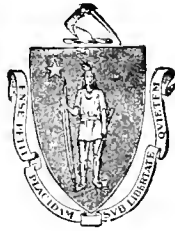


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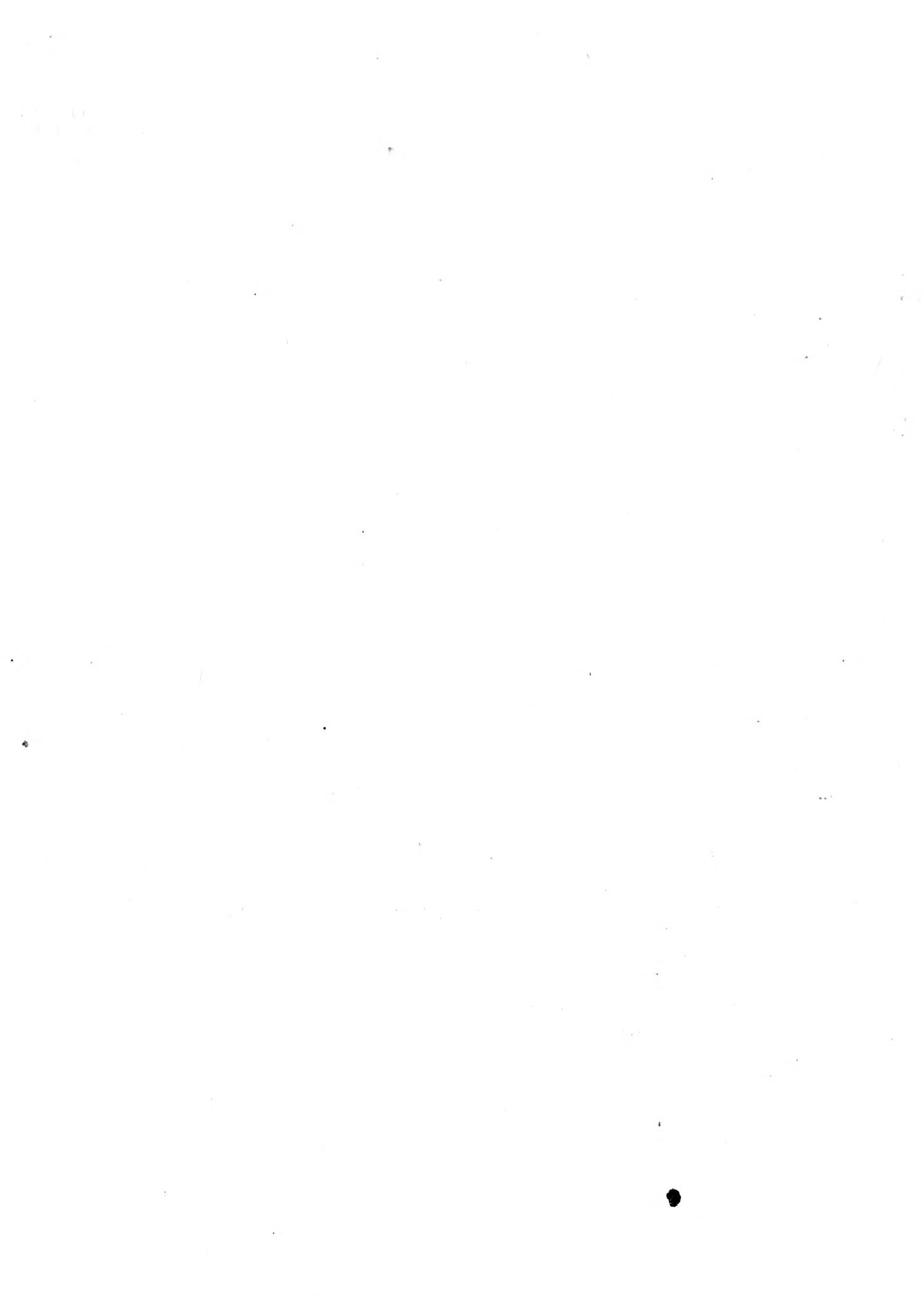


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JUNE 26, 1920

THE
GARDENERS' CHRONICLE

A Weekly Illustrated Journal

OF

HORTICULTURE AND ALLIED SUBJECTS

(ESTABLISHED IN 1841.)

VOL. LXVII.—THIRD SERIES.

JANUARY TO JUNE, 1920.

LONDON
41, WELLINGTON STREET, COVENT GARDEN, W.C.2.

1920.

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INDEX OF CONTENTS.

JANUARY TO JUNE, 1920.

(FOR SPECIAL HEADINGS SEE UNDER ANSWERS TO CORRESPONDENTS; BOOKS; CERTIFICATED PLANTS, ETC.; LAW NOTES; OBITUARY; PLANTS, NEW; SCIENTIFIC COMMITTEE; SOCIETIES; AND ILLUSTRATIONS.)

A

ABERDEEN CHAIR OF BOTANY, appointment to, 138, 211
 Aberdeen, horticultural demonstrations in, 12; new park for, 313
Acacia dealbata, 173; *A. pycnantha*, 86
Acacia, timber of the, 37
Acacias for pot culture, 169
Acalypha hispida, 143
Acer circinatum, 139
Adonis amurensis, the double, 115, 145
 Agricultural Botany, National Institute of, 235
 Agricultural research, 61
 Agricultural training for disabled ex-service men, 275
 Agricultural Wages Board, 187; appointment of new Chairman of, 287
 Agriculture, tropical, 12
Akebia in S.W. Scotland, 101
Alchemilla argentea, 115
 Alexandria, horticulture at, 250
Aleyrodes (or White Fly), 44, 68, 80, 96, 108, 134, 160, 173
 Algaroba tree in Hawaii, the, 212
 Allotment, produce from a 10-rod, 242.
 Allotments, 62, 94, 187, 200; at Edinburgh, 85; at Epping, 11; at Merton, 176; in Surrey, 35, 114; in the Thames Valley, 138
 Allwood Bros., Gold Flora Medal for 289; nurseries of, 309
 Almond, flowering of the, 100
 Alpine garden, the, 5, 13, 31, 49, 66, 101, 115, 127, 140, 155, 171, 193, 203, 213, 253, 265, 307
 Alpine Meadows of Burma-Yunnan, 118
 Alpine Strawberries, 25
 Amelanchiers, 317
 America: Association of Kew Gardeners in, 262; Bulb growing in, 36; Iris Society for, 24, 152; Iris trials in, 36; Orchid Society for, 187, 200; plant quarantine in, 62; the Paeony in, 151
 American Apple trade, the, 199;
 American plants in England, 52
Anchusa myosotidifolia, 140
Androsace glacialis, 155
Anemone blanda scythica, 265;
A. cylindrica, 31; *A. St. Brigid*, 270, 308; *A. sylvestris*, 121

Answers to Correspondents:—
Acacia Baileyana, propagation of, 112; *Acetylene* refuse, 174, 186;
 Apple Baddamora, 198; Apple seedling, 150; Apples injured, 84, 150, 198, 222, 322; Azaleas, injured, 124, 150; chemical fertilisers for, 98; Beans, unsatisfactory, 174;
Begonia injured, 84; Black Currants injured, 174, 312;
 Bonus and reserved pay, 272;
 Books, 112, 174; Brassicas, club-root in, 84; Brown Elm dust, 34; *Calanthes* injured, 46;
 Carnations injured, 98; Cauliflowers, 60; *Cedrus atlantica glauca*, 210;
 Charlock, destruction of, 46;
 Choisyia injured, 186; Christmas Roses injured, 198; Chrysanthemums injured, 248; for outdoors, 112; Cinerarias, 84; Clivia roots,

34; Copperas, spraying with, 112;
 Cucumbers injured, 260; Daffodil bulbs injured, 288; Damsons and Bullaies, propagation of, 60; Digging, 174; Eelworms in manure, 22; Elm timber, the price of, 198;
 Employer's liability, 60; *Enkianthus campanulatus*, 174; *Equisetum*, exterminating, 248; Fern and Cactus, 22; Ferns from spores, 174; Figs, 22, 222, 248;
 Flowers for market, cultivation of, 98; Fruit cultivation, 150, 198;
 Fruit-room, cleaning a, 322;
 Fruit trees, pruning in autumn, 234; Garden staff for a, 322; Gardeners and unemployment, 150;
Gardeners' Chronicle, volumes of the, 186; Gardener's licence for under-, 84; Gardener's notice, 70; *Garrya elliptica*, 112; *Gloxinias* injured, 150, 260;
 Gooseberry Bush injured, 322; Grafting wax, 112; Grafting on Laburnum, 124, 162; Grapes, varieties of, 10, 84; Greenhouse heating, 124, 322; Herbaceous plants for chalky soils, 112; Herbs, medicinal, 174; Hydrangeas, blue 174, 248; Insects for naming, 22, 210, 234, 260;
Lapageria injured, 198; Lawn, lime dressing for, 112; Moss on, 312; Leech, horse 162;
 Lily of the Valley, 136; 248; Melon plants wilting, 322;
 Mushroom, 124, 309; Names of fruits, 10, 22, 34, 60, 98, 112, 136, 150, 186, 260, 322; Names of plants, 10, 24, 46, 60, 70, 124, 136, 150, 174, 186, 198, 210, 234, 248, 260, 272, 288, 322; Narcissus failing, 60; *Narcissus poeticus ornatus*, 150; National Diploma in Horticulture, 98; Nectarines, Silver Leaf disease on, 288; Orchid leaves damaged, 248; Paony injured, 272; Paradise stock, 248; Parks, employment in, 84; Paved garden, plants for a, 150; Patent, application for a, 248; Peaches injured, 46, 150, 174, 210, 222, 248, 260, 288; Pear trees, failure of, 98, 136; Pear Dana's Hovey, 34; Pear tree, grafting a, 112, 248; Pear trees, weevils on, 260;
 Peas unhealthy, 288; *Pelargonium* diseased, 198; Peppermint, 10; *Picea* injured, 210; Pineapple cultivation, 112; Plants, a tenant's, 222, 248; for carpet bedding, 34; for house-decoration, 162; for a paved garden, 150; Plum trees, Silver Leaf disease in, 150; Plums falling, 322; Potatos, new, inside old, 322; Rabbits eating tree stems, 84; Rats destruction of, 222; Red currant fruits falling 288; Rhubarb, Hobday's, 198; Rhubarb running to flower, 234; Richardia, abnormal, 124; Richardias injured, 210; Rose Maréchal Neil, 234; Rose shoots diseased, 248; Roses, for market, 136; *Salvia splendens* attacked by Dodder, 260; *Schizanthus* failing, 198; Seed testing, 22; Shallots, Dutch, 22; Shrubs for borders, 112; for chalky soil, 34; Silver-leaf, 150, 288;

Sludge manure, 34; Society, local registration of, 136; Soil, the excavation of, 300; Sulphate of copper solution, 70; Sulphate of iron, for fruit trees, 136, Sweet Peas under glass, 222; Tennis Court, 322; Timber, how to measure, 150; Tobacco, Turkish and Virginian, 150; Tomatos, cultivation of, 46, 60, 150, 174; Tree stumps, blasting, 162; *Trichodaena* and *Tellima*, 174; Tulips "breaking," 300; Tulip disease, 272, 288; Turf, right of removal of, 70; Union Jack design for flower bed, 210; Vines injured, 46, 222, 246, 272, 300, 322, Violets diseased, 210; Wages and hours for gardeners, etc., 150, 210, 260; Watercress cultivation, 322; Weed in pond, 150, 272, 322; Window boxes, 70; Witches Broom on Lime trees, 112; *Wisteria* grafting, on Laburnum, 162
Anthemium cupaniana, 290
Anthericum Liliastrum, 121
Antirrhinums, 53
 Ants, method of destroying, 152
 Antwerp Flower Show, 114, 126, 233, 244
Aotus gracillima, 232
 Aphides and frost, 78
 Aphis, a plague of, 32
 Apiary the, 45, 106, 305
 Apple Day, a national, 164
 Apple trade, the American, 199
 Apples: Alfriston, 160, 186, 201, 232, 243, 270; Cox's Orange Pippin, 171; Crofton Scarlet, 25; Egremont Russet, 158; Ellison's Orange, 108; Queen Caroline, 9; Radford Beauty, 93; Spencer's Seedling, 9; Syke House Russet, 158; Thomas Coomber, 158; Tythby's Seedling 93
 Apples: packing and grading, 93, 290; double grafting, 142, 243; home-grown, causes of low prices for, 47, 92, 95; October dessert, 8, 20, 56; prices for late, 220.
 Arbor Day in Manchester, 126
 Arnold Arboretum, 194, 212, 317; effect of the severe winter in the, 266
 Artichokes, 79
 Arum Lilies at Swansea, 320
 Asparagus, 170
Asperula, garden species of, 91; leaves blackened, 322.
Asystasia (Mackaya) bella, 51, 143
 Austria, horticulture in, 241
 Azaleas from Kurume, 194, 205
Azara integrifolia, 89

B

BAGATELLE, best new Rose at, 301
 Bailey, L. H. (*Nursery Manual*, *The*), 251
 Banana growing in Queensland, 71
 Basic slag as manure, 152
 Bean, a gigantic, 239
 Beans, Runner, 182
 Bee-hives, site for, 45
 Bees, the management of, 45, 106, 305
Begonia manicata, 269; *B. polyantha*, 143; *B. semperflorens gigantea*, 143

Begonias: fibrous-rooted, 277; from November to March, 230, 298; winter-flowering 43
 Belgian seed trade, 2
 Belgium's gratitude to British horticulturists, 86
 Big bud in Currants, remedy for, 31, 122
 Birch, the, as a street tree, 122, 157, 183
 Birds and buds, 95, 134, 196, 220
 Birmingham, new park for, 200; Potato Exhibition at, 212.
 Black Currant, the, 223
 Black-leg in Potato clamps, 235
 Bois, M.D., appointment of, 273
 Books: horticultural and botanical, the sale of, 290; scientific and technical, 134
Books, Notices of:— American Rose Annual, the, 251; Botanical Magazine, 302; British Rainfall (*H. R. Mill* and *Carle S. Salter*), 27; Calendar of Garden Operations, the, 230; Everybody's Book on Garden Annuals (*Haslehurst Graves*), 220; Flora of Chesham, the (*W. J. Schoolbred*), 237; Flowering Trees and Shrubs for use in South Africa (*T. E. Sim*), 158; Forest Woods and Trees in Relation to Hygiene (*Augustine Henry*), 54; Fossil plants (*A. C. Steward*), 177; Guide to the Identification of our more useful Timbers (*Herbert Stone*), 314; Handbook of Forestry, the (*A. D. Webster*), 167; Insect Pests and Plant Diseases in the Vegetable and Fruit Garden (*F. Martin Duncan*), 8; Lawns and Greens (*T. W. Sanders*), 237; Manual of American Grape-growing (*W. P. Hendrick*), 303; Meteorology for All (*D. W. Horner*), 27; Nursery Manual, the (*L. H. Bailey*), 251; Outlines of the History of Botany (*Harvey Gibson*), 139; Practical Hardy Fruit Culture (*Richard Staward*), 100; Roses, Their History, Development and Cultivation (*Rev. J. H. Pemberton*), 263; Study of the Weather, the (*E. H. Chapman*), 27; Sweet Peas and Antirrhinums (*William Cuthbertson*), 220; Twentieth Century Potatos (*J. Fraser*), 220.
 Books, sale of, 314.
 Botanical artist, a forgotten, 278
 Botany: new Professor of, at Aberdeen, 138, 211, the relation of, to commerce, 138
 Bournemouth Parks, new superintendent of the, 86
 Brassica cross, a, 9, 20
 Brassicas, club root in, 134, 160
 Brasso-Cattleya Menda, 3
 Brasso Laelio-Cattleya Jupiter, 275; B.L.C. Tom, 15
 Brown Oak timber, 37
 Bryndir, Orchids from, 89
 Buckwheat, the cultivation of, 262
 Buds for grafting, selection of, 163
 Bulb garden, the, 67, 133, 255
Bursaria spinosa and Indian Wax Scale, 61
 Bushy Park Horse Chestnuts, 236

MAR 15 1921

C

- CALCEOLARIAS, herbaceous, 181, 277
 Cambridge degree in horticulture, 273
 Cambridge, lecturer in botany at, 11
Camellia reticulata, 183
Campanula Vidalii, 193
Campanulas, hybrid, 290
Canarina campanulata, 53
 Cardiff, the R.H.S. show at, 289
Carnation Souvenir de la Malmaison, 19
 Carnation stem rot in America, 36, 95
 Carnations: American, for Belgian growers, 151; perpetual, 144, 156, 172, 217; stem-rot of, 36, 95
Castilleja acuminata, 140
Cattleya amethystoglossa, 77; C. Enid, Dovercourt var., 39; C. Portia, 15; C. Rhoda, 117
 Cauliflowers, 103
Ceanothus Gloire de Versailles, 41
Celastrus articulatus, 55
 Celsius for the flower border, 179
- Certificated Plants:**—*Anemone* St. Bavo, 221; *Auriculas*: Bookham Blue, 196; Jean Holding, 247; Jennie Scott, 247; Landrail, 247; Mrs. Saunders, 247; Mrs. T. E. Owens, 247; *Azalea* Dr. Oosthoek, 245; *Begonia* Peace, 281; *Brasso-Cattleya Cliftonii* *Gratrix's* var., 234; B. C. *Enchantress*, 33; B. C. *Gatton Lily* var. *Triumph*, 196; B. C. *Princess Mary* var. *exquisitum*, 33; *Brasso-Laelio-Cattleya Joan* var. *Excelsior*, 221; B. L. C. *Lua*, 174; *Olanthe burfordense*, 33; C. *Papilio*, 33; *Cardamine pratensis* *lilacina plena*, 196; *Carnations*: *Lady Inverforth*, 281; *New White Glove*, 310; *Renown*, 221; *Wivelsfield Claret*, 196; *Catasetum viridifolium*, 33; *Cattleya Cowanae* alba var. *Jeannette*, 174; C. *Fabia atro-purpurea*, 33; C. *Harrisoniana*, *The Grange* var., 174; C. *Hesta magnifica*, 312; C. *Lady Rowena The Bride*, 174; C. L. R. var. *White Swan*, 173; C. *Marguerita*, 247; C. *Memoria F. M. Ogilvie* var. *The Premier*, 124; C. *Mendellii* *Bridesmaid*, 234; C. M. *Diana*, 69; C. *Moira* alba, 33; C. *Mrs. James Watson*, *The Dell* var., 58; C. *Snowdrop intertexta*, 124; C. *Snowflake* var. *Noel*, 246; C. *Tityus* *Fasey's* var., 221; C. T. *Royal Monarch*, 247; C. *Trianae* alba var. *Mary Regina*, 174; C. T. *The Baron*, 124; *Chrysanthemum* *The Favourite*, 32; *Clivia* St. Nicholas, 245; *Cornus Nuttallii*, 196; *Cymbidium albanense* *Joicey's* var., 58; C. *Alexanderi* *amabile*, 174; C. A. var. *La France*, 247; C. A. var. *Ideal*, 247; C. *Diana* *Bolholt* var., 124; C. *Gottianum superbum*, 174; C. *Actaeus* *Lady Greensleeves*, 69; C. *Angela*, 33; C. *Astarte*, 124; C. *aureum* *Hyeannum*, 69; C. *Christopher* var. *Praesigne*, 33; C. *Cyclops* *West Point* var., 69; C. *Cyril Lee*, 33; C. *Draco Lee's* var., 33; C. *Elise magnificum*, 69; C. *Euryades* *Carter Place* var., 69; C. *Florence* *Spencer*, 135; C. *Joy Sander*, 69; C. *Lathamianum* *Wrigley's* var., 69; C. *magnificum*, 69; C. *Memoria F. M. Ogilvie*, 69, 81; C. *Mem. F. M. O.* var. *Rex*, 173; C. *Moonbeam* var. *W. G. Groves*, 33; C. *nanum* var. *W. A. Stewart*, 33; C. *Olympus* var. *The Chairman*, 69; C. *Orva*, 33; C. *Our Prince*, 33; C. *Persens* *Queen Alexandra*, 124; C. *Radium*, 124; C. *Rheims* *Invicta*, 69; C. *Seraphina* var. *Marcel*, 174; C. *Tigris*, 33; C. *Victor Hugo* var. *King John*, 33; C. *Virginia*, 69; C. *Zadie*, 69; *Daphne* *Cneorum* alba, 196; *Delphinium Blue Bird*, 310; *D. Pannonia*, 310; *Dendrobium Austini* *Bolholt* var. 173; *D. delense*, 124; *D. Findleyanum* album, 173; *D. Lady Jellicoe*, 173; *D. Melpomene splendidi-dissimum*, 173; *D. nobile* *Gibsonii*, 124; *D. nobile* *Hercules*, 173; *D. primularidii*, 300; *D. Samuel* *Gratrix*, 124; *D. Schultzei*, 124; *D. Sir Frederick* *Moore*, 124; *D. Sir F. M.* var. *magnificum*, 173; *D. venustum*, 247 (see also p. 300); *Dianthus* *Harold*, 281; *D. Jean*, 281; *D. Robert*, 281; *D. Rufus*, 281; *Freesias*: *Apogée*, 221; *Onakeross*, 134; *Rosebud*, 134; *Gaillardia* *Downer's* *Double*, 310; *Galanthus* *vanis* *Imperati*, 81; *Geums*: *Lady Stratheden*, 281; *Orangeman*, 281; *Helleborus* *Ena*, 134; *H. Gertie*, 134; *Iris* *Ann Page*, 281; *I. Balanuc*, 281; *I. kashmiriana* var. *Raniket*, 245; *I. Prospero*, 281; *I. xiphium* *Voerman*, 281; *I. Yellowhammer*, 221; *Laelio-Cattleya* *Alborak*, 32; L. C. *Beatrice* *West Point* var., 174; L. C. *Eunice* var. *Snowdon*, 196; L. C. *Finnini*, 69; L. C. *General* *Allenby*, 174; L. C. *Joy Sander*, 234; L. C. *luminosa* *aurea* *The Premier*, 247; *Mrs. Willoughby* *Pemberton*, 311; L. C. *Schröderae* *Ouren*, 69; *Lilium* *Farreri*, 281; *Lycaste* *orienta* *Bridge Hall* var., 124; *L. Skinneri* var. *alba*, 124; *L. S. Cazador*, 234; *L. S.* var. *Crimson Glow*, 124; *L. S. delicatissima*, 234; *L. S.* var. *Fairy*, 69; *L. S.* var. *Great Rex*, 124; *L. S.* var. *His Excellency*, 124; *L. S. ingens*, 124; *L. S.* var. *Phoebus*, 124; *L. S. rosalba*, 124; *L. S.* var. *Rosy Morn*, 69; *L. S. Royal Beauty*, 234; *L. S. rubella* *superba*, 175; *Miltonia* *Blueana* var. *Princess Elizabeth*, 109; *M. Memoria* *Crown* *Princess Margaret*, 279; *Myosotis* *dissitiflora* *hybrida* *Roll of Honour*, 245; *Narcissus* *Firetail*, 197; *N. John* *Masefield*, 197; *N. Magnificence*, 135; *N. Mrs. Leonard* *Harrison*, 135; *N. Orange* *Glory*, 197; *N. triandrus* *calathinus*, 135; *Odontioda* *Alcantara* *Ralli's* var., 32; *Oda. Alcantara* var. *rubra*, 234; *Oda. Bradshawiae* *Colossus* 124; *Oda. Chanticleer* var. *superba*, 234; *Oda. Colinge* var. *rubra*, 174; *Oda. Decia*, 221; *Oda. Fabia* *Ralli's* var., 246; *Oda. Gatton* *Glory*, 279; *Oda. Gloss* *Broadlands* var., 246; *Oda. Leon* *Perrin*, 196; *Oda. Madeline* *Christabel*, 174; *Oda. Orphana*, 247; *Oda. Red* *Cross* *Bracken* *hurst* var., 173; *Oda. Sir* *Douglas* *Hall*, 174; *Oda. Zenobia* *Houghtoni*, 247; *Odontoglossum* *Adula*, 221; *Odm. armainvillierense* var. *Mary*, 174; *Odm. Bonaparte*, 221; *Odm. Colonel* *Leith* *Maadon* *House* var., 33; *Odm. Conqueror* *Fasey's* var., 109; *Odm. crispo-* *Solon* var. *Kenneth*, 279; *Odm. Diamond*, 221; *Odm. Doreen* *magnificum*, 312; *Odm. Doris* *majesticum*, 174; *Odm. Doris* *West Point* var., 124; *Odm. Dorothy* *Arkle*, 81; *Odm. Elfrida* var. *magnificum*, 234; *Odm. excellens* var. *Golden Dawn*, 247; *Odm. Fabia* *Frant* *Court* var., 221; *Odm. Gipsy* *Queen*, 173; *Odm. Joy*, 196; *Odm. Henry* *VIII.*, 109; *Odm. Hymen*, 135; *Odm. Laurentia* *lilacinum*, 174; *Odm. Memoria* *Nurse* *Cavell*, 174; *Odm. Parsifal*, 173; *Odm. per-* *cutum* *Black Knight*, 124; *Odm. Pescatorei* *albens* *Ogilvie's* var., 247; *Odm. Pluto*, 174; *Odm. Promerens* var. *Duchess*, 247; *Odm. Promerens* *Prince* *Henry*, 247; *Odm. rayonatum*, 124; *Odm. St. George*, 174; *Odm. St. George* var. *Albion*, 279; *Odm. St. Peter*, 174; *Odm. Thwaitesiae* *Fasey's* var., 33; *Odm. Tityus*, 234; *Odm. crispo-Solon*, 81, 174; *Odm. crispum* *Gladiator*, 234; *Odm. e.* *Lady* *White*, 124; *Odm. e.* var. *Pearl* *White*, 124; *Odm. e.* *Rosamund*, 174; *Odm. e.* *Trojan*, 247; *Odm. e.* *Troytown*, 234; *Odm. e.* *Virgin* *Queen*, 124; *Odm. e.* *West* *Point* *Monarch*, 124; *Odm. e.* *Yuletide*, 33; *Odm. eximium* *Shackletoni*, 234; *Odontonia* *Glady's*, 279; *O. Pittiae*, 81; *Ochris* *foliosa*, 279; *Paeony* *Souvenir* *du* *Professeur* *Cornu*, 245; *Papaver* *orientale* *Lord* *Lambourne*, 281; *Phyllodae* (?) *alenticia*, 196; *Picea* *Albertiana*, 281; *Pinks*: *Mrs. Geo. Walker*, 281; *Victory*, 281; *Polystichum* *angulare* *divisilobum* *plumosum* *densum* *No. 2*, 281; *P. angulare* *divisilobum* *plumosum* *robustum*, *Perry*, 281; *Primula* *Aileen* *Aroon*, 245; *P. denticulata* *magnifica*, 134; *P. Margarita* *Linda* *Pope*, 196; *Pyracantha* *yunnan-* *ensis* var. *Warley*, 310; *Rhododendron* *calophyllum*, 134; *R. Donna* *Anita*, 196; *R. Don* *Ernestii*, 196; *R. Donna* *Florenza*, 196; *R. Richard* *Gill*, 196; *R. The* *Don*, 196; *Roscoe* *Humeana*, 281; *Roses*: *Constance* *Casson*, 232; *Mrs. Curcock* *Sawday*, 232, 310; *Padre*, 232; *Rev. F. Page* *Roberts*, 232; *Saxifraga* *Monica*, 245; *S. Tumb-* *ling* *Waters*, 281; *Schizanthus* *roseum* *compactum*, 281; *Sophro-* *Cattleya* *Saxa* var. *flamea*, 69; *S. C. Saxa* *magnifica*, 124; *Sophro-Laelio-Cattleya* *Meuse* var. *magnifica*, 135; *Sweet* *Peas*: *George* *Shawyer*, 282; *Hawmark* *Lavender*, 282; *Le* *Mabdi*, 310; *Mildred* *Howard*, 310; *Picture*, 282; *Tangerine*, 282; *Tulips*: *Advance* 221; *Alceme*, 246; *Dido*, 246; *Firenze*, 221; *Vanda* *caerulea* var. *Bluebeard*, 33
- Preliminary Commendation:**—*Odon-* *tonia* *Dora*, 279
- Certificated Fruit:**—*Apple* *Alfri-* *ton*, 135
- Certificated Vegetables:**—*Peas*: *Prime* 311; *Prosperity*, 311; *Reading* *Wonder*, 311; *Swedes*: *Acme*, 69; *Naylen's* *Ruta* *Bagu*, 69; *Nonesuch* *Purple* *Top*, 69; *Superlative* *Garden*, 69; *Yellow* *Garden*, 69
- Cestrum*s, hybrid, 220
 Chadwick lectures, the, 224
 Chamomile cultivation in Scotland, 2
 Chapman, E. H. (*Study of the* *Weather*), 27
 Chatsworth, the great conservatory at, demolition of, 119
 Chelsea Show, the, 279, 296;
 Orchid Tent at, 305
 Chermes attacking Douglas Fir, 318
 Cherries under glass, 68
 China, the *Chrysanthemum* in, 188
 "Chrysanthème, le," 47
Chrysanthemum Autocrat, 217
Chrysanthemums, 5, 18, 53, 87, 134, 157, 173, 185; in China, 188;
 in France, 176
 Cider industry, the, 262
 Cider tasting at Long Ashton, 199
 Cirropetalum, 275
Citrus inodorus, 289
Clianthus, 63; C. *Dampieri*, 123
 Clover, wild white, for pastures, 176
Clusia grandiflora, 315
 Cogniaux, Alfred, appreciation of, 12
 Colonies, notes from the, 309
 Columneas, 193
 Conservatory, demolition of the great at (Chatsworth), 119
 Conifers, odours of, 318
Corydalis tuberosa (C. Cava), 189
Cotoneaster rotundifolia, 131
 Cotton cultivation in Egypt, 176; in Uganda, 152
 Country produce, exhibition of, 235
 Covent Garden Market and Estate, 100, 152
 Cowper's Summer House at Olney, 302
 Crabs John Downie and Dartmouth, 55
 Crabtree, Miss, 278
Crocus tommasinianus, 119
 Crop and stock on the home farm, 45
 Crocydon *Chrysanthemum* Show, revival of the, 85
 Crystal Palace, fire at, 72; re-opening of the, 212
 Cultivation, deep, 30
 Cultural memoranda, 19, 39, 120, 144, 171, 177, 215, 242
 Cuthbertson, William (*Sweet Peas* and *Antirrhinums*), 220
 Cuttings, 7, 42, 143, 177
Cyclamen europaeum, longevity of, 122
Cymbidium Alexanderi, 153; C. *Diana* var. *concolor*, 183; C. *l'Ansonii*, 153, 274
Cymbidiums, hybrid, 103
Cynoglossum amabile, 140
Cynorchis, 183
Cypripedium chrysoxum *striatum*, 33; C. *Hazeldene*, 153; C. *Latona*, 3; C. *Memoria* *F. M. Ogilvie*, 103; C. *Mrs. Alfred C. Hanbury*, 3
Cypripediums from Westonsbirt, 31
- D**
DAHLIAS for garden decoration, 258
Dalibarda repens, 213
 Dalkeith gardens, 274
Daphne Mezereum, 75
 Darfield Rectory, Yorkshire, the Garden of the Rev. Walter Stonehouse, in 1640, 240, 256, 263, 296
 Dartmoor, the proposed Industrialisation of, 12, 62
Datura sanguinea, 208
 December, the weather in, 44
 Deciduous hedges, 49
 Deepdene, Dorking, sale of, 164
Dendrobium Bassettii *Deanlands* var., 213; *D. Pierardii*, 239; *D. primularidii*, 239, 308; *D. primum*, 239
Desfontainea spinosa, 75, 173
 Douglas Fir, the, 48; attacked by Chermes, 318
 Drainage of small areas, the, 106
 Dryham, Walton-on-Thames, 257
 Dumfries municipal bowling green charges, 273

Duncan, F. Martin, (*Insect Pests and Plant Diseases in the Vegetable and Fruit Garden*), 8

E

EAST MOLESEY, recreation ground for, 100
 Edinburgh: allotments at, 85; Botanic Gardens, notes from the, 294; parks in, 35, 199, 250, 261, 289, 290, 301
 Eelworm disease of Narcissus, 176, 206, 218
 Egypt, cotton-growing in, 176
Elaeagnus argentea, 307
 English *versus* Scottish gardeners, 172, 208
 Enham Village centre for disabled men, 187, 232
Enkianthus campanulatus, 237
Epphyllum truncatum, 48, 80
 Epping, allotments at, 11
Erica darleyensis, 165
Erinus alpinus, 171, 265
Erodium pelargoniflorum, 127
Erysimum linifolium, 307
Erythraea Centaurium, 13, 96
Eulalia, 39
Eulophiella Elizabethae, 191
 Evergreen hedges, 12, 44
 Ewell, "Garden of Remembrance" at, 301

F

FAIRFIELD lecture, the, 249
 FARM, crop and stock on the home, 45
 Farm school, gift of, for Suffolk, 23
 Farmers' Land Purchase Co., 62
 Farrer's, Mr. Reginald, second exploration in Asia, 6, 29, 66, 104, 142, 204, 266
 Felstead, Mr. Walter, appointment of, 86
 Fern flora of trees, the, 309
 Fernery, the, 17
 Ferns as decorative plants, 17
 Fertilisers, the use of, in counter-acting adverse climate, 224
 Fish poisons as insecticides, 313
 Flagstaff, new, at Kew, 37
 Florence, the Tulips of, 181
 Florists' flowers, 18, 52, 73, 87, 144, 207, 217, 258
 Flower garden, the, 4, 14, 26, 38, 50, 64, 75, 90, 103, 116, 129, 140, 154, 166, 178, 190, 203, 215, 226, 238, 253, 265, 276, 292, 304, 316
 Flowering bulbs, cultivation of, in America, 36
 Flowers in season, 164
 Flowers, seasonable indoor, 15
 Food kitchens in London parks, 188
 Food production, increased, 235
 Food trains, 36
 Foreign correspondence, 19, 73, 230, 242, 290
 "Foremarke" Challenge Cup for Gladiolus, 85
 Forest fires, 12
 Forest trees, "flight" of pollen, 236; seeds of, sown by aeroplane, 11
 Forestry Commissioner, assistant, 152
 Forestry notes, 37
 France, choice Chrysanthemums in, 176
 Fraser, J. (*Twentieth Century Potatoes*), 220
Fraxinus Mariesi, 157
 Freesia names and the R.H.S. Floral Committee, 208, 232, 243

Fritillaria, 241
 Fruit conference at Wye College, 85, 126
 Fruit growing, education in, 113; in Nova Scotia, 313; research in, 61, 211
 Fruit register, 5, 55, 93, 158, 171, 200
 Fruit trees, hardy, assisting, 73
 Fruits: Under glass, 5, 14, 26, 38, 50, 64, 74, 90, 162, 116, 129, 141, 154, 166, 178, 190, 232, 214, 227, 238, 252, 264, 276, 292, 304, 316; British grown, exhibition of, 137
 Fungus, adjectival form of the word, 209, 232

G

GALANTHUS ELWESI var. Cassaba, 62; *G. nivalis* Perfection, 205
 Galega Hartlandii, 319
 Garden villages conference at Croydon, 24
 Gardens, the, 2
Gardeners' Chronicle, the, Seventy-Five Years Ago, 2, 12, 24, 36, 48, 62, 72, 86, 100, 114, 126, 138, 152, 164, 176, 188, 200, 212, 224, 236, 251, 262, 274, 290, 302, 314
 Gardeners' education and training, 42, 63, 95, 123, 145, 220, 290
 Gardening and food production, lectures on, 188, 290
 Gardens in Edinburgh, lecture on, 62
Genista sagittalis, 165
Gentiana excisa, 253; *G. verna angulosa*, 265
Gesnera cardinalis, 308
 Ghent, International Horticultural Conference at, 259
 Gibson, Harvey (*Outlines of the History of Botany*), 139
 Gladiolus, "Foremarke" Challenge Cup for, 85
 Glasgow, new park for, 250, 301
 Glasgow Parks, Director of, 289; staff of, 236
 Gooseberry Mildew Order, 10
 Grape Madresfield Court, 5, 31, 55
 Grapes in unheated houses, 20, 44
 Grass-land campaign, a, 72
 Graves, Haslehurst (*Everybody's Book on Garden Annuals*), 220
 Green crops for dairy cows, 261
 Greenhouse plants in February, 104
 Greenwich Park in spring time, 250
 Guillaumin, M., appointment of, 273
 Gundersbury estate, proposed new public park in the, 188

H

HAMAMELIS, 131
 Hampton Court: Accident at, 72
 spring flowers at, 113, 243; vine at, 176
 Hardy flower border, 121, 153, 189, 290
 Hardy fruit garden, the, 4, 14, 26, 38, 50, 65, 74, 90, 102, 116, 128, 140, 154, 166, 179, 190, 202, 214, 226, 238, 252, 264, 276, 292, 304, 316
 Hare, Mr. F. E., honour for, 200
 Hawaii, the Algaroba tree in, 212
 Heath fire in Surrey, 151
 Hedges, deciduous, 49; evergreen, 12, 44, 75, 108
Helichrysum coralloides, 35; *H. rosmarinifolium*, 317
 Hendrick, W. P. (*Manual of American Grape Growing*), 303
 Henry, Augustine (*Forest, Woods, and Trees in Relation to Hygiene*), 54
 Herbaceous border, an interesting, 67
 Hildebrandsson Dr., awarded the "Symons" Medal, 23

Himalayaberry, the, 20
Hippeastrum pardinum, 155
 Holland, garden produce under glass in, 224
 Hope, Mr. Collingwood, appointment of, 289
 Horner, D. W. (*Meteorology for All*), 27
 Horse-hestnuts in Bushy Park, 236
 Horticultural demonstrations at Aberdeenshire, 12; from a train, 249
 Horticultural Education Association, 249; events in 1919, 1; training centre for Middlesex, 23
 Horticulture and the State, 113
 Horticulture in Austria, 242; in Russia, 77
 Horticulturists, honours for, 176
Hutchinsia alpina, 127
 Hyacinths, "Cynthella," 290

I

IMAW BUM, plant collecting on the, 168, 228, 306
Impatiens Herzogii, 318
 Imperial Botanical Congress, 126
 Inclosure and Tithe Acts, 290
 Insect pests and plant diseases, 133
 Insects, spray proof, 35
 Ireland, notes from, 17, 147
Iris laevigata, Fischer, 274
 Iris Society for America, 24, 152
 Irises: Bog, 209; colouring of, 19, 290; hybrid bearded, 76, 88, 184, 225; trials of, in America, 36
Isatis tinctoria

J

JAM making, sugar for, 187
Jasminum nudiflorum, 89
 Japanese Rhododendrons, 195

K

KEEBLE, DR. F. W., marriage of, 163
 Kelso Abbey, 2
Kew Guild Journal, 144
 Kew: museum of economic botany at, 113; new flagstaff at, 37; notes from, 104; hostel for the garden staff at, 114; Pease commemoration trees at, 24; tennis on the Green at, 85; war memorial at, 152
 King, John K. and Sons, fire at premises of, 235
 Kitchen garden, the, 4, 14, 26, 38, 50, 64, 74, 90, 102, 116, 129, 141, 154, 166, 178, 190, 202, 214, 226, 238, 252, 264, 276, 293, 304, 316

L

LABELS, garden, 270
Laelia monophylla, 275
Laelio-Cattleya Coccidom, 191; L.C. Hildom, 191
 "La Linnea" alpine garden, 101
 Lancashire Potato trials, 235
 Land settlement for ex-Service men, 24, 187, 211, 232, 313
 Land, vacant railway, utilisation of, 123
 Larch canker, 175, 195
 Law Note: Bulb trade, custom of the, 322
 Lazy-bed method of planting Potatoes, 145
 Leaf curl of Potatoes, 176
 Leaves, propagation by, 120
 Lebanon Oak, the, 139
 Legacies of an untoward season, 95

Leicestershire, fruit crops in, 308
 Leslie, Mr. Peter, visiting America, 301
 Lettuces, 103, 133, 192, 201
 Lilies, in 1919, 180; Japanese, 27
Lilium auratum macranthum, 67; *L. giganteum*, 103, 289; *L. speciosum*, 133
 Lily, a new Chinese, 114; a new hybrid (*Lilium regale* × *L. sargentiae*), 255
 Linarias, 184
 Linn Park, Glasgow, The, 12
Lithospermum Froebelii, 140; *L. purpureo-caeruleum*, 307
Lobelia tenuior, 217
 Lobjoit, Mr. W. J., appointment of, 301
 Long Ashton, cider tasting day at, 199
Lonicera Standishii lancifolia, 101
Lopezia miniata, 43
Loropetalum chinense, 183
Luculia, 16

M

MACEDONIA, vegetable cultivation in, 94, 105
 Mackaya (*Asystasia*) bella, 51, 143
 Macquarie Island, the flora of, 85
 Maize, the origin of, 114
 Malope, 105
 Manchester, Arbor Day in, 126
 Mangin, Mons. L., appointment of, 23
 Maps, ordnance survey, 138
 Market fruit garden, the, 28, 92, 130, 149, 206, 254, 294, 317
Masdevallia coccinea, 239; *M. ignea*, 239
 Melons, early, 120
 Melville, Mr. David, presentation to, 126
 Merton and Morden, town planning at, 86
 Merton, allotments at, 176
 Meteorological lectures, 23
 Mill, H. R. (*British Rainfall*), 27
Miltonia Bleuana Reine Elisabeth, 239
Miltonias at Chelsea, 315
 Ministry of Agriculture, work of the, 211
 Mints, variegated, 107
 Mistletoe, hosts for the, 9, 20, 44, 56, 69, 80, 103, 122, 145, 173, 185
 Moles attacking cabbages, 8
 "Monro, Geo., Ltd.," concert, 61, 114
Moraea iridioides Johnsonii, 165, 297, 320
 Morayshire, damage by sandstorm in, 262
 Moth, the buff-tip, *Pygaera* (*Phalera*) *bucephala*, 5
 "Mountain Ash," Australian, 37
 Mussel scale, a specific for, 152

N

NARCISSUS, eelworm disease of, 176, 206, 218
 Narcissus Firetail, 227; *N. Solci d'Or*, 145
Nierembergia rivularis, 121
 Norfolk, demonstration farm in, 151
 Nova Scotia, fruit growing in, 313
 Novelties, registration of, 75
 Nursery notes, 107, 308
Nuttallia cerasiformis, 253

O

Obituary: Bartlett, Edmund, 186; Boudier, Emile, 137; Calder, John S., 260; Chappellier, Paul, 70; Crocker, Alexander Morrison,

- 110; Cowan, Chas. W., 162; Craig, James, 10; Cypher, Mrs. John, 322; De Candolle, Augustin, 300; Delacour, Th., 137; Dobson, W. H., 110, 146; Downie, Mrs., 186; Farnish, William Robert, 60; Fox, Freeman, 21; Gurney, George, 60; Hewitt, Dr. C. Gordon, 174; Holmes, William, 212; Kennedy, James, 97; Lange, John, 97; Loder, Sir Edmund Giles, 210; Low, William, 10; McCabe, William James, 260; McKenzie, William, 234; Monro, George, 237; Moorman, Jacob William, 234; Neale, J. J., 21; Peeters, Augustin André, 186; Parsons, Alfred, 70; Poisson, Jules, 137; Prime, Henry, 148; Ravn, F. K., 322; Bourke, James, 136; Saccardo, Dr. P. Andrea, 174; Selkirk, the Countess of, 44; Sharp W., 234; Silsbury, J. H., 136; Snell, John, 210, 222; Stanton, George, 148; Sutherland, William, 110; Taber, George Hugo, 124; Trussler, George, 60; Tutcher, W. J., 198, 208; Wilson, Dr. John H., 44, 59
- Odontioda Camden, 274; Oda, Gloss, 263; Oda, Nada Ralli's var. 39; Oda, Pierrette, 213; Oda, Vera Belle, 305
- Odontocidium epiphorum, 183
- Odontoglossum Clotilde, 213; Odm. crispum Lady Newnes, 3; Odm. Eden, 263; Odm. Harold var Master Dick, 213; Odm. Mrs. Harry Worsley, 213; Odm. Owenianum, Rolfe, 275; Odm. Phillip, 263; Odm. Phillipsianum anrum, 263; Odm. Triomphe de Bruges, 77
- Oncidium splendidum, 153
- Onion fly, 122, 160, 185, 220
- Onion Smut, 313
- Onions, cultivation of, 30, 56
- Onosma albo-roseum, 31
- Orchid houses, the, 4, 14, 26, 38, 50, 64, 74, 90, 102, 116, 129, 140, 155, 167, 178, 190, 202, 214, 226, 239, 252, 264, 276, 292, 304, 316
- Orchid notes and gleanings, 3, 15, 31, 39, 76, 89, 103, 117, 153, 169, 183, 191, 213, 239, 263, 274, 305, 315
- Orchid Society for America, a national, 187, 200
- Orchids: at the Dell, Egham, 315; from Bryndir, 89; in 1919, 3; hybrid, 15, 117, 153, 169, 213
- Orchis foliosa, 191; O. latifolia, 191; O. Munbyana, 315; O. pratermissa var. pulchella, Druce, 76
- Ordinance survey maps, 138
- Ourisia coccinea, 5, 66, 101
- Oxytropis pyrenaica, 265
- P**
- PAEONIA DELAVAYI, 185
- Paeony in America, the, 151
- Paint, a whitewash, 24
- Pampas Grass, 19
- Paris, spring flower show in, 250; Horticultural Congresses in, 314
- Park, new public, for Birmingham, 200; for Edinburgh, 301; for East Molesey, 100; for Glasgow, 250, 301; for Gunnedbury, 188; for Ware, 188
- Parks and open spaces in London, 176
- Parks, Royal, speed limit in, 176
- Parliament, horticulture in, 302
- Parsnips, 79
- Pea, Mangetout, 122
- Peach leaf curl, 151
- Peaches, Amnden June, 73; Crim son Galande, 9
- Peaches, disbudging and thinning, 182
- Pear scab, 137
- Pear Winter Peach, 73
- Pears, wild, 297
- Peas, late, 308
- Peat, "nitric," 12
- Pelargoniums, scarlet, for winter blooming, 193
- Pemberton, Rev. J. H. (*Roses: Their History, Development, and Cultivation*), 263
- Perennials, raising from seed, 144
- Petasites fragrans, 91
- Phosphate rock, supplies of, 86
- Phylloxera certificates, 21
- Picea jezoensis, 139
- Pinus Thunbergii, 139
- Pistacia lentiscus, 41
- Pitwood, sales of, 36
- Plants: American, in England, 52; distribution of, 99; early flowering, 125; hygiene of, 40, 54, 108, 138; indoor, 131, 143, 155, 308; notes, 16; novelties in, 8
- Plants, New or Noteworthy**—
- Berberis orthobotrys, 77, 103; Catalpa Duclouxii, Dode, 303; Canophyllum thalioides, 63; Clematis Pavoliniana, 177; Picea Glehnii, Masters, 89; Rhododendron Fraseri, 225; R. praevenerum, n. sp., 127; Verrières, rare shrubs at, 303
- Plants under glass, 4, 15, 27, 39, 51, 64, 74, 90, 102, 117, 123, 141, 154, 166, 178, 191, 202, 214, 226, 238, 252, 264, 276, 292, 304, 316
- Pleione Pricei, 183
- Polygala Vavredae, 203
- Poppies, Iceland, disease of, 62
- Pot plants, conveyance of, by passenger train, 163, 187, 322
- Potatoes: America, 68; The Champion, 145; McPherson, 20
- Potatoes: Black-leg of, 235; Common Scab of, 163; crops of, 72, 96, 176, 120, 132, 170, 173; early, in Avyrshire, 145; early, in infected areas, 152; methods of planting 8, 20, 32, 44, 95, 145, 158; mosaic disease of, 85; sale of, in Avyrshire, 313; seed price of, 151; seedling, 18; snraying of, 182, 258, 270, 298, 308; trials of, in Lancashire, 235; varieties of, 44, 108; Wart Disease of, 302
- Primroses, blue, 173
- Primula leucophylla, 203; P. obovata, 171; P. Wattii, 48
- Primulas, the Reading, 107
- Propagation, hints on, 43, 120, 177, 287
- Prunus microlepis, 139
- Publications received, 24, 36, 62, 72, 86, 126, 152, 200, 224, 250
- Pygaera (Phalera) bucephala, 5
- Pycaantha, a yellow-fruited, 55
- Pyrus auricularis, 267; P. floribunda, 229
- Q**
- QUEENSLAND, Banana growing in, 71
- Quercus Libani, 139
- R**
- RABBIT breeding, 212
- Rabbits eating tree stems, 55
- Railway rates, new, 11
- Rainfall, the, 80
- Ranunculus nyssanus, 101
- Rat trap, a varnish, 12
- Reid, Mr. John, a gardener station-master, 164
- Rhaphithamnus cyanocarpus, 204
- Rhododendron Edgeworthii, 208, 220; R. glaucum, 275; R. moupinense, 205; R. sutchuenense, 127, 172
- Rhododendrons, in flower at Kew, 71; Javanese, 195
- Rhyniaceae, 126
- Richmond Terrace Gardens, 11, 114
- Riviera, the Palms of the, 216
- Rochea, 303
- Romneya Coulteri, 121
- Rosary, the, 251
- Roscoeae caulioides, 101
- Rose Frances Gaunt, Gold Medal for, 301
- Roses, attar of, 2; early, 251; new, 41; planting of, 16; pruning of, 216
- Rothamsted Experimental Station, the, 301
- Royal Academy, the, 224
- Royal Colonial Institute, gift to the, 11
- Royal Horticultural Society's examinations, 61
- R.H.S. Gardens Club, journal of the, 199
- Russia, horticulture in, 77
- S**
- SALTER, Carle, S. (*British Rain-fall*), 27
- Sanders, T. W. (*Lawns and Greens*), 237
- Saponaria officinalis, 49
- Sarracenia, 195
- Saxifraga Burseriana sulphurea, 119
- Saxifragas, the lingulate, 319
- Saxifragas, classification of, 36
- Schizostylis coccinea, 143, 173
- Schneider, M. Georges, monument to the late, 223
- Scilla italica, 255; S. lilio-hyacinthus, 255
- Scientific Committee**—
- Aquilegia hybrid, 321; Ancuba japonica, white-berried, 245; British plants, 69; Carnation: foliage malformed, 298; Wheat-ear, 321; Cheiranthus x 245; C. x Marshallii, 298; Chinese plants, 245; Cypripedium insigne, twin-flowered, 69; Daffodils, certificate for, 259; Davidia involucreta, 69; Elwes, Mr. H. J., various plants from, 259, 321; Freesia, variegation of stem in, 147; Holly berry, 69; Iris seedlings, 298; Irises, hybrid, 245; Mercenialis annuus, 69; Oncidium x incurviflorum, 69; Pelargonium sport, 298; Pleione pogoanoides, 69; Primrose Evelyn Arkwright, 245; Primula crosses, 147; Primula Juliae x elatior, 109, 147; Pruning of seedling fruits, 147; Rhododendrons, 245, 298; Senecio squilidus, 69; Snow drop seedlings, 109; Tulip, with bulb in leaf-axil, 298; Veldheimia viridifolia, 147; Veronica lobeloides, 260; Willow seeds, 109.
- Seaweed as a manure, 151
- Seeds, electrolytic treatment of, 113; germination of, 273; sowing of, 63
- Senecio candidans, 153
- Shakespeare, flowers of, 2, 188, 227
- Shoobred, W. A. (*Flora of Chesham, the*), 237
- Shrewsbury, spring flowers at, 262
- Shrubs, late flowering, 12
- Silene acaulis, 193
- Silver Leaf Disease, 2, 18, 31, 72, 134, 235, 253, 270, 308
- Sim, T. R. (*Flowering Trees and Shrubs for use in S. Africa*), 158
- Snowy Fly, 44, 68, 80, 96, 108, 134, 160, 173
- Soapwort, the double, 49
- Societies**—
- Association Française d'Horticulture, 151; Bath and West and Southern Counties, 236, 271; British Carnation, 100, 147; British Florists' Federation, 69; British Gardeners' Association, 33, 124, 159; Chamber of Horticulture, 10, 47, 80, 176, 210, 249, 302, 320; Chester Paxton, 21, 97, 126; Croydon Chrysanthemum, 85; Dumfries and District Horticultural, 164; East Anglian Horticultural Club, 21; Economic Biologists, 138, 321; Fruiterers' Company, 47; Gardeners' Company, 261; Gardeners' Horticultural, 137; Gardeners' Royal Benevolent Institution, 11, 35, 56, 62, 301; Hampstead Horticultural Association, 164; Horticultural Club, 36, 97, 124, 125, 198, 249, 298; Kew Guild, 250, 300; Lea Valley and District Nurserymen and Growers' Association, 10; Leeds and District Market Gardeners', 148; Linnean, 124, 173, 234, 247, 272; National Auricula and Primula, 233, 247; National Chrysanthemum, 47, 59, 70; National Dahlia, 35, 59; National Gladiolus, 23; National Potato Society of Great Britain and Ireland, 212; National Rose, 58, 223, 232, 313; National Sweet Pea, 151; National Union of Horticultural Workers (late B.G.A.), 173, 185; Norfolk and Norwich Horticultural, 36; North of England Horticultural, 146; Ormskirk Potato Show and Conference, 187; Petersham Flower Show, 35; Professional Gardeners' Association, 164; Richmond Horticultural, 71; Royal, 126; Royal Botanic, 2, 211; Royal Caledonian Horticultural, 59, 235; Royal Gardeners' Orphan Fund, 83, 100, 151, 236, 271; Royal Horticulturists, 11, 32, 57, 69, 81, 106, 109, 134, 137, 147, 160, 196, 209, 212, 291, 245, 249, 259, 261, 279, 289, 298, 310, 321; Royal Horticultural and Arboricultural of Ireland, 198; Royal National Tulip, 246; Royal Scottish Arboricultural, 9; Saltaire and Shinley Rose, 2; Scottish Horticultural, 59, 100, 174; Société Dendrologique de France, 35; Société Nationale d'Horticulture de France, 122, 313, 321; Sorbiton, Kingston, Dittons and District Chrysanthemum, 9, 223; Surveyors' Institution, 188; United Horticultural Benevolent and Provident, 45, 97, 125, 147, 209, 260, 321; Walmsfield and Northern Tulip, 187, 300; Windsor Rose, 126; Women's Farm and Garden Union, 250; Yorkshire Flower Show and Gala, 36, 311, 314; Yorkshire Professional Gardeners, 97.
- Soil, disinfection of, by hot water, 71; temperature of, the, 23
- Solanum aculeatissimum, 32
- Sophora tetraptera, 204
- Sonchro-Laelio-Cattleya Brilliant, 191; S.-L.-C. Lowellii, 213; S.-L.-C. Margrand, 117
- Sparmannia africana, 155
- Spathoglottis, 183
- Sphaeralcea ambigua, 153; S. pedata, 140
- Spring flowers, 119, 157, 164, 195
- Spring, precocious, 99
- Steward, Richard (*Practical Hardy Fruit Culture*), 100
- Steward, A. C. (*Fossil Plants*), 177
- Stone, Herbert (*Guide to the Identification of Our More Useful Timbers*), 314
- Strawberries: alpine, 25, marketing of, by aeroplane, 274; "red plant" in, 269
- Streptocarpus hybrids, 293

Sugar Beet, in Scotland, 47; factory, at Kelham, 188, 199
 Sugar: For jam-making, 100, 187; home-grown, 2, 47, 188, 199, 274
 Sulphate of Ammonia, prices of, 262
 Surrey, small holdings in, 35, 114
 Swanley Horticultural College, 23, 239
 Sweden, the late Crown Princess of, 250
Sweet Pea Annual, 113
Sweet Pea Review, 47
 Sweet Peas: In 1920, 73; in the West Indies, 274
 "Symons" medal, award of the, 23
Symphytum canescens, 203
Synthyris reniformis, 203, 253, 265

T

TERREGLES, Daffodil Day at, 211
 Thames Valley, allotments in, 138
Thlaspi rotundifolium, 213
 Timber, exhibition of empire-grown, 138, 301; home-grown, 152
 Tithe, redemption of, 24
 Tomatos, artificial pollination of, 236
 Trade Notes, 10, 21, 34, 70, 97, 110, 149, 185, 209, 248, 260, 320

Trail, the late Dr. W. H., 113, 239
 Tree stems, earthing up, 37
 Trees and shrubs, 41, 55, 75, 89, 101, 122, 131, 139, 157, 165, 183, 194, 204, 237, 253, 266, 275, 307, 317
 Trentham, sale of the estate of, 250
 Trials, 35, 36, 235
 Trinidad Botanic Gardens, centenary of the, 212
Trochodendron aralioides, 196, 237
Tropaeolum polyphyllum, 127
 Truffaut, M. Georges, honour for, 61
 Tulip city of Canada, the, 12
 Tulips of Florence, 181
 Tydaea, 65

U

UGANDA, cotton growing in, 152
 Ultra violet light, 122

V

VEGETABLES, 8, 30, 79, 103, 133, 145, 158, 170, 182, 219; in 1850 2, prizes for, 2

Veitch, Sir Harry J., 62, 85
Verbena chamaedryfolia, 196
 Verbenas, 207
Veronica edimensis, 317; *V. Hulkeana*, 307
 Verrières, rare shrubs at, 303
 Vine borders, inside, 95
 Vine Maple, the, 139
 Vines, spring planting of, 219
Viola calcarata, 171
 Violets, double, cultivation of, 215

W

WAGES, minimum, 100, 126, 164, 187, 261, 289
Waldsteinia fragarioides, 171; *W. trifolia*, 171
 Wandsworth, flower show at, 313
 Ware Priory, gift of, to the public, 188
 War graves commission, II, 211
 Water Lilies, 275
 Weather, the, 44, 95, 99, 149, 152, 248; effect of the, 95, 289
 Webster, A. D. (*Handbook of Forestry*), 167
 Weed-killer, 200
 West Indies, Sweet Peas in the, 274
 Westminster Hall roof, 48
 Wheat, the world's supplies of, 12

White City exhibition, cancellation of, 72
 White Fly, 44, 68, 80, 96, 108, 134, 160, 173
 White Poplar in Surrey, the, 20
 Wilson, Mr. E. H., new exploration tour of, 212
 Wimbledon Common, the windmill on, 188
 Winter Moth and grease banding, 95
 Wireworms, effect of ammonia on, 176
 Wisley: Expedition to, 261; ex-soldiers at, 187; horticultural scholarship at, 23; report on the gardens at, 231; the Rock Garden at, 188; trials at, 35
Wistaria chinensis, 131; *W. multijuga*, 165
 Women gardeners, 20
 Women's Institutes, 250
 Wood, superfluous, in fruit and other trees, 224
 Wye, fruit growers conference at, 126
 Wyllie, Mr. George, retirement of, 274

Z

ZANTHOORHA *apiifolia*, 237

LIST OF ILLUSTRATIONS.

- A**
- ACACIA pycnantha, 87
 Adonis amurensis, 159
 Androsace glacialis, 155
 Anthericum Liliastrum, 121
 Antwerp Flower Show, the, 236.
 242, 243, 244
 Apples: Crofton Scarlet, 25;
 Thomas Coombe, 158; Tythby's
 Seedling, 95
 Arum Lilies at Swansea, 320
 Asystasia (Mackaya) bella, 51
- B**
- BEGONIA Gloire de Sceaux, 43;
 B. polyantha, 143
 Begonias, group of fibrous-rooted,
 277
 Berberis orthobotrys, 77.
 Blackberry aphid, 78
 "Blue garden" at the Chelsea
 Show, 293
 Briscoe, Mr. T. W., portrait of, 4
 Buff-tip moth, eggs of the, 5
 Bungalow in the valley region
 (Hpipaw, China), 28
 Burton, Miss Mary B., portrait of,
 100
- C**
- CALCEOLARIAS, herbaceous, Messrs.
 Sutton and Sons' exhibit of, at
 Chelsea, 282
 Carnation Wivelsfield White, 148
 Cattleya Portia, 15
 Caulophyllum thalictroides, 63
 Ceanothus Gloire de Versailles, 41
 Celsia cretica, 179
 Chatworth, the great conservatory
 at, 119
 Cheimantobia brumata, 95
 Chermes Cooley on Douglas Fir,
 318
 Cherry Governor Wood, pot tree of,
 68
 Chrysanthemums: Autocrat, 215,
 217; Mrs. H. E. Dixon, 53
 Clematis montana in China, 9
 Clematis pavoliniana, 177
 Clanthus Dampieri, 123
 Clivia St. Nicholas, 251
 Clusia grandifolia at Cambridge,
 315
 Coelogyne asperata, 129
 Corydalis thalictrifolia, 189
 Coultts, Mr. John, portrait of, 4
 Cowper's summer-house at Olney,
 302
 Cremanthodium: A white-flowered,
 in China, 204; a yellow-
 flowered, 266
 Cyclamen europaeum, 122
 Cypripedium Memoria F. M.
 Ogilvie, 103
- D**
- DAFFODIL, bulb infested with Eel-
 worm disease, 207
 Daffodils at Gravetye, 157
- Darfield Rectory: plan of the
 garden at, in 1640, 241; of the
 new orchard, 297; of the Saffron
 Garth, 296
 Dianthus Allwoodii Susan, 509
 Drynham, Walton-on-Thames:
 Rhododendrons at, 257; water
 garden and rocky at, 258
 Dykes, Mr. W. R., portrait of, 72
- E**
- EELWORMS, quiescent, 206; head of
 adult, 206
 Elaeagnus argentea, 307
 Eukianthus campanulatus, 237
 Erius alpinus, 265
 Erythraea Centaurium, 13
 Eupatorium Raffilli, 19.
 Euxann macranthum, 141
- F**
- FELSFIELD, Mr. Walter, portrait of,
 86
- G**
- GALANTHUS Elwesi var. Cassaba,
 62
 Gravetye, Daffodils at, 157
- H**
- HARE, Mr. F. E., portrait of, 200
 Hawthorn, a well-kept hedge of, 49
 Helichrysum rosmarinum, 317
- I**
- Iris garden at the Chelsea Show,
 295
 Iris unguicularis, 88; I. Yellow-
 hammer, 225
 Isatis tinctoria, 305
 Italian garden at the Chelsea Show,
 291
- J**
- JORDAN, Mr. F., portrait of, 5
- K**
- Kew: New flagstaff at, 36, 37;
 proposed memorial at, 153
- L**
- LAZY-BED method of growing
 Potatoes, 145
- Legg, Mr. Sidney, portrait of, 4
 Lettuces, Cabbage, 192, 201
 Lilium auratum var. platyphyllum,
 27; L. Farreri, 284; Lilium sp.
 (Farrer's), 7, 180, 181
 Lily, a hybrid, raised from Lilium
 regale and L. sargentiae, 255
 Lily, trumpet, unnamed, from
 Kansu, 115
 Lobjoit, Mr. W. J., portrait of,
 301
 Lonicera Standishii lanceifolia, 101
 Luculia gratissima, 17
- M**
- MAKAYA (Asystasia) bella, 51
 Malope grandiflora alba, 105;
 M. g. rosea, 105
 Miltunir Glenana var. Reine
 Elisabeth (see page 259), 117
 Menro, George, portrait of the late,
 287
 Moorman, G. W., portrait of the
 late, 234
 Moraea iridioides Johnsonii, 164,
 165
 Moth, Buff-tip, eggs of, 5; winter
 95
 Mucuna sempervirens (?) at
 Verrières, 303
 Myosotis dissitiflora Roll of
 Honour, 265
- N**
- NARCISSUS bulbs and plants
 affected by Eelworm disease, 207,
 208, 218, 219
 Narcissus Firetail, 227; N. John
 Evelyn, 167; N. Magnificence,
 146
 Nomocharis pandanthona, 29
- O**
- OAK, evergreen, hedge of, 75
 Odontioda Joiceyi, 169
 Odontioda Nada Ralli's var., 39
 Odontoglossum crispum Lady
 Newnes, 3
 Odontonia Gladys, 279
 Orchis foliosa, 191; O. latifolia, 191
- P**
- PAPAVER orientale Lord Lamborne,
 280
 Pateman, Mr. T., portrait of, 4
 Peach shoot disbudbed, 182
 Petasites fragrans, 91
 Picea Glehnii, 89
 Picea jezoensis, 139
 Pleione Pricei, 185
- Polystichum angulare divisilobum
 plemosum robustum, 283
 Potatoes: Edzell Blue, 133; Kerr's
 Pink, 132
 Primula Wattii, 48
 Primulas in the conservatory at
 Hillside, Reading, 107
 Prunus cerasifera Pissardii, 194,
 195
 Pygacra (Phalera) bucephala, eggs
 of, 5
 Pyracantha crenulata Rogersiana
 forma flava, 55
 Pyrus Aria, 269; P. amicularis,
 267; P. floribunda, 229
- R**
- RHEUM Alexandrae in China, 142
 Rhododendron sp. (Farrer's), 6; R.
 glaucum, 275; R. Loder's White:
 257; R. moupinense, 205
 Rock garden at the Chelsea Show,
 299
 Rose aphid, 79
 Rose Rev. F. Page Roberts, 233
- S**
- SAXIFRAGA lingulata, 231, 319, S.
 Tumbling Waters, 281
 Silene acaulis, 195
 Solanum aculeatissimum, fruits of,
 31
 Stanton, George, portrait of the
 late, 149
 St. Peter's Court, Broadstairs,
 herbaceous border at, 67
 Synthlipsis reniformis, 203
- T**
- THLASPI rotundifolium, 213
 Tropaeolum polyphyllum, 127
 Tulip Firenze, 239
 Tydaea amabilis, 65
- V**
- VIOLA calcarata, 171
- W**
- WUFFLER, Mr. H., portrait of, 4
 Winter M-th, 95
 Wistaria chinensis, 131

SUPPLEMENTARY COLOURED ILLUSTRATIONS.

CATTLEYA Rhoda, Fowler's variety (March 6, 1920)

Iris laevigata (June 5, 1920).

THE **Gardeners' Chronicle**

No. 1723—SATURDAY, JAN. 3, 1920.

CONTENTS.

Alpine garden, the—	Orchid notes and gleanings—
<i>Oniscia aeneica</i> ... 5	<i>Laelio-Cattleya Golden Light</i> ... 3
Apple Queen Caroline ... 9	<i>Brasso-Cattleya Mendii</i> ... 3
Belgian seed trade ... 2	<i>Cypripedium Latona</i> ... 3
Books, notices of ... 8	<i>Cypripedium Mrs.</i> ... 3
Chrysanthemums—	Alfred C. Hanbury ... 3
Early cuttings ... 5	<i>Odontoglossum Crispum Lady Newnes</i> ... 3
Chamomile cultivation in	Orchids in 1919 ... 3
Scotland ... 2	<i>Peach Crimson Galande</i> ... 9
Cuttings ... 7	Plant novelties, protection for ... 8
Farrer's, Mr. Reginald, second exploration in	<i>Potatos, spade potato</i> ... 8
Asia ... 6	<i>plough</i> ... 8
Fruit register ... 5	<i>Roses, attar of</i> ... 2
<i>Gardeners' Chronicle</i> Seventy-Five Years ago ... 2	<i>Saltire Rose Show</i> ... 2
Horticultural events in 1919 ... 1	<i>Shakespeare, flowers of</i> ... 2
Kelso Abbey ... 2	Silver leaf disease ... 2
Misteto, hosts for the ... 9	Sugar beet ... 2
Moles attacking Cabbages ... 8	Societies ... 9
Moth, the buff-tip, <i>Pygæa (Phalera) bucephala</i> ... 5	The Gardener ... 2
Obituary—	Trade notes ... 10
Low, William ... 10	Vegetables—
Craig, James ... 10	<i>Brassica cross, a</i> ... 8
	Vegetables in 1850-2 ... 2
	Small prizes for ... 2
	Week's work, the ... 4.5

ILLUSTRATIONS.

Eggs of the buff-tip moth on a blade of grass ... 5
<i>Lilium speciosum</i> (Farrer) ... 7
<i>Odontoglossum Lady Newnes</i> ... 3
Portraits of Messrs. T. W. Biscoe, 4; J. Coult, 4; E. Jordan, 5; S. Legg, 4; T. Pateman, 4; H. Wheeler, ... 4
<i>Rhododendron</i> , a new Chinese ... 6

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.04°.

ACTUAL TEMPERATURE.—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, December 31, 1919, 10 a.m.: Bar, 28.7; temp, 45° Weather Rainy.

1919.

As a violent storm leaves the waters tossing for many days after it has passed, so the war has left an aftermath of trouble during the year of transition from war-like to peaceful times. The unsettled political and economic weather had its counterpart in the seasons ushered in by an untoward spring, followed by a dry summer and an autumn which, though generally mild, brought sharp snaps of early frost. Yet, in spite of inclement conditions, the past year turned out less unpropitious than might have been feared. The fruit harvest, which at one time looked none too promising, proved, after all, to be good. In the case of soft fruits, the reduced acreage resulted in a shortage, in spite of fair average yields, and, as was foreseen by those who knew that the area under these fruits was only three-quarters of that of pre-war years, prices ruled high and resulted in a serious embarrassment to the jam manufacturers, whose finished product was subject to a controlled price. The year, however, will long be memorable for its fine Apple harvest, and those who had the opportunity of seeing the Kentish orchards in early autumn will not soon forget the wonderful sight which the heavily-laden trees presented. It was especially a Cox's Orange Pippin year, and that variety brought much-needed returns to many growers who had suffered from the scarcity of the previous year. Unfortunately, the dislocation of transport and the general shortage of trucks prevented the prompt marketing of all the Apple harvest and caused serious loss to growers in the less accessible districts. Noteworthy in this connection is the relatively extensive increase in the use of motor transport for marketing the produce raised in districts within motor-range of London.

Probably the greatest difficulty with which great growers have had to contend is

the steady rise of prices of material and the increased labour bill, and it will take some time yet before the industry can adapt itself to these new conditions. Not a few horticulturists have hoped and believed that something would be done to give them at least a period during which they could reconstruct their industry which, in certain districts, had suffered severely from the war. However great that hope and belief might have been, it is to be feared that the general high level of prices will deter the nation, which, after all, is highly embarrassed, from accepting even a temporary restriction of imports. If this forecast proves correct it will be only by improving market facilities and transport arrangements and by combined marketing that British growers will be able to hold their own. There is, however, the hope that as Europe becomes more settled there will be a greater general demand for the produce of the soil, and hence a lessened danger of competition and driving land out of intensive cultivation. The year has seen a beginning of the State scheme of land settlement. Already several thousands of ex-Service men have received holdings, and in the near future the numbers will be greatly increased, although shortage of houses and slowness of building must delay the fulfilment of the programme.

Among the most notable horticultural events of the year was the effective establishment of the British Chamber of Horticulture, which we believe is destined to play a large part in consolidating and promoting the interests of commercial horticulturists. The need for the special organisation of horticulture has also been recognised by the Board of Agriculture by the establishment by the late President, Lord Ernle, of a Horticultural Division of the Board, concerned specifically with all forms of "petite culture." As the result of the activities of the Horticultural Division of the Board, Horticultural Sub-Committees of the Agricultural Education Committees have been set up in most counties; these have co-opted practical horticulturists, and are now engaged in drawing up programmes destined to provide instruction and demonstration not only for allotment holders and cottage gardens, but also for the large number of smallholders engaged in intensive cultivation.

Other events of importance have been the resumption of the Kent Fruit Show, the institution of an East Anglian Fruit Show—the inaugural meeting of which, at Cambridge, proved at once the excellence of the fruit grown in that district, and the need for improved methods of packing. During the year, Lord Grenfell retired from the Presidency of the Royal Horticultural Society, and was succeeded by Lord Lambourne, who had proved himself for many years a devoted and wise friend of horticulture. Towards the end of the year also, the Rev. W. Wilks, retired from the secretaryship of the Society, and Mr. Dykes has been nominated by the Council as his successor. The year indeed was full of changes for the Society, for, in addition to those just mentioned, Dr. Keeble relinquished the post of Director of the Gardens at Wisley to take up that of Assistant Secretary at the Board of Agriculture. He was succeeded at Wisley by Mr. Chittenden, whose connection with the Gardens has extended over many years, and whose wide knowledge of horticulture is the best augury that this research station will continue to increase in activity and importance.

One of the events of the year which caused more serious apprehension among the nursery trade was the introduction by the United States of the most catholic

system of import restrictions to which horticultural plants have ever been subjected. The original scheme made it all but impossible to send many categories of horticultural plants to the United States, and, although certain concessions were made which have eased the situation, nurserymen continue to regard the restrictive order with grave misgivings and apprehension. The new principle adopted in this restrictive order is that a plant is, or may be, prohibited, not because it may be the means of introducing certain specified pests, but because it might serve to introduce some unknown pest which in turn might prove inimical to American horticulture. It is greatly to be hoped that the Order will not be enforced in such a way as to oust European growers from the markets of the United States. Yet another notable event of the year was the issue of the first number of a journal devoted to pomology, and all interested in the advancement of fruit-growing will wish Mr. E. A. Bunyard, under whose direction the *Journal of Pomology* is published, every success in his public-spirited venture. Very regrettable was the spread of certain plant diseases which threaten important crops, and particularly Wart Disease of Potatoes and Silver Leaf of Plums. The extension of the former goes on apace, and there is but little doubt that the new outbreak was almost always to be traced to diseased "seed." More severe measures are to be taken to ensure that seed shall be clean, but how to rid the soil of this pertinacious pest remains, unfortunately, unknown. In the case of Silver Leaf, a new Order has been introduced by the Board of Agriculture, with the cordial consent of fruit growers, which should do much to prevent the spread of the disease in Plum orchards and plantations.

Perhaps the event which gave most satisfaction to the general body of horticulturists was the revival of the R.H.S. Chelsea Show. It was a symbol of peace, and as such greatly welcomed. It was, moreover, a wonderful proof of the energy and resource of nurserymen and florists, for though the show did not reach the high level of excellence of pre-war exhibitions, it far exceeded the expectations of those who best know how seriously our nurseries had been depleted during the war. The interest taken in the show and in the conference held in connection with it, was also a striking proof of the fact that the public delight in gardening is ever increasing and extending. Nurserymen, indeed, are experiencing no little difficulty in meeting the demands for certain kinds of plants, and in particular fruit trees and Roses. Time, however, will remedy the present shortage, and there is every indication that, provided a more settled and stable state of affairs comes about, the industry of horticulture will enjoy once again its due share of prosperity.

During 1919, horticulturists had to mourn the death of not a few of their colleagues—Sir Frank Crisp among the number, whose generosity and kindness endeared him to a wide circle of friends; Mr. George Bunyard, whose services to fruit-growing were great and universally established; Mr. William Goldring, to whose horticultural knowledge and taste many of our gardens bear witness; Mr. Edmund and Mr. John Rochford, of market-gardening fame; Mr. John McKenchar, and the distinguished gardeners, Mr. Jesse Willard and Mr. T. W. Turner.

Although it is idle to pretend that serious difficulties do not confront us all in the days of the present year, yet we may draw a certain measure of hope from the fact that during the past year, with its usual firm-handedness, the nation has plucked from the Nettle of danger the flower of Safety.

Belgian Seed Trade.—During the first seven months of the year 1919, the amount of seeds imported into Belgium were (in kilos), Colza and Rape, 4,644; Flax, 9,751,136; and other seeds, 3,769,698; valued at 9,983; 10,597,402 and 5,531,456 francs respectively. The exports amounted to (in kilos), 3,040; 295,998; and 473,113 respectively, valued at 2,470, 370,445 and 1,064,791 francs respectively.

"The Gardener."—We learn that our enterprising contemporary *The Gardener* will, at an early date in the present year, alter its title to that of *Popular Gardening*. At present the double title is being used so as to familiarise readers with the proposed change.

Saltaire Rose Show.—The Saltaire Rose Society has decided to revive the annual show in 1920. The exhibition will be held in Saltaire Park, as hitherto, on July 7, and will be on the same extensive scale as its predecessors. The Society's 100 guineas challenge trophy will again be offered for competition, and there will be the usual open classes, in addition to those for amateurs and local growers.

Small Prizes for Vegetables in 1850-2.—In the Border Horticultural Society's records there are entries to show that in the year 1850 the late Mr. James Dobbie, founder of the firm of Dobbie and Co., won first prize for six Early Round Potatoes, and this prize was 2s.; in the same year he won 3s. as first prize for six Leeks. In 1851 his first prizes for two French Marigolds, two African Marigolds and one German Green were 1s. each; for one Winter Cabbage and for four Pears, his second prizes were 6d. each, and for six spring Onions and four baking Apples, the prizes were 2s. each, and for six Leeks, 3s. Mr. Dobbie was also a successful prize-winner in 1852, and his first prizes were as follows:—Two French Marigolds, 1s.; two African Marigolds, 1s.; three seedling Pansies raised by the competitor in 1851, 3s.; four Dahlias, 4s.; and best collection of vegetables (six Onions, six Leeks, six Carrots, six Early Potatoes and one Cauliflower), 5s. As Mr. Dobbie had to travel ten miles, from Dums, to exhibit at the Border Horticultural Society's show at Coldstream, it is evident he appreciated the honour of winning prizes far more than their monetary value.

Chamomile Cultivation in Scotland.—Some interesting particulars were brought out in a paper on "Scotch Chamomile Flowers," read at a recent meeting of the North British Branch of the Pharmaceutical Society of Great Britain, in Edinburgh, by Mr. H. W. Blair, who gave details of the cultivation of the Chamomile in Scotland in former years. The plant was formerly extensively cultivated in the Deeside area of Aberdeenshire, where it was grown in places now more profitably devoted to Strawberries. Many cottagers also cultivated the Chamomile in their gardens, employing the flowers for their own use and selling the surplus to chemists. The large supplies received from Belgium and elsewhere have made the cultivation of the Chamomile unremunerative in Scotland.

Silver Leaf Disease.—In addition to being very common throughout the country, Silver Leaf disease is known on the Continent and also in South Africa, New Zealand and Canada. The many investigators who have handled the problem agree that the fungus is not present in the tissues of "silvered" leaves, and that the "silvering" is really an unusual reflection of light from the leaf surface, due to the disorganisation of leaf tissues by a toxin which is secreted by the fungus and finds its way to the leaf. Recent investigations by Bintner serve to show that the fungus is not found naturally in the leaves, but if artificially introduced into a leaf by inoculation, will develop there and produce the familiar "silvering." He states that the fungus may enter the wood through a wound anywhere, from the topmost branches to the superficial roots, and though trees may be saved, provided those branches to which the disease is confined are cut away immediately, there is little hope if the disease be present in the trunk.

Attar of Roses.—The attar of Roses industry is centred in the Thracian plain with the little

Bulgarian town of Kasanlik as its headquarters. There are 173 villages in the district, each devoted entirely to Rose culture. According to *Chambers's Journal*, the industry dates back two centuries, and is a legacy from the Turks, who first discovered the special quality of the soil—a soil which produces Roses capable of yielding a more exquisite essence than the blooms of any other country. The plantations are arranged in high parallel hedges, a hundred yards long or more. The Rose harvest begins about the middle of May, and the average yield is about 6,250,000 Roses per acre. The collected blooms are despatched to the various centres for distillation. The operation of distilling the Rose-water occupies from one to one and a half hour, and it is essential that all the petals picked on a particular date shall be distilled on the same day. Twenty-four hours' delay in distillation means a considerable loss in the yield of the perfume. To extract the attar from the Rose-water a second distillation is necessary, and in this process the liquid first obtained is reduced to one-eighth its original volume. Thus, from forty quarts of Rose-water not more than five quarts of attar can be secured. More than 4,000 pounds of Roses are required to produce one pound of attar. In 1904 no less than 8,147 pounds of attar of Roses was produced at Kasanlik. That meant the distillation of something like 13,657,312,000 Rose blooms, all of which were grown on the surrounding plain.

Kelso Abbey.—The Abbey of Kelso, founded in the year 1128, and for many years one of the most influential of the Scottish Abbeys, will in future be maintained by the State, and recognised as a national monument, as the result of an agreement which has been made with the Duke of Roxburgh. Other Scottish Abbeys held under somewhat similar conditions as national monuments are those of Dryburgh, Jedburgh, and Melrose.

Home-grown Sugar.—An effort to establish a Beet-sugar factory was originally made some fifty years ago, at Lavenham, in Suffolk. This attempt failed. The enterprise was strongly supported by Lord Denbigh who, some twenty years ago, carried out experiments with a view to proving that Sugar-beet, of which farmers knew nothing, could be grown profitably in this country. The next step was the formation of the National Sugar-Beet Association, strongly supported by the Duke of Bedford and other leading agriculturists. This carried out much useful experimental work right down to the commencement of the war, an attempt being made in 1912, by means of a factory erected at Cantley, in Norfolk, to put the industry on a working basis. Unfortunately the necessity of providing a substantial area of suitable land for the production of roots adjacent to and under the control of the factory was overlooked. Production was left entirely to the enterprise of the farmers, who failed to provide the roots in quantities sufficient to make the undertaking a success. Last year, the British Sugar-Beet Growers' Society, Ltd., formed in 1915 under the chairmanship of Sir Beville Stamer, M.P., purchased the Kelham Estate, near Newark, Nottinghamshire, a portion of which was subsequently sold to the Board of Agriculture, to be developed as a farm colony under the Land Settlement Scheme. The remainder, some 2,800 odd acres, is worked as a large farm, with the ultimate object of introducing Sugar-beet as the main crop as soon as a factory can be erected. Meanwhile, the land is devoted to cereals and stock, with a small area of Sugar-beet for feeding and for seed production. The manager of the estate is Mr. Sidney Colyer, formerly farming assistant to Sir Daniel Hall, K.C.B., and he acts under the control and direction of a Joint Committee of the Board of Agriculture and the Sugar-beet Growers' Society. The Society has now brought the enterprise to a point where, to establish it on a sound commercial footing, a large outlay of capital is required. With this object in view it is now proposed to form a public company, and the Government contemplate taking up a portion of the capital. The title of the proposed company will be "Home-grown Sugar, Limited," and the nominal capital £1,000,000, half of which is to be issued, the proposal being that the

Government will take up £250,000, the remainder being offered to the general public.

Flowers of Shakespeare.—The trustees and guardians of Shakespeare's birthplace are laying out the "Great Garden" attached to his house. "New Place," (which forms part of their New Place estate) as an old-fashioned Elizabethan garden, and are desirous of stocking it thoroughly with old English flowers. The trustees have already planted the smaller garden attached to their birthplace property with flowers of Shakespearean association. Now that they are pursuing the like plan on a comprehensive scale in the larger area at New Place, the trustees think that many lovers of Shakespeare may welcome the opportunity of contributing some of their own flowers and so help to call anew into existence the original aspect of the garden which is especially identified with the poet's prime. The flowers which the trustees chiefly want are:—Madonna Lilies, Carnations, Crown Imperials, Rosemary, and Roses. Other old English flowers which are not specifically mentioned in Shakespeare's plays, but were well known in his time, would also be welcome. Offerings of such flowers, or, indeed of any others mentioned in Thomas Hill's *Profitable Art of Gardening*, 1563, or his *Gardener's Labyrinth*, published under the pseudonym of "Didymus Mountain," in 1577, in Lyte's *Herball*, published in 1578, or in Gerard's *Herball*, published in 1597, the year in which Shakespeare bought New Place, may be sent by carrier, post, or rail, to Frederick C. Wellstood, Esq., M.A., Secretary to the Trust, Shakespeare's Great Garden, New Place, Stratford-upon-Avon.

"The Gardeners' Chronicle" Seventy-five Years Ago.—Allotments. Mr. Cowper's Bill. —I am perfectly convinced of the great advantages that will accrue to the labourer by a judicious system of allotments, always keeping in mind that land thus appropriated should be let at the farming price. Yet, being intimately acquainted with parish affairs, there appears to be insuperable difficulties to overcome in legislating upon the question. If it is made incumbent upon wardens to hire land, in the event of no waste land existing, and to pay for it out of the rates, how are they to decide who is to benefit by it? For it is quite certain all cannot; and, as I have before remarked, those who pay rates as poor men will have a claim. Under all circumstances, and with the knowledge of the petty jealousies so prevalent in every small community, I am averse to legislative interference, which would excite endless squabbling and discontent. Since the subject of garden allotments has been brought before the public so prominently, landowners have more generously encouraged the project. The efficacy of the plan appears to rest mainly on two points, viz., a moderate rent to the holder, and not permitting him to have more than a quarter of an acre, free from tithes and rates—these to be charged in the rent. I am also an advocate for small farms (more of this another time), which should be kept distinct from allotments; the latter must not, on any account, be allowed to run into the former; such a mistake would destroy the benefit of both. A man must have either just enough to employ his leisure hours, or sufficient ground to maintain himself and family without seeking work elsewhere. Perhaps the condition of the labourer and manufacturer was never lower than it is at present, yet the idea of supposing men will take advantage of an indulgence, and neglect their master's interests, is too uncharitable to be entertained for a moment. I am satisfied the desire to raise themselves in the estimation of their fellow creatures is still uppermost in the thoughts of the working classes, and only requires proper encouragement to shine forth, and become evidence of a true and kindly spirit. *Falcon*, in *Cont. Chron.*, January 4, 1845.

Holiday Lectures at the Royal Botanic Society.

On January 5, 12, and 19, Professor A. W. Bickerton will give lectures on "Stars and Flowers" in the Museum at the Royal Botanic Society's Gardens, Regent's Park, commencing at 5 o'clock on each occasion.

ORCHIDS IN 1919.

NOTWITHSTANDING the many and increasing difficulties which Orchidists have had to contend with during the past year, interest in Orchids has been fairly well sustained, at least up to the standard of the past three or four years. The scarcity of fuel has been one of the chief difficulties of growers. Orchids have been freely exhibited during the past twelve months, although many enthusiastic amateurs of the old school have discontinued showing their plants owing to difficulties of transport. With all this, however, increased interest is shown by collectors of specialities and good hybrids, particularly in the area from which the exhibits at the Manchester and North of England Orchid Society's Shows are drawn. The Manchester Society is doing good work, and the list of their certificated plants includes many valuable novelties of the past year. The Royal Horticultural Society, which is again in possession of its fine hall in Vincent Square, Westminster, has attracted good exhibits of Orchids at most of the fortnightly meetings, whilst the summer exhibition in the Chelsea Hospital gardens included almost as many of these beautiful flowers as in pre-war times. During 1919 the R.H.S. Orchid Committee has awarded fourteen First-Class Certificates, sixty Awards of Merit, eleven Preliminary Commendations, and one Certificate of Appreciation, the last-named being confirmed by the Scientific Committee. The awards in the aggregate are approximately similar to those of last year, although there is a great falling off in the exhibits deemed worthy of the premier award of a First-Class Certificate, the numbers being fourteen for the past year against twenty-one in 1918. The additional number of certificated plants painted for the Society's collection for comparison and reference brings the total to 2,511.

As has been the case in recent years imported species have no part in the honours awarded, although many species have been shown to advantage in groups, and even those of botanical interest have appeared in fair quantity. It is expected that importations of Orchids will again be made in the near future. Already some have arrived in good condition. Few startling novelties have appeared during the past year, the greater number being improvements on existing types, in which the tendency to merge previously distinct sections rather than to produce distinct types has been evident. The list of varieties awarded the F.C.C., however, includes some fine results. *Odontioda Lady Veitch*, raised by Messrs. Armstrong and Brown, and shown by H. T. Pitt, Esq., is considered to be the best deep red form yet raised, whilst Mr. Pitt's *Odontoglossum harvengtense*, Pitt's variety, is one of the best yellow *Odontoglossums*. Sir Jeremiah Colman, Bart., in *Brasso-Cattleya Gattou Lily*, var. *Purity*, and *B.C. speciosa Gattou Park* variety has two of the best whites; *Laelio-Cattleya excelsior*, *Ashted Park* variety, and *L.C. Excelsior*, var. *The Globe*, shown by Pantia Ralli, Esq., are charming novelties in their section; as are Baron Schröder's *L.C. Schödera magnifica* and *L.C. Bellatrix*. Other plants awarded the First Class Certificate and worthy of special mention are two brilliant forms of *Sophro-Laelio-Cattleya Anzac*, shown by Messrs. Charlesworth and Co. at the Chelsea Show, the very fine *Disa Blackii grandiflora* of Messrs. Flory and Black, and *Odontoglossum Aston*, shown by W. R. Fasey, Esq., at the last meeting in the year.

Plants which received the R.H.S. Award of Merit included some fine *Odontoglossums* from Sir Jeremiah Colman, Bart., H. T. Pitt, Esq., Messrs. Charlesworth and Co., Messrs. Sanders, and Messrs. Armstrong and Brown, who also received Preliminary Commendations for plants of much promise.

The periodical lists of new hybrids published in *The Gardeners' Chronicle* show that hybridists are as keen as ever in making new crosses. The tables of last year enumerated 261 new records, as against 214 in 1918. The following Orchids were illustrated in *Gard. Chron.* during 1919:—

Brasso-Laelio-Cattleya Imogen—March 15, p. 127.
Brasso-Laelio-Cattleya Joiceyi—Nov. 1, p. 222.
Cattleya Browningiana lilacina—Jan. 4, p. 1.

Cattleya illustris—Aug. 16, p. 95.
Cymbidium grandiflorum—Oct. 18, p. 198.
Cypripedium insigne Sanderae, at Wiseton—Nov. 29, p. 275.
Cypripedium John Hartley—Jan. 18, p. 27.
Cypripedium Perseus—Feb. 15, p. 73.
Cypripedium Shogun—Jan. 18, p. 28.
Dendrobium fusiforme—March 29, p. 156.
Dendrobium speciosum nitidum—March 29, p. 155.
Laelio-Cattleya Honoria, *Orchidhurst* variety—Nov. 22, p. 263.
Macodes Rollissonii—March 1, p. 93.
Odontioda Lady Margaret, *Gattou Park* var.—May 3, p. 214.
Odontioda Lady Veitch—May 3, p. 218.
Odontioda Cyclops (Marvel)—March 29, p. 155.
Odontoglossum Ajax—April 5, p. 168.
Odontoglossum crispum Lehmannii—March 17, p. 236.
Odontoglossum crispum Oakfield Sunrise—May 17, p. 245.
Odontoglossum crispum Pittianum—May 17, p. 235.

ODONTOGLOSSUM CRISPUM LADY NEWNES.

THE illustration in Fig. 1 depicts the very beautiful *Odontoglossum crispum Lady Newnes*, which was one of the most attractive specimens in the decorative department of the show held at Chelsea Hospital Gardens on June 25, and the two following days, in aid of the Horticultural War Relief Fund. The plant illustrated is one of the best of Messrs. Charlesworth's famous strain of *O. crispum xanthoides*, its pure white flowers, much reduced in size in the illustration, having the occasional clear yellow blotches of the type. In their strain of this charming class, Messrs. Charlesworth have also developed a branching habit in the plants.

CYPRIPEDIUM LATONA.

MR. ALEXANDER sends a fine flower of this hybrid between *C. Alcibiades* (*Lecanum* × *Mons. de Curte*), and *C. Niobe* (*Fairrieanum* × *Spicerianum*). The broad, dorsal sepal is white

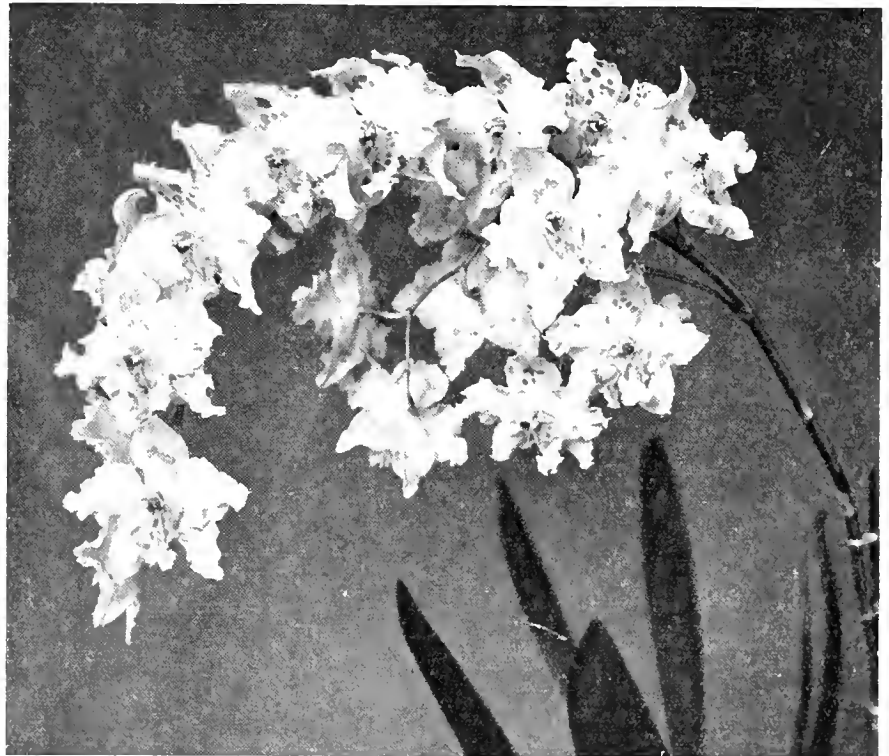


FIG. 1.—ODONTOGLOSSUM CRISPUM LADY NEWNES.

Odontoglossum crispum Rosemary—May 17, p. 237.
Odontoglossum harvengtense, Pitt's var.—June 14, p. 290.
Odontoglossum Miguelito—July 12, p. 20.
Odontoglossum platycheilum—June 21, p. 304.
Odontoglossum The Tiger—May 24, p. 250.
Phaius grandifolius—June 21, p. 307.

with a small pale green base from which ascend to the centre numerous dotted lines of purple colour, changing to mauve at the extreme points. The petals and lip have a yellow ground, and are tinged with reddish chocolate; the petals also have dark chocolate-purple spotting on their inner halves.

CYPRIPEDIUM MRS. ALFRED C. HANBURY.

A MAGNIFICENT flower of this fine new cross between *C. Hera Enryades splendens* (*Boxallii* × *Lecanum*) and *C. gigas Corndean Hall* variety (*Harrisianum superbum* × *Lawrenceanum*) is sent by Frederick J. Hanbury, Esq., Brockhurst, East Grinstead, in whose collection it was raised and is now flowering for the first time. It proves to be the largest, best and most perfect in shape of the very dark hybrids of the *C. Pyramus* class. The broad dorsal sepal is dark mulberry-red, changing upwards to bright mauve, the lines branching at the broad pure white margin. The extraordinarily broad petals are dark chocolate purple, with pale yellow margins, and some dark spotting on pale yellow ground. On the lower halves the surface of the lip is chocolate purple.

ORCHID NOTES AND GLEANINGS.

BRASSO CATTLEYA MENDA WITH FOUR FLOWERS.

FOLLOWING the finely-developed inflorescence of three large blooms of *Brasso-Cattleya Nestor* (see *Gard. Chron.*, Nov. 29, 1919, p. 275), R. Windsor Rickards, Esq., Usk Priory, Monmouthshire, now sends a grand inflorescence of *B.C. Menda* (*B.C. Digbyano Mossiae* × *C. labiata*) with four flowers arranged in bouquet-like form, and constituting probably a record spike. The perfectly-formed flowers are of a delicate Peach-blossom tint, the lip having a chrome-yellow disc with purple markings at the base, and an oblong violet blotch in front of the disc.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Cheshire.

General Remarks.—Brighter and longer days will mean a busy time at the potting bench, therefore the annual cleansing of the houses

should be completed soon. Examine each plant for insect pests. Where necessary, furnish new labels. This is an important detail, especially where seedlings are raised, as seedlings are usually grown under numbers, the parentage being recorded in the stock book. It is a good



plan to have two books, one for everyday use, the other kept in a place where it is safe from fire. A stock of the various fibres, peat, and Sphagnum-moss should be obtained, pots and pans washed, also a quantity of broken receptacles for use as drainage material. Blinds should be overhauled and repaired, and the order given for new ones. Where Oak or Beech leaves are employed in the potting compost for Orchids, a quantity should be collected and stored in a dry and well-ventilated shed. When the sticks and rubbish are picked out, and the leaves rubbed through a half-inch mesh sieve, a light, flaky mould remains, which, when mixed with other materials, is valuable for potting certain Orchids; the Brazilian Miltonias for example.

Dendrobium.—Where Dendrobiums are grown in quantity, the flowering period may be prolonged if a few of the more forward specimens are placed in gentle warmth. Select plants with thoroughly ripened pseudo-bulbs and showing signs of swelling at the nodes. The change from cool, resting conditions to a very warm house should be gradual. Watering should be done at long intervals, for if the roots are watered too liberally, the plants will make premature growth instead of flowers. Directly the flower buds are visible, more water may, with advantage, be given. *D. aureum*, and most of its hybrids, respond readily to gentle forcing.

THE HARDY FRUIT GARDEN

By T. PAINMAN, Gardener to C. A. COX, Esq., J.P.,
The Nole, Codicote, Welwyn, Hertfordshire.

Planting Operations.—Whenever the weather and soil are suitable to permit of the work being done arrears of planting should be completed. The weather in

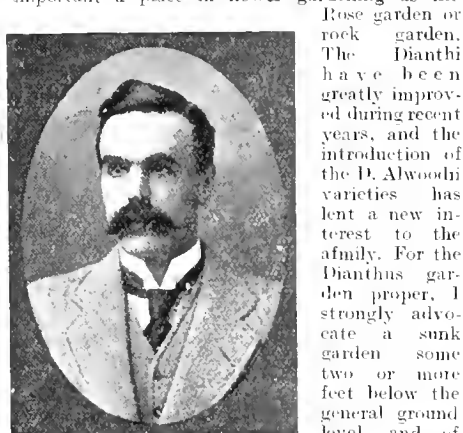
late autumn was favourable for the planting of fruit trees, and especially in heavy soils. At the time of writing the soil is in good condition for working and should be well trenched before the trees are planted, and mixed with mortar and wood ash.

Ordinary garden soil, with good loam added, is rich enough for trees in their first few years. If the weather conditions are not favourable for planting when the trees arrive from the nursery, take out a trench and heel them in, covering all the roots with soil to protect them from drying winds. It is a good plan to have a few loads of fresh loam in an open shed, where it will keep dry and be in readiness for planting almost at any time. Failing an open shed it may be put in a heap and covered with sheet iron or old boards. I do not recommend planting fruit trees deeply in heavy soil. Care should be taken to have the soil at the bottom of the hole firm and slightly raised under the stem of the tree. The roots should then be carefully spread out, and if any have been damaged in lifting make a clean cut in an upward direction to favour the development of new roots near the surface. The soil should be trodden firm, after a quantity has been placed in the hole, provided it is dry enough for trampling. Secure the stem to a stake. Top-dress the roots with leaf-mould or a little short manure. Bush trees are usually planted near paths in the kitchen garden, and should be about four feet from the edge of the path. The trees themselves should not be closer than twelve feet from each other.

THE FLOWER GARDEN.

By SIRSTY LEGG, Gardener to the Dowager Lady
NORBURNHOLME, Warter Priory, Yorkshire.

The Dianthus Garden.—I believe that in the near future the Dianthus garden will take as important a place in flower gardening as the



Rose garden or rock garden. The Dianthi have been greatly improved during recent years, and the introduction of the *D. Alwoodii* varieties has lent a new interest to the family. For the Dianthus garden proper, I strongly advocate a sunk garden some two or more feet below the general ground level, and of very irregular outline. Flagged pathways, or connected stepping stones, which should be at least 4 feet wide, are an advantage. The north and eastern outline may be bounded by an irregular protection, after the manner of, but not so erect as, a dry wall; fewer stones and more soil is the correct idea to follow. Embellishments, where required, should be of stone; such as lowly-placed Japanese lanterns, or chairs and stools of original design. Thorough drainage of the soil is an all important factor in the Dianthus garden. At the present time the plants should be kept scrupulously clean and free from fallen leaves and decaying matter, and a light application of basic slag may be applied between the plants without delay.

The common Pinks, Rock Pinks, and Alpine Pinks are most suitable for furnishing the irregular rocky sides or banks of the Dianthus garden. They live longest when elevated above the general ground level and also show to better advantage. The Cheddar Pink (*D. caesius*) is in its element when it has gained a foothold between rocks, and in this position will brave the winter. Varieties of the Chinese Pink (*D. sinensis*) are beautiful, and also accommodating; they may be treated as annuals or biennials by sowing seeds either early or late in the season, and are useful for filling vacant places and sharply defined points. The many varieties of *D. Caryophyllus* and *D. barbatus* are best arranged to give colour in bold, irregular masses; an ordinary rich medium loam not deficient in lime suits them admirably.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNNER, Wenhoe
Castle, near Cardiff.

Forewords.—All vegetables are worth growing well, and the slight extra labour and attention involved are well repaid in increased



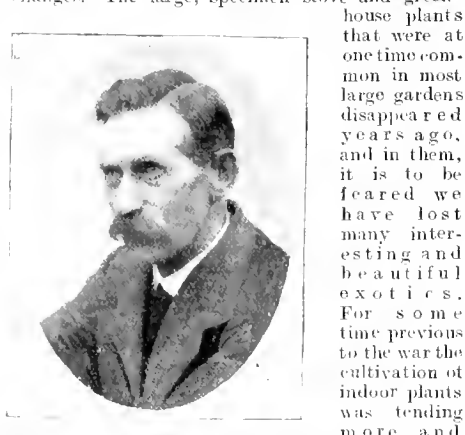
production, extra size, and enhanced quality of the produce. In view of the fact that exhibitions are being revived and the great increase of local organisations resulting from the food production movement, I propose to introduce from time to time a few remarks on the cultivation of vegetables for exhibition.

Onions.—Onions with deep bulbs, and those of a flatter type will not always do equally well in the same soil, and where this is true it is advisable to grow the type that is known to do best. Where extra large bulbs are desired sow seed now in compost consisting of three-parts old potting soil and one-part loam, with sufficient sand and leaf-mould added to render the soil porous. Place the soil in seed-boxes, press it firmly and soak it thoroughly. When the box has drained, sow the seeds evenly, covering them very lightly with fine soil. Place a sheet of glass over the box until the seeds germinate, when the boxes should be placed in a light position in a house having a temperature of 55°. The ground intended for these Onions should be trenched, and enriched with a heavy dressing of decayed cow-mannure. When the work of digging is completed, top-dress the plot with basic-slag at the rate of two ounces to the square yard.

PLANTS UNDER GLASS.

By JOHN COFFIN, Foreman, Royal Botanic Gardens,
Kew.

Forewords.—For many years the character of indoor gardening has been undergoing marked changes. The large, specimen stove and green-



house plants that were at one time common in most large gardens disappeared years ago, and in them, it is to be feared we have lost many interesting and beautiful exotics. For some time previous to the war the cultivation of indoor plants was tending more and more to become simply a process of growing a limited number of subjects for purely decorative purposes. It only needed the war with its attendant evils, including shortage of fuel and labour, to put a finish to many collections of stove plants, and, as things are at present, there seems to be little hope (for some years at least) of any keen interest being taken in the cultivation of choice stove and greenhouse subjects. Still, it is to be hoped that where possible some efforts will be made to preserve the stocks of interesting and rare plants. In the meantime reduced staffs render it difficult to maintain a large and varied collection of plants. In such cases

it is advisable to inspect the plants occasionally and discard any that are in poor health, or not worth cultivating, for even in the best collections there are generally plenty of subjects that might with advantage be consigned to the rubbish heap. It is well to remember that gardeners are often judged, not by the number of good plants they grow, but by the few failures that are always conspicuous; it is a good gardener that has mastered the difficult art of knowing what to throw away.

Preparations for Spring Work.—It will save much time and worry in the approaching busy season if preparations are made for work in advance. All washing and cleansing of houses should be finished as soon as possible, propagating cases cleaned out, and filled with fresh plunging material; flower stakes examined, painted and sorted into different lengths and flower-pots washed, so that they will be clean and dry when wanted. If not already done, stocks of loam, leaf-mould and sand should be placed under cover where the materials will keep dry. The loam should have a dressing of lime; this is important, for although the good gardener periodically applies lime to ground out-of-doors, he too often neglects to add it to potting soils, although they probably are more in need of it, for the loam is generally cut from old pasture or park lands, which are often neglected as regards liming.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SHERBORN CLAY, M.P., Ford Manor, Lingfield, Surrey.

Vine Eyes.—If the renewal of old Vines or the planting of a new viney is contemplated, the present is a suitable time to select prunings of the different varieties required. The Vine eyes may either be inserted in small pots, or in squares of turf; when turf is used the roots do not get cramped. If a suitable house or pit is not available, defer the rooting of the eyes until next month. When the days lengthen, rapid growth will justify the delay, and strong, young Vines will be available for planting in May, these being preferable to one year or two-year-old canes. The eyes may be started in a Melon or Cucumber house, where bottom-heat and moisture are available.



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Cucumbers.—Great care and attention are necessary to maintain a constant supply of Cucumbers in February and March. Keep the plants trained thinly and crop them lightly. Top-dress the roots from time to time with rich warm compost, and feed them on occasions with weak liquid manure warmed to the same temperature as the interior of the house. A night temperature of 65° to 68° should be maintained, according to the weather; take advantage of bright days to admit a little air, and at such times the temperature may be allowed to rise. A moderately moist atmosphere may be maintained by damping the paths and beds on all favourable occasions. Sow more seeds in small pots and plunge the latter in a bottom-heat of 80°. The seedlings should be grown near the roof-glass in a house having a temperature of 68°.

General Remarks.—The pruning of Vines and Peaches and the cleansing of houses should be completed, taking advantage of wet days to utilise the services of the outside staff. Interior walls should be washed with hot lime, with a handful of flowers of sulphur added. Few other materials are better for washing Vines than Gishurst Compound. Houses in which fruit trees are resting should be kept as cool as possible until the time arrives for starting them. Collect a large heap of leaves and litter and store it under cover.

FRUIT REGISTER.

GRAPE MADRESFIELD COURT.

This magnificent Grape is not grown so extensively as one would expect considering its good qualities.

Doubtless the chief reason why it is not looked upon with more favour in many places, is because the berries are very liable to split at a certain period. In a mixed house of Grapes it is very difficult to prevent a small amount of splitting, but where a house or even half of a house can be devoted to the variety, there is no difficulty in preventing the trouble.

In these gardens we are fortunate in possessing a "Madresfield" house. The vines are grown on the extension system, and, by withholding water entirely as soon as the first tinge of colour is seen on a berry, allowing a little more lateral growth to develop at that stage and affording ample air by day and night on all favourable occasions, we rarely have a split berry and the bunches finish perfectly.

The roots are given liquid manure as soon as the Grapes are cut and while the foliage is still green and the roots active. This stimulant is also applied after the bunches are thinned, and a final application is given as soon as the berries have finished stoning. No further stimulant is employed and mulching material is never placed on the borders.

I may add that the houses are span roofed, and the roots are restricted to the inside border. Where the roots are allowed to grow outside the viney I have found it advisable, after the berries begin to swell for the second time, to cover the border with zinc sheets to prevent heavy rains from saturating the roots. If this precaution is neglected and the season happens to be a wet one, the berries are almost sure to split. J. G. Besant, Melton Constable.

THE ALPINE GARDEN.

OURISIA COCCINEA.

It is easier to secure and grow a plant of *Ourisia coccinea* than to flower it, and those who have had most experience of this fickle subject are the least prepared to dogmatise regarding how it may be induced to bloom. Even those who are happy enough to own a good plant which flowers freely have often to confess themselves baffled when they attempt to establish it in another part of the same garden and in what appear to be precisely similar conditions. The foliage is pleasing, and a mass of the elegantly formed leaves rising but little above the ground on creeping stems is a pretty sight. But it is to procure a profusion of its eight or nine inch stems, carrying their delightful vivid, almost vermilion-scarlet flowers, that our energies are directed, too often in vain. The usual advice to select a cool, moist spot for the plant is good, so far as it goes, but it is not enough to secure flowers, and I cannot say that any certain conditions will or will not induce the plant to bloom. Doubtless a cool, moist peaty soil, with perhaps the addition of a little sand when heavy, is best suited to *O. coccinea*, but it seems a matter of chance whether the plant will reward the grower with its flowers or remain a carpet of greenery. S. Arnott.

CHRYSANTHEMUMS.

EARLY CUTTINGS.

All but the latest varieties of Chrysanthemums have done flowering and cuttings of the large flowering varieties may be inserted singly in small pots. Shoots arising from the base of the plants provide the best cuttings; those made from shoots higher up the stems, should be free of flower buds. The soil for potting the cuttings should consist of sifted, good loam, leaf-mould and sand, made firm in the pots. After inserting the cuttings firmly in the pots give them a thorough watering. They may be rooted in a frame set up in a cool house and the light covering the frame should be removed each morning for a short period. Scottish Grower.

THE BUFF-TIP MOTH, PYGAERA (PHALERA) BUCEPHALA.

In *Gard. Chron.*, August 16, 1919, we published an illustration of the Buff-tip moth, from a sketch by the late Miss Kate Ashley, showing the caterpillar attacking Rose leaves, also the moth, pupa and eggs. The eggs are usually laid on the leaves of trees, but Mr. Geo. Kent, Brocket Gardens, Hattfield, found specimens last summer attached to a blade of grass (see Fig. 2), which is very unusual. Mr. K. G. Blair, F.E.S., of the British Museum, informs us that the female usually oviposits on the leaves of trees of various kinds, Lime, Elm, Oak, Willow, and many others, the eggs being usually arranged in groups of 40 or 50 on the underside of the leaf; but, as is particularly the case with moths whose larvae have a varied range of diet, the female Buff-tip is not very particular where she deposits her family and will frequently lay on an Oak fence or on a lamp-post, or, in captivity, on the side of a box.

The caterpillars when first hatched remain huddled together in a cluster on the leaf with

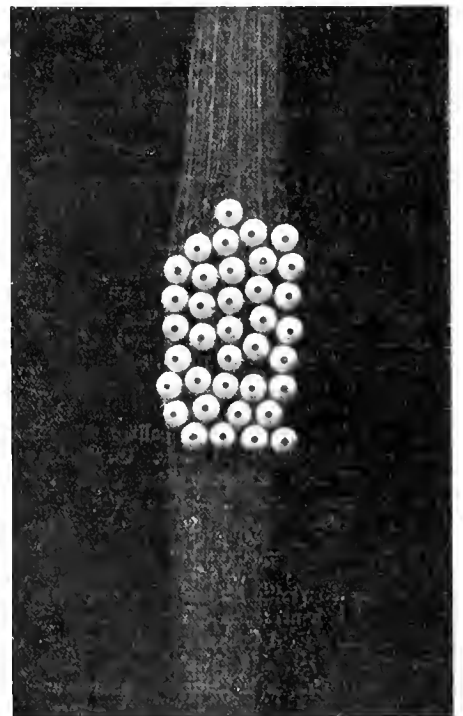


FIG. 2.—EGGS OF THE BUFF-TIP MOTH ON A BLADE OF GRASS, X 4.

their heads outwards, and in feeding soon reduce the leaf to a skeleton of veins. Like many of their allies they have a peculiar habit of cooing up their tails when at rest. After their first moult they migrate to a neighbouring leaf, leaving a little group of black cast skins behind them; as they get older they have a tendency to separate. The presence of a party of Buff-tip larvae in a tree is very evident; one or more branches will be noticed stripped bare of leaves amid the surrounding foliage. These bare branches, and a rain of black pellets of excrement on the ground beneath the tree, may frequently be noticed in early autumn, in tree after tree among the young Limes commonly grown along suburban streets. When full grown, the black and yellow-striped caterpillars, about 2 inches long, crawl or fall to the ground, and are to be found crawling about on the footways in search of a spot of exposed earth in which to burrow. The dark reddish-brown, shining chrysalis is formed a few inches beneath the surface of the ground, without any cocoon or other protection, and remains till the moth emerges in the following June.

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Editors and Publisher.—Our correspondents would oblige by delaying in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

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Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

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Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

No 12.—FIRST SEEDS.

THE glory of the tree-Rhododendrons is all gone by July, and it would really be too much to expect later months to rival the earlier in the beauty and bounty of their yield (though I am told of July Rhododendrons that equal, if they do not surpass, their predecessors). *R. agapetum* is still in glory though, and I am not far from calling this the finest scarlet Rhododendron I know. On the tops there is still the Rhododendron with the orange trumpet: and now on the Pass and the Ridge there is opening yet another of high merit, being a thin, straggly bush, with narrow and intensely aromatic foliage of deep, metallic bronze-green or purple, that further enhances the charm of its loose heads of medium-sized flowers of soft rosy pink, heavily marked inside with mahogany brown. (See Fig. 3.) This is a charming plant; and every July Rhododendron has its especial value. But the Pass is now to be visited for early seeds, and we cannot even linger over *Nomocharis*, now in more stupefying millions than ever over the upland grass. The principal object is that incomparable blue *Primula* of April, though I also have my eye on the little white woodlander, now also due, as well as faint hopes of *P. bella*. But these *Primulas* of the *Davidii* (?) and *Sonchifolia* groups have a very puzzling way with their seed. The scape, pedicels and calyx stiffen and fatten, and the seed matures in a cushion-shaped mass beneath a membranous covering. But this ravel away ere long, and the seed is revealed, still green, lying in the disk, at the mercy of wind and weather, so that one is under the necessity of gathering it when one can. By July, indeed, the "Blue" is ready, but the little "woodland white" still tarries, yet seems to shed its seed even greener than the other. Both, I fancy, will want special care in raising—particularly the blue one—and might profitably be treated

as if they were *Rhododendrons*. As for *P. bella*, this is not nearly ready yet, but surprised me by a new characteristic, hitherto unknown to me, or unremembered, in *P. bella*, for a large proportion of the plants, after flowering, develop four or five fat pink stolons that radiate from the crown, and strike root from fresh rosettes at the end. Has anyone experience of this habit in true *P. bella*?

But seeds are not all there is to see on the Pass in the opening of July. All the earlier flowers are now at their full: *Nomocharis* is ubiquitous, and by the pathside *Anchusa*, *Thalictrums* and *Corydalis* combine in a haze of azure and white and gold. In the deep brake there is little or no blossom, but wherever the light sufficiently penetrates the damp gloom may be seen the noble plumes of *Rodgersia sambucifolia*. Beautiful as *R. aesculifolia* was, in the

high, with well-displayed flights of fine flowers of the richest blue. The choicest plant of all, though, was found by my companion, Mr. Cox, in a grassy glade up above the Pass. Here he came on a colony of some twenty stems, and no more, of a tall and stately Liliaceous plant (see Fig. 4), which I can only compare to a magnified *Hyacinthus candicans*, but that the stems are leafy and the flowers of a deep and soft satiny rose-crimson. Can this be *Lilium Thompsonianum*?—of which I have no experience nor any diagnosis at hand. If so, *L. Thompsonianum* should be better worth having than its rarity in our gardens would suggest; and also easier to cultivate. For I must now repeat my conviction that the conditions here, in the Alpine region, are much more those of a temperate English north-country summer than in any other mountain range I have yet



FIG. 3.—MR. FARRER'S NEW RHODODENDRON, WITH SOFT-PINK FLOWERS.

deep gorges of Siku, I think that this one even surpasses it. For, though there may not be much to choose between them in tropical amplitude of foliage, in *R. aesculifolia* the flowers were always creamy, whereas in *R. sambucifolia* no two spires turn out the same colour, but all are in delicate and tender tones of pink. For open woodland glades this *Rodgersia* (like all the others, for that matter) should be a treasure for naturalising: I long to see the day when they shall all be established by thousands, and wonder that these noble plants still seem so comparatively rare, and are still choicely cherished in corners of the rock-work dell—the last place in the world to suit their voluminous development. As for the *Thalictrum*, I should only reiterate my former praise, with large additions; and the *Anchusa*, too, is a treasure, growing not more than a foot

travelled. After a fine spell in May-June, the rains are now on. And what they amount to in this favoured corner of the Burma-Chinese alps is a steady succession of downpours every night, with abundance of low cloud each morning, gradually clearing up to a fine and more or less sunny afternoon. "Fine spells" are also to be expected with greater frequency and of greater length as time goes on, but meanwhile the summer conditions here are so like those of the West Riding that, though the warmth is pleasant, Peaches do not ripen till September at Hpimaw Fort, while corn, and even Oats, will not ripen at all, not even down in the much greater warmth and openness of the valley. There is nothing here of the hard, hot, summer brilliance which, even in the high alps of N.W. China, unfits so many of its plants for our comparative lack of summer sun; nor anything much either of

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12 August 9, August 23, September 6, September 27, October 18, November 1, November 22, and December 6, 1919.

N.W. China's blasting and immovable winter cold.

But, however large and varied be a range, sooner rather than later one comes to an end of its botanical resources, and meets everywhere with only repetition of things by this time grown commonplace, that when first seen elicited cries of delight. In the deep gullies that descend from the Ridge a middle-sized Musk of brightest yellow now haunts the wettest places among the stones; while on the moss-cushions that hang on the shady cliff-walls of the ravines, a little *Tofieldia* is thrusting out fluffy spikes of pure white; while higher up on sunny rocks *Potentilla davurica* begins to open golden; and by the Pass the montana *Clematis* has been succeeded by the full expansion of the acuminate one (see Fig. 5) which now reveals itself an even handsomer plant of a rather warmer white. Lower down, and the first harvest is to be got of a charming little Liliaceous plant, which bedecked all the coppice in April with heads of *Puschkinia* blue blossom on $\frac{3}{4}$ inch stems. In that stage I could not name it, but now its scapes have shot up to a couple of feet, and its pedicels have elongated to match, each one of them carrying an oval, dry, seedful berry of a bloomy-blue, ripening to black. So that I wonder if it may not be a *Clintonia*. In any case, blossoming at the same time, it ought to naturalise delightfully among wood-Anemones and Primroses; and has the added attraction of thus producing fruit quite as pretty as its blossom, and in an entirely unexpected style. But rabbits and slugs would have to lend it their fear or forbearance at home: in the Alps there are no such enemies to fear—as I grow weary of trying to explain to enthusiasts who are continually asking me why I do not Senhouse all the fells of Ingleborough till they are solid with Chinese Primulas and Poppies. You might as well hope to naturalise Lettuce in a warren. *Reginald Farrer.*

CUTTINGS.

" CUTTINGS of half-ripened wood taken with a heel, inserted in sandy soil, and put in a close frame with a gentle bottom-heat root readily," is the usual advice given for the propagation of hardy trees and shrubs, but the statement is not true of all hard-wooded plants. I have tried several experiments with various cuttings during the past two years, and have found that the above formula is, in some instances misleading. So far, I have not found it possible to work out any definite rules regarding the rooting of cuttings, for what holds good for one subject may be entirely wrong for another. For instance, if a *Clematis* cutting is made with a heel, or cut at a joint, as is usual with most cuttings, it will not root, but if it is cut through at an internode, it will form roots from almost any part of the internode, or from the joint above, or from both.

I have noticed that cuttings produce roots in various ways, the commonest being where a callus is formed at the base, and the roots spring from it usually all round. Sometimes the roots develop only on one side, but that is because one or more become sufficiently advanced to supply everything necessary to the well being of the cutting, a check to these advanced roots being balanced by the production of others in the same circle. Most of the commoner flowering-shrubs form roots in this manner, usually in from two to four weeks' time after insertion.

Another way in which roots are formed is where a cutting is made with a heel, which calluses over, but the roots are produced from practically the whole of the stem below the ground-level, the callus apparently having little to do with root-formation. This is seen in the Ericaceae and Vasciniaceae, a few of the garden-forms of *Philadelphus* and *Ceanothus*, and in *Stewartias*. I have been particularly interested in the behaviour of cuttings of *Sinowilsonia Henryi*, a Chinese member of the Hamamelidaceae. These were inserted on June 6th, and were rooted in early August. As this is an entirely new genus, I used soft cuttings, and made some

with a heel; a few were cut at the internodes and some at a joint or two above the heel. Every cutting formed roots, but those which were cut at an internode were by far the best rooted. In every case roots were produced from the stems, none whatever from the base, and in each instance there was from a quarter to half-an-inch of sound wood between the callus and the roots. *Fortunearia sinensis*, an allied plant, produced roots from the callus in what may be termed a normal manner.

Besides *Clematis*, I have found that shoots of *Meliosma* can only be rooted as internodal cuttings. When made at a joint or with a heel the cuttings formed a callus and lived for a year or more, but they never produced roots. If taken when quite young and cut at an internode shoots of this genus may be rooted in

of the cuttings, and the roots appearing from a somewhat recessed space in the centre. At the same time cuttings of *Nothofagus procera* and *N. obliqua* were inserted, of which the former were rooted in six weeks, the roots springing from the callus in the ordinary manner, while of the cuttings of the latter, only two were found to be rooted at the end of three months. They were all—about twenty of them—made with a heel, but the two that formed roots made them from the centre of the lowest internode, the part below having rotted away.

I have only given a few instances as some proof of what I contend, viz.:—that it is always necessary to have "cuttings of half-ripened wood taken with a heel" to ensure successful rooting. All the cuttings mentioned have been of very soft wood, and many of them

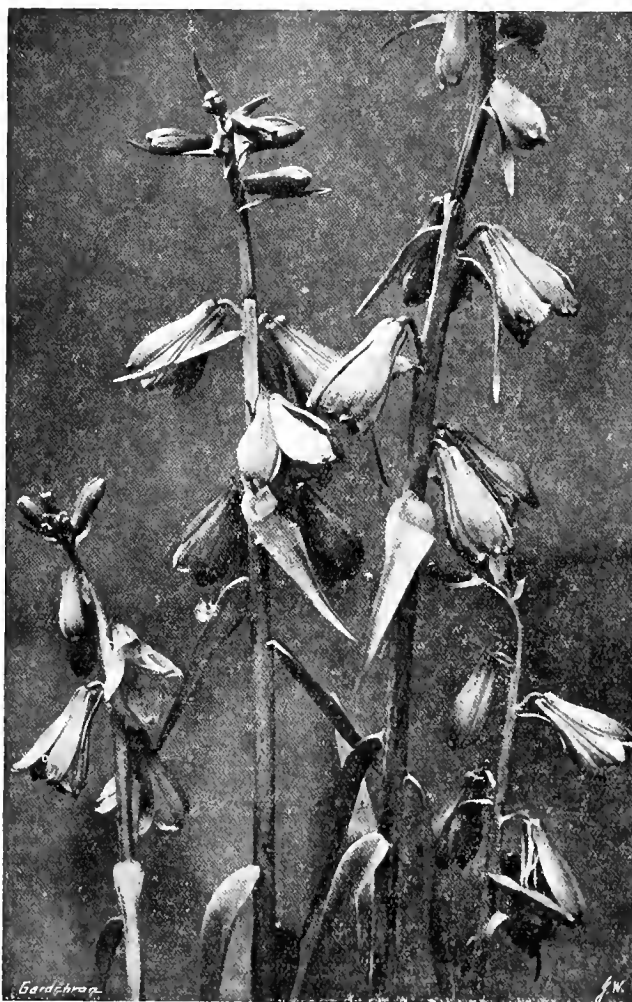


FIG. 4.—MR. FARRER'S EXPLORATIONS. LILIUM SPECIES FOUND ON THE GLADE ABOVE THE PASS.

about ten or twelve weeks. Cuttings of *Meliosma Beamanii*, *M. cuneifolia*, *M. myriantha*, *M. Oldhamii*, and *M. Veitchiorum*, inserted on June 6th, were just forming roots at the end of August. I always make these internodal cuttings with a slanting cut at the base, which, in my experience, renders the cutting less liable to rot, though this is open to further experiment. The roots of *Meliosmas* are produced from the inner bark at the lowest part of the cutting and go straight down until they reach the bottom of the pot. A return of fifty per cent. of rooted cuttings is as much as one may expect.

On the 18th of May I inserted four young growths of *Aesculus Wilsonii*, a new Chinese Horse Chestnut, two of which formed roots in about eight weeks, the other two dying. These cuttings were taken with a heel, and the roots were produced from the centre of the base, a callus forming regularly all round the bottom

have rooted when not made with a heel. So far as I have been able to judge, roots are not always produced from the same part of the wood, but may be formed from the outer or inner barks, or even, but more rarely from the pith or centre. It follows, therefore, that experiment is necessary when dealing with a new plant, even if it is a member of an old genus. With those plants that "will not root from cuttings" a common phrase in gardening and garden literature—it is probable that the right kind of cutting has not been tried at the proper time. I am inclined to believe with Professor Balfour that cuttings of any plant can be rooted, provided they are taken at the right time, and are the proper part of the plant to employ. All our present knowledge of plant propagation has been the result of continued experiment, and the same means must be used with the new plants that are being raised or introduced every year. *J. Clark.*

NOTICES OF BOOKS.

Insect Pests and Plant Diseases in the Vegetable and Fruit Garden.*

The title of this book is somewhat misleading in that neither insect pests nor diseases of fruits and fruit trees are even mentioned, and indeed the expressed aim of the author is to assist the allotment-holder.

The book consists of two parts, one dealing with insect pests and the other with fungous diseases of vegetables.

The use of technical terms has been largely avoided, and where used are usually sufficiently explained.

The aim of the book has been to place before amateurs information on common garden troubles in as simple a form as possible, and at the same time to confine the matter within small limits.

The author has largely succeeded; and where he has failed, the failure is not the author's fault, but is due to the fact that he has set himself an impossible task. To attempt to give an account of insects, even though confined to their external differences, and without the aid of diagrams, in the limits of a few small pages is almost impossible. Doubtless any entomologist will easily follow the description given, but it is doubtful whether the account will leave more than a hazy impression on the ordinary reader.

At the end of the general description of insects the author has omitted to mention the Earwigs when describing the order Orthoptera. It may at least be claimed that they are commoner inhabitants in a garden than are cockroaches or even locusts or crickets, which are mentioned.

The rest of the portion of the book devoted to insects deals with such as are commonly met with in any garden or allotment, though mention might have been made of the leather jackets and cockchafer larva, those frequenters of newly-tinned land.

The typical life history of aphides given has a very curious omission. After describing hatching of the eggs and parthenogenetic production of young by wingless females, the author passes on to the appearance of the sexual forms, giving no indication that part of the very large increase in numbers of aphides is due to the appearance of winged parthenogenetic females. In describing the Bean aphid also the author for once fails to explain technical terms in that "honey tubes (cornicles)" is misleading, since the honey dew is secreted by the anus, moreover, the term "ochreous" can hardly be understood by the ordinary man.

There are a few other points that also call for attention. Cabbage fly is said to cause "wart-like swellings" on the roots of Brassicas, a description which does not tally with the reviewer's experience, and which suggests the attack of *Centorhynchus ruficollis*, the Turnip Gall weevil, an insect, which, though excessively common, is not even mentioned in this book. Amongst the remedies mentioned no account is given of the use of tarred felt discs, which have been successful both in America and this country. To advise rotation of crops as a remedy is not particularly helpful either to the allotment holder or gardener since, of necessity, a large proportion of his crops are of the Brassica family and it is quite impossible in practice to avoid a fairly close rotation for these plants. Anyhow, the Cabbage fly is winged, and will find no difficulty in flying a few score of yards.

The second part of the book is devoted to plant diseases, and most, if not all, of those commonly met with in a garden are included. After giving a general description, the author passes to an account of the ordinary Potato disease, in which occurs the statement that the mycelium may pass down the tissues of diseased stems, certainly a highly contentious dictum, and of which no positive proof has yet been obtained. Besides Bordeaux mixture as a preventive, mention should be made also of the easily made Burgundy mixture. Everyone can procure washing soda in good condition, but the acquisition of good lime is a far more

difficult matter. Again, the author advises a weaker spray for young foliage when, as has been shown by Barker and Gimingham, for copper sprays, young injured foliage is much more resistant to spray damage than older foliage.

A notable omission occurs in the treatment given for wart disease of Potatoes when absolutely no reference is made to immune varieties, of which there is now a large number, and, in addition, the statement is made that good cultivation may check the severity of the disease, which it emphatically does not. Lastly, though lime is given as a remedy for finger and toe disease, no reason is given for its good effect, and the reader is left innocent of the fact that the organism cannot grow in an alkaline medium.

The plates dealing with insects are clear and to the point, but those dealing with the fungous diseases are more suitable for a text book of fungi than for a handbook intended for the amateur. Not even with the strongest lens could anyone see such minute objects as swimming zoospores, and the author must have spent much time before he was in a position to draw the conjugating archegonium and antheridium of *Pythium de Baryanum* figured on Plate VIII. If such time had been devoted to the reproduction of good illustrations of the microscopic features of the diseases described the book would have gained considerably in value.

VEGETABLES.

A BRASSICA CROSS.

THE Mendelian law is, I take it, generally accepted, although the percentages vary slightly as regards similarity to the parent plants according to species. After many efforts to obtain a hybrid Autumn Giant Cauliflower x Kohl-Rabi, success has at last crowned my efforts, and I find the progeny is the ratio of 9 to 6 and the remainder (that is as to shape) a very polyglot mixture. One seed only was obtained, which germinated and grew into a sturdy plant, which stood in the open throughout the winter 1918-19, flowered in June, 1919, and the resultant seed was sown August. The bulbous part was attached to a foot stalk of a much more sturdy nature than that of the ordinary Kohl-Rabi and had a circumference of 23 inches. The plant was grown in soil of an ordinary nature, as it was thought a rich rooting-medium might cause excess of vigour and result in the shedding of the flowers before the seed set. Plants bearing reddish foliage of the Kohl-Rabi are forming a true spheroid; the ones with the light-green leafage are now of a Medlar shape. The polyglots are, in shape, several phrases of oval, long, medium and short, but all the leaves are the same as to shape, that is, longer than Kohl-Rabi, shorter than the Cauliflower, yet combining the general characteristics of each. Undoubtedly the plant will prove an acquisition as a Cauliflower is provided for table, and the rest of the plant is suitable as food for stock. *Cauli-Rabi*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Moles Attacking Cabbages I have a patch of spring Cabbage in an outer kitchen garden that has recently been attacked by moles. The first thing I noticed wrong was that some of the plants were eaten out at the hearts, leaving only the outside basal leaves. On examination I found a small hole about the size of a mouse hole in the soil by the side of the stem of the plant, and about four inches deep. I naturally concluded the mischief was caused by mice, but on a closer examination I found it was moles, and that they were working their way through the bed without having made any casts. I am interested to know if it is an unusual thing for moles to attack Cabbages in this way. *J. Gammon, Eggham Hall Gardens, Witney, Oxon.*

Protection for Plant Novelties.—I trust the admirable article by Mr. Bliss on p. 278 will

receive the attention it deserves. Almost everyone is agreed that the position of the raiser of a new fruit is about as bad as it can be, but few realise how much the production of novelties is checked by the want of some system for ensuring to the raiser fair return for his skill and labour. At present only an enthusiast independent of financial considerations can afford to spend years in hybridising and testing, with the certainty that if he does raise a really good thing, others will reap the harvest. Given fair play, we should soon have a boom in new fruits and vegetables, many of which would be a national gain. To show how the present system works, I may mention that my father spent years in hybridising Grapes, and was the first to cross the Eastern and American species. Of many hundred seedlings, which cost an average of thirty shillings each to test, several were put in commerce, but only one (Golden Queen) did more than pay the expenses of distribution. This made a profit of about £200, but it is needless to add that the net result was a financial loss. Who raises Grapes now? There are difficulties in the way of patenting fruits, etc., but these are not much greater than in the case of mechanical inventions and are surmountable. The chief point to remember is, that in spite of many and great difficulties and frequent litigation, the patent system is in practical working, and inventors under it do, as a rule, secure the benefits to which they are entitled. *Chas. E. Pearson, F.L.S.*

October Dessert Apples.—I may be able to throw light on Apple Bowhill Pippin, having purchased a tree from Messrs. Rivers, Sawbridgeworth, over 20 years ago. In shape the fruit somewhat resembles a medium-sized specimen of Blenheim Pippin. The skin is pale yellow when the fruit is ripe, but in Devonshire this Apple was not fit for table until the latter part of November. I consider Benoni an excellent Apple for dessert during October and early November, and the same is true of Rival and Kerry Pippin. The latter variety won the 1st prize in competition "for flavour" some years ago at a fortnightly meeting of the Royal Horticultural Society. I venture to include Court of Wick and Scarlet Pearmain, two excellent varieties for use during October. While recognising Beauty of Kent and Emperor Alexander as excellent cooking varieties, few would class either as a dessert sort. Wealthy has high colour, and the tree crops freely, but it has never appealed to me as a dessert fruit. *J. Mayne, Eltham.*

Potatos: Spade versus Plough.—It has been clearly demonstrated within the past five years that our system of attempting to provide home-grown food in abundance for our population is radically out of joint. We have been helped and advised in all possible ways by a benevolently paternal Government, and yet the business is an utter failure. Any practical gardener who has taken the trouble to form an estimate knows that a maincrop Potato, given fairly ordinary attention, is capable of producing 50 or more tons per acre in an average season, and yet we have the authorised estimate of 5.7 tons for the country just issued. It is true Potato crops have been comparatively light this season, owing to the long continued drought, but even in 1918, which was a very favourable year, the official figure was only an average of 6.6 tons. This state of affairs, coming as it does in company with a loss of home-grown feeding products, has arisen mainly from preventable causes, and makes one exclaim, "Alas! my country, so magnificent in war, so helpless in peace." Have we not yet been sufficiently chastised? Have our dear ones bled in vain? If not, why this apathy? Why should we hand a bankrupt-state down to our children simply because we are too lazy or too ignorant to make use of God's blessings so bountifully showered on us? Shall we wait for the women to show us the way as they have done in many things of late, or shall we return to pre-war days, and sit still while the foreigner supplies our necessities? We shall not always be able to pay for the foreigner's attentions, and then something else will happen. A new world is not what we want; there is still much beauty in this old one of ours which we are only just beginning to see, much wealth

* *Insect Pests and Plant Diseases in the Vegetable and Fruit Garden*. F. Martin Duncan, London: Constable and Co., Ltd. Price, 3s. 6d. nett.

SOCIETIES.

**ROYAL SCOTTISH ARBORICULTURAL.
Aberdeen Branch.**

THE members of the Aberdeen Branch of this Society held their monthly meeting in the Douglas Hotel, Aberdeen, on Saturday, 13th ult. Mr. A. Forbes Irvine, of Drum, the president, was in the chair, and there was a representative attendance. The main feature of the meeting was a paper by Mr. John Rule, forester to His Grace the Duke of Richmond and Gordon at Huntly Lodge, on the Bin Wood, Huntly, Aberdeenshire—one of the most noted "ripe" woods in Scotland—during the war. The Bin Wood, Mr. Rule stated, covered two distinct hills, 800 feet and 1,037 feet high respectively, 2,258 acres in extent, and to go round it, one would have to travel eleven miles over very rough ground. The Bin Wood had not been cut before its time, like many of the woods throughout the length and breadth of the country, but at the mature age of 80 years. It had proved a great asset to the nation in the part it had taken in the great war. The planter of 80 years ago never thought his seedlings would ultimately be timbering the trenches in

of this country, fearing that the initial cost of replanting at present-day expenditure would be ruinous to proprietors.

Sir John R. Gladstone, Bart., of Fasque, Kincardineshire, spoke of the importance of having cattle and sheep on the forest trampling in the seed when natural regeneration of the woodlands was contemplated, and referring to the success which had attended this method in the Glendye district of his estates.

Mr. George D. Massie, the hon. secretary of the branch, in his annual report, stated that there were now in the branch 168 members, 32 having been admitted during the past year. They regretted the death of Dr. James W. H. Trail, professor of botany in Aberdeen University, and Sir David Stewart of Banchory House. The year's proceedings had been marked by great enthusiasm. A number of new members were admitted, including Captain Ramsay, Commissioner to the King at Balmoral Castle; Commander J. W. G. Innes of Raemoir, and Mr. James Stewart, Castle Forbes.

Office-bearers were elected as follows:—president, Mr. Irvine of Drum; vice-presidents, Sir John R. Gladstone, Bart., of Fasque; Mr. John Michie, M.V.O.; Mr. John Clark, head forester to the Marquis of Aberdeen and Temair, Haddo House; and Mr. S. J. Gammell of



FIG. 5.—MR. FARRER'S EXPLORATIONS: THE NEW MONTANA-CLEMATIS WITH WHITE FLOWERS.
(See page 6.)

a world conflict. Bin Wood's uses to the locality had been many and varied in affording shelter and amenity, supplying wood for all the needs of a wide agricultural district, its by-products, such as brushwood and "rosy roots," having been of great value to the people of the district, and especially to the poor of the town of Huntly. But by far the greatest benefit of the Bin Wood had been the lucrative employment it afforded to many people. Including planters, at least 20 men, on an average, had, in one way or another, found regular employment during the last 80 years. Replanting had been carried on for the past fifteen years, and already parts of the rugged hills were beginning to have a quite wooded appearance.

Mr. John Michie, M.V.O., formerly forester and factor to the King, at Balmoral Castle, expressed approval of Mr. Rule's system in regard to the replanting of the Bin Wood, where it had been cut, pointing out that in forestry, as in agriculture, a rotation of crops was desirable, Larch following Scotch Fir, or Spruce in the wetter portions. Mr. Rule, in answer to Mr. George Wyllie, forester at Ballogie, Aberdeenshire, said that at the time the Bin Wood was planted, comparatively little attention was being paid to the best methods of forestry, or the Bin could have carried double the crop planted.

Mr. Sydney J. Gammell of Comtesswells, emphasised the importance of greater attention being paid to natural regeneration of the woods

Comtesswells; hon. secretary and treasurer, Mr. George D. Massie, advocate, Aberdeen; and for vacancies in the committee the four retiring members were re-elected—Mr. George Wyllie, Ballogie, Major R. J. Nicol of Ballogie, Mr. Donald Munro, O.B.E., Banchory, and Mr. Peter Leslie, Aberdeen University; while Lord Forbes, Castle Forbes, was appointed to take the place of Sir John R. Gladstone, Bart., as a member of the Council on the latter's promotion to be a vice-president.

SURBITON, KINGSTON, DITTONS AND DISTRICT CHRYSANTHEMUM.

DECEMBER 17.—The annual general meeting of the above society was held at the Waggon Hotel, Surbiton, on this date. The finances of the society are in an improved condition, for there is now a balance in hand of £29 9s. 1d., an increase of £23 19s. 10d. on the balance brought forward from 1915, when, owing to the war, the society suspended operations. Mr. J. Salter Cox continues to be president, and a committee, which includes Messrs. J. S. Kelly and M. L. Sargent, was elected. To the regret of the meeting, Mr. T. Smith resigned the secretaryship, and the appointment of a successor was left in the hands of the committee. After some discussion it was decided by a narrow majority to increase the annual subscription from 2s. 6d. to 5s. Next year's show has been fixed for November 3.

waiting to be tapped, and much happiness which only wants looking for. But what is the principal cause of our failure to grow Potatos? It is the antediluvian plough which we still hold so dearly. Let us commit to the scrap heap all types of that implement which merely skim under the surface a few inches and make a plaster of the soil if it is damp, while leaving a hard base whereon to rest the seed. The routine which follows is of an equally barbarous type, and all this after the seed tubers have been carefully selected, prepared and tended through autumn, winter and spring. There is nothing so good as a steel fork for preparing ground for planting, and I believe it would pay to prepare all the ground in this way when we consider that the crop might be easily quadrupled. The spade should not be used for the purpose unless the soil is very dry. I am not acquainted with the more modern forms of cultivators, but those I have seen are wrong in principle and the results do not justify the energy expended. Do not let us attempt too much. We should try to make the best of the top spit, and most of the best producing gardens have no more than this to depend on. My crude idea of a cultivator would be a sufficiently weighted revolving cylinder fitted with 12-inch spikes. There would be much less resistance than when any thrusting implement, like deep scarifiers, for instance, are used, and there would be no plastering. There may be already some simple and effectual cultivator in existence, but one can scarcely imagine this to be the case or the mischief-making plough would have long since been ousted. Let us scrap the plough for Potatos. *Wm. Taylor.*

Apple Queen Caroline or Spencer's Seedling.
—We have a large standard tree of Apple Queen Caroline growing here, and it usually bears a good crop of medium-sized fruits. It is a good cooking variety, with quite an acid flavour. The skin is clear yellow, and the fruit keeps well into December. I have known this particular tree for twenty-one years, but have never seen the variety growing elsewhere; it is quite healthy and a strong grower. *G. H. S., Aldescar Hall Gardens, Langley Mill, Derbyshire.*

Peach Crimson Galande.—Allow me to add my testimony to what has already been stated as to the merits of this excellent Peach. I grew it for several years as a pot tree, and thus grown I found it always of excellent quality and also one of the best for appearance. It sets well, possesses a good constitution and, moreover, it packs well, being very firm when quite ripe. For dessert it is one of the best, being of high colour when well ripened. It parts from the stone quite readily, and the flesh is crimson next to the stone. I should place it among the six best Peaches, either for growing under glass or on the open wall. As with most of the small-flowered varieties, the abundance of its pollen is a good point. *Jas. Hudson, F.M.H.*

Hosts for the Mistleto.—Mistleto is more common in the orchards of Hereford than in the eastern counties, or those around London. I have not yet seen it on a Rose bush (see Vol. LXVI, p. 322), but on several other members of the same family. It is plentiful in some parts of Buckinghamshire, and in 1912 existed on twelve different species of trees, in Stoke Park, near Slough, but some of the trees have since been cut down. It was very vigorous on almost every one of the numerous Lime trees in the park. Other hosts for it were the Hawthorn, Apple, Crab-apple, Norway Maple, Robinia Pseudacacia, Hornbeam, Elm, Pavia rubra, common Walnut, Black Walnut, and Black Italian Poplar. The clusters got to the largest size on Lime, Black Italian Poplar, English Elm and Apple. Mistleto also grows on the Mountain Ash, Pear, Sycamore, Horse Chestnut, Pavia Iava, Ostrya vulgaris, Beech, Salix alba, Viburnum, Cladrastis tinctoria, Crataegus odoratissima, Acer monspessulanum, Pyrus Aria, Fraxinus Ornus, Olive, Aspen, Birch, Magnolia glauca, Oak, Service Tree, and Acer rubrum. I have a record of it growing upon the Oak in at least six different counties, in 1887; also a record of it on the Rose in Worcestershire, of the same date. *J. P.*

Obituary.

William Low.—We learn with regret that Mr. William Low, gardener to the Duke of Grafton, Euston Hall, Thetford, Suffolk, died about three weeks ago. He was well known in gardening circles in East Anglia and had recently completed forty-nine years' service at Euston Hall.

James Craig.—We learn with regret that Mr. James Craig, market gardener, Viewfield, Davidson's Mains, Edinburgh, died at his home on Christmas Day, at the advanced age of 77. His remains were laid to rest on Monday, the 29th ult., in Warriston Cemetery, Edinburgh.

TRADE NOTES.

CHAMBER OF HORTICULTURE.

At a meeting of the Council held on the 17th ult. it was stated that the Ministry of Transport was making enquiry into specific difficulties reported by the Chamber and was in communication on the subjects of the Advisory Panel, and the Railway Rates Committee enquiries. As to anthracite supplies in respect to which transit was delayed through railway congestion, this matter is being carefully watched.

A further conference on the Regulation of Imports will be arranged for Tuesday, 20th January, 1920. The Import of American Apples in competition with home-grown produce will be brought forward for full discussion at this meeting. Meantime the Chamber is arranging to obtain views from its affiliated Societies and other organisations as to a practical method of meeting the interests of the Trade. It was felt that standardisation of growing, packing and grading is essential, and possibly a commission of enquiry into American methods as a basis for educational propaganda might hereafter be arranged by the Chamber.

The misunderstanding as to an early round table conference with the Agricultural Organisation Society was disposed of by the Council's minute deciding to invite concrete evidence from all those interested in this matter as a basis for further action.

Mr. S. McGredy (Portadown, Ireland), Messrs. C. Sharpe and Co., Ltd. (Sleaford, Lincs.), and Messrs. T. Walter Ware, Ltd. (Bath), were duly elected Members of the Chamber.

The First Annual General Meeting of the Chamber was fixed for Friday, 6th February, 1920, at 2.30 p.m., and will be held in the Council Chamber of the Royal Agricultural Society, 16, Bedford Square, W.C., kindly placed by the Society at the disposal of the Council. Further details will be announced nearer the date. All Standing Committees at present elected remain in office until this meeting.

The Council has appointed five delegates representing the Fruit Section of the Chamber, to meet in Conference representatives of the leading jam manufacturers, on Wednesday, January 14th, 1920. It is hoped this may result in the establishment of a good understanding in the interests of the Trade.

It was reported that the progress of the Hours of Employment Bill was being watched on behalf of the Chamber, and a Special Committee appointed by the Council was prepared for immediate decision in case of the necessity arising. Statistics had been prepared at the request of Government Departments, showing the custom followed to keep men in regular employment all the year round.

The Lea Valley and District Nurserymen and Growers' Association will hold its annual dinner at the Cambridge Rooms, Great Eastern Hotel, Liverpool Street, E.C., on Friday, January 16. Mr. H. O. Larsen, J.P., will preside.

The Board of Agriculture again calls the attention of nurserymen and others to the new Gooseberry Mildew Order, which revokes all

previous Orders dealing with this disease except the Fruit Orders of 1915 and 1919 (Orders referring to the importation of fruit and the consignment of diseased fruit to markets).

Under this Order notification of disease is required from persons growing Gooseberry and Currant bushes for sale. It is illegal to sell Gooseberry or Currant bushes affected with the disease, but a grower after notification may prune away all diseased tips and then sell the bushes without a licence. The onus of seeing the bushes are free from disease rests with the seller. All restrictions on the movement of Gooseberry and Currant bushes which have been in force in Wisbech, Kent, Worcestershire, etc., are removed, but the new Order enables an inspector to forbid the removal of visibly diseased bushes, and also to deal with diseased bushes moved in contravention of the Order. The Board retains power under the Order to deal with fruit growers and private owners who fail to take proper steps to check the disease.

The importation of Gooseberry bushes is still prohibited, but that of Currant bushes is now allowed without licence.

The Board regrets to find nurserymen and growers of bushes for sale are not exercising the necessary care and removing the tips before selling the bushes. The Board will strictly enforce the provisions of the Order dealing with the sale of diseased bushes, and in such cases of contravention reported to them are instituting legal proceedings.

ANSWERS TO CORRESPONDENTS.

How to Grow PEPPERMINT: *H. M.* Peppermint is very easy to grow in any soil, except that which is shallow and consisting largely of sand. In this case the application of animal or green manures to increase the moisture-holding capacity of the soil will enable the Peppermint to grow more vigorously. In gardens with soils of average good quality it will prove easy to grow. It does not object to partial shade, but if the shade is too great and the soil very damp in winter the roots are liable to die away. In well-drained soil and moderate shade this will not happen. One great point in growing most of the Mints in gardens, and keeping them free from disease (*Puccinia Menthae*), is to transplant them annually, using only small pieces of the healthy, young, underground stems or rhizomes, and giving sufficient room to prevent crowding. They are most liable to disease in wet soils and wet seasons, when crowded. The above refers to ordinary garden cultivation. If you desire to grow Peppermint for the sake of its essential oil you should select a chalky soil, in an open or fully exposed position. It is usually grown upon flat areas on the top of the chalk downs in Surrey. It is not desirable to get great bulk of stem and leaf, but rather a dense development of the oil glands upon all parts of the plant, and especially on the leaves and inflorescence. This is the reason why dry chalky soils, fully exposed to sunshine and air are selected. If the soil is very poor it may be manured, and the Peppermint planted in lines 18-20 in. apart and 1 ft. in the lines to allow room for the horse-hoe or Planet junior-hoe to keep the ground clean and well aerated in summer. The planting may be done in March or early April, before growth is much advanced. The rhizomes must not be long exposed to drying winds or strong sunshine preparatory to planting, because they get dried up and killed by a few hours of exposure.

NAMES OF FRUITS: *X. J. P.* 1, Chaumontelle; 2, Fondante d'Automne; 3, Monarch; 4, Glou Moreau; 5, Marie Louise; 6, Flanders Pippin; 7, Nonsuch; 8, not recognised; 9, Stone Pippin; 10, Piles Russet. *McT.* 1, decayed; 2, Queen; 3, Pott's Seedling; 5, Nancy Jackson; 6, Beauty of Hants; 7, Nonsuch; 8, King of the Pippins; 10, Cox's Orange Pippin; 11, Chas.

Ross; 12, De Neige; 13, Prince Bismarck; 14, Bess Pool; 15, Wyken Pippin; 17, Norfolk Stone Pippin; 20, Golden Noble; 21, Orange Goff; 22, American Mother; Pears, 2, 3, 4 and 5, decayed; 6, Pitmaston Duchesse; 7, Louise Bonne of Jersey; 8, Van Mons Léon Le Clerc; 9, Beurré Hardy; 10, Beurré Diel.—*M. C.* 1, Tyler's Kernel; 2, not recognised; 3, Lucombe's Pine Apple; 4, Broad Eyed Pippin; 5, Requette du Canada; 6, Melon Apple.—*J. D.* 1, Flower of Kent; 2, King of Tomkin's County; 3, Lady Heniker; 4, New Bess Pool; 5, Lady Heniker; 6, Graham's Apple; Pear, Duchesse d'Angoulême.—*G. A. M.* 1, Tower of Glamis; 2, Winter Hawthornden; 3, Golden Pippin; 4, Allington Pippin; 5, Blenheim Pippin.—*B. N.* 1, Fondante d'Automne; 2, Bellissime d'Hiver; 3, Scarlet Golden Pippin.—*R. S.* 1, Requette Franche; 2, Yorkshire Beauty; 3, Lord Suifield; 4, Christmas Pearmain; 5, Vicar of Beighton; 6, Ilanwell Souring; 7, Mabbot's Pearmain; 8, Nonsuch; 9, Herefordshire Pearmain; 10, Lodgemore Nonpariel; 11, Lord Derby.—*W. D. and Sons.* A, Golden Spire; B and C, decayed.—*W. and S., Ltd.* Lady Heniker.—*E. P. D. and Sons.* Queen Caroline.—*T. E. P.* 1, Cornish Mother; 2, Bess Pool; 3, Melon Apple; 4, Gascoyne's Scarlet; 5, Cornish Gilliflower; 6, Sturmer Pippin; 7, Calville St. Sauveur; 8, Rond Winter Nonsuch; 9, Colonel Vaughan; 10, Cocker's Pippin; 11, White Paradise.—*G. B.* 1, Blenheim Pippin; 2, Wyken Pippin; 3, Northern Spy; 4, Sam Young; 5, Dutch Mignonne; 6, Cocker's Pippin.—*Pom.* Winter Greening.—*H. S.* 1, Lane's Prince Albert; 2, Claygate Pearmain; 3, Mank's Codlin; 4, decayed; 5, Emile d'Heyst.—*A. C.* 1, Lord Grosvenor; 2, Small's Admirable; 3, Roi d'Angleterre; 4, Peasgood's Nonsuch; 5, Northern Spy; 6, Dean's Codlin; 7, Annie Elizabeth; 8, Fearn's Pippin; 9 and 10, decayed.—*C. S.* 1, decayed; 2, Beurré d'Amanlis.—*J. E. S.* 1, Woodcock; 2, D'Arcy Spice; 3, Lord Derby; 4, Blenheim Pippin.—*A. L.* Beurré Hardy.—*Hythe.* 1, decayed; 2, Calville St. Sauveur; 3, Chaumontel; 4, Aromatic Russet; 5, Annie Elizabeth; 6, Sandringham.—*D. S.* 1, Manning's Pearmain; 2, Loddington Pearmain; 3, Sturmer Pippin; 4, Wellington (Dumelow's Seedling); 5, Beauty of Kent; 6, Melon Apple.—*T. R. S.* 1, Jolly Beggar; 2, Striped Beeching; 3, Hanwell Seedling; 4, William's Favorite.—*M. L. H.* 1, Warner's King; 2, Stirling Castle.—*J. S.* 1, Withington Filling; 2, Beauty of Kent; 3, Waltham Abbey Seedling; 4, Gascoyne's Scarlet; 5, decayed; 7, Gloria Mundi; 8, decayed; 9, Pitmaston Duchess; 6, Louise Bonne of Jersey.

NAME OF PLANT: *W. Heaver.* The specimen sent is *Pyrus Aria* (White Beam Tree), which tree is very different in appearance to the Mountain Ash (*Pyrus Aucuparia*), though the two are closely allied.

VARIETIES OF GRAPES: *F.* The best black Grape to grow with Muscat of Alexandria is Madresfield Court. It is a fitting companion to the Muscat for the show hoard; it ripens a little in advance of the other, but if grown in the cooler end of the house it will keep well. It is of fine quality and flavour, and receives high points from judges. These Grapes may both be grown in a comparatively cool vinery when the borders are inside, and the soil quite under control; and with a night temperature of 65°. Assuming that Grapes are to be grown in a three-quarter span house, and no better plan can be followed, these are the two best varieties to plant for the purposes indicated. Neither Muscat Hamburg nor Mrs. Pince, both of excellent quality, are so dependable for high-class finish as the Madresfield Court. Both, however, ripen somewhat later.

Communications Received.—*H. E. W. L.*—*W. J. S.*, *A. D. S.*, *A. J. R. A.*, *R. A. F.*, *R. A. C.*, *A. O. H. B.*, *E. F. R. A.*, *J. H. J. M.*, Chicago; *G. W. W.*, *H. C. R. W.*, *F. T. R. W.*, *T. Mrs.*, *M. W. T.*, *S. W. P.*, *H. R. D.*

THE
Gardeners' Chronicle
No. 1724—SATURDAY, JAN. 10, 1920.

CONTENTS.

Aberdeen, horticultural demonstration at ... 12	Orchid notes and gleanings ... 15
Alpine garden, the—Erythraea Centaurium ... 13	Pampas Grass ... 19
Apples, October dessert ... 20	Plant notes ... 16
Brassica crosses ... 20	Potato cultivation, spade versus plough ... 20
Canada, the "Pulp city" of ... 12	Potato, McPherson ... 20
Cogniaux, Alfred ... 12	Potatoes, seedling ... 18
Correspondence, foreign ... 19	Railway rates, new ... 11
Cultural memoranda ... 19	Rat trap, varnish ... 12
Dartmoor, the proposed industrialisation of ... 12	Richardson, threatened disengagement of the Thames view at ... 11
Epping allotments ... 11	Roses, planting ... 16
Evergreen hedges ... 13	Royal Colonial Institute, gift to the ... 11
Fernery, the ... 17	R. H. S. exhibition at Cardiff ... 11
Flowers, florists' ... 18	Shrubs, late flowering ... 12
Flowers, seasonal indoor ... 15	Silver Leaf Order of 1919 ... 18
Forest fires, fighting ... 12	Societies ... 21
"Gardeners' Chronicle" Seventy-five years ago ... 12	Soldiers' graves ... 11
Gardeners' Royal Benevolent Institution ... 11	Sowing forest tree seeds by aeroplane ... 11
Grapes in unheated houses ... 20	Trade notes ... 21
Himalayaberry, the ... 21	Tropical agriculture ... 12
Ireland, notes from ... 17	Week's work, the ... 14, 15
Lecture in Botany at Cambridge ... 11	Wheat, the world's supplies of ... 12
Linn Park, Glasgow, the Mistletoe, hosts for ... 20	White Poplar in Surrey ... 20
"Nitric" peat ... 12	Women gardeners ... 20
Obituary ... 21	

ILLUSTRATIONS.

Cattleya Portia with eighty four flowers, a fine plant of ... 15
Erythraea Centaurium ... 13
Eupatorium Raddeii ... 19
Luculia gratissima flowering in the Temperate House, Kew ... 17

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.1°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, January 7, 1920, 10 a.m.: Bar. 29.9; temp. 39°. Weather—Cold and dull.

There are countless men and women who will derive consolation from the knowledge that their relatives who fell in the war lie buried not in some nameless and neglected grave, but in ground consecrated and kept and tended with every care that can be bestowed upon it. How this work has been done may be read in Captain A. W. Hill's account of soldiers' graves.*

In wind-swept Flanders the graves lie sheltered by lines of Maritime Pines, Poplar and Sycamore, underplanted with Willow and Sea Buckthorn, and near the coast the desolation of the sand dunes is mitigated in summer time by blue and mauve and white annuals—*Nemophila*, *Phacelia*, *Linaria*, *Asters* and *Alyssum*.

No matter how inhospitable the soil, the horticultural officers attached to the Imperial War Graves Commission have found means to lend it some touch of life and to establish some plant-memorial to the memory of the dead—for the Canadian there is Maple grown from seed sent to Kew from Canada; and for the Australian, Tasmanian *Eucalyptus*, *E. Gunnii* and *E. whittinghamensis*, which may be expected to prove hardy in northern France; for the New Zealand soldier there are *Olearias* and *Veronica Traversii*; and for the Indian, *Iris*, *Marigold* and *Cypress*, plants which they held sacred.

Every cemetery in France and Belgium and in Italy, constituting the burial places of our heroes, is British ground, made so by the fine and generous act of the Governments of those countries. Men skilled in the raising and care of plants are engaged in

planting and tending these burial places and wherever it is possible, perennials are planted bordering on the graves—double white Pinks, London Pride, Mossy Saxifrages, *Cerastium* and *Thrift*, and at the foot of each Cross, *Polyantha*, *Roses*, *Lavender*, *Rosemary*, *Iris* and *Heaths*. At Wimereux, *Cotoneaster frigidula* and *Sycamore* have been planted, and on the ground between the graves, *Nepeta Mussinii*, the mauve flowers of which make a beautiful contrast with the sands. The graves in the Asiatic Mountains are planted with Alpines, *Saxifrages* and *Cyclamens* and *Gentians*; in the cemeteries of the Venetian Plain, dwarf *Rose* bushes, *Irises* and carpeting plants are being established; and in the Riviera, that most imposing of all plants which stand as sentinel over death, the Italian *Cypress*, *Cupressus sempervirens* var *pyramidalis*—the monitor of immortality.

By its solicitude in the care of soldiers' graves Kew has rendered a great service to the Empire, and the account which Captain Hill gives of the way in which the task is being performed will bring solace to many hearts. Many will remember with gratitude the large part which Captain Hill has taken in the pious work of national remembrance.

Epping Allotments.

It is difficult to understand the attitude taken up by the Epping Forest Commissioners in requiring the 2,000 allotment holders at Wanstead Flats and Epping Forest to surrender their allotments. There may be reasons why the land should not remain permanently under allotment cultivation; if so, it should be the duty of the Commissioners to convince the public of the validity of those reasons; for, so far as we know, the Commissioners are not to be regarded as absolute owners of the land, but rather as trustees administering it on behalf of the public. It may, perhaps, be urged that the permanent establishment of allotments in this district would spoil the amenities or restrict the facilities for the public enjoyment of the ground. This, however is easily ascertained, and if enquiry shows that it is the case, then ultimately the allotment holders must be called upon to surrender their holdings. We confess, however, that until such an enquiry has been held we are sceptical of the cogency of the claim. It may be that the allotments are unsightly—many are; yet that is in itself no reason for disturbance, unless it can also be shown that it is impossible, either by screening them with permanent plants, or by other means, to prevent the allotments from spoiling the landscape. But whether permanent possession may be granted or not, the decision of the Commissioners, to remove the holders at the present time, although it is no doubt in accordance with the rights vested in the Commissioners, is, nevertheless, to be deprecated. For, even though when the allotments were provided a term was set upon them, conditions of high post-war prices offer powerful reasons for extending the term. The allotment movement has by common consent proved so beneficial to the community that pre-war habits of thought should be discarded and the most sympathetic attitude taken towards them. The intervention of the Prime Minister in favour of the holders is therefore a source of satisfaction to all who desire to see allotment gardening encouraged and extended, and we trust that this intervention may be successful not only in extending the time of possession, but

also—unless good proof is forthcoming that permanent allotment in this case are opposed to the general interests—in the continued maintenance of these food-producing plots.

Lecturer in Botany, at Cambridge.—Mr. A. G. Tansley has been appointed University lecturer in botany at Cambridge.

Threatened Disfigurement of the Thames View at Richmond.—The proposal to construct a wharf on the Middlesex bank of the Thames, at Twickenham, for the purpose of loading barges with gravel, is arousing considerable opposition in the Richmond district. The Heston and Isleworth District Council has already entered a protest, as it considers the wharf, with cranes and loading platforms, would be prejudicial to the amenities of the river and would disfigure one of the most charming spots of riverside scenery.

Munificent Gift to the Royal Colonial Institute.—Mr. Hugh R. Dnison, managing director of the *Sydney Sun*, and a Life Fellow of the Institute, has given a donation of £25,000 to the Jubilee Building Fund of the Royal Colonial Institute, because he considers the Institute to be a "means of strengthening the threads which connect the various parts of our Empire together."

R.H.S. Exhibition at Cardiff.—Responding to an invitation from the Lord Mayor of Cardiff, the President and Council of the Royal Horticultural Society have decided to hold a horticultural exhibition in that city on July 6, 7, and 8. It is nearly thirty-five years since an attempt was made by the Society to hold an exhibition in the provinces, during which period its educational exhibition work has been confined to London as a centre, combined with the sending of deputations to provincial societies. Every possible effort is now being put forth to make the Cardiff exhibition a great success and in every way worthy of the leading horticultural society of the world. The President and Council have decided to award the Coronation Cup to the best exhibit in the show. The Wigan Cup for Roses will also be given on this occasion, and the Gordon-Lennox Cup for the best exhibit of fruit.

Gardeners' Royal Benevolent Institution.—The eightieth annual general meeting of the members and subscribers of the Gardeners' Royal Benevolent Institution will be held at "Simpson's," 101, Strand, London, on Thursday, the 22nd inst., at 2.45 p.m. After the business meeting, which will include the reading of the annual report of the committee and a statement of the accounts of the Institution, twenty annuitants will be elected. The chair will be taken by the treasurer and chairman, Sir Harry J. Veitch, at 2.45 p.m. The poll will open at 3 p.m. and close at 4 p.m.

New Railway Rates.—The increase in railway rates for goods, announced by Mr. A. Neal, secretary to the Ministry of Transport, is intended to produce an additional sum of fifty million pounds per year to balance the deficit on the working of various railway systems. The new charges will not be uniform and will vary from 25 per cent. to 100 per cent., with a flat rate of 3d. to 1s. per ton, but the greatest increase is on the small parcels traffic, on which an additional 100 per cent. will be charged. There is no increase on the cost of transit of fertilisers. Market growers will view with apprehension the increase of 100 per cent. on returnable empties, for almost all marketable produce is conveyed in boxes or baskets which have necessarily to be returned to the consignee. The increased cost of transit on fruit is expected to be infinitesimal.

Sowing Forest Tree Seeds by Aeroplane.—With a zeal which is not according to knowledge, one of the Californian State representatives has urged the Forestry Service of his State to commence an afforestation programme in the fire-swept districts of the Sierra Mada range by utilising aeroplanes for the distribution of seeds

* *Journal of Roy. Hort. Soc.*, XLV, 1919, Part I.

over these areas during the rainy season. Anyone with the slightest knowledge of the subject will understand that it would only be a waste of seeds, time and money to attempt afforestation by such means.

Forest Fire Fighting.—The carrier pigeons and equipment of this department of the American Navy, announces the United States Department of Agriculture, has been acquired for service in combating the forest fires that so often become destructive in that country. The pigeons are to be distributed over the forest zones, ready, in cases of need, to carry messages to headquarters.

Late Flowering Shrubs.—A brief article in a recent issue of *Irish Gardening*, on the above subject draws attention to the following plants for the autumn flower garden:—*Elsholtzia Stauntonii*, a native of China, which in September and October bears panicles of small, purplish-pink flowers; *Caryopteris Mastacanthus*, a half-hardy native of China and Japan, and a Verbenaceous shrub, which produces corymbs of bright blue or violet flowers in October; *Esallonia montevidensis*, which generally requires the shelter of a wall, has evergreen leaves and large panicles of white flowers; and *Bursaria spinosa*, also suitable for a wall and white-flowered, with an agreeable scent of Hawthorn.

"Nitric" Peat.—The Italian Government is converting certain types of ammunition-explosive into fertiliser—a new method of turning swords into ploughshares. The method adopted is to dissolve out the nitrate of ammonia and add powdered peat to the solution. As a result a fertiliser named nitric peat is produced, containing 18.8 per cent. of "ash," of which 42.8 per cent. is nitrate of ammonia. The value of the fertiliser is about equal to that of nitrate of soda.

Alfred Cogniaux.—The 5th volume of the *Bulletin du Jardin Botanique de l'Etat à Bruxelles* contains an appreciation of the work of Alfred Cogniaux, the distinguished botanist of the Botanic Gardens, whose death took place during the war (April 15, 1916).

A Varnish Rat Trap.—The use of strong lithographic varnish as a means of destroying rats is recommended by Dr. Howarth, Medical Officer for the City of London. According to the report of an interview with Dr. Howarth, published in the *Times* on January 2, the varnish should be warmed until it will "run" by heating it over a saucepan or other contrivance filled with water, and then spread one-sixteenth to one-eighth of an inch thick on pieces of strawboard or fairly thick cardboard, some 15 inches by 12 inches in size. About an inch margin is left unvarnished and bait is placed in the centre of the board and stuck to the varnish. The trap is placed along a run or near rat holes, and will serve for about four days, after which the board must be scraped and revarnished.

The Proposed Industrialisation of Dartmoor.—The proposal to develop the mineral and other resources of Dartmoor must of necessity arouse apprehension in the minds of those who love the wild and shy beauty of that part of Devon, and Mr. Eden Phillpotts has done well to draw the attention of the public, by means of a letter to the *Times* (on December 27), to the project. What would appear to be a semi-official announcement of the attitude of the Duchy of Cornwall towards the proposal appeared in a subsequent issue of the same journal and should reassure those who feared that the Duchy might be tempted to sell its birthright of beauty for a mess of pottage of industry. On the contrary, if it can be shown that the proposed installation of reservoirs and of machinery can be effected without serious detriment to the amenities of the moorland, and that material prosperity would follow the industrialisation of a part of the area, reasonable opposition would doubtless be withdrawn. The difficulty is, of course, to estimate the permanent effect of the scheme for making Dartmoor a source of electric power. There are, of course, districts in France, as for example in Haute-Savoie, where the industrial exploitation of water power has been conducted with no considerable destruction of the amenities of that beautiful region.

It is a difficult question to resolve, but we can at least hope that in the consideration of this scheme the importance of preserving the spacious beauty of Dartmoor will not be overlooked.

The Tulip City of Canada.—St. Thomas City hopes to become the Tulip City of Canada this year. Altogether nearly 40,000 Tulip bulbs, mostly of named varieties, from Holland, have been planted in various parts of the city. The St. Thomas Horticultural Society has planted over 22,000 bulbs in the boulevards, while the London and Port Stanley Railway Company has filled two immense beds at its new depot. The movement for beautifying the city has been ably supported by a large number of residents, who have planted Tulip bulbs freely in their front gardens, as also have many business houses.

Tropical Agriculture.—On Tuesday, February 3, Sir Francis Watts, Imperial Commissioner of Agriculture for the West Indies, will lecture at the Royal Society of Arts on "Tropical Departments of Agriculture, with special reference to the West Indies." Lieut. Colonel Sir David Prain, Director of the Royal Gardens, Kew, will preside.

The World's Supplies of Wheat.—The important question of the future of Wheat production, with special reference to the Empire, is dealt with at length in the current number of the Bulletin of the Imperial Institute. The annual production of Wheat in the world prior to the war amounted to about 110,000,000 tons, the largest producers being the Russian Empire, with an output of 22,000,000 tons, and the United States, which provided nearly 19,000,000 tons. During the war the production in Europe as a whole, and in Russia in particular, decreased considerably, but outside Europe there was a great expansion. The acreage under Wheat in Canada, the United States, Argentina, India and Australia in 1918 was over 25 per cent. larger than the average acreage for the five years before the war, and it is considered that at the present time there is a sufficiency of Wheat, even without the help of Russia, to meet the requirements of the world. As regards the future also there is reason for optimism. There are vast areas of land suitable for Wheat-growing yet to be opened up in Canada, Australia, South America, Siberia and other countries, whilst the present low average yield of 15 bushels per acre is capable of great improvement. In recent years the increase in the world's production has been due, to a great extent, to an increased yield per acre.

The Linn Park, Glasgow.—This park, acquired in 1919 by the Corporation of Glasgow, is, we learn, to be made accessible to the public shortly. The necessary improvements have been under the consideration of Mr. James Whitton, and it is expected that a beginning will be made with the paths before long. The park is a highly picturesque one, situated on the banks of the river Cart at Cathcart, and comprising many beautiful features. A considerable time will be required in which to develop the park, but it is not intended to interfere with the natural features. A considerable expense will be incurred before the absolutely necessary work can be carried through, and some of the buildings at present on the property will call for a heavy outlay. The Linn Park has been acquired since Mr. Whitton gave his paper on the Glasgow parks at the meeting of the Royal Horticultural Society in March last, so that no reference to it appears in Mr. Whitton's paper published in the *R.H.S. Journal*, Vol. LXV., Part 1.

Horticultural Demonstrations at Aberdeen.—A large and deeply interested company met at Craibstone Farm and Gardens, the experimental station of the Aberdeen and North of Scotland College of Agriculture, on Saturday, the 27th ult., to view a most interesting and educative exhibition of Potatoes, Turnips and other horticultural produce. Not only were there many professional gardeners present, but a pleasing feature was the large number of plotters who attended. The exhibits included 400 varieties of Potatoes, 150 varieties of Turnips, and Carrots in the various stages of decay caused by the Carrot fly, with numerous large, well-formed sound

specimens that had been treated with a specific to combat the scourge. Experts gave a demonstration in the winter pruning of fruit trees and bushes. Professor Hendrick, head of the College, was present and was accompanied by Mr. G. E. Greenhouse, lecturer in horticulture, and Mr. William M. Findlay, superintendent of experiments at Craibstone, to whom the chief credit is due for the fine display. The object of the Potato experiments at Craibstone was to decide the cropping powers of the various varieties. It was seen early in the day, however, that large numbers were similar in this respect. Accordingly, attention had been directed to dividing them into different types and varieties. Of Up-to-Date type there were no fewer than 60 varieties, all similar. Of second earlies, there were two main types—British Queen and Abundance—and of earlies, Duke of York, Epicure, Harbinger and Sharpe's Express. Taking Up-to-Date, for example, it had been found that a large number of the varieties were almost similar in so far as cropping power was concerned. Of the 80 varieties, there were probably 20, or more, any one of which was as good as the other. Any difference which was found to exist was due probably to the source of the origin of the "seed." Mr. Findlay emphasised the importance of the origin of "seed," and said it was a matter which did not receive the attention it deserved. Much interest was taken in the display of Carrots—some stunted and cankered, grown without preventive treatment against Carrot fly, and other, well-formed, sound specimens, to which Mr. Greenhouse had applied his specific. The Carrot fly preventative which gave such good results is composed of one ounce of sheep dip (about a table-spoonful), diluted with one pint of water, and mixed with 14 lb. of dry sand. The mixture was applied twice weekly during the months of May, June and July, at the rate of one handful of the prepared sand to each square yard of ground. Among Apples specially recommended for cultivation in the north of Scotland were Golden Spire, Bramley's Seedling (crimson and green), Prince Albert, Bailie Neilson, Warner's King and Ecklinville.

The "Gardeners' Chronicle" Seventy-five Years Ago.—Propagation by Leaves.—We have never heard of anyone striking Orange trees from their leaves, but we entertain no doubt of the possibility of the thing; for although in this country we rarely attempt to apply the practice to any sorts of leaves except those of a fleshy texture, like Gloxinias, Gesneras, etc., yet Mr. Neumann tells us that the hard and dry-leaved *Theophrasta latifolia* has been struck by him in this way; and what is more, that when the leaf was cut into two halves, the one half struck root as well as the other. It will be obvious to all who know what a *Theophrasta* is, that if such a leaf as that may be made to strike root, there can be no conceivable difficulty in obtaining the same results from the leaves of Oranges, Lemons, Sweet Bays, Rhododendrons, Hollies, or any other sort of evergreen. The difficulty will reside in the varying structure of such plants, and the consequent uncertainty about the peculiar treatment which each leaf may demand. What may be extremely proper in one case will be destructive in another. Experience is therefore wanted; and numerous experiments must be made to determine the details of such a practice. But those experiments will have a better chance of leading quickly to success if the theory of the action of leaves is understood. No plant can form a new individual without first organising a bud. That must be in all cases the first step in the process of propagation. Now buds are known to spring exclusively from the soft pulpy or cellular matter that constitutes the flesh of plants, and not from their solid woody (or bony) parts. This cellular matter is formed by Nature out of organisable fluids produced by the leaves, and by the leaves only, or their equivalent, as in the instance of the green bark of the leafless Cacti. Hence it follows that leaves are really the great agents of propagation in any case, whether layers, cuttings, or other forms of multiplication are had recourse to; for the power possessed by the parts of plants so named is derived immediately and exclusively from the leaves. No wonder, then, that leaves should themselves become agents of propagation.—*Gard. Chron.*, January 11, 1845.

EVERGREEN HEDGES.

For shelter and appearance, evergreen hedges have much to recommend them over those formed of deciduous plants, and require less attention in keeping them trimmed.

March and April are good months in which to plant evergreens for hedges, as the plants start into growth almost at once and escape the severe frost sometimes experienced when they are planted in the autumn.

Thorough preparation of the site is of great value in ensuring success, yet too often slipshod methods are adopted, such as using no manure, or not even digging the soil deeply.

In all cases the ground should be dug deeply or, where it is of a heavy character and retentive of moisture owing to an impervious subsoil, trenched. In the case of sandy soil or light loam, deep digging will suffice. Half decayed manure should be put under the plants and a mulching, 2 inches thick, laid over the surface to a distance of two feet around them. This will serve to conserve the soil moisture during the dry weather, and eventually rotting will encourage the roots to grow near the surface.

For a hedge over 5 feet high, nothing equals *Thuya Lobbii*. The growth is fast and dense, whilst the colour is pleasing: being deep green in summer with a bronzed tint in the autumn and winter. Two trees, eighteen inches high, planted to the yard will quickly form a hedge so much as 20 feet high if required, and at that height need not be more than 2 feet wide if properly trimmed.

What could be better for a shelter to a fruit tree plantation, kitchen or flower garden, or as a screen to hide an unsightly object? *Thuya occidentalis* (American Arbor Vitae) is a good subject for a hedge up to 8 feet high. The deep bronze hue in winter is even more emphasised than in *T. Lobbii*. Plants of this Conifer should be planted 15 inches apart. *Cupressus Lawsoniana*, tinged on the under, and deep green on its upper, surface, is a suitable tree for a hedge 6 feet high. This Conifer should be planted 2 feet apart, as the growth is more dense than in other subjects.

Where variety in colour is required, *Thuya gigantea aurea*, with its rich tint of gold, makes a pleasant picture in the garden, and the golden Arbor Vitae provides a similar colour.

The common or English Yew is much appreciated for the making of hedges, in fact it is the most popular of all hedge plants. A fault is its slow growth, but it has the advantage of great density, is easily kept in order when established, and provides a thorough screen. Plants of a bushy character should be set 1½ ft. apart.

The common green Holly makes one of the best hedges in existence, especially for planting in sandy soil or deep loams. Where the subsoil is heavy in texture the leaves show a tendency to drop prematurely, but this may be obviated by deep trenching. Unless the plants are well selected—bushy below—it often takes a long time to establish a hedge dense at the base; until this is assured the leading shoots should not be allowed to extend upwards. The month of April is the best time to plant Holly, placing the plants 1 foot apart.

Where broad, tall hedges or screens are required, the common Laurel is suitable. The variety *colchica* grows faster than any other and has very large leaves of a dense green colour. The plant will extend as much as 2 feet or even more in one season. For a close, compact, neat hedge, the variety *rotundifolia* is best, as it is so amenable to clipping and, being compact in its growth, it is especially well suited for hedges. In colour perhaps it is a little pale. The Caucasian Laurel is also suitable; the leaves are long, narrow, and dense green. This is, perhaps, the hardiest of all Laurels. The common Laurel possesses many good points, but its worst fault is that it is more subject to injury by frost than any other.

The Portugal Laurel deserves much more attention as a hedge plant than it receives. A hedge of this evergreen 12 feet high and 6 feet in thickness is a notable object in any garden. It is not wise to plant Laurels too

thickly; bushy plants, two to the yard, quickly form a thick hedge. Deeply trenched soil and an abundance of manure favour quick growth, and the manure causes the foliage to develop a deep colour. February and March are suitable months to prune finally, and August for the removal of long shoots of the current season.

The common Spruce Fir, if planted when not more than eighteen inches high and the side shoots pruned carefully, quickly grows into a thick hedge, and has a much better appearance than many persons would think who have not seen this Conifer used as a hedge plant.

Berberis Darwinii, with its rich orange blossoms in the spring, and its dense growth of green foliage, is a most interesting subject for a hedge. Unfortunately the plant is liable to be injured by 25° of frost, which makes gaps, otherwise it is a most desirable plant for a hedge. By putting in one plant of common Holly to two of *Berberis* as a protection, frost may to some extent be warded off. To obtain freedom in flowering, vigorous growth should be encouraged by affording the roots manure, and allowing all growth to remain until flowering is past, in May, when the hedge should at once

be cut. It will at once commence to make new growth, upon which the following season's blossoms will form.

Cupressus macrocarpa and its yellow form grow amazingly fast. These Conifers are well suited for planting as screens, but are liable to be blown down if allowed to extend too rapidly and are also apt to become somewhat thin at the base if allowed to start away too vigorously. To avoid this, remove the point of each tree and plant young specimens 2 feet high.

Where dwarf, compact hedges are required, *Retinospora plumosa* and its golden form are excellent, and so is Box, except, perhaps, that the last is too slow in growth; the *rotundifolia* variety of Box is more suitable than others. Rosemary makes an interesting hedge; the plant grows freely, is amenable to close cutting and thoroughly hardy in any situation.

The common *Laurestinus* is another uncom-

mon subject for the purpose, yet an interesting and desirable one. The foliage is dense, tinted dark green in winter, and the plant is pretty in the spring when in bloom. Common Furze, where the soil is of a sandy character, quickly forms a thick hedge of dark green, much ornamented with its golden blossoms in spring.

The shape in which evergreen hedges should grow is a matter of convenience, but they have, in my opinion, the best appearance when trained with upright sides and flat top, not more than 2 feet wide, except in the case of Laurels, where they should be 3 feet. *E. Molyneux*.

THE ALPINE GARDEN.

ERYTHRAEA CENTAURIUM.

The common *Erythraea* or Centaury is one of our prettiest native plants. It is frequently met with in dry pastures, by roadsides, and on sandy banks. It is extremely variable in habit, some specimens growing only an inch or two



FIG. 6.—ERYTHRAEA CENTAURIUM: FLOWERS PINK.

high, while others are more than a foot tall. The one illustrated in Fig 6 was a foot high and nearly as much across; it was covered with a mass of pink flowers during the summer, when it was one of the most attractive plants in the rock garden. *Erythraea Centaurium* is a biennial or annual and makes an excellent plant for naturalising in the rock garden among other low-growing plants as, owing to its light growth, little harm is caused by its presence in odd corners. In poor, chalky soil larger flowers are produced on small plants, while in richer ground the plants tend to more foliage and smaller, fewer flowers. In contrast to *E. Centaurium*, which prefers full sunshine, *E. Massoni*, the other member of the genus, from the Azores, prefers half shade and rich soil. This species is a perennial and produces a profusion of prostrate stems bearing an abundance of large, pink flowers. W. F.

be closely cut. It will at once commence to make new growth, upon which the following season's blossoms will form.

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The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOL, Gardener to W. R. LYSAGHT, Esq.,
Castletord, Chepstow.

Cattleya—Certain of the winter-flowering Cattleyas and Laelio-Cattleyas, and especially hybrids of *C. labiata*, possess a more or less thick sheath around the flower spike, which occasionally sets up decay at the top of the pseudo-bulb. If the weather is dull and foggy, care should be taken to make a clean cut when removing the sheath, and, at the first signs of decay, dust the affected part with powdered charcoal or sulphur.

Zygopetalum Mackayi.—Plants of this Orchid have passed the flowering stage, and those root-bound may be repotted when the new growth is a few inches high. *Z. Mackayi* is a vigorous rooting subject, and requires a somewhat liberal compost consisting of good, fibrous loam, and a small quantity of partially decayed leaves. For a few weeks after being disturbed the plants should be grown in a light position in the Cattleya house, but when they are re-established a cool-intermediate temperature will suffice. The roots should be given plenty of water while the plants are making their growth. This useful, winter-flowering Orchid may be raised readily from seeds.

Seedling Dendrobiums.—These commence growing early in the year and any necessary repotting may be done when roots are developing at the base of the new growth. Small pans provide the most suitable receptacles, and they should have a wire handle attached to suspend them from the roof rafters. The handles may also be used as a support to the pseudo-bulbs and new growths. The compost should consist of fibrous peat or *Osmunda* fibre and Sphagnum-moss in equal parts. The materials should be made moderately fine, and a sprinkling of sharp sand may be added. Grow the plants in a warm house, and afford water in moderation or the young shoots will invariably damp off.

Temperatures.—The following day temperatures should be maintained in the respective houses:—East Indian or warm house, 65°-70°; Cattleya or intermediate house, 60°-65°; *Odontoglossum* or cool house, 55°-60°. The maximum temperatures should be at mid-day. At night, the temperature may be 5° lower than the minimum given for the day. During cold, frosty weather it is better to allow the temperature to fall slightly below the figures given rather than drive the fires to their utmost capacity. At such times the atmosphere should not be surcharged with moisture.

THE HARDY FRUIT GARDEN

By T. PATEMAN, Gardener to C. A. CUNY, Esq., J.P.,
The Nade, Cadicote, Welwyn, Hertfordshire.

Varieties of Apples and Pears.—I do not advise the planting of many bush Apple trees of the early dessert sorts. A sufficient number only should be planted to furnish fruit that may be consumed direct from the trees. The varieties Irish Peach, Beauty of Bath, Lady Sudeley, Worcester Pearmain and St. Everard may be recommended. Plant freely the following varieties: (dessert) Cox's Orange Pippin, St. Edmund's Pippin, Ellison's Orange, Rival, The Houbton, Ribston Pippin, Belle de Boskoop, Barnack Beauty; (culinary) Lord Grosvenor, Grenadier, Warner's King, Bramley's Seedling, Lane's Prince Albert, and Newton Wonder. Pears that crop well here as bush trees are Clapp's Favourite, Souvenir du Congrès, Marguerite Marillat, Durondeau and Doyenné du Comice.

Pruning.—No hard and fast rule can be laid down as to the proper time for pruning hardy fruit trees. Apples and Pears may be pruned from the end of October until the end of March; it is advisable, however, to complete the work as early in the New Year as possible, and it should be done in fine weather, as the cut surfaces heal

better when it is mild than in times of frost. Use a sharp knife in preference to secateurs, for pruning with secateurs tends to produce bad spurs.

Bush Apples.—The extent to which pruning may with advantage be practised in the case of bush Apples depends very largely on the particular variety. Certain sorts of Apples produce short, stubby side shoots from four to six inches long, terminating in bloom buds. If these are shortened the most fruitful parts of the trees are cut away. The longer side shoots should be cut back to within two or three eyes and the leading growth shortened as required. Leaders on young, established trees may be left 15 to 18 inches long and the cut should be made at a bud pointing in the direction growth is required.

Pears.—Bush Pears on the Quince stock may be pruned as advised for bush Apples.

Preparations for Top Grafting Old Trees.—The shoots of old fruit trees intended to be grafted before the sap is on the move should be cut back in preparation for inserting the scions, which should be obtained from healthy trees. They should be placed temporarily in the soil to keep them moist.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPURNER CLAY,
M.P., Ford Manor, Lingfield, Surrey

Strawberries.—Where suitable accommodation is available and very early berries are required, the first batch of Strawberries was started last month. The night temperature should not be increased for the present beyond 45°, with a few degrees higher by day, as growth will be slow during the first few weeks. The majority of growers start their first plants in the New Year in a house having a temperature of 40° to 45°. If the pots are stood on a bed of sweet, fermenting leaves the gentle heat will stimulate the roots, and prevent early attacks of red spider. Clear the pots of weeds and worms, and ram the soil firmly when it is moderately dry. Little or no water will be needed during the first few weeks, and water should only be given after careful examination shows that moisture is needed.

Pot Vines.—The buds of the earliest pot vines are swelling. Let the forcing of these vines be done, as much as possible, during the day. Renovate the fermenting material if the heat has declined; this will soften the effects of fire-heat, assist the roots of the vines, and also create more natural atmospheric moisture. Pay careful attention to dis-budding, retaining the strongest and best-placed shoots, and leaving the laterals about 20 inches apart on either side. As soon as the leaves are developed, discontinue syringing the vines, damping the paths and other available spaces only. At this stage the temperature may range from 55° to 60° at night, according to the weather, until the vines come into flower, when 65° to 68° should be maintained, with 10° higher by day with sun heat. Examine the pots daily and use tepid water only to keep the roots moist.

The Orchard House.—Where such varieties as Cardinal and Early Rivers Nectarines and Duchess of Cornwall and Duke of York Peaches are grown, pot trees need not be started until the New Year. Select trees in moderate-sized pots which are full of roots, having thoroughly ripe new wood well set with buds. Where a mild bottom-heat can be provided, this will be found a great help to the trees. Stand the pots on other inverted pots, and place leaves and litter, which have been prepared previously, around them. Start with a low temperature of 40° to 45°, with plenty of air.

Figs in pots and those planted in borders should be started, and here again gentle fermenting materials are of great advantage. The temperature of the house may range about 50°—a little more or less, according to the weather. Syringe the trees with tepid water once or twice daily as required, and sufficiently early in the day to allow them to dry before night. At all times avoid hard forcing in severe weather; rather let the temperature decline a few degrees than use an excess of fire heat.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenhoe Castle, near Cardiff.

Hotbeds.—Where brick-pits or frames are available for the early forcing of vegetables on hot-beds, the latter should be made forthwith. Oak and Beech leaves mixed with long stable manure offer the best materials for the purpose as they maintain warmth for a long period. The leaves and dung should be in a moist state and used in the proportion of two parts of leaves to one of stable manure. Turn the material on alternate days: in about ten days it should be in a suitable condition for making the hot-bed. Where frames are to be used, the hot-bed should be at least three feet high in the front and four feet at the back; it should exceed the width and length of the frame by at least 2 feet 6 inches. The quantity of hot-bed material to use in brick-pits will be governed by the depth of the latter. Proceed to make up the bed by putting the material in layers and beating it very firmly with the back of a digging fork. Place the frame in position and finish the work by placing nine inches of fine soil inside the frame. Put the lights on and when, after a few days, the bed does not feel unduly hot, sow the crop.

Potatos. Tubers for forcing should now be planted in heated pits, choosing those that have been prepared for early planting, and with strong sprouts. Select a dwarf-hauled, early variety, and plant the tubers in rows 15 inches apart, allowing a distance of 10 inches between the sets in the rows. Do not plant deeply; more soil may be added when top growth is three to four inches high. By planting shallowly, the tubers will derive full benefit from sun-heat.

Asparagus.—Asparagus will force readily now, but it is important that strong roots not younger than three years be used. Place the crowns closely together on a hot-bed and cover them with three inches of light soil. Given a light position and a temperature of 60° to 65°, shoots should be ready for cutting in three weeks.

General Remarks.—The present is a suitable time for selecting the positions and space for the various crops it is proposed to grow during the coming season. Root crops should not be grown in recently manured ground, but in soil that has been well manured for a previous crop. By this time the seed catalogues are in the hands of most gardeners, and growers should choose varieties that are known to do well in their locality. A few novelties and varieties which have attracted special notice in the past season should be included in the order.

THE FLOWER GARDEN.

By SIDNEY LIGG, Gardener to the Dowager Lady
NUNBURNHOLME, Warton Priory, Yorkshire.

Dianthus Garden.—Mice and slugs are very partial to species and varieties of Dianthus, therefore it is necessary to be always trapping these vermin. It is also advisable to wage war on sparrows, and the careful cultivator will, when introducing new loam, see that it is not infested with wireworms. Those constructing a Dianthus garden and not having sufficient plants to complete the planting, may utilise any of the following subjects for the time being without misgiving:—*Lavandula*, in variety, *Santolina incana*, alpine *Auriculas*, *Veronica incana*, *V. spicata*, *Statice Bonduellii*, *Narcissi*, *Tulips* and bulbous-rooted *Freeses*. On no account use creeping and spreading plants like *Cerastium tomentosum* as, when established, they are difficult to eradicate and are a constant source of trouble.

The Spring Garden.—During the war the trees in many Pine copses were felled. Some of the copses were comparatively small and included Birch trees (*Betula alba*). Those having a copse of this kind in the near vicinity of the pleasure grounds, with the majority of Pines cut out, will have the foundation for a spring garden. Once the pathways and necessary clearings have been made the soil will need to be thoroughly trenched, liberally manured and, in some in-

stances, mixed with suitable materials to render it porous. It is not advisable to plant a large variety of subjects at the commencement; one genus—for instance, the Primulaceae—is preferable to many. Species of Primula, Tulipa, Narcissus, Scilla and Anemone are ample to start with and will give a very effective display; other genera may be introduced to extend and prolong the season as and when required. The large bunch-flowered Primroses show to best advantage when massed. Of Tulips, those of the Gesneriana type are most suitable. Scilla sibirica and Anemone apemina should be planted on rising ground and in such a manner as to provide a sheet of colour. With regard to tones, it is wise to let the light and soft shades predominate. The sombre colours may be utilised in the background and then gradually toned off towards the more open stretches, to pure white. Remove all decaying branches from the trees at the present time and clear away any rubbish that may have accumulated. Should fungi attack the trees, use soluble paraffin specific to eradicate them. If jackdaws prove troublesome, erect a cage four feet high and use a wide-meshed net at the top. Place some corn in the trap and the birds will pass through the net but cannot fly out of the cage.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Hippeastrum.—The earliest plants of Hippeastrum may be started at any time now, selecting those plants that were repotted and started early last year as these matured early last season. It is important in growing early Hippeastrums to select plants that do not require repotting. The soil should have several soakings to wet the material thoroughly; then turn the plants out of their receptacles and correct faulty drainage. Remove some of the top soil, top-dress the roots with rich compost, and plunge the pots in a hot-bed with a bottom heat of 70°. The plants should require very little water until the flower spikes begin to develop and some leaf growth is made. If infested with mealy bug, the bulbs should be carefully cleaned, and a sharp outlook be kept every day for stray bugs. Within the next few weeks the collection should be examined, and all plants that require it shaken out, cleaned and repotted, using as small pots as possible. They will then be ready for introducing into heat as required. Last year's seedlings, at present in 60-sized pots, will, sometime during the present month, require a shift into 48-sized pots; very young seedlings should not be dried off until they attain flowering size.

Richardia.—A batch of plants of Richardia Elliottana should be potted in 6-inch or 7-inch pots, according to the size of the tubers. As the roots develop from the crown of the tuber, they should be covered with some two inches of soil, and not left exposed, as is sometimes done. The pots should be little more than half filled with compost, to allow room for top dressings as the plants develop. A temperature of 55° is suitable at the commencement of forcing. Exercise great care not to overwater the plants until they have made fresh roots and top growth, but when growing actively give them liberal supplies of water and frequent applications of diluted liquid manure. R. Pentlandii and R. Mrs. Roosevelt should be afforded similar treatment. Plants of R. africana in full growth and showing flower should be given liquid manure and soot water liberally at least twice a week.

Sweet Peas.—Seedling Sweet Peas raised from seed sown last autumn should be ready for placing in their flowering pots, after which they should be grown in a cool, light house near to the roof-glass. Water them with extra care until the roots become re-established in the soil.

Chrysanthemums.—As good, strong cuttings of Chrysanthemums become available, continue to propagate according to requirements. Large flowers have a certain value in bold floral arrangements, but they are not nearly so popular as the more decorative blooms, including the many beautiful single varieties.

ORCHID NOTES AND GLEANINGS.

BRASSO-LAELIO-CATTLEYA TONIE.

A PRETTY flower, of good size, of this new cross between B.-L. C. Cooksonii (B.-L. Mrs. M. Gratrix × C. Dowiana) and C. Venus (Dowiana × Iris) is sent by the raisers, Messrs. Charlesworth and Co., Haywards Heath. C. Dowiana aurea being also in the parentage of C. Iris, this Orchid is represented in the cross three times, and shows its influence strongly in the new hybrid, practically to the exclusion of B. Digbyana in B.-L. Mrs. M. Gratrix, which only appears in the slight fringe on the lip and the very firm substance of all the segments. The sepals and petals are bright chrome yellow with an orange shade. The lip is rosy-ovate with orange base. The fleshy column is white.

CATTLEYA PORTIA.

I enclose a photograph of a plant of Cattleya Portia which flowered here recently, when it carried no fewer than eighty-four flowers. I think it may interest you and your readers. C. Portia, you will remember, is the result of crossing C. Bowringiana with C. labiata. C. Kench, Broomhill Gardens, Spratton, Northampton.

SEASONABLE INDOOR FLOWERS.

So far as is consistent with accommodation and individual requirements, those responsible for the decoration of show houses should cultivate as great a variety of plants as possible. A list of a few showy subjects that might be more generally cultivated may be useful at this time. Coleus thrysoideus, Pycnostachys Dawei and Eranthemum pulchellum, are all beautiful blue-flowered subjects that are in flower during winter or early spring, while Erlangea tomentosa, Eupatorium macrophyllum, E. Rafillii (see Fig. 9), and E. lanthimum are useful plants, with lavender blue or purplish flowers. There are also a few Acacias that are so useful as to be worthy of more general cultivation; these are A. platyptera, A. longiflora, A. longiflora var. mucronata, A. hastata and A. Baileyana, which, if planted out in a conservatory, will give a wealth of sprays suitable for cutting about Christmas time.

Jacobinia chrysocephala should be grown for December flowering, as there is no other subject in that month that surpasses it in its wonderful orange-yellow colouring. Foreman.

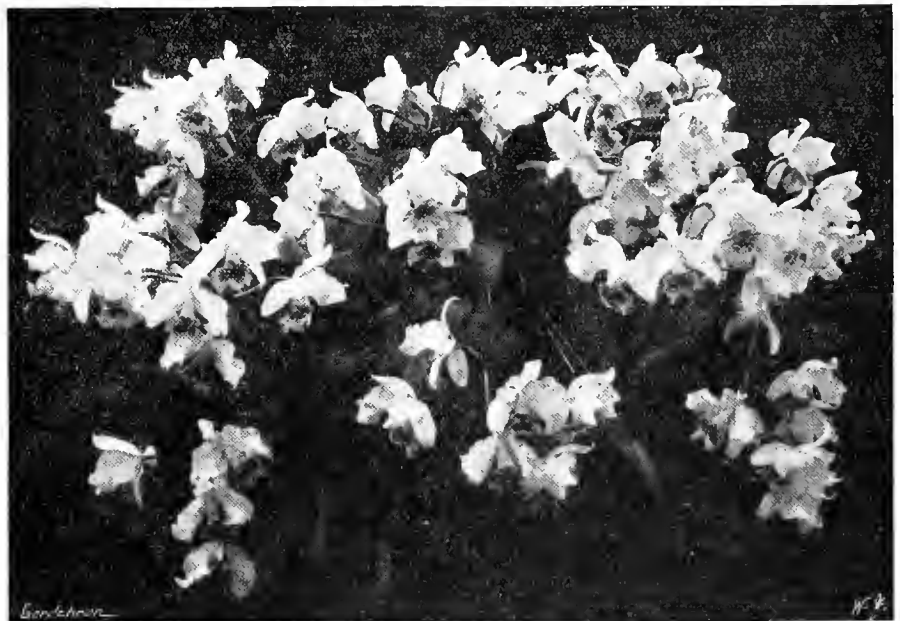


FIG. 7.—A FINE PLANT OF CATTLEYA PORTIA WITH EIGHTY-FOUR FLOWERS.

NEW HYBRIDS.
(Continued from November 8, 1919, p. 240.)

Name.	Parentage.	Exhibitor.
Brasso-Cattleya Benvenuto	C. Maggie Raphael alba × B.-C. Ilene	Baron Schröder.
Brasso-Laelio-Cattleya Golden Casket	B.-C. Mrs. J. Leeman × L.-C. Neltthrop Beauclerk	H. T. Pitt, Esq.
Brasso-Laelio-Cattleya Thylene	B.-C. Mrs. J. Leeman × L.-C. Thylene	Hassall and Co. Sanders.
Cattleya Imperial	Hardyana × Luogene	Flory and Black.
Cattleya Peter	Peetersii × labiata	Sir H. S. Leon.
Cattleya Pittportia var. Lady Leon	Mrs. Pitt × Portia	Sir J. Colman.
Cattleya Quebec	Mrs. Percy Bigland × chacoensis alba	G. Hamilton Smith, Esq.
Cymbidium Argo	Winnianum × erythrostylum	G. Hamilton Smith, Esq.
Cymbidium Ceres	FAusoni Cravenianum × insigne Sanderae	H. T. Pitt, Esq.
Cypripedium Boston Beauty	Dante magnificum × insigne Chantini	Mrs. W. R. Lee.
Cypripedium Charmion	R. Ashworth × Alephades illustris	Mrs. W. R. Lee.
Cypripedium Hestia	Cyclops × Lady Dillon	Sanders.
Cypripedium Lewisian	Fulshavens × insigne Harold Hall	Sanders.
Cypripedium Peacock	Baron Schröder × Her.	S. Gratrix, Esq.
Cypripedium Royal Oak	Dreadnought × Reginald Young	Keeling.
Cypripedium T. Albat	Leucanum × Harri-Leemanum	Charlesworth.
Cypripedium Thias	Desdemona × Beckmannii	Baron Schröder.
Laelio-Cattleya Bellatrix	L.-C. Bella alba × C. Faldia alba	Flory and Black.
Laelio-Cattleya St. Bernard	L.-C. Rubens × C. labiata	Sir Geo. L. Holford.
Laelio-Cattleya Golden Light	Luminosa × Golden Fleece	P. Smith, Esq.
Odontida Carola	Oda, l'Empereur × Oda, Diana	R. G. Thwaites, Esq.
Odontida Livina	Oda, Thwaitesii × Odm. amabile	R. G. Thwaites, Esq.
Odontida Saturn	Odm. Argon × Oda, Sanderae	R. G. Thwaites, Esq.
Odontoglossum Argon	Edwardo × amabile	W. B. Fossey, Esq.
Odontoglossum Asion	Solen × Aquifania	Charlesworth.
Odontoglossum Carola	Queen Alexandra × Scottianum	Sanders.
Odontoglossum Colombia	Margal Sander × splendulum	Flory and Black.
Sophr-Cattleya Venus	S. C. Diana × C. Venus	Pantia Ralli, Esq.
Sophr-Laelio-Cattleya Rainbow	C. Dowiana × S. L. C. de Vere Beauclerk	

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PLANTING ROSES.

THE late autumn—from October to Christmas—is recognised by rosarians as the planting season, and seldom have I known an autumn in which the condition of the soil has been so excellent for planting from start to finish. For the operation of making or remaking beds for Roses, the ground can seldom be too dry for the comfort of the gardener, and October provided us last year with almost ideal conditions in this respect, while even the rains of November failed to render the condition of the ground more than pleasantly moist, and produced none of that stickiness in which we almost fear to tread the ground too recklessly lest we should puddle the compost. There has been this past season no excuse for failure to secure firm planting; one might almost have used a ramming iron without evil results, and whatever the future may have in store for us we may rest assured that, if ordinary care has been exercised, a good start has been made in the first operation of the rosarian's year.

It is the more to be regretted that stocks of Roses have, of necessity, been somewhat short. No one need be surprised at this for the Roses we buy now must have been budded in 1918 when many skilled hands were absent from the nurseries, and the stocks must have been planted a year earlier, 1917, when most of the ground in the country was sadly needed for food production. The weight of the war was heavy on us in both these years and when we now feel at greater liberty to plant what we would, we find the position is rather that we must plant what we can.

Nevertheless, owing to the enterprise of our nurserymen, and perhaps through improved methods of preparation and communication they may have learnt during the war, I fancy that both I and my fellow gardeners have fared better at the hands of our tradesmen than most of us dared to hope at the beginning of the season; while it may be that having to plant what we can rather than what we might have selected may have proved less evil than we anticipated, and certainly in some cases that have come under my notice has introduced our friends to Roses of merit that they might not have thought of for some years, if at all, had their choice been entirely free.

The renovation of Rose beds, and the construction of new beds, are rightly regarded as the first operations of the Rose grower's year, which thus begins in the autumn. It is often surprising how long a well-made bed of Roses will last in good condition with little more attention than the annual manuring in spring and the sprinkling of a little lime or basic slag on the soil in autumn. I have a few beds that have been planted for over 15 years without renovation and they are still doing well; the plants make annually nearly as good growth as when they were first planted, while in other cases only 3 or 4 years after planting has elapsed before renovation was called for.

A question one is often asked is "My Roses have been planted so many years, ought I to dig them up?" and without further information it cannot be answered satisfactorily. So long as Roses continue to flower well and make good growth it is unnecessary to disturb them, but so soon as the plants are seen to be failing, investigation becomes necessary, and the cause should be sought for. The failure may arise from many causes. Sometimes pruning has been neglected and the plants fail to make good growth from the base. Sometimes, without apparent reason, the plants appear to be getting prematurely old, and in other cases the same thing may occur through attacks of some fungus. Again, the plants may appear healthy and make fair growth and yet flower badly, in which case either unsuitable soil or the invasion of tree roots may be suspected. Finally, owing to neglect or failure to apply effective remedies, the plants may have been seriously crippled by mildew, red rust or black spot diseases. In all these cases renovation of the bed and replanting are usually desirable, though in the last case (tripping through mildew, etc.) if the trouble is not very bad, it may be deferred in order to attempt, in another season, more effective and early treatment.

The nature and extent of the renovation of the bed that is called for before replanting must, to a great extent, depend on the cause of failure. There are two classes of ground fungi that are very pernicious to Roses, and they may occur either separately or in combination.

One is a fungus that attacks dead wood and also invades the living plants. Where this is present it may be seen in the form of white hyphae permeating the soil, attacking and whitening bits of dead wood and prunings which have fallen into the soil. If the Rose plants are attacked the white fungus will be found running down the outside of the roots and little blackish fungi, like small toadstools on stalks, about 1½ inches long, may, in autumn, often be seen growing out of the Rose plant near the collar. The other fungus is not, I think, perceptible to the eye in the soil, but it attacks the bark of the Roses, specially near the collar or in standards near the seat of grafting, though the injury may also occur at other points on the stem. The injury may be little noted at pruning time and if the attacked stem is allowed to remain it grows for a short time at the top, but the new shoots wilt and die before long, a mishap often erroneously attributed to frost. In both cases if the attacked plant is pulled or dug up it will be found to smell strongly of Mushrooms.

Where either of these fungous invasions have occurred the soil should either be removed and fresh compost substituted (which is doubtless the safest plan), or at least the ground should be thoroughly trenched, all affected soil deeply and carefully buried and the top filled in either with fresh soil or with that from the bottom of the bed. So far as I can judge the fungus does

not usually extend very far below the surface, and I fondly hope may be killed by burial at a sufficient depth.

Where no fungus is present and renovation is chiefly required because of the age of the beds, less drastic treatment is necessary, but trenching the beds is often advisable, and if top spit is procurable from a fresh site, there is nothing better for incorporating with the upper foot of soil, together with a moderate quantity of old manure. If some ingenious person would invent a method of slightly roasting soil without burning it, it would solve many difficulties in renovation. Dressings of basic slag are of great value in Rose growing, but this fertiliser should not be used when fresh animal manure is dug into the bed, or much of its value will be wasted. Basic slag is essentially a manure for autumn application, because it is slow in action. It has several advantages for our purpose. It contains phosphates to feed the plant and harden the tissues against disease; it contains lime to sweeten the soil and render its food constituents more readily soluble for the use of the plant; it does not appear to do harm to Roses as do many artificial manures if the proper proportions are exceeded. As a convenient guide to the amount to be used a 5-inch potful may be spread over about 4 square yards, or a 2 yard run of a border 6 ft. wide.

In the making of new Rose beds regard must be had to the nature of the soil, and this varies so much that only general directions can be useful. Where the land is gravelly, or chalk comes near the surface, excavation to at least 2 feet 6 inches in depth and filling with good soil is essential. There are, however, many soils where after drainage has been attended to little more than trenching the ground and working in well-decayed manure seem necessary.

The best Rose soils seem to occur near the outcrop of clay formations, and so where the staple is pure clay the addition of material to make the soil lighter and more porous is desirable. *White Rose.*

PLANT NOTES.

LUCULLA.

THE *Lucullas*, when in flower, are amongst the most attractive of plants, equally on account of their exquisite perfume as for their attractive appearance. Flowering in mid-winter they are doubly welcome, and deserve a wider cultivation than they receive even if they are rather difficult to manage. Plants succeed best when planted out in a light position in a house where the minimum temperature does not fall below 40°.

In favourable conditions they grow fairly quickly and form good bushes (see Fig. 8). The roots should not be placed in very rich compost, and the plants seem to do best when the root room is restricted to about three feet. The compost should consist of fibrous loam, peat, leaf soil and sand. Cuttings root easily and quickly provided they receive proper attention, and are placed in suitable propagating cases. Soft cuttings taken immediately after flowering usually do best. The cuttings should be about three inches long, and fairly strong. They should not be allowed to flag. Cuttings inserted singly in small, well-drained pots filled about two-thirds with soil give the best results. The soil should consist of sand, peat, and flaky leaf-mould in equal parts. Cuttings strike more easily when the pots are dipped rather than when watered overhead, but a slight spray occasionally is advisable. When roots are formed the plants grow rapidly, and should be potted on as required, giving a small amount of additional space at each potting. Large plants may be grown in pots, but planting out gives better results although occasionally

one sees fine specimens in pots or tubs. In any case ample drainage is necessary. After flowering the plants may be pruned rather severely, and they should be kept rather dry at the roots until they are started again usually about the end of March—when they will grow rapidly. The shoots may require pinching once or twice during the summer, according to the growth made, and the plants will flower freely from the wood thus formed. Unfortunately the flowers are useless for decoration when cut, as they fade almost at once. The two species grown are *L. gratissima* and *L. Pincana*, the former being the better known.

L. gratissima has rose to flesh-coloured, rather fleshy and very sweetly scented flowers with tubular corollas. The inflorescence forms a terminal cyme, having upwards of twenty flowers. The leaves are elliptic acuminate, very shiny in healthy specimens, smooth above and hairy below, especially on the veins. The species is a native of the temperate Himalayas, and is figured in *Bot. Mag.*, tab. 3946. It was introduced in 1823. *L. Pincana* has much the same habit of flowering, but the flowers are white to pinky white. Some authorities consider this to be the more fragrant of the two species, but I consider the former to have the more scent. The most prominent character which distinguishes it from *L. gratissima* is the raised hump or callus at the junction of the corolla lobes. The habit of growth is not so upright, and the leaves are rather smaller, tough and leathery, and have more numerous veins, and quite smooth surfaces. This species is figured in *Bot. Mag.*, tab. 4132. Both species are in flower in the Temperate House at Kew. H. L.

THE FERNERY.

FERNS AS DECORATIVE PLANTS.

WHILE some Ferns require a comparatively high temperature and a liberal amount of atmospheric moisture, there are numbers that will thrive in an ordinary greenhouse or conservatory. They are, among other uses, available for the decoration of the dwelling house. Many conservatories attached to town houses do not receive a gleam of direct sunshine and, with no heating arrangement, are ill suited for the cultivation of plants in general. In such houses a selection of hardy Ferns may be depended upon to provide a satisfactory display. Even though many of the plants are deciduous there are, however, fair numbers of evergreen Ferns, which will, even in the depth of winter, form an interesting feature.

In many gardens, especially in those attached to small suburban houses, there is often a damp shady corner where scarcely anything will thrive, except hardy Ferns. The more vigorous kinds should be chosen for such a purpose; the densely crested and depauperated varieties are not suitable. In my small back yard in London, dignified by the name of a garden, a narrow border which never received a glimpse of sunshine was always attractive from the collection of hardy Ferns which there found a congenial home.

A visit to Covent Garden Flower market in the early morning will serve to show the extent to which greenhouse Ferns are grown by some firms. Large numbers of these plants are disposed of in thumb pots at a very cheap price, and, in addition, decorative specimens of different sizes are exceedingly numerous. The bulk of these market Ferns are grown in the regulation market pot five inches in diameter.

A selection of greenhouse Ferns that will remain for some time in the dwelling house without injury is as follows:—*Adiantum cuneatum*, *A. decorum*, *A. fragrantissimum*, *A. fulvum*, *A. gracillimum*, *A. Mariessii*, *A. Williamsii*, *Asplenium bulbiferum*, *A. Colensii*, *A. Nidus*, *Blechnum occidentale*, *Cyrtomium falcatum*, *Davallia billata*, *D. canariense*, *D. dissecta*, *D. Lawsoniana*, *D. tenuifolia*, *Doryopteris palmata*, *Lastrea aris-tata variegata*, *L. lepida*, *L. patens*, *L. varia*, *Lomaria ciliata*, *L. gibba*, *Nephrodium molle*, *Nephrolepis exaltata*, and plumose varieties, *Oncium japonicum*, *Osmunda palustris*, *Polypodium aureum*, *P. glaucum*, *P. Mayii*, *P.*

Schneiderianum, *Polystichum triangulum*, *Pteris argyrea*, *P. Childsii*, *P. cretica*, *P. cretica albidinervis*, *P. cretica major*, *P. heterophylla*, *P. leptophylla*, *P. longitoba Mariessii*, *P. scaberula*, *P. serrulata*, *P. serrulata cristata*, *P. tremula*, *P. tremula Smithii*, *Todea africana*, and *Woolwardia orientalis*.

At one time peat was considered necessary for the successful culture of Ferns, but now a-days it is not used to anything like the same extent as formerly. There are a few Ferns for which peat is essential, but most of the decorative kinds, such as are enumerated above, will thrive equally well in a compost where leaf-mould

NOTES FROM IRELAND.

THE 90th annual general meeting of the Royal Horticultural and Arboreal Society of Ireland was held at the offices, 5, Molesworth Street, Dublin, on the 17th ult., Mr. A. V. Montgomery, in the absence of the President, the Marquis of Headfort, presiding.

The Hon. Secretary, Sir Frederick W. Moore, reviewed the year's work, as stated in the report, which, with the balance sheet, was unanimously adopted. The Chairman, while regretting a deficit on the year's working, con-



[Photograph by C. P. Raffell]
FIG. 8.—*LUCILIA GRATISSIMA* FLOWERING IN THE TEMPERATE HOUSE, KEW.

takes the place of peat. A mixture of equal parts of loam and leaf-mould with a liberal sprinkling of rough silver sand will suit most Ferns. The plants should, as a rule, be potted in spring before the young fronds are produced, but in the case of young specimens of quick growing kinds they may be shifted into larger pots whenever necessary.

Direct sunshine during the greater part of the summer is harmful to Ferns, but the plants are not, as a rule, shaded so densely now as was the practice at one time. When the roots are potbound an occasional dose of liquid manure or some other stimulant is beneficial to many Ferns, provided it is applied in a weak form. U

gratulated the members on the solvency of the Society. Col. Sir Frederick W. Shaw, D.S.O., and Mrs. George Mitchell, were elected to fill vacancies on the council.

The series of lectures under the auspices of the R.H.S. of Ireland, which, by permission of the Royal Dublin Society, are being given in the Theatre, Leinster House, Dublin, will be resumed on January 14, when Mr. J. W. Pesant, of the Royal Botanic Gardens, Glasnevin, will treat on Herbaceous Plants, to be followed on January 21 by Mr. W. S. Irving, Department of Agriculture (Ireland), on Apples, and concluding on January 28 with Professor G. H. Pethybridge's lecture on Fungous Pests.

Mild, wet periods have prevailed since the wintry snap which was accompanied by rather heavy snowfalls, and the rainfall has been copious enough to avert the city's water famine which threatened at mid-autumn. Situated away in the wilds of Wicklow, where the Vartry river is impounded in huge reservoirs, the purity and softness of Dublin's water supply is a boon only perhaps appreciated when failure, or shortage, is imminent.

The annual general meeting of the Drummond Benefit Association for Land Stewards and Gardeners, held at 58, Dawson Street, Dublin, on December 19, 1919, disclosed a very satisfactory balance sheet, cash to credit, chiefly invested in trustee securities, amounting to £2,941 3s. 6d., while £215 had been distributed in benefit grants during the year's working under review. Facts and figures shown, too, at the winding-up of the Irish branch of the Vegetable Products Committee, under the auspices of the R.H.S. of Ireland, for supplying fruit and vegetables to the Navy, justified the unanimous opinion that its working had been eminently satisfactory, the generous support given to the project throughout Ireland resulting in over £5,000 having been subscribed, enabling extensive purchases of market garden produce, apart from considerably more than 1,000 tons of produce given from private gardens during the 4½ years' working. *K., Dublin.*

FLORISTS' FLOWERS.

CHRYSANTHEMUMS.

THE average grower has not the time nor the means to specialise in the cultivation of large blooms of Chrysanthemums for exhibition; still, many commence the year with the determination to have finer blooms than before, as in their season few flowers are brighter, and none of the grower more interesting than Chrysanthemums. December is a favourite month for propagating, but in the north, where conditions are not favourable to early growth, January-rooted plants are preferable. The best cuttings are shoots about three inches long that spring from the base. Certain varieties are shy in producing suitable shoots for cuttings, and stem shoots have sometimes to be made use of. The chief objection to these is their tendency to produce a flower-bud after being potted for the first time, but they invariably grow satisfactorily and prove but little the worse. In order to prevent the check that usually follows the potting of newly-rooted cuttings, they should be inserted singly in small, well drained pots filled with a mixture of good loam, leaf mould and sand.

The less important varieties may be placed around the sides of 5-inch pots. A propagating frame resting on a closed bench covered with shingle, in a cool greenhouse, affords an ideal rooting place, and if a little air is admitted daily after the first week, there will be little or no danger of loss through damping. Very little water beyond that given immediately following the insertion of the cuttings is necessary, and if they show signs of flagging, spraying lightly overhead when closing the light will usually suffice to make them turgid again. When able to withstand the atmosphere of the house, the plants should be removed to a shelf near the roof glass. Throughout their whole existence plants intended to produce large blooms should grow steadily, but during the time they are indoors the less fire-heat employed the better, as cool, airy conditions are necessary to obtain short-jointed, sturdy growth. Neglect, and particularly in regard to watering during the early stages, must be guarded against, as it does not end with outward signs of distress; the roots suffer also, the fleshy ends wither and until others form growth is practically at a standstill. Over-watering is no less an evil, resulting in sickly foliage and sappy growth. Blooms of superior finish can only be obtained from well-ripened shoots, and to this end culture should be directed.

New varieties are available in greater number than for some time, and certain of them bid fair to become popular, but, owing to circumstances connected with the war, the usual ex-

hibitions have not been held in many places.

The following sorts introduced last season are of outstanding merit:—Mrs. G. S. Cotterill, yellow; Rear Admiral Keyes, deep rose; and Peace, a yellow sport from the giant, white, incurved-Japanese Louisa Peckett. In favourable districts all these Chrysanthemums will give good blooms on natural first-crown buds provided they are strong plants, but in the north it is almost impossible to secure buds early in August unless stopping is done about the middle of May, according to the vigour of the plants. Amongst novelties of 1918, Mr. Lloyd George is probably the finest crimson variety yet sent out. The blooms are of average size, and the florets droop perfectly, showing no reverse a fault many so-called crimson Chrysanthemums have. Creditable flowers result from a natural break the first week in June, although with an early start second crowns may be obtained. H. Medhurst is worthy of a place in collections for its unique colouring—cream, edged mauve; the plant is an easy one to grow. General Petain, pink on white ground, has already a fair number of admirers; it is a fine incurving Japanese sort that only needs good treatment to have it in perfection. This variety does not develop early buds, and should be stepped in April. Of earlier introduction, among those seen to advantage on last season's exhibition boards is Princess Mary, a yellow sport from the well-known white Queen Mary. If anything, it is an easier grower than its parent, in that late buds do not show the "eye" so much. In poor growing districts both these Chrysanthemums give the best results when stopped in mid-April, as the buds require a longer period than most in order to develop full centres. W. Rigby, yellow, and its popular parent, Mrs. G. Drabble, require similar treatment. Sir E. Letchworth is a handsome bloom of rosy purple colour, with a silver reverse, and should be in every collection. The blooms are good from either first or second crown buds. Equally as easy to manage is the beautiful pink Mrs. Algeron Davis, and the massive, incurved Rear Admiral, rosy cerise, with bright gold reverse. Golden Champion is a variety that will not lack favour for some time, for besides being a flower of exceptional quality, the plant is easy to grow, the buds opening to perfection on natural first crowns. Edith Cavell, chestnut bronze, is a desirable variety in every respect, and the blooms should develop from second crown buds; the yellow sport from W. Turner, Mrs. H. Tysoe, is another variety of merit. Others of equal value include Daily Mail, Mrs. C. Edwards, Undaunted, and Mrs. M. Sargent. Blooms of the true incurved varieties are very effective in large vases. They open more readily than the Japanese sorts, consequently the buds do not require taking quite so early in the season. In addition to the older varieties the pure white Percy A. Dove, the golden yellow Miss D. Adams, and the soft pink Mrs. S. Dove are all to be recommended. *F. T.*

SEEDLING POTATOS.

MR. CHITTENDEN did well to ventilate the question of Seedling Potatos in his note on this subject (p. 264, vol. LXVI.). I think he is right in stating that one of the principal causes of the multiplicity of names which we find given to Potatos that are practically similar in every respect is the fact that the farm to which the new name is given is a seedling. That is, undoubtedly, the reason why there are so many synonyms amongst Potatos. Mr. Chittenden wrote:—"That seedlings similar to existing varieties do arise, has been denied." Denied by whom? Surely not by those who have had any experience at all in the raising of seedling Potatos and other plants.

Certain varieties of Potatos set seed freely to their own pollen. It is my experience that the progeny of such are worthless; the worker, on such a basis, is in a vicious circle and is simply recreating sorts that are already in cultivation or are really indistinguishable from the seed parent. For too many alleged new Potatos have gained recognition because they were seedlings, and, as such, were supposed to be new varieties. Thus the multiplicity of names,

and a consequent list of "too much alike varieties." The Potato does not stand alone in this respect, and many instances could be given of a variety of names applied to forms that are practically similar in the cases of other plants. Take Grapes. The late Mr. J. A. Pearson, of Lowdham, one of the ablest raisers and growers of the Vine, wrote thus of Muscat of Alexandria—"It reproduces itself with little change from seed. Its various varieties, Bowwood Muscat, Charlesworth Tokay, Tynningham Muscat, and some twenty others are so similar that I never yet met a man who could separate the bunches of fruit when mixed, or could name the plants with any certainty." The same thing may be said of Black Hamburg and other Grapes. Let us, again, take the Green Gage Plum. It reproduces itself from seed and, in consequence, it has at least forty synonyms. So, too, does the German Prune, and it also has a large list of synonyms. Perdrigon White and St. Catherine are also examples of Plums that come fairly true from seed. Bavay has recorded a similar experience with Cherries, and the same remarks apply to Apricots, Raspberries, and Peaches.

Decaisne, one of the most famous of French pomologists, gives a notable instance in the case of the Pear, and his experience is confirmed by that of Lerdy, an equal authority. Scott, of Yeovil, probably, the greatest pomological authority of Britain, gives a typical example in the case of the Apple. He describes the Apple Jacques Lebel, raised at Amiens, as practically identical with Blenheim Pippin. With Apples, however, as with other things, instance after instance could be given of seedlings being practically identical with the seed parent.

I know that many Potato raisers are a law unto themselves on the question of new varieties, but they cannot afford to neglect the experiences of those who work with other subjects. The same natural laws govern the reproduction of Potatos as govern, say, Apples, Pears, Plums, or anything else in the vegetable kingdom. Many Potato experts ignore those laws altogether, and others have no knowledge of them. No one, surely will treat any Potato expert seriously when he denies that seedlings arise which are similar to existing varieties. The whole trouble in regard to the Potato arises from the fact that there are too many raisers and distributors who are not familiar with sorts that are already in commerce, and with sorts that have already been discarded. The mere fact that a Potato, or any other plant, is a seedling is no proof that it is distinct from sorts already raised. *George M. Taylor, Edinburgh.*

SILVER LEAF ORDER OF 1919.

THE Board of Agriculture and Fisheries, by virtue and in exercise of the powers vested in it under the Destructive Insects and Pests Acts, 1877 and 1907, and for the purpose of preventing the spreading in England and Wales of the pest known as Silver Leaf, which is destructive to fruit trees and bushes, do order as follows:—

DEFINITIONS.

The expression "the Board" means the Board of Agriculture and Fisheries; the expression "Plum trees" includes any stock, stool or cutting of a Plum tree; "Inspector" means an Inspector of the Board or of the Local Authority; "The Local Authority" means as regards any District the Local Authority for the District under the Diseases of Animals Act, 1894.

DESTRUCTION OF DEAD WOOD.

(1) The occupier of any premises on which Plum trees are growing shall cut off and destroy by fire on the premises all the dead wood of each Plum tree before April 1 of each year, and where the dead wood in the trunk of any such tree extends to the ground, the occupier shall grub up and destroy by fire upon the premises the whole of any such tree, including the roots, before that date.

(2) An Inspector may at any time serve a notice on the occupier of any premises requiring him to cut off and destroy by fire within the

CULTURAL MEMORANDA.

**SOUVENIR DE LA MALMAISON
CARNATION.**

YOUNG layers of *Souvenir de la Malmaison* Carnations are ready for shifting into larger pots. This type of Carnation should still be kept on the dry side, both at the roots and top growth. In winter they should be given no more water at the roots than will suffice to keep them from shrivelling, and without a spot on the foliage. This dry treatment is the only preventive of and the only cure for "rust," and in conjunction with these conditions a little fresh air should at all times be admitted to the house and the water pipes kept only just warm. The frequent recommendations to spray with all sorts of supposed remedies is just so much waste, and worse than useless, in that spraying with fluids provides the conditions for the propagation of disease. *Furman.*

picture, particularly when the weather is bright and the plumes are reflected in the water. As Mr. Turner remarks, a background of evergreens serves to enhance their beauty as well as provide shelter—a very important matter here. Another fine colony is planted in the lowest part of the pleasure grounds on sea level and within a few yards of tidal water. These occupy a considerable area and usually arrest everyone's attention when first seen, and when in flower they present a veritable forest of plumes. It is with considerable difficulty that a person is able to get between the clumps. On the rising ground above them is a large tree of *Cupressus macrocarpa*, which, together with *Cryptomerias*, *Araucarias*, and other Conifers, backed by the stately Silver Firs, makes a fine setting.

Planted in company with the last mentioned Pampas group are several plants of *Arundo conspicua*, which, though not so stately, I am inclined to think are for several reasons much more desirable. They send up their plumes



FIG. 9.—*EUPATORIUM RAFFELLII*: FLOWERS PURPLE.
(See page 15.)

PAMPAS GRASS.

THE illustration and note on Pampas Grass on p. 315, *Gard. Chron.*, vol. LXVI., have induced me to contribute a few remarks on this highly decorative plant. At Fota, the Pampas Grass has been largely planted, with excellent effect, and there is considerable variety in the colouring and the form of the plumes. In one part planted on an island in company with the New Zealand Flax and close to the water's edge, specimens of Pampas Grass make a charming

long before the Pampas Grass does, and retain their beauty long after them.

At the time of writing (January 11) the Pampas Grass clumps present quite a bedraggled appearance, owing principally to the unusually wintry weather experienced here during the month of November, and heavy rains and gales in December, but the *Arundo*s are still quite attractive, and pure in their colouring. Isolated clumps of the Pampas Grass which have become very dirty and unkempt may be easily cleaned by setting fire to them. *E. Beckett, Fota Gardens, Queenstown, Co. Cork.*

time specified in the notice and on the premises any dead wood of any tree or bush of any kind whatsoever on the premises on which there are visible fruiting bodies of the fungus *Stereum purpureum*.

POWER OF ENTRY.

Any Inspector of the Board or of the Local Authority upon production, if so required, of his appointment, may for the purpose of enforcing this Order enter any premises on which he has reason to suspect that a tree or bush to which this Order applies, is or recently has been, and examine any such tree or bush thereon and any wood cut from any such tree or bush.

SERVICE OF NOTICES, &C.

(1) For the purpose of this Order a notice shall be deemed to be served on any person if it is delivered to him personally or left for him at his last known place of abode or business, or sent through the post in a letter addressed to him there; and a notice purporting to be signed by an Inspector shall be *prima facie* evidence that it was signed by him as an Inspector.

(2) A copy of every notice served under this Order shall be sent to the Board by the Inspector by whom the notice is signed.

NOTIFICATION OF ORDER.

This Order shall be published by the Local Authority in accordance with any directions given by the Board.

OFFENCES.

Every person shall be liable on conviction to a penalty not exceeding ten pounds who:—

- (1) fails to comply with the requirements of this Order, or of any notice served under this Order, or
- (2) wilfully obstructs or impedes any Inspector in the exercise of his powers or duties under this Order.

COMMENCEMENT AND APPLICATION OF ORDER.

This Order shall come into operation on the first day of January, 1920, and the Order shall apply to England and Wales. This Order may be cited as the Silver Leaf Order of 1919.

FOREIGN CORRESPONDENCE.

THE COLOURING OF NEW IRISES.

REGARDING the blending of colours in Iris, alluded to by R. S. Sturtevant, in *Gard. Chron.* of December 20, 1919, p. 309, I may state that the variety *Eldorado* raised and sent out by Messrs. Vilmorin-Andrieux and Co. in Paris some time before the war, is the one showing the most perfect blending of blue and yellow, not half and half, such as blue standards with yellow falls, as in many varieties of the variegata section, but both standards and falls pass gradually from golden yellow at the claws to deep lavender at the top of the divisions. As its name implies, it is indeed a golden variety to which no other approaches.

I take this opportunity to point out to amateurs that among the new varieties this firm is sending out this year the three following have flowers much larger than the largest previously known sorts. Readers will judge from the measurements given for both falls and standards, taken when flat:—

Magnifica (macrantha).—Falls deep violet, very long and pendent, 11 cm. x 6 cm.; standards clear lavender, very broad, 10 cm. x 8 cm.; this extraordinary flower is thus more than 6 inches from the top of the standards to the top of the falls, in its natural shape.

Ballerine (pallida).—A self, pale blue lavender with extraordinarily broad divisions and one of the most sweetly scented of Irises; stem sometimes over 4 feet high; falls, 9 cm. x 7 cm.; standards, 8 cm. x 9 cm.

Ambassadeur (squalens).—Somewhat like *Jacquiesiana* with velvety purple falls, 10 cm. x 5 cm.; and light, smoky purple standards, 9 cm. x 5½ cm. This variety is not so remarkable for its size as for its great substance, the falls being so thick as to stand almost horizontally, and the stem, as stiff as a stick, reaching sometimes nearly 4 feet. *S. M., Paris.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Grapes in Unheated Houses.—Mr. Taylor's experience in growing Grapes in unheated houses for the past 8 or 10 years is certainly interesting as well as educational, but the point is, would it be sound practice to grow either Muscat of Alexandria or Madresfield Court in an unheated house as a private or commercial undertaking? I agree that the bunches from an unheated house would be safer cut, bottled and stored away from the fog and frost. Even then a flow-and-return hot water pipe, with a valve to regulate the heat, is useful in the Grape store to counteract the effect of a damp atmosphere during continued wet weather or following a sudden thaw. As one of the causes of the splitting in Madresfield Court is an excess of water over sugar in the composition of the pulp, this might, in a large measure, be prevented by growing the vines in warm and comparatively dry conditions, strict attention, of course, being given to the size, composition, and treatment of the border, which should have a perfect system of drainage. *J. R. A.*

The Himalayaberry (see p. 312).—Mr. J. Bintner and myself were responsible for the pruning and tying of the plants in the Rabi collection at Wisley in 1918. I remember the Himalayaberry particularly as it was such a very strong grower, and I suggested to the Superintendent that laterals of new growth should be retained as far as possible and tied their full length. The shoots needed a lot of tying and twisting about, which aroused the Superintendent's interest and curiosity, for without his sanction I could not have done anything of the kind on my own initiative. I saw the results were fully justified in early September when I last visited Wisley. It is gratifying to read, on p. 312, Mr. James Hudson's remark on the Himalayaberry, "It has fruited finely at Wisley." *C. A. Jardine.*

Potato McPherson.—I was very pleased to see a favourable notice of this excellent, second early Potato, contributed by Mr. E. Molyneux, in *Gard. Chron.*, p. 318, December 20, 1919. I have grown it for several years, and my experience of it coincides with that of your able correspondent. It is extensively grown in this locality, where its excellent quality when cooked is highly appreciated, during September and October, at which period it is at its best, although we have been using it up to the present and find it quite good. On the low ground skirting the shores of the Firth of Tay, where the soil is very sandy, it is sometimes affected by what is known here as "sand ring," especially if the tubers are left too long in the ground; but a mile or two inland, where a fine loamy soil prevails, tubers of splendid quality are obtained, quite free from this blight. To those who are unacquainted with "sand ring," I may state it is a dark ring in the flesh of the tuber, about a quarter of an inch or so under the skin, and quite unobservable until the tubers are cut. As will be readily understood, it detracts from the appearance of the Potato when cooked, and lowers its quality. The McPherson Potato was raised in this district about 15 or 16 years ago by a market gardener named Colin McPherson, who for a number of years carried on business at Braefoot, Carnoustie, Forfarshire. Regarding its parentage, I can learn very little further than that it was raised from seeds taken from a Potato fruit picked at random, and even the name of the variety producing the seed is unknown. It is undoubtedly an excellent second early variety, well worthy of extended cultivation, and it is highly gratifying to learn that it has reached so far south as Swannore. If the variety cannot be obtained elsewhere, Messrs. D. and W. Croll, or Messrs. Thyne and Sons, Dundee, may be able to supply it. *W. Little, Carnoustie.*

The White Poplar in Surrey.—Though often confused with the Grey Poplar there are numerous trees of the White Poplar (*Populus alba*), scattered about over a wide area of Surrey, and numbers of them are of considerable size. For instance, there are three

trees 50-70 ft. high at Barwell Court; one at Holm Lacey 60 ft.; one at Pyrford 60ft.; two trees in a meadow outside Ockham Park, 70-75 ft. high, of wide spread and splendidly furnished with branches; and two trees near Coumbe Lane, west of Wimbledon, 60 ft. high. All the above are female trees; indeed, I have not observed a male tree, large or small. One of the characters by which the species can be recognised is the white wool on the undersides of the leaves, especially on young trees and on vigorous summer shoots. I was examining a dried specimen in a private herbarium and felt almost certain that it was *P. canescens*, because the leaves were perfectly devoid of the white wool. I discovered a round-headed tree, however, in a meadow near the banks of the Thames, below Weybridge, which had few or no strong summer shoots, and the ovate or rounded leaves were quite glabrous before the end of September. The shape and condition of the leaves at that date make the tree very difficult to distinguish from the Grey Poplar. The best time to see such trees, however, is when they are in bloom at the end of March or early in April. At that time the female catkins are only $\frac{1}{4}$ to 1 in. long, but the yellow or golden bracts are so conspicuous that the identity of the tree can be established at a considerable distance away. The female catkins of *P. canescens* are much longer and the bracts are brown or grey-brown, according to age. *J. F.*

October Dessert Apples.—I think the list of Apples by *R. L. C.* in *Thompson's Gardener's Assistant* may be termed an authoritative one. In Vol. II. of the 1907 edition, page 91, September Beauty is described as: "Dessert, Oct.-Nov., tree compact and well branched. Growth slender, forming a good bush on a dwarfing stock, and fine trees on the free stock, though slower in coming into bearing. Fruit small, round or slightly conical, yellow and red, richly flavoured when ripe." Perhaps this description may have escaped the notice of *E. M.* He can also see a tree growing in the gardens at Rotherfield Park, Alton, Hampshire, which is much nearer to him than Wisley. *E. E.*

—It would require too much of your valuable space to reply in full to Mr. E. Molyneux's letter in your issue of December 27 last. By the tone of his letter it would appear I had taken up an unreasonable attitude in referring him to the R.H.S. Gardens, Wisley, instead of giving him the details he requires myself. Which is best; to tap information at the source, or take it secondhand? The R.H.S. Gardens at Wisley are mainly for the purpose of experiment, and a source of knowledge to all the R.H.S. Fellows, who include all ranks of horticulturists. At Wisley will be found the best equipped Horticultural Laboratory in the world. Mr. Chittenden, the Director, is one of the foremost scientific and practical horticulturists of the day, and Mr. Wright, the Superintendent, a man of the old school of gardening, is one of the few who has assimilated the scientific and practical knowledge evolved in the last twelve or fifteen years. Is it therefore unreasonable of me to refer Mr. Molyneux to this source of information, and what are the R.H.S. Gardens for but to supply such information? I may say at once that the authorities at Wisley are most courteous and obliging to all inquirers. If Mr. Molyneux is candidly seeking information with a view to its use, to refuse to be influenced by the proved facts in regard to infertility in Apple blossoms is not the right frame of mind to go about it. He should read Mr. Cecil A. Hooper's article on the subject on page 278, *Gard. Chron.*, 1919. Mr. Molyneux convinces me that he is an expert cultivator, but one requires resource in obtaining the newer varieties of Apples from the nurserymen and a certain amount of adventure in giving a trial to a method of culture which may be quite new to some individual. As regards raising the soil 6 inches, which system is the more likely to nourish the plant successfully (especially through a drought)—planting at 2 ft. 6 in. deep or at 3 ft deep? And would not the deeper soil keep the roots cooler than the shallow soil? *C. A. Jardine.*

Women Gardeners—I think that possibly the readers of *The Gardeners' Chronicle* may be

glad to know of a Bureau through which they can get into touch with women gardeners. I therefore write to state that the Women's Service Bureau, which was opened in the first week of the war, has been the means of advising, training and placing over 59,000 educated women in suitable work of a varied character. This Bureau is not an Employment Agency in the ordinary sense of the term, as it is maintained entirely by voluntary donations from the members of the Society, and from those who benefit by its services. Particular care is taken in the selection of suitable applicants, and all classes of workers are supplied, both for indoor and outdoor work, including gardening. *P. Strachey, Secretary, 58, Victoria Street, S.W.1.*

Brassica Crosses.—I have read and re-read the letter appearing in your issue of January 3rd, signed *Cauli Rabi*, but I can hardly think the writer wishes his remarks to be taken seriously. In the first place, there is not the slightest difficulty in obtaining crosses between Cauliflowers of the Autumn Giant type and Kohl Rabi; indeed, so easily do they intercross that tons of Cauliflower seed have been spoiled by the inexperience or carelessness of growers who have planted seed crops of Cauliflowers and Kohl Rabi in too close proximity. As many of your readers know, practically all Cauliflower seed of the Autumn Giant class is grown in the south of Italy, but, unfortunately, Kohl Rabi seed is also grown there for Continental houses. It would be almost impossible for anyone to make a really exhaustive series of trials of Italian Cauliflower seed in any season without finding certain parcels absolutely spoiled and useless from intercrossing with Kohl Rabi. Of course, it is equally true that trials may be made of many stocks of Italian Cauliflower seeds which show no trace of intercrossing with Kohl Rabi, but this is only another way of saying that the best of Italian seed growers know the necessity of keeping their plantations of Cauliflower and Kohl Rabi at great distances from one another. Your correspondent writes: "Undoubtedly the plant will prove an acquisition, as a Cauliflower is provided for table and the rest of the plant is suitable as food for stock," but all practical seed growers know that there is no possibility of developing a pure Cauliflower head except by rigorously excluding any possibility of cross-fertilisation with any other type of Brassica, for the slightest intermixture at once gives wild and coarse-looking heads which are broken up with leaflets, badly discoloured, and absolutely useless. Experience has also taught us that the many types of Brassicas which now form such valuable culinary plants can only be brought to perfection and kept true to type by complete isolation during the flowering and seeding stages. In Volume XXXVIII. of the *Linnean Society's Journal* is published a paper by myself entitled, "Brassica Crosses," and this paper gives a detailed report of crosses made between many of the Brassicas, showing exactly how far Mendelian ratios were obtained, and how far it was possible to perpetuate new hybrid forms of commercial value. *Arthur W. Sutton, Reading.*

Spade v Plough for Potato Cultivation.—I have read with interest Mr. Wm. Taylor's remarks re "Spade versus Plough." I think it would be almost impossible to scrap the plough entirely for the cultivation of Potatoes, but I quite agree that the fork is the best cultivator, although its use would entail very considerable labour for 20 or 30 acres of Potatoes. A method I have practised with success is to follow the plough with a single horse-hoe converted into a grubber. This means that all the smooth, hard surface of the sub-soil is broken up, leaving a good depth of workable soil, and I have grown some fine crops of white and red Belgian Carrots therein. I feel sure such a method is good for any root crop. *C. L. Branson, Youlbury.*

Hosts for the Mistletoe.—To the very interesting list of hosts for the Mistletoe given in your issue of January 3rd, by *J. F.* (see p. 9), may be added the Medlar and, as a variety, the Red Thorn (single), which are among the 20 or 30 host plants grown here since my garden was planted in 1905. Each year I have taken berries from the Christmas decorations and rubbed

them on to sundry plants, mostly Apple trees. As a result I have growths for every year up to 1915, since when, strangely, none has developed, unless those of 1918 are starting high up on a Poplar; but as the growth, after a year, is microscopic, I have not used a ladder to hunt for it. Trees on which repeated attempts to establish Mistletoe have so far failed are the Glastonbury Holy Thorn and Double Flowering Crab. The clusters of Mistletoe from my earliest efforts would now be over a yard through had they not been severely cut for Christmas decorations and to spare the hosts. The berries are usually abundant, perhaps because male flower-sprays are placed among the female blossoms. The sowing has been done in the middle of or late in January. Boughs also have been placed in the trees and Mistle thrushes have evidently assisted. Except in the case of the Arbutus, the Mistletoe fruit takes longer to mature than that of any other of our common shrubs. The berries on our exposed north-east slope, 560 feet high, are hardly white by Christmas and probably not fully ripe till two to four weeks later. The blossoming has varied from January 15, in 1916, to March 16 and 25 in 1917, for the male and female blooms respectively. *J. Edmund Clark, Purley, Surrey.*

In addition to the list of "Hosts for the Mistletoe" mentioned by *J. P.* I may add *Acacia* and *Medlar*. A *Medlar* carrying Mistletoe was removed last winter when reorganising our kitchen garden. The Apple espaliers here are literally smothered with Mistletoe. A few years ago a bush Apple was planted in place of an older tree that died, and the third year afterwards a shoot of the parasite was seen sprouting from a clean, smooth branch. We had also two strong bunches of Mistletoe growing on *Roses*, and numerous *Hawthorns* are full of Mistletoe. *Geo. W. Stacey, Chorleywood Cedars.*

SOCIETIES.

CHESTER PAXTON.

The Annual Meeting was held in the Freemasons' Hall, Chester, Mr. N. F. Barnes, Eaton Gardens, presiding. In his annual report for 1919 the Honorary Secretary, Mr. G. P. Miln, said:—"It is gratifying to find that there has been a considerable increase in the membership of the Society during the past year. This goes to prove that interest in the Food Production movement is still being maintained in the city and neighbourhood. The exhibition of vegetables and fruits held in the Town Hall in September, at which allotment holders and cottagers were represented by nearly 300 entries, was a great advance on anything of its kind ever held in Chester, and it is proposed to hold another exhibition of a similar nature in the Town Hall during the coming autumn. A series of lectures held during the early spring was well attended and much appreciated by allotment holders and others interested in horticultural subjects."

Mr. T. Gibbons Frost, J.P., who was cordially thanked for his continued interest in the Society, was re-elected President, Mr. N. F. Barnes was unanimously re-elected Chairman of Committee, and Professor Newstead, F.R.S., was re-elected Consulting Naturalist. On the express wish of the Chairman and Committee, Mr. G. P. Miln, J.P., consented to retain the offices of Secretary and Treasurer.

EAST ANGLIAN HORTICULTURAL CLUB.

The annual meeting of the East Anglian Horticultural Club was held on Wednesday, the 10th ult.; Mr. W. Shoosmith presided.

The 30th annual report of the committee, presented by the secretary (Mr. G. Todd), was very satisfactory. A number of the members who had been away in connection with the war had rejoined the club, and the numbers were steadily increasing by this means, and also by the request for admission by many of the allotment holders of the district. The series of lectures and essays had proved a source of much educational value, and the coming year looked like being equally successful. Most points at the monthly competitions were secured by Mr. C. H. Fox.

The finances are in a very sound condition, as was evidenced by the auditors' report, as presented by Mr. H. Perry.

Mr. W. Shoosmith was unanimously elected to the position of president. Mr. C. H. Fox was elected acting vice-president. The office of librarian was again accepted by Mr. J. C. Abel. Mr. G. R. Todd was again elected to the office of secretary. The auditors were re-elected, as was also the treasurer.

Mr. H. Perry was asked to undertake the office of representative of the club on the committee of the Norfolk and Norwich Horticultural Society.

Obituary.

J. J. Neale.—We regret to have to record the death of Mr. J. J. Neale, of Oxtou, Kenton, Exeter (formerly of Penarth), who died of peritonitis, following an operation for appendicitis, on the 29th ult., at the age of 65 years. Mr. Neale was one of the oldest, most observant, and enthusiastic of our Orchid lovers, many of his plants, and especially the rare species, having been recorded and some of them illustrated in *The Gardeners' Chronicle*. He was also fond of insectivorous plants and others with uncommon characteristics. He leaves a widow, six sons and three daughters, all of whom are interested in Orchids, so that, we understand, the important collection will be retained and cared for by the widow as by her late lamented husband, who found his chief recreation in his garden and Orchid houses.

Freeman Fox.—We deeply regret to learn that Mr. Freeman Fox passed away on 22nd ult., at the age of 72 years. He had been ill for some time but his end came somewhat suddenly. He was head gardener to the late Mrs. Penn, of the Cedars, Lee, for about 50 years. He was a very active member of the Lee, Blackheath and Lewisham, Horticultural Society, as committee-man, trustee and vice-chairman; and of the Kent County Chrysanthemum Society he was hon. secretary for the last 15 years of its existence, and it was mainly due to his efforts that the society was able to continue its activities. He was a keen supporter of the Royal Gardeners' Orphan Fund, and always collected funds for this gardeners' charity at the annual exhibitions with which he was associated. Mr. Fox leaves a widow and daughter, to whom we extend our deepest sympathy. The funeral took place on the 29th ult., at Hither Green Cemetery.

TRADE NOTE.

In view of the resumption of trade with the Continent on the part of English nurserymen, the Board of Agriculture is prepared to issue Phylloxera certificates, where required, if the usual conditions are fulfilled. These certificates are issued under the authority of regulations imposed by Continental countries, which state that: "No Vines must be grown on the nursery, or within 22 yards of it, unless they are separated by a sufficient obstacle, such as a wall, or by being grown in pots, to prevent the passage of the roots into the nursery." Where the nursery has been inspected during the year, and the usual fee of £2 2s. for the nursery inspection has been paid, no further charge will be made, except the nominal fee of 5s. per 100 for the issue of the certificates. If an inspector has to make a special visit to the nursery to satisfy the Board that Vines are not present, a fee of £2 2s. will be charged, but this will include the issue of 25 certificates. Where the Board, as the result of inspections in the past, already have the information that Vines are not usually grown in the nursery, the certificate can be issued without further inspection. In these cases the fee will be 10s. 6d., to include the issue of 25 certificates in any one year, or £1 1s. per 100 in the same year. Applications should be made to the General Secretary, Board of Agriculture and Fisheries, 72, Victoria Street, S.W.1.

MARKETS.

COVENT GARDEN January 7th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit : Average Wholesale Prices.		Average Wholesale Prices.	
	s. d. s. d.		s. d. s. d.
Apples (English)		Bananas, singles	25 0-35 0
—King of the Pippins per ½ bus.	3 6- 6 0	Chestnuts	40 0 —
—Cox's Orange Pippin per ½ bus. best	8 0-11 0	—Italian	40 0 —
—Bleuheim Pippin per bus.	8 0-12 0	Grapes Alicante	2 0- 2 6
—Newton Wonder	5 0- 8 6	—Special per lb.	3 0- 4 0
—Lane's Prince Albert, per bus.	6 0- 8 0	—Gros Colmar	2 4- 3 0
—Bramley's Seedling per bus.	6 0- 8 0	—Special	3 6- 4 6
—Brit. Columbian		—Muscat, per lb.	10 0-12 0
Cox's Orange	360	—Canon Hall	10 0-12 0
Pippin	300	—Almeria per barrel	20 0-40 0
Jonathan	250	Lemons 300's	24 0-25 0
Grime's Golden	200	—Oranges—	
Nonesuch	19 0-20 0		
Melintosh Red	18 6- —	Nuts—Brazilis(new)	
New Town	20 10- —	per cwt.	125 0-130 0
Orégon New Town	20 10	Cob Nuts, per lb.	1 2- 1 4
—Nova Scotian—		Walnuts 25 kils.	50 0-55 0
—G. Russets	40 0-45 0	Pears—	
—Wagners	12 0-14 0	—Boure D'Anjou	30 0-35 0
—Ribston Pippin per case	16 0-18 0	—Californian	
		Winter Nuts case	40 0-45 0
		Pineapples each	3 0- 8 6

Vegetables : Average Wholesale Prices.		Average Wholesale Prices.	
	s. d. s. d.		s. d. s. d.
Asparagus, English,		Parsley, per doz.	
Devon 50's	6 0- 7 6	bunches	3 0- 4 0
Middlesex	8 0- —	Parsnips, per bag	7 0- 8 0
Devon 100's	22 6-25 0	Peas Guernsey,	2 0- 3 0
—French (Paris Green)	14 0-16 0	per lb.	2 0- 3 0
Beas Guernsey,	4 0- 5 0	Potatoes, per cwt.	11 0-14 0
per lb.	4 0- 5 0	Radishes, per doz.	1 6- 2 0
Beets, per bag	10 0-11 0	Rhubarb Forced	
Cabbage, per doz.	2 0- 2 6	per doz.	2 6- 3 6
Carrots, per bag	8 0- 9 0	Seakale per punnet	2 0- 2 6
Cauliflower, per doz.	4 0- 8 0	Spanish Onions	
Celery, per fan, (12 heads)	3 6- 4 6	4 tier	22 0- —
Cucumbers, per doz.	24 0- —	5 tier	24 0- —
Garlic, per lb.	1 6- —	Sprouts, per bag	28 lb. 5 0- 6 0
French Lettuce, per doz.	3 6- 4 0	Tomatoes, English,	
Herbs, per doz. bun.	4 0- 6 0	New Crop	
Mint, per doz. bun.	15 0- —	per doz. lbs.	10 0-12 0
Mustard and Cress, per doz. punnets	1 3- 1 6	—Jersey	
Mushrooms, per lb.	2 3- 3 0	Best, per bundle	32 0-36 0
Onions, per cwt.	10 0-14 0	Turnips, per bag	0 15- 9 0
		Watercress, per doz.	0 9- —

REMARKS.—Business continues satisfactory in volume in most sections. English Apples show a slight increase in quantity as well as a tendency to improve in price. Some particularly fine fruits of Bramley's Seedling and Newton Wonder are to hand. British Columbian Apples are arriving in excellent condition, and remain in firm request. Hot-house Grapes continue good, and business and prices show a slight advance. The market is practically clear of Pines, but shipments are expected at the week-end. Tomatoes are in short supply and good marks of selected fruits are in exceptional demand. English Asparagus does not sell well, and must be considered cheap relative to other forced vegetables, for which the demand continues good. Cauliflowers are in plentiful supply, and reasonable in price. Prices for green vegetables are slightly firmer, as are also those for good Potatoes.

Plants in Pots, &c. : Average Wholesale Prices.

(All 48's, per doz. except where otherwise stated.)		Average Wholesale Prices.	
	s. d. s. d.		s. d. s. d.
Aralia Sieboldii		Cyclamen	
48's per doz.	10 0-12 0	48's per doz.	24 0-30 0
Asparagus plumosus	12 0-15 0	Erica hyemalis—	
—Sorengeri	12 0-18 0	48's per doz.	24 0-36 0
Aspidistra, green	48 0 72 0	Erica Melanthera,	
Begonia Gloire de Lorraine		per doz.	30 0-36 0
48's per doz.	24 0-36 0	Marguerites white	18 0-24 0
Azaleas, each	3 0- 5 0- 7 6	Palus Kentia	24 0-36 0
Cacti per tray		—Cocos	15 0-18 0
12's, 15's	5 0- 6 0	Poinsettia	
Chrysanthemums		48's per doz.	24 0-30 0
48's per doz.	24 0-30 0	Roman Hyacinthus	
Cinerarias, per doz.	15 0-24 0	on bulbs,	7 0- 8 0

REMARKS.—A few coloured Azaleas are the newest subjects in this department. There are also a few pots of large Hyacinths and Roman Hyacinths, which are put up in boxes of 12 and 24 bulbs. Many stands are empty, and business is quiet in this department.

Ferns and Palms: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Adiantum	Nephrolepis. In
cuneatum 48's	variety. 48's
per doz. .. 12 0-15 0	32's .. 24 0-36 0
— elegans .. 15 0-18 0	Pteris, in variety
Asplenium 48's per	48's .. 12 0-21 0
doz. .. 12 0-18 0	— large 60's .. 5 0- 6 0
— 32's .. 24 0-30 0	— small 60's .. 4 0- 4 6
— nidus 48's .. 12 0-15 0	— 72's per tray of
Cyrtomium 48's	15's .. 3 6 4 0

Cut Flowers, &c.: Average Wholesale Prices.

s. d. s. d.	s. d. s. d.
Azalea white, per	Lapagerias, per doz.
doz. bun. .. 12 0-15 0	blossoms .. 5 0- 6 0
Camellias per doz.	Lilium longiflorum,
6 0- 7 0	per bunch .. 18 0-20 0
Carnations per doz.	Lilium speciosum
blossoms, best	album per bunch
American var. 7 0 8 0	— rubrum per bun
Chrysanthemums—	Lily of the Valley
— White, per doz.	per bunch .. 2 0- 3 0
blossoms .. 4 0-10 0	Narcissus, Soleil
— Yellow .. 4 0-10 0	d'Or, per doz. bun
— Pink .. 8 0-15 0	Grand Primo .. 10 0-12 0
Spray White	Orchids per doz.:
per doz. bun. 30 0-48 0	— Cattleyas .. 24 0-30 0
— Coloured	— Cypripediums
per doz. bun. 30 0-48 0	per doz. .. 5 0-10 0
Daffodils, Single,	Pelargonium, dou-
per doz. bun. 24 0-30 0	ble scarlet, per
Freesia, White	doz. bun. .. 15 0-24 0
per doz. bun. 10 0-20 0	Richardia (Arums),
French Flowers—	per doz. blms. 9 0-12 0
Anemones, Pink	Roses per dozeo
per doz. bun. 6 0- 9 0	blossoms—
— Lilac white	— Liberty .. 12 0-15 0
per doz. spray 4 0- 6 0	— Melody .. 10 0-18 0
— Marguerites yellow	— Mme. Abel .. 9 0-12 0
per doz. bun. 5 0- 6 0	— Chatenay .. 12 0-18 0
— Mimosa, per pad	— Ophelia .. 10 0-15 0
20 0-25 0	— Richmond .. 2 0- 2 6
— Narcissus, Paper	Roman Hyacinth
White per pad 15 0-18 0	per doz. spikes
Soleil d'Or, per	— Tulips, White, .. 2 6- 3 0
doz. bun. 4 0 5 0	— Scarlet .. 2 6- 3 0
— Ranunculus, Carmine	— Violets Single
per doz. bun. 12 0-18 0	large per doz.
— Scarlet .. 12 0-15 0	bun. .. 8 0-10 0
— Violets,	— Ruby .. 5 0- 6 0
— Parma, per bun 10 0-12 0	
Heather, white	
per doz. bun. 10 0-12 0	

REMARKS.—With the exception of Roses, all other flowers from home growers appear to be sufficient for the demand, and their prices are considerably lower. Daffodils are now available in increasing quantities, and white Freesias are the newest subjects offered, and are also more numerous and of better quality. Small consignments of flowers are arriving from the Channel Islands, consisting of single Daffodils, Freesias, Narcissus, Grand Primo, N. Soleil d'Or, single Violets and Smilax. The last has a ready sale owing to the shortage of Asparagus and Adiantum (Maidenhair) Fern. Large quantities of Paper White Narcissus arrived from the South of France last week, but many baskets were in a very poor condition, and were sold at low prices. Many packages of yellow Marguerites and Mimosa also suffered in transit. A few baskets of Anemones and Ranunculus are arriving in good condition. Supplies from abroad were not so heavy this morning, and prices are again higher for best quality flowers.

APPOINTMENTS FOR THE ENSUING WEEK.

- MONDAY, JANUARY 12. United Horticultural Benefit and Provident Society. Committee Meeting.
- TUESDAY, JANUARY 13. Royal Horticultural Society's Committees meet.
- WEDNESDAY, JANUARY 14. East Anglian Horticultural Society Meeting.

GARDENING APPOINTMENTS.

- Mr. G. G. Hales, for the past two and a half years with His Majesty's Forests, and previously Gardener and Bailiff to H. L. PEARSON, Esq., Meopham Park, as Gardener and Bailiff to W. H. J. BARNARD, Esq., Stone House, Reigate, Surrey. (Thanks for P.O. 2s. for R.G.O.F. Box.—Eds.)
- Mr. W. H. Wain, formerly Gardener to Lady Scott, The Yewes, Windermere, as Gardener to E. J. WOOLLEY, Esq., at West Thorpe, Bowdon, Cheshire
- Mr. A. G. Inkpen, three years on war service, previously at Enville Hall and Blankley Hall Gardens, as Gardener to Mrs. PAGE CROFT, Panham, Hants, Ware, Hertfordshire.

CATALOGUES RECEIVED.

- DOBIE & Co., Edinburgh.—Seeds.
- STEWART & Co., 13, So. St. Andrew Street, Edinburgh.—Seeds.
- CLIBRANS, Altrincham.—Seeds.
- SYTON & SONS, Reading.—Seeds.
- ED. WEBB & SONS, LTD., Wordsley, Stourbridge.—Seeds.
- ALFRED DAWKINS, 408, King's Road, Chelsea, London, S.W.10.—Seeds.
- FOREIGN.
- LEONARD SEED COMPANY, 226-230, W. Kinzie Street, Chicago.—Seeds (wholesale)

ANSWERS TO CORRESPONDENTS.

BEEBLE ATTACKING CHRYSANTHEMUMS.—E. A. S. F.: The insect attacking the Chrysanthemums is a plant bug, not a beetle. By means of its sharp, piercing proboscis it sucks the sap of the plants and might easily cause "blindness." When the plants are not in flower spray them thoroughly with the following specific: Soft soap, 1lb.; nicotine (95 per cent. purity), 3oz., water, 10 gallons. Use hot water to dissolve the soap, add the nicotine and the required amount of water.

DUTCH SHALLOTS. W. W.: If the bulbs are firm and otherwise in good condition the Dutch shallots should be as suitable for planting as any others.

EELWORMS IN MANURE.—B. O. H.: Send a sample of the manure containing the eelworms packed in a small tin box.

FERN AND CACTUS. W. F. Howarth: There is no sign of any disease on either the Fern or the Cactus, but both have the appearance of having been affected by frost. Similar injuries might result from too low a temperature generally. You do not say under what conditions the plants have been grown, but we should advise you to keep them in a warmer house.

FIGS. F.: It is certainly advisable to make the bottom and sides of the Fig border of concrete, as for a Vinery, and this is even more essential if the soil is overcharged with moisture. Two rows of 4-inch pipes should be arranged at the front, with ventilators to open through the wall and between these pipes. These two rows of pipes should be extended around both ends of the house if possible. Assuming that a path will be provided under the apex of the roof, one return pipe might rest on each of the piers on either side of this path. This should be the minimum amount of piping used. As to soil, if the planting out system is adopted, let it be even rougher than that for Vines, using mortar rubble freely from the size of a small egg down to that of a hazel nut. Lime rubble, if easily obtainable in the district might also be added, as this will act more quickly than the mortar rubble. Use small pieces of charcoal also. These component parts should be quite one-third of the whole. Choose rough, fibrous loam, and if with a calcareous tendency, so much the better. Make the compost firm when arranging it in the border, but only provide for one-third of the space for the first few years. If pot trees are used, and we are disposed to advise these, more variety and a better succession can be had. If planted out, three trees to the 35 ft. are ample, i.e., three at the front and three at the back, with one at either end—eight trees in all. These should be as follows:—two of Brown Turkey, two of White Marseilles, two of Negro Largo and two of Bourjassotte Grise (these should be easily obtainable). Violette Sepor might take the place of White Marseilles if desired. If pot trees be decided upon use the same varieties, but twice as many trees, as all the surface may be taken up with them, and also add four each of St. John, or Pingo de Mel, as early sorts, and Violette de Bordeaux as a late one, 24 trees in all, which will be just over 23 sq. ft. to each tree. Pot trees come into bearing almost at once, but planted out trees will take even longer than a newly planted Vine to arrive at maturity.

NAMES OF FRUITS. C. W. S.: 1, Wadhurst Pippin; 2, Reinette Franche; 3, decayed; 4, Norfolk Stone Pippin; 5, Scarlet Nonpareil; 6, Nonsuch; 7, Small's Admirable; 8, Leathercoat; 9, Ribston Pearmain; 10, Sturmer Pippin.—J. G. B.: 1, Waltham Abbey Seedling; 2, Wyken Pippin.—A. J.: 1, Brabant Bellefleur; 2, Washington; 3, Roi d'Angleterre; 4, Adams's Pearmain; 5, Herefordshire Pearmain; 6, Reinette de Caux; 7, Round Winter Nonsuch; 8, Rymer.—R. B.: Minchull Crab.—J. G.: 1, Norfolk Beeling; 2, Cellin; 3, Roi d'Angleterre; 4, Radford Beauty; 5, Ashmead's Kernel; 6, Court of Wick; 7,

Broad-eyed Pippin; 8, Lane's Prince Albert.—K. P.: Mère de Ménage.—G. L. R.: 1, Yorkshire Beauty; 2, Lord Burghley.—E. B.: 1, Nonsuch; 2, Winter Hawthorn; 3, Bedfordshire Foundling; 4, Beauty of Kent.—A. K.: 1, 12 and 14, decayed; 2, Hoary Morning; 3, Sturmer Pippin; 4, Calville St. Sauveur; 5, Flower of Kent; 6, Hornead's Pearmain; 7, Bess Pool; 8, Adams's Pearmain; 9, Lord Suffield; 10, Beauty of Kent; 11, Hanwell Souring; 13, Cox's Pearmain.—J. G.: Calville Rouge d'Hiver.—J. W. M.: 1, Flanders Pippin; 2, Small's Admirable; 3, Winter Strawberry; 4, Beauty of Kent; 5, Nancy Jackson; 6, Mabbott's Pearmain; 7, Fearn's Pippin; 8, Pile's Russet; 9, Ashmead's Kernel Improved; 10, Minchull Crab; 11, Yorkshire Greening.—E. A.: 1, Lane's Prince Albert; 2, Cullen; 3, Yorkshire Beauty; 4, Catshead.

SEED TESTING IN ENGLAND AND WALES. R. G. A.:—The tests required under the Testing of Seeds Order, 1918, may be made by the seller himself, or by a private testing station, or by the Official Seed Testing Station. The fees charged for testing seeds by the Official Station are as follows:—To Farmers.—A report will be furnished to bona-fide English and Welsh farmers at the rate of 3d. per sample on seed which the farmer himself is proposing to sow. Samples to be tested at the 3d. rate must be accompanied by an undertaking that the test is not required in connection with a declaration for sale. In the case of tests which a farmer requires for the purpose of a declaration for sale, he is required to pay the fees chargeable to seedsmen, i.e., Cereals, per sample, 1s. 0d.; Roots and vegetables, other than Mangels and Beet, per sample, 1s. 6d.; Mangels, Beet, Grasses and Clovers, per sample, 2s. 0d.; the sizes of samples for testing must be as follows:—garden Turnip, garden Cabbage, garden Kale, garden Kohl Rabi, Brussels Sprouts, Broccoli, Cauliflower, Carrot, Parsnip, Onion, not less than ½ oz.; Ryegrasses, Meadow Fescue, Cocksfoot, Crested Dogtail, Timothy, Alsike, White Clover, field Turnip, Swede, Rape, field Cabbage, field Kale, field Kohl Rabi, Mangel and Beet, not less than 2 oz.; Wheat, Oats, Barley, Rye, Tares or Vetches, Red Clover, Crimson Clover, Trefoil, Lucerne, and Sainfoin, not less than 4 oz.; Peas and Dwarf French Beans, not less than 6 oz.; Broad Beans and Scarlet Runner Beans, not less than 8 oz. Each kind of seed must be enclosed in a separate strong envelope and forwarded either separately or in a well-made-up parcel addressed to Board of Agriculture and Fisheries, Seed Testing Station, 18, Leigham Court Road, Streatham Hill, S.W.16. You can obtain suitable envelopes for the purpose, free of charge on application to the Station. A slip of paper must be enclosed in the envelope with each sample (suitable slips are provided with the envelope supplied by the Station) giving the following particulars:—(1) Name and full postal address (including county) of sender; (2) date when sent; (3) kind and variety of the seed; (4) sender's reference number or mark if several samples of any one variety of seed are sent; (5) the name and address of the person (or firm) from whom the seed was (or is) to be purchased; (6) the price per lb. or per other measure; and (7) copy of declaration as to purity, germination, etc., given by the seller. The particulars asked for in Nos. (1), (2), (3) and (4) above must in all cases be given, but it is to the sender's advantage to supply the further particulars per Nos. (5), (6) and (7), although he need not necessarily do so as a condition upon which the seeds will be tested. If sent by letter post and properly addressed in accordance with the above instructions, the postage on the samples need not be paid, but if sent by parcels post it must be paid.

Communications Received.—W. W. and Co.—H. H. R.—F. J.—E. M.—B.—G. C.—B. A.—S. A.—E. L. B.—H. B.—B. H.—B. H. M.—G. V.—S.—L.—E. C.—H. B.—E. M.—T. P.—G. T. R.—G. F.—T. W. B.—J. C.—C.—R. F.—H.—H.—H.—B.—J. G.—K. F.—B. McO.—R. T.—W. T.—W. H.—V.—E.—M. G.—E. W. C.—E. H. J.—J. A. S.—J. G. B.—H. T. E.

THE
Gardeners' Chronicle
No. 1725—SATURDAY, JAN. 17, 1920.

CONTENTS.

Aphis, a plague of ...	32	Orchid notes and gleanings:	
Apple Crofton Scarlet ...	25	Cypripediums from	
Books, Notices of:		Westonbirt ...	31
British rainfall ...	27	Paint, a whitewash ...	24
Meteorology for all ...	27	Peace commemoration	
The Study of the		Crows at Kew ...	24
Weather, the ...	27	Potatoes, spade versus	
Bulb garden, the ...	27	plough for ...	32
Lilies, Japanese, is the		Red currants, big bud	
garden ...	27	nile on ...	31
Cultivation, deep, the		Silver Leaf ...	31
value of ...	30	Societies:	
Farm School, gift of a,		National Gladiolus ...	23
for Suffolk ...	23	Manchester and North	
Farrer's, Mr. Reginald,		of England Orchid ...	33
second exploration in		Royal Horticultural ...	32
Asia ...	29	British Gardeners' As-	
Fruit garden, the market		sociation ...	23
Gardeners' Chronicle,	28	Soil temperature ...	23
seventy-five years ago	24	Solanum aculeatissimum	32
Garden Villages Confer-		strawberries, alpine ...	25
ence at Croydon ...	24	Swanley Horticultural	
Grape Madresfield Court		College ...	23
Horticultural Training		Symons Medal, award of	23
Centre for Middlesex	23	Tithe, redemption of ...	24
Land settlement for ex-		Vegetables:	
service men ...	24	Onions, exhibition ...	30
Mangin, M. L. ...	23	Week's Work, the 26, 27	
Meteorological lectures	23	Wisley, horticultural	
		scholarship at ...	23

ILLUSTRATIONS.

Apple Crofton Scarlet ...	25
Farrer's, Mr. Reginald, exploration:	
Bungalow in the valley region ...	28
Lilium auratum var platyphyllum ...	27
Nomocharis pardanthina ...	29
Solanum aculeatissimum, fruits of ...	31

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.35°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, January 14, 1920, 10 a.m.: Bar, 29.9; temp, 42°. Weather—Cold, bright and windy.

evaporation and the fall of cold rain or snow. The amount of radiation is determined by the clearness of the atmosphere and its relative humidity. It will also depend on the dryness of the surface soil—the drier the greater the radiation.

As radiation proceeds its effect in cooling the surface soil is counterbalanced by the heat conducted from the lower part of the soil, and when the soil freezes there is also the latent heat which serves to prevent a further fall of soil-temperature.

From these general considerations the author concludes that the amount of radiation (R) is equal to the sum of the amount of heat conducted (C) from below, the latent heat (L) and the heat given up in the cooling of the surface layers (CSL):—

$$R = C + L + CSL.$$

If, then, any three of these factors be known, the fourth is also known.

By a series of observations Captain Franklin has succeeded in showing that the relation expressed in the formula holds good in practice.

He thus arrives at the important conclusion that the prediction of frost on a given night depends on the possibility of estimating—

1. Average relative humidity during the night.
2. The temperature at a given depth—say, 4 inches—at the time of the surface minimum.
3. The conductivity of the soil between the surface and that depth.
4. The difference between surface soil temperature and that of the air above it.

He also suggests that it should prove possible to predict the minimum temperature on calm, clear nights from observations taken in the afternoon. From actual observations taken by means of electric resistance thermometers the author finds ground for believing that this suggestion is well founded.

Captain Franklin has investigated the thermal effect of soil coverings on surface soil temperatures. The materials experimented with were loose soil, ashes, manure, fallen leaves and grass. Of these coverings grass is the most efficient, making at the maximum a difference of 15° F; fallen leaves are next in efficiency, 7° F, manure, 6.5° F, ashes, 6° F, and loose soil, 3° F, from which it would appear that a winter soil mulch might make the difference between freezing and non-freezing of the roots of half tender plants. The pronounced effect of ashes in reducing the fall in surface soil temperatures is also of interest. It throws light—new to some of us—on the significance of the practice of plunging potted bulbs, and it suggests that the gardener has close at hand a material with which to cover any "roots" which may be precious and apt to suffer from frost. An application possibly worth trying would be the use of ashes for banking up Celery or Leek ridges.

Finally the author points out how important must be the effect of grass in permitting the over-wintering and precocious growth of bulbous and other plants which have their stations in meadows and other grassy places. Thanks to its property of non-conduction, the temperature of the soil beneath grass remains higher than that freely exposed in open, cultivated land, and hence plants growing therein are able to make an early start in spring.

For a like reason the pests, leather-jackets, etc., which hibernate beneath grass are well protected. It would be interesting to know whether fruit trees in grass are apt to flower earlier than those in cultivated ground, and also whether the deep planting of bulbs owes something of its advantage to the fact that in well-drained soil the spring temperature is

higher in the deeper layers of the soil than it is nearer the surface.

Captain Franklin's paper is a valuable contribution to soil physics, than which no subject is of greater interest or importance to gardeners and growers generally.

Horticultural Scholarship at Wisley.—We learn that Sir James Knott has presented the Royal Horticultural Society with a sum of money for the establishment of a scholarship at the Society's Gardens, Wisley. Candidates must be between 16 and 22 years of age and must pass first class at the R.H.S. General Examination in Horticulture on March 21. The scholarship will be of the value of £30 a year for two years, and candidates must make application on or before March 10.

Swanley Horticultural College.—The governors of the Horticultural College, Swanley, have appointed Miss F. M. G. Micklethwait, A.R.C.S., F.L.C., as principal of the college. Miss Micklethwait is a former student of the college, and was a Beit Research Fellow. She has done much good work both as a practical gardener and as a research student.

The National Gladiolus Society.—The winding up of this Society has now been completed by Mr. P. R. Barr and Major G. Churcher. The sum of £16 Is. 2d. realised has been handed to St. Dunstan's Hostel for Blinded Soldiers and Sailors and the £15 15s. 9d. Five per cent. War Loan has been transferred to the Trustees of the same Charity. The Society's Register, Colour Chart and other papers remain in the care of Mr. P. R. Barr. The President's Challenge Cup has been returned to Sir Francis Burdett, Bart., who informs us that he has presented the cup to, and it has been accepted by, the Royal Horticultural Society for annual competition between growers of Gladioli.

M. L. Mangin.—M. L. Mangin, the French botanist, has been appointed director of the Natural History Museum, Paris, in succession to M. E. Perrier.

Meteorological Lectures.—Sir Napier Shaw will deliver a course of nine lectures on "A General Survey of the Globe and its Atmosphere," at the Meteorological Office, at 3 p.m. on Fridays, beginning on January 23. Admission is free.

Award of the "Symons" Medal.—The Symons Gold Medal for 1920 has been awarded by the Council of the Royal Meteorological Society to Dr. H. H. Hildebrandsson, of Upsala University, in recognition of his distinguished work in connection with meteorological science.

Horticultural Training Centre for Middlesex.—At Bury Farm, Enfield, a Middlesex training centre in horticulture is being started for partially disabled ex-Service men. The scheme has the support of Mr. Alfred Bath, J.P., the tenant, who himself served with the Royal Fusiliers on the Western front.

Gift of a Farm School for Suffolk.—Lord Iveagh, who has done so much for deserving causes, is anxious to help those sons of agricultural labourers who, being bright, intelligent and fit for more responsible work than that which would fall to their lot in ordinary circumstances, are barred from advancement by lack of education. To this end he has purchased the Chadacre Hall Estate of some five hundred acres in the county of Suffolk, and is prepared to defray the whole cost of establishing a Farm Institute for forty or fifty boys who will be admitted at the age of 16 years after some training on a farm. While the Institute is intended primarily for the sons of poor parents, particularly of farm labourers, the cases of the sons of small farmers and small-holders will be considered, together with cases recommended to the Governing Committee by local authorities, school managers, clergy and others. Lord Iveagh hopes that it will be possible for the Farm Institute to begin work at Michaelmas. No fees are to be charged, board, lodging and instruction being entirely free.

Soil Temperature.
Every student of plant life realises that soil temperature plays an important part in plant growth, and the more he recognises this fact the more he has reason to regret the scantiness of our knowledge of the mechanism by which soil temperature is determined. The philosophic gardener will therefore read with pleasure and profit Captain Franklin's account of experiments and observations on the subject.* Captain Franklin prefaces his paper with a criticism of the custom of taking the grass minimum temperature as an index of the probability of the occurrence of frost. The fact that grass is a bad conductor of heat, in consequence of which the temperature of the soil immediately beneath the grass may be many degrees—15° F or more—above that of the air on the grass, suffices to show that the grass minimum temperature affords no certain indication of soil temperature. On the contrary, no such large differences exist between the temperature of the air resting on open soil and that of the surface soil itself. For in this case there is no non-conducting mat to prevent equalisation of the surface temperature and that of the air in immediate contact with it.

It is to be concluded, therefore that the grass minimum temperature gives a false impression of that of air over open soil. Hence, for cultivators who desire to know the chances of frost, a determination of the surface soil minimum is more useful than that of the grass minimum.

The cooling of soil is due to radiation,

* "The Cooling of Soil at Night, with Special Reference to Late Spring Frosts," by Captain T. Bedford Franklin, *Proc. Roy. Soc.* of Edinburgh, August 5, 1919.

Garden Villages Conference at Croydon.—The Surrey Land Settlement Committee has organised a conference for the purpose of securing support for its scheme of establishing near Croydon a Garden Village for ex-Service men and others. The conference will be held in the Croydon Town Hall on January 26-30, and the subjects and speakers will be:—Jan. 26—The Ideal Garden Village—Its Part in National Reconstruction, by Mr. Ebenezer Howard; The Winterslow Colony, by Mr. Mark Poore; and Principles of Housing and Town Planning, by Capt. R. L. Reiss. Jan. 27—Pise Building and its Possibilities, by Mr. Clough Williams Ellis; Brick v. Wood, by Mr. Alfred Crofts; and Utility Rabbit Keeping, by Mr. C. A. House. Jan. 28—The Value of Bee Keeping in Land Settlement as a Rural Industry, by Mr. W. Herrod-Hempsall; Goat Keeping, by Mr. H. S. Holmes Pegler; and The Most Profitable Way of Cropping a 20-Rod Plot, by Mr. S. T. Wright (Superintendent of the Royal Horticultural Society's Gardens). Jan. 29—Intensive Culture by Means of Heated Movable Glass Houses, by Mr. A. Pullen Barry; Roadside Fruit Tree Planting, by Mr. R. G. James (County Instructor in Horticulture, Cheshire); and Co-operative Organisation for Smallholders and Allotment Holders, by Mr. Geo. Nicholls. Jan. 30—Transport as a Factor in Housing, by Capt. G. Swinton; Bird Sanctuaries, by Mrs. Frank Lemon; Taxation of Land Values, by Alderman F. C. K. Douglas; Land Nationalisation, by Mr. Joseph Hyder; and Perpetual Tenure, by Mr. Mark B. E. Major. Admission is free each day.

Land Settlement for ex-Service Men.—A review of the work of settling ex-Service men on the land accomplished by the County Councils and the Councils of County Boroughs during 1919, as agents for the Ministry of Agriculture and Fisheries, has just been issued. This shows that Councils have on their lists 24,921 ex-Service applicants who have applied for 429,697 acres. Of these 15,008 applicants have so far been approved as suitable for 251,568 of the acres applied for. Although the Land Settlement (Facilities) Act, which was passed to facilitate the acquisition of land for ex-Service men, received the Royal Assent as recently as August 19 last, Councils have already actually acquired, or agreed to acquire, 151,548 acres under the Act. In addition the Councils have under consideration 76,929 acres, the bulk of which, it is hoped, will be acquired at an early date. Two County Councils alone have failed to acquire a single acre for ex-Service men—the London County Council and the Rutland County Council. So far 3,788 men have actually been settled on their holdings, a total area of 51,697 acres, and the figures given above would appear to show that the promises of the Government with regard to the provision of land for men who have fought for their country are being redeemed in a satisfactory manner almost everywhere, except in the two counties already mentioned.

Redemption of Tithe.—Owners of land who desire to rid themselves of the liability of paying tithe may do so under the Tithe Act of 1918 at a reasonable cost. During the past twelve months applications for redemption of tithe rent charge amounting to nearly seventeen thousand pounds, and to capital values of about £300,000 have reached the Board of Agriculture. Although the tithe included in these applications must be regarded as considerable, being, for example, nearly eleven times as much as that in the applications received between the 1st December, 1912, and 30th November, 1915, the Tithe Bill of 1918 has not completely fulfilled the hopes of some of its supporters. Undoubtedly applications would have been larger but for the widespread belief that redemption proceedings involved landowners in a considerable amount of trouble. In point of fact nothing more is required in the great majority of cases than that the applicant should write to the Board of Agriculture, giving particulars of the tithe rent charge he wishes to redeem, together with the names and addresses of the owner and collector of the charge. All other work falls upon officers of the Board. It is of interest to note that at the moment, when tithe rent charge is payable to the incumbent in right of his benefice, the

cost of redemption works out at about seventeen years' purchase of the present annual value. Where the tithe rent charge is otherwise held, the consideration is about fifteen and a half years' purchase. Those who cannot supply correct particulars of the tithe rent charge should send to the Board a plan of their property preferably on a 1:2,500 scale ordinance sheet with the boundaries of the land to be redeemed clearly and accurately set out with a coloured edging. If further particulars are desired, they can be obtained, together with the necessary forms of application, free of all charge, on application to the Board of Agriculture.

Peace Commemoration Trees at Kew.—In the autumn of 1917 some seeds of common Oak and of Horse Chestnut were received at Kew which had been collected on the battlefields of Verdun. They had been sent by the Mayor of that city to the London and North-Western Railway Company, whose officials forwarded a few of each kind to Kew. The seeds were sown and twenty-one Oaks and eight Horse Chestnuts were raised from them. In view of their interesting origin these trees appeared very appropriate to plant as memorial trees. Accordingly three of them, two Oaks and one Chestnut, which had been established in pots for the purpose, were planted on Peace Day, July 19, 1919, the day of the Great Victory Procession in London. Two of them are on the southern slope of the hill which is crowned by the Temple of Aeolus, the other is between No. 1 Museum and the Temple of Arethusa. Considering the interest with which these trees are likely to be regarded by future generations, when the great war has receded into the dim past, we agree with the *Kew Bulletin* that it is desirable to put on record the time and place of their planting. By desire of His Majesty the King, two of these Oaks and two of the Chestnuts were planted at Windsor on the same day. In the public parks at Reading, under the auspices of Messrs. Sutton, two Oaks were also planted. A Chestnut was sent to Keswick for the same purpose.

An Iris Society for America.—Iris fanciers in the United States propose to form themselves into a special society for the purpose of promoting the culture and development of the Iris. It may eventually include in its purview the study of all known species and varieties; the compiling of a list of horticultural sorts with their parentage, synonyms, name of originator and date of introduction; their proper classification; compilation of a history of Iris growing; cultural directions for different climates; a study of Iris diseases and pests; the establishment of test and exhibition gardens in various sections of the country; the organisation of Iris exhibitions, and publicity through articles and bulletins, lantern slides and lectures. The Society hopes to encourage Iris breeders everywhere, and at the same time to discourage the introduction of inferior novelties.

A Whitewash Paint.—A whitewash that is said to be almost as serviceable as and cheaper than the cheapest paint for wood, brick, or stone, has been used by the United States Government for whitewashing lighthouses. It has also been used to embellish the east end of the White House in Washington. The whitewash is made as follows:—Slake half-a-bushel of lime with boiling water, cover during the process to keep in the steam, strain the liquid through a fine sieve or strainer, and add to it a peck of salt, previously dissolved in warm water, 3 lb. of ground rice boiled to a thin paste, and stirred in while hot, $\frac{1}{2}$ lb. of Spanish whiting, and 1 lb. of clear glue previously dissolved by soaking in cold water, and then hanging it over a slow fire in a small pot hung in a larger one filled with water. Add 5 gallons of hot water to the mixture, stir well, and let it stand a few days, covered from dirt. The wash should be applied hot, for which purpose it can be kept in a kettle or portable furnace. By the addition of colouring matter various shades of colour may be obtained. The colouring matters generally used are ochre, chrome, Dutch pink, and raw sienna for yellows and buff; Venetian red, burnt sienna, Indian red, or purple brown for reds; celestial blue, ultramarine, and indigo for blues; red and

blue for purple grey or lavender; red lead and chrome for orange; Brunswick green for greens. Yellow ochre added to the white-wash gives a cream colour; lamp-black or ivory black produces a pearl or lead tint; 4 pounds of umber to 1 pound of Indian red and 1 pound of lamp-black makes fawn; and 4 pounds of umber and 2 pounds of lamp-black produces the common stone colour.

The "Gardeners' Chronicle" Seventy-five Years Ago.—Potatoes.—I have observed lately the result of some experiments which have been made in raising Potatoes; and from trials which I have also made, I entertain no doubt but that planting whole Potatoes of a middling size is much preferable to those which are cut. In dry ground or in ordinary seasons the latter no doubt grow very well, but there is always a loss by cutting in pieces the large Potatoes while the others not so valuable are available. In damp or wet ground not thoroughly drained, or in cold, backward seasons where vegetation is checked, the cut sets parch and never grow, so that blanks of some yards are everywhere visible, whilst the drills planted with whole Potatoes are as close as a hedge. I have also made some experiments as to the best and easiest mode of keeping the one crop of Potatoes in a proper state for use until the following crop is ready. Persons residing in the country who have frames of glass can have Potatoes very early, and they can also have old Potatoes kept in pits in the earth, etc., but people residing in towns, the lower classes especially, have no such conveniences. In the spring, when the Potatoes begin to grow, they send out long shoots, and when these are removed others succeed—the root all the time shrivelling and wasting its substance. An effectual way of killing the vegetative powers at that period (and no sooner) occurred to me. The heat of boiling water being 212°, and three minutes being sufficient to boil an egg, the question came to be, how short a time would effect the present object? and an immersion till a person could count six seems amply sufficient; this might be tested exactly, and be done on a large scale with a copper and netted bag. Potatoes so served keep for many weeks quite plump and fresh and until new ones could be got in the market at a reasonable price. This plan may also be useful for preserving them longer fit for use at sea, where vegetables are not to be had. *Observer, Gard. Chron.*, January 18, 1845.

Publications Received.—*The Fungicidal Properties of Certain Spray Fluids*, J. Vargas Eyre, E. S. Salmon, and L. K. Wormald. Cambridge: At the University Press. *A Critical Revision of the Genus Eucalyptus*, J. H. Maiden, Sydney, Australia: 2s 6d. nett. William Applegate Gullick, *The Hardwoods of Australia*, By Richard T. Baker, Sydney: W. A. Gullick, Government Printer. *Final Report of the Women's National Land Service Corps*, London: 50, Upper Baker Street, N.W.1. *Bulletin of Peony News*, No. 9. Edited by A. P. Saunders, American Peony Society, Clinton, New York. *USA Journal of the Royal Horticultural Society*, Vol. XLV, Part 1. London: W. Wesley & Son, 28, Essex Street, W.C. *Henry Nicholson Ellacombe. A Memoir*, By Arthur W. Hill. London: "Country Life" Library, 20, Tavistock Street, Covent Garden, W.C. Price 10s 6d. nett. *A Common Disease of Potatoes, Stem Rot, Rosette or Little Potato*, By D. G. O'Brien, M.A. Glasgow: West of Scotland Agricultural College, Bulletin, No. 94. *Annual Report of the Massachusetts Agricultural Experimental Station*, Boston: Wright and Potter, State Printers, 32, Dene Street. *Practical Exercises on the Weather and Climate of the British Isles and North West Europe*, By W. F. Stacey, F.R.G.S., Cambridge University Press. *Outlines of the History of Botany*, By Harvey Gibson. London: Adam & Charles Black, Soho Square. Price 10s. nett. *Notes from the Royal Botanic Garden, Edinburgh*, Vol. XI, Edinburgh: William Grant Craib, M.A., H.M., Stationery Office, 23, Firth Street. *Temperature in Relation to Quality of Sweetcorn*, By Neil E. Stevens & C. H. Higgins. Washington: Government Printing Office.

ALPINE STRAWBERRIES.

ALPINE Strawberries, *i.e.*, the Quatre Saisons of French cultivators, are better known on the Continent than in Great Britain. Both in France and in Italy they are, however, much appreciated and I saw them in fruiterer's shops in Rome, at Easter, in 1902. Where these were grown I know not, but presumably in the extreme south, or in Sicily.

I was requested to start the cultivation of Alpine Strawberries by the late Mr. Leopold de Rothschild in 1895. I found, almost at the start, that the best results were to be obtained by raising the necessary stock from seed every year and never to depend upon runners, unless I was short of plants, and then only the first runners. I had to find out what was the best season for saving the seed, so as to ensure a supply of plants and fruits. Altogether it was about three years before I decided upon a definite method of cultivation and then I was enabled to work almost with certainty.

The cultivation of these luscious fruits has not been taken up in this country so extensively as it deserves to be. I am somewhat surprised at this, but the lack of interest is no doubt partly explained by the persistence with which traders include Alpine sorts in their Strawberry lists, and offer runners for sale, which is an utter mistake. Up-to-date seedsmen have for some years past listed Alpine Strawberries in the seed catalogues every spring. Raising plants from seeds is the correct method to follow, and as the season for making out the seed orders is now with us, I advise growers to order a few packets of Alpine Strawberry seed. It is necessary to secure new seed, *i.e.*, seed of the previous season, to ensure a high percentage of germination.

I obtained the best results when I sowed the seed early in April, using shallow boxes, as for other seeds, when large numbers of plants were needed. Sow in light soil; sandy loam and leaf-soil passed through a fine meshed sieve provide the best compost for the seeds and seedlings. The best place wherein to raise the seedlings is a Peach house, or other structure where the temperature is similar at that season of the year. Those growers who raise Celery at about that season may safely adopt similar methods for Alpine Strawberries with good results. Watch the condition of the soil closely, damp it as may be needed, and shade the boxes from bright sunshine. Prick out the seedlings, as for Celery, in due course. Do not allow a high temperature or the seedlings will draw up weak and spindly; when they are well established ventilate the house or pit freely.

As soon as these young plants are becoming crowded a place should be prepared for pricking them out; frames from which bedding plants have been removed will answer well. Estimate the required quantity and prick out the plants six inches apart. Here they may remain until a plot of ground can be spared upon which to plant them. For this final planting allow eighteen inches from plant to plant. An open piece of ground suits Alpine Strawberries, but not a hot border in front of fruit-trees on a wall. They need plenty of air and moisture when in growth. It is not, however, essential that the ground should be in the open, for Alpine Strawberries grow freely if planted in partial shade, but not, however, where there would be an excess of drip from overhanging trees. The site chosen should be well prepared by deep trenching and manuring; the manure should be of a light character. I find that well-decayed leaf-soil is one of the best manurial additions, as well as old Mushroom bed soil or spent hot-bed material. The Alpine Strawberries have much in common with our wild, or wood Strawberry; indeed I consider them closely related. After the ground has been prepared it should be worked over again and broken down finely, and if the work is completed by the end of September that will be sufficiently early. I have always had the greatest success when planting was finished before the middle of October.

The young plants should be lifted with as good a ball of soil and roots as possible and planted carefully; make the ground firm and then water them to settle the soil around the roots. After

this there is not much further to be done that season other than such routine work as hoeing lightly as may be found necessary. At all times remove runners and thus concentrate the strength of the plants in the crowns. During the first winter the plants should be examined after severe frost and if any have been lifted thereby, and have their roots exposed, they should be pressed back firmly into the soil. When growth commences in the spring all vacancies should be filled from the reserve bed. Keep the runners picked off persistently, and in order to strengthen the plants remove the first flower spikes also. In order to have good fruits

kind of crop. Picking the fruits is best done by pulling off the berries without stalks and placing them in a tight punnet, which, if quite clean, may be sent to the table as it is.

These Alpine Strawberry fruits were most in request at Gunnersbury for breakfast and for afternoon teas and tennis parties. There are not many varieties from which to choose, but I have proved the following to be quite reliable: Sutton's Large Red Alpine, Rouge Amelioré or Improved Red, of which there is a desirable white variety, and Belle de Meaux, a dark red form, almost rotund and of excellent quality. *Jos. Hudson, V.M.H.*

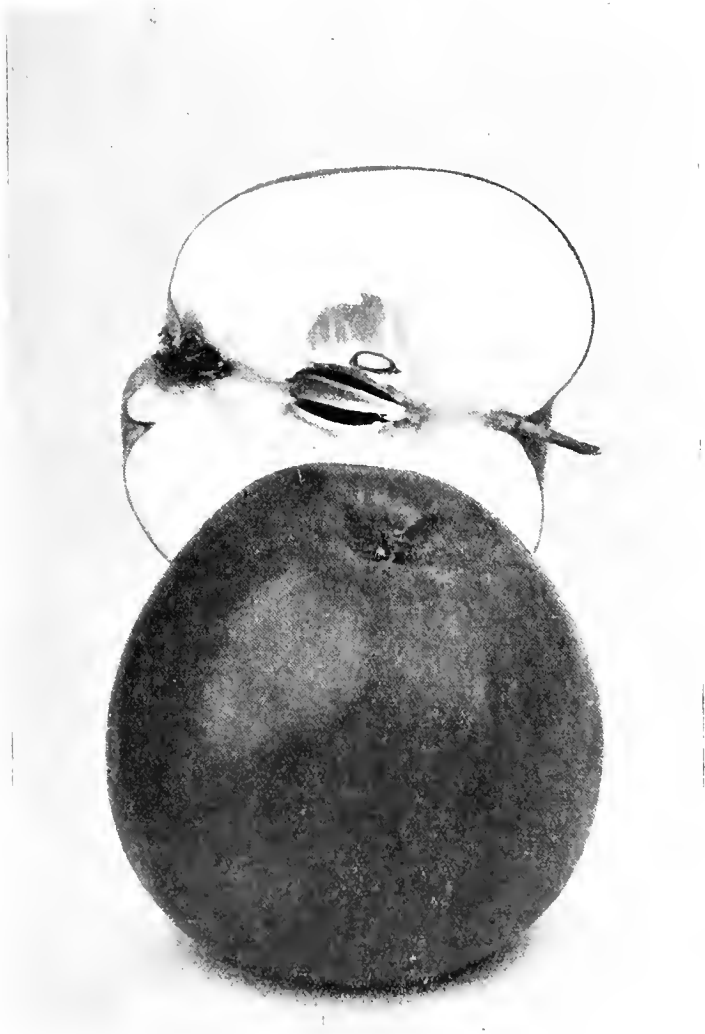


FIG. 10.—APPLE CROFTON SCARLET.

APPLE CROFTON SCARLET.

for picking from the middle of August onwards until the early part of October, I made it a practice to pick off all flower spikes until the end of June, then left half the bed untouched and removed spikes from the other half until a fortnight later. At this period the beds should be mulched with light strawy material, such as that taken from the plantations of summer fruiting Strawberries. During the period of active growth water must be applied as may be necessary, and when the mulch is applied, give a light dressing of Peruvian guano, as this will add vigour to the plants.

After the mulch has been given it is a good plan to leave the runners alone; the following spring, however, they may be carefully thinned. The first gathering of the berries should take place about the same time as fruits of Royal Sovereign come into use out of doors, but the crop should continue until the middle of August. Then, being assured of the succession of fruits from other plantations, this early bed may be disposed of and the site prepared for some other

Dr. Hogg, in *The Fruit Manual*, describes Crofton Scarlet as "a most delicious dessert Apple, of first-rate quality; in use from October to December and does not become mealy." It seems remarkable that such a fine variety should receive neglect from growers, yet apparently it is but little grown now-a-days, and few who saw the specimens exhibited at the meeting of the Royal Horticultural Society on November 18, last, had ever seen this Apple before.

Mr. Divois, who exhibited the fruits, spoke in high praise of this old Apple as a dessert variety, a typical specimen of which is illustrated, natural size, in Fig. 10. It will be seen that the fruit is of medium size and slightly angular on the sides. The colour is bright red on the side next to the sun, hence the name. The flesh is firm, crisp, sweet, and of rich flavour. The origin of this old Apple is not known, except that it came from Ireland.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENCER CLAY, M.P., Ford Manor, Liphfield, Surrey.

Permanent Trees.—The earliest Fig house should be closed at once. Examine the borders, and see that they are in a suitable condition, down to the drainage. Very little, if any, fire-heat will be necessary.

Early Vinery.—This house should now be closed with a night temperature of 48° to 50°. The necessary moisture will be provided by lightly syringing the vines and bare spaces once or twice daily, according to the weather. Give the borders one or two good waterings with tepid water, and keep the house closed for ten days or a fortnight, without heat or ventilation.

Melons.—The present is a suitable time to sow Melon seeds to obtain plants that will furnish ripe fruits early in May. Where efficiently heated pits are in readiness, with everything sweet and clean, a start may be made. Sow seeds of some early fruiting variety singly in small pots and plunge the pots in material providing a bottom-heat of 75° to 80°. Let them be fully exposed to the light and cover the pots with glass until the seed leaves appear. Where fermenting material is used a good heap of litter and leaves should be got in readiness by turning and mixing them. These early plants are best grown in 12-inch pots plunged closely together in the fermenting material, but stood upon inverted pots to prevent sinking and possibly strangling the tender shoots. Use clean, well crocked pots and have sufficient warm compost, consisting of fairly heavy loam and lime rubble with a dash of bone meal added, in readiness. If planting out is preferred, use similar compost placed on turves arranged grass side downwards in the form of a ridge. Set the plants in the soil when they are quite small and make the compost fairly firm. Maintain a bottom-heat of 75° to 80° and a minimum night temperature of 65° to 68°, rising to 75° or 80° by day with sun-heat. Promote a moist atmosphere by frequent light sprinklings of water warmed to the temperature of the house.

Pines.—The cultivation of these plants is only attempted nowadays in a few private establishments, and I shall only occasionally refer to their treatment. The first batch of plants of the Queen variety should be selected and plunged in a steady bottom-heat of 80° to 85°, with a night temperature of 65° to 70°, rising to 75° or 80° during day with sun-heat, according to weather. These temperatures must not be exceeded during the next few weeks. Maintain a moist atmosphere by frequent dampings, but guard against drip or excessive moisture in dull weather.

THE FLOWER GARDEN.

By SIDNEY LIGG, Gardener to the Dowager Lady NUNBURGHOLME, Warton Priory, Yorkshire.

The Formal Garden.—It is highly important to give strict attention to the drainage of the soil. All necessary digging should be completed with the utmost speed and the bed suitably manured in accordance with the requirements of the plants to be utilised. The planter's plan made out last August will greatly facilitate the general work of suitably preparing the beds, and also contain the names of the plants, together with the quantities required to complete the ultimate bedding. Test the soil, and if found deficient in lime give a dressing of about 6 ozs. of slaked lime per square yard to the surface, after the digging has been accomplished. This may be followed in the spring with an application of superphosphates at the rate of about four ounces per square yard. The fertiliser will need to be lightly forked in and the operation will improve the ground for planting. One method of testing soil as to whether it is, or is not, deficient in lime, is as follows:—Place a small and fair sample of the soil in a transparent vessel and

pour a moderate quantity of hydrochloric acid on the earth. If the liquid effervesces freely, plenty of lime is present for the time being. Where beds are known to contain eelworms—probably introduced through the medium of leaf-mould—and for various reasons it is not practicable to remove the soil a dressing of sulphate of potash will be found serviceable. The best results are obtained by applying the potash 4 or 6 weeks previous to planting and thoroughly forking it in the soil.

Datura cornigera (syn. *Brugmansia Knightii*).—Standards of this plant are handsome subjects for planting at the beginning of June in the sub-tropical garden. The double white flowers overhanging a carpet of *Funkia ovata aurea* are very pleasing. A very sheltered position should be chosen for the plant in the open. Cuttings may be inserted singly in small pots and rooted in gentle warmth. Repot the plants when they need it, grow them quickly and keep them to one stem until the desired height is attained, then gradually grow them in cooler conditions. A top-dressing of old cow manure provides the best stimulant for the roots.

Tools.—Too much attention cannot be given to the proper equipment of a garden staff with suitable tools. The tools should be as light as possible, consistent with strength. English manufacturers have much to learn in this respect from their American competitors. I have seen wheelbarrows in use that would turn the elastic steps of the most enthusiastic apprentice into the plect of a tired worker. Mowing machines should be thoroughly overhauled so that no delay may occur in the spring. An inspection of tools should take place at least twice a year.

THE HARDY FRUIT GARDEN

By T. PATEMAN, Gardener to C. A. COUS, Esq., J.P., The Nucle, Codicote, Welwyn, Hertfordshire.

Propagating Bush Fruits.—A few bush fruits should be propagated annually from cuttings. Select strong, healthy shoots of last season's growth, about 15 to 18 inches long. Remove all the buds from the lower part of the cutting (except in the case of Black Currants) retaining 5 to 6 on the top to form the branches. The cuttings will root readily in ordinary garden soil. After they are inserted examine them occasionally, and if they have become loosened by the action of frost, make them firm again by treading the soil on both sides of the rows.

Morello Cherries.—Although generally grown on north walls, I advise planting a few trees of Morello Cherries on a north-west aspect. Trees planted here on a north-west wall fruit better than those facing due north. In some counties the Morello grows well as half-standards, and when visiting a garden just outside Derby last year I was very much surprised at the fruitfulness of such trees. The fruits were easily preserved from birds by fixing four poles to form a square, making them rigid by nailing a batten from pole to pole, and covering all with a net.

Pruning the Morello.—The Morello Cherry requires different pruning and training to other kinds, as the fruits are chiefly borne on the previous year's growth. Therefore as much of the young wood should be retained as possible, but branches that are bare of young wood should be removed. Care should be taken not to bruise any of the shoots.

Apricot.—The Apricot is one of the most difficult of the hardy fruits to cultivate, and it is more affected by our unfavourable climate than any other outdoor fruit. The sudden death of branches is a common occurrence for which no one at present seems able to find a remedy. I have noticed that when the trees have carried heavy crops many branches die the following year. It is advisable, therefore, to give the roots of trees bearing bounteous crops liquid fertiliser during hot, dry weather. The Apricot fruits on the previous year's growth and also on spurs on the older branches; it is advisable, therefore, to retain as much of the young growth as may be necessary to fill the allotted space upon the wall, but guard against overcrowding the branches. Thick clusters of spurs should be thinned.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenloe Castle, near Cardiff.

Seakale and Rhubarb.—If the crowns of these plants intended for forcing have not been lifted already, they should be dug up, as they will force more easily after exposure. Rhubarb roots intended for future requirements may be left on the surface of the ground, but the Seakale plants should be placed in ashes, leaving only the crowns exposed. The Mushroom house is often used for forcing these plants; but almost any place where total darkness may be ensured with a temperature of 50° is suitable. Excellent results may be obtained by packing the roots in deep boxes and filling them up to the crowns of the plants with light soil. Place the boxes under the stage near the water-pipes, covering the top of the box, or the side of the stage, with sacking to exclude the light. Rough boards on edge, or slates, will answer the same purpose. Water the roots thoroughly, and take care that they do not become dry afterwards. When lifting Seakale, select straight thongs from the lower roots as stock for planting again in the spring. The roots for propagating should be cut in six-inch lengths, making the cut level across the top and slanting at the bottom to distinguish the crown end. Tie the roots in bundles and plunge them in ashes until they are required for planting.

Hot-beds.—As soon as hot-beds are ready, sow seed of Carrots of the Horn type in drills made 10 inches apart; and between the Carrots sow Radishes of the Early Gem type, which will mature early and allow the Carrots to occupy the whole of the space when they are pulled. Early Milan Turnips should also be sown, allowing a distance of 12 inches between the drills; if seed of white, Turnip-shaped Radish is sown between the Turnips the Radishes will provide, earlier, a good substitute for white Turnips for any purpose in which the latter are used. The soil should be light and fine, and watered after the seed is sown. Close the lights until the seedlings of the various crops enumerated appear, when air should be admitted on all favourable occasions to prevent the seedlings from becoming drawn and weakly.

Lettuce.—Sow, in pans, a small quantity of Lettuce seed of a dwarf, quick-maturing variety, eventually pricking out the seedlings into boxes and transplanting them into frames.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Cheshire.

Coeloglyne cristata and its varieties.—These chaste Orchids will soon produce their flower scapes, and the plants will be benefited by a more liberal supply of water than hitherto. The quantity should, however, be increased gradually, for at present the roots are inactive although fresh top growth will be evident. Care must be taken to prevent moisture collecting in the new growth, or the scapes may decay. If several pans are grown one or two may be placed in a warm house, to produce a few early flowers.

Calanthe.—With the exception of *C. Regneri* and its varieties, Calanthes have passed the flowering stage, and should now undergo a period of rest in a house having an average temperature of 50°. Some growers allow the pseudo-bulbs to remain in the pots, and this is a very good plan if stage room is available, otherwise they may be turned out of their pots, removing all the soil and most of the dead roots, and re-arranged in shallow boxes with a little sand around their bases. Water will not be needed and the atmosphere should be on the dry side.

Seedling Cypripediums.—These Orchids may be repotted directly they have filled their present pots with roots, irrespective of the season. Others that may have lost their roots through over watering or any other cause should also receive attention. Healthy specimens will need a liberal amount of root space, and, as a rule, a pot two sizes larger than the old one should be employed. Fibrous peat and Sphagnum-moss provide a suitable rooting medium, but for plants nearing the flowering stage, and having *C.*

insigne either directly or indirectly as a parent, a proportion of good loam may be added to the compost.

Cypripedium.—Seeds of *Cypripedium* may be sown at this season. Sow them on the soil of plants of the same genus that will not require repotting for a year or so and that offer a clean pot surface, free from *Sphagnum*-moss and lichens. Give the compost a thorough soaking with water, and after the water has drained away sprinkle the seeds thinly and evenly over the surface. Henceforth watering must be done with great care, for the seeds are easily washed over the sides of the pots. Never allow the host plants to become dry at the base, and, if they are grown in a warm division, the fertile seeds will soon germinate. If seedlings do not appear in a month or two no anxiety need be felt, for I have known instances where twelve months have elapsed before the seedlings have appeared.

Cyrtopodium.—The spring flowering *C. Andersonii* will soon show signs of activity and any plants not producing a flower spike may be repotted directly the new growth begins to develop. Specimens in bloom should not be disturbed for a week or so until the scapes are removed. *Cyrtopodiums* produce strong, fleshy roots, and need fibrous loam and rough peat as a compost. During the growing period a warm, moist house is necessary, and an abundance of water at the roots. When the growth of the pseudobulbs is completed the plants should be grown in a cooler temperature, with less moisture both at the roots and in the atmosphere. *C. punctatum* and *C. palmifrons* require similar treatment.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Lilium.—As Lily bulbs come to hand they should be potted forthwith, for if left exposed to the air for any length of time they soon shrivel and quickly deteriorate. In proportion to their size, Lilies, and especially those of the stem-rooting section, require fairly large pots, which should be drained thoroughly. All the following do well in good mellow loam, with the addition of leaf-mould and good, sharp sand to keep the compost porous:—*L. longiflorum*, *L. auratum*, *L. speciosum*, *L. Henryi*, and *L. regale*. They are all stem-rooting species, and their pots should be little more than half filled with compost, to allow for subsequent top-dressings when roots develop from the stem. There should be a great future for *L. regale* in gardens, as it is not only perfectly hardy, but a splendid subject for pot culture, and may be flowered in two years from seed. When potted, Lilies are best grown in a cold frame until they have made plenty of roots.

Cyclamen.—Plants of the florist's *Cyclamen* from a sowing made last August and wintered in pans should, if not already done, be transferred to thumb pots filled with a light rich compost to which old mortar rubbish has been added. Grow the seedlings in a light position on a shelf near to the roof-glass; in their earlier stages they enjoy a fairly high temperature of some 50°, rising to 55° during the day.

Half-Hardy Annuals.—Seeds of half-hardy annuals used for conservatory decoration, including *Godelia*, *Clarkia*, *Schizanthus* and *Statice Suworowii*, should be sown forthwith. It is true that most of these plants are best raised the previous autumn, but in the immediate vicinity of London it is hopeless to sow them then, as they are ruined by the winter, and better results are obtained by deferring the sowing until the turn of the year.

Roses in Pots.—The batch of Roses specially prepared for indoor flowering should now be pruned and top-dressed. Examine and correct faulty drainage. A night temperature of 40° to 45° is sufficient in the early stages of forcing. Spray the plants with clear water during bright weather, and, as growth advances and the light gets stronger, increase the temperature. Ventilate with great care, as cold draughts inevitably lead to mildew on the foliage.

THE BULB GARDEN.

JAPANESE LILIES IN THE GARDEN.
Now that the seas are open again we shall, no doubt, continue to obtain from Japan bulbs of the beautiful native *Lilium* which are so useful in the garden as well as in the greenhouse.

The finest of them all is, perhaps, the grand variety of *Lilium auratum* known as *platyphyllum* (see Fig. 11). The blooms are 10 inches in diameter and richly coloured with cream and gold. This fine Lily succeeds well in the open. Home-grown bulbs of this variety are usually better than those imported as they are not deprived of their lower, fleshy roots, which the Japanese are apt to cut away before packing the bulbs, regardless of the fact that these roots should never be destroyed. The supply of home-raised bulbs is, unfortunately, very limited.

In planting these Lilies out of doors, a hole of considerable breadth (according to the number of bulbs) and to the depth of two feet should be made, filling in the lower six inches



FIG. 11.—LILIAM AURATUM VAR. PLATYPHYLLUM.

with broken crocks and ashes, which should be covered with rough pieces of peat or dry sods with the grass side downwards.

Over this layer should be placed a little fine soil, consisting of loam, leaf-mould and charcoal in small pieces, on which the bulbs should rest, at a depth of six inches below the surface, packing it round firmly with similar compost and making all firm. Where the bulbs are planted early in the year it is desirable to protect them by placing a piece of glass or a bell-glass over them until March, but air must not be entirely excluded in doing so, the object of the protection being to keep the bulbs fairly dry until they begin to grow.

When the stem appears all protection should be removed and a top-dressing of good loam, charcoal, and leaf-mould placed around the plant, adding to this occasionally, as the stem grows, and giving a weekly dose of soot water or other liquid stimulant as soon as the buds appear, after which plenty of water should be supplied in hot, dry weather.

In October, when the stems have dried off, they should be removed, but they must not be cut down until this gradual ripening of the foliage is completed, for it is necessary to the formation of flowers for the following season, a

process which begins in the centre of the bulb as soon as the blossoms fade.

A conical heap of ashes raised over the bulbs will protect them in winter, or a layer of dry leaves may be put down with a piece of glass over them, raised on bricks. If ashes are used great care must be exercised in removing them the following March, when the plants will be pushing up their stems, which are exceedingly brittle. In cold, wet soils the bulbs may be taken up for the winter and potted, planting them again in February or March, but they make stronger growth in the open ground, and it is worth while to give them the slight protection they need in the garden. J. L. Richmond.

NOTICES OF BOOKS.

The Weather.

The weather has a great bearing on gardening, and gardeners will find much useful information in this book on *The Study of the Weather*,* although it is intended primarily as a Nature Study book.

There is perhaps no subject in which the school teacher must be more alert and resourceful than that of the study of the weather. Proverbially uncertain in a climate such as ours, "weather" does not adapt itself to the prepared lesson, and yet its very variability renders it a valuable Nature Study subject. Mr. Chapman's little volume is an excellent guide to weather observations, "arranged with a certain adaptability to all times and seasons," and emphasising "the pressing importance of observing what you can and where you can." The opening chapters of the book show that much useful work can be done without instruments, while the simple exercises in the drawing of weather charts bring out the value of co-ordination in such work. Every lesson is eminently practical.

The Clerk of the Weather.

ONE of the by-products of the great war has been a recognition of the importance of meteorology by the "man in the street." Notably with the evolution of aircraft have new problems been provided for the meteorologist, and on his skill in forecasting the fate of the airman often depends. This fact has so gripped the imagination of many who are not meteorologists that they desire to know something definite about the work of the modern Clerk of the Weather. For such, "whether man, woman or child," Mr. Horner's work has presumably been written, but it is doubtful if even the most enthusiastic among them will care to wade through many pages descriptive of the meteorological instruments, or will want to know "how some of the instruments are made." Mr. Horner has some amusing stories to tell, and concludes his volume with a chapter on "Weather-Saws and Rules." An excellent introduction is contributed by Mr. de Carle Salter.

British Rainfall.

THIS fifty-eighth annual volume from the British Rainfall Organisation† contains the usual exhaustive statistics, based on records from almost 5,000 stations, of rainfall in the British Islands for the year under review. A series of 24 maps show not only the monthly rainfalls, but the percentage fall of each month to an average of 35 years, while a map in colour brings out in a graphic way the relation of the total fall in 1918 to the same average. In the section on "The Distribution of Rainfall in Time," Dr. Mill discusses in an interesting way the "rain days," "droughts," and "rain spells" of the year. Equally interesting is his treatment of "seasonal rainfall," where two groups of six months each are made the subject of a careful analysis. Mr. Salter contributes a valuable article on "The Relation of Rainfall to Configuration."

* *The Study of the Weather*, E. H. Chapman, viii + 131 pp. Cambridge University Press, 3s. 6d. net.
† *Meteorology for All*, D. W. Horner, xv + 184 pp. Witherby and Co., 6s. net.
‡ *British Rainfall*, H. R. Mill and Mr. de Carle S. Salter, 68 + 232 pp. Edward Stanford, 14d.

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Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

THE MARKET FRUIT GARDEN

THE year that has recently closed will long be remembered by market growers for its glorious summer and heavy crops of clean, healthy fruit. In the writer's memory it will stand out even more vividly on account of the absence of serious trouble from pests and diseases. It is true that caterpillars of the Winter and other moths were very numerous in early summer, but full preparation had been made for their appearance, and they were much more quickly and successfully dealt with than in the previous year. In some districts, of course, growers were less fortunate, or the plague of caterpillars was worse, and much damage was done, whilst in other places there was a severe visitation of Apple-blossom weevil. Apart from these two pests there was little to complain about. Fungous diseases gave hardly any trouble, and I have never known a season so free from the various aphides that attack fruit trees.

The year's rainfall at my station was 29.82 in., which fell on 148 days. It was thus the driest of the last eleven years with the single exception of 1917, when the total fall was only 27.67 in. The year 1919 was not, however, so dry as the prolonged summer drought led one to believe, the heavy rain of the opening months bringing the total actually slightly above the average of the eighteen years during which my record has been kept, viz., 29.74 inches.

PROSPECTS FOR 1920.

It is hardly to be expected that crops of orchard fruit will be as heavy this year as they were last. It is true that the trees have ripened their wood thoroughly and are full of fruit buds, so that profuse blooming is probable; but they must feel the strain of carrying such a heavy crop during a dry summer, and will most likely set less fruit in consequence. The season may, however, be none the less prosperous on that account. We can hardly have too much small fruit (Gooseberries, Currants, etc.), for which there is sure to be a good demand, and dessert Apples are not likely to be a drug in the market; but of Plums and cooking Apples half crops would probably pay best. The public cannot use unlimited quantities of these unless

sugar is plentiful, and there is, unfortunately, little chance of the sugar scarcity being overcome this year. The grower who has to sell a heavy crop of cooking Apples at the prices ruling last year is not to be envied. The labour of picking, packing, and cating is very expensive, and there will now be increased railway rates to make matters worse. Added to this, a big yield means an increased call for manure, which is still almost prohibitive in price. Practically all the grower's requirements in the way of tools, trees, manure and spraying materials, are even dearer than they were last winter, and quite as difficult to obtain at any price. High values for fruit are therefore a necessity if growers are to prosper, and last year's experience shows that these cannot be realised with a full crop at home and even sub-normal imports. Cooking Apples were cheap throughout the season, and even now the very best realise no more than 8s. per bushel wholesale.

PESTS AND DISEASES.

Knowledge of what is in store for us in the way of insect and fungous enemies in the coming season would be worth much to a grower. Personally, I do not expect a repetition of the caterpillar plague of the last three years with anything like the same severity. I have grease-banded nine acres of Apple trees, and have secured quite an insignificant catch of winter



FIG. 12.—MR. FARRER'S EXPLORATIONS: BUNGALOW IN THE VALLEY REGION. (See p. 29.)

moths. The dry summer, with insect enemies of caterpillars unusually prevalent, was no doubt responsible for a great decrease in these pests, whilst spraying carried out in such favourable weather proved more deadly than usual. This year I am prepared for a strenuous spraying campaign against aphides, as another plague of these is about due. Moreover, I see that the reporters of the Board of Agriculture record the appearance of great numbers of Apple and Plum aphid eggs on orchard trees in Kent, Norfolk, and Worcestershire. With respect to fungous diseases there are few data to go upon, but it is to be hoped that the past dry summer has subdued these to a considerable extent. Certainly the trees look healthy at the present time, there being little evidence of Apple scab on the young wood, for instance.

WET WEATHER WORK.

As there were only nine days without rain during December the problem of providing work under cover became acute. This is always a difficulty on a fruit farm. Plenty of hands are essential even in winter if the outdoor work is to be kept under, but the trouble is to find profitable work for them when rain falls heavily. At one time a small regular staff could be kept, and any extra hands required were

taken on casually on the understanding that they must lose time when the weather prevented them from doing the job for which they were engaged. As the law stands at present a man must be given employment in any weather if he presents himself ready for work. Presumably, however, the employer is not obliged to provide work under cover. He could say: "There is the job for you if you care to get on with it in the pouring rain." But few, I imagine, are hard-hearted enough for that. To the credit of the men I am glad to say that I find them much more ready to keep out in the rain than they used to be before wages were raised. Still, there are times when work under cover must be found. The making of boxes for picking and storing Apples used to be a regular winter job, but the price of timber is now so high that there is little temptation to add to the stock of boxes. Old ones are mended, steps and ladders repaired, Currant cuttings made, and Potatoes put into trays for sprouting. For the less skilled hands there is always the sawing of logs for firewood, a job which could be done far more economically with an oil engine and circular saw.

ARTIFICIAL FRUIT SPURS.

I am surprised to find that many Kentish growers still shorten laterals to about half an inch to form fruit spurs on Apple trees. I thought that 2 in. was now considered the minimum. Certainly the larger the spur, the greater the probability of a fruit bud maturing on it the first season. Only in the case of a prolific variety with slender laterals can even a 2 in. spur be depended on to form a fruit bud in one year. Robust growers with stout laterals more often respond with growth which has to be spurred again for two or three years before the coveted fruit bud appears. On such vigorous varieties I like to make the spurs about 5 in. long. Then the first season one or two shoots develop from the end buds, but there is a good chance of getting a prominent fruit bud nearer the base. The following winter the spur is shortened to this bud, and the thing is done. There is, I admit, a curious temptation to make short, neat spurs when pruning, but it certainly delays fruiting. As a matter of fact, the longer the wood left in the first instance, the greater the chance of getting a fruit bud close to the parent stem, and therefore the shorter the resulting spur when completed.

According to an account of Australian methods of pruning which appeared recently, a very different plan of inducing young trees to come into bearing is followed there. Hard pruning is the rule for three or four years after planting, just as it is here. After that the laterals are left full length until fruit buds form on them, when they are shortened to one of these strong laterals, and those springing from the upper side of nearly horizontal branches are cut clean out, leaving the weakest to fruit. The object is to make the tree bear along the laterals rather than on short spurs along the main branches. The reason for shortening the laterals ultimately to one of the fruit buds is that, if left full length, the spurs nearer the base die out in time.

The plan appears to me to be the best that could be adopted for bringing a tree quickly into bearing. There is no doubt that fruit spurs form along laterals much sooner if they are left entire than if shortened. In this country, on any but rich soils, or under very generous cultivation, the probability is that prolific varieties would bear too soon and remain stunted in growth. Presumably, if this plan be followed, the main branches must be fewer and more

thinly disposed than we usually have them to make room for the laterals.

CRAB-APPLES FOR MARKET.

A relative who intends to plant some adjacent land with fruit trees is putting a number of John Downie Crab-Apples in the hedgerows surrounding the proposed orchards. The main idea is to secure a crop from land that would otherwise be unproductive, and it is hoped also that the free-blooming Crabs will serve to pollinate the other Apples. In this latter they can hardly fail to fulfil a useful purpose, but whether the fruit will be profitable to market remains to be seen. It should meet with a ready demand, as people seem to be fully alive to the value of Crabs for making jelly, and John Downie would make an attractive appearance in the shops.

THE SILVER LEAF ORDER.

The Silver Leaf Order, which came into force on January 1, should meet with the approval of all up-to-date growers. It simply makes it compulsory to cut out all dead wood from Plum trees before April 1 every year, and burn it. Inspectors of the Board of Agriculture, or the local authority may also order the burning of any dead wood of other trees on which there are visible fruiting bodies of the fungus *Stereum purpureum*. *Market Grower.*

pour shorter as the months go on—though in this particular season September is waking up with a prolonged attack of ill-temper for the unnatural amiability of August. But the weather does not definitely and finally dry its tears until frost begins to lay hold of the high tops in October. It may be judged, then, from this first-hand account, how little the plants of this region have to dread from the heaviest rainfall of Scotland, Westmoreland or Ireland. The only marvel to me is, indeed, how they ever accumulate sufficient sun-force to set their seed or mature it.

Not that the valleys lack heat, and even torrid heat, in occasional glimpses of the sun throughout the summer. But before I descend their steamy depths in pursuit of a July Rhododendron, I had better, at the risk of repetition, give a detail of the zones into which my brief experience divides the flora of these parts. In the first place, up to 4,000 feet, all may be reckoned as tropical, half-hardy, or untrustworthy; from four to six thousand feet, little better can be said, though the distrust need not be quite so desperate. This is the region of the deep river glens, buried in close forest, and walled by high hot steepes of grass and Bracken, with woods of evergreen Oak. This may be called

It may be imagined then, that the valley zone does not offer very much. *Mimulus ringens* (it seems) is very handsome with its purple and paler-purple helmets, sprawling along the damper gravelly places of the wayside. There is also a pretty, sprawling *Commelina* with blue flowers, and blue stamens fluffy as if of chenille; and September brings into bloom the universal *Auemeone vitifolia* of these hot grassy foothills, a sadly inferior, small-flowered, white form, as compared with its ample-faced pink development up the Kansu Borders of Tibet. But the glories of the valley region are the *Hedychiums*. One of these, indeed, ascends to the uppermost limit of the Middle Zone and abounds all over Hpimaw Hill; so that it might easily prove generally trustworthy even in the open at home. Unfortunately it is not the most brilliant, having spikes of rather ragged white and yellow flowers, borne at an angle to the stem. Another white and yellow species, but much larger and more solid and more sumptuous, belongs to moist places in the lower valley region; while the most gorgeous of all has stout spires of brilliant cinnabar-red, and luxuriates in dells of the middle region. But all these depths are the paradise of Orchids, and give little hope of hardiness, when one sees great golden flights of *Dendrobium* flopping from

MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

No. 13.—THE RAINS.

HPIMAW and its adjacent ranges have no special rainy season. The monsoon cloud-masses are not able to advance so far north against the barrier of the Burmo-Chinese Alps that hedge the deep valley of the Salween on the east from the head-waters of the Nmai Hka Irrawaddy on the west. This, indeed, is the official theory, and as such I state it with all the solemnity it deserves: in actual practice, however, the Hpimaw ranges seem to have a very effective rainfall of their own, and the plant-collector experiences torrential deluges every day and night, and almost all day and night, from June to November. Roads (or tracks) are washed away; convey and pilgrimage become impossible; the steady downpours discourage everything except fungus; boots and bags adorn themselves obstinately in blue fur, and the dried specimen cases turned into successful Mushroom houses. This is the rainy season here at its best: at its worst it must not only damp all collecting-ardour, but swamp it out. Fortunately, this season the monsoon rains swept up in their main mass to India, and left Burma no more than her normal share; but last year India was left parched and dry, while Burma received all to herself the whole portion that should have been divided between the two. The heavens wept as insatiably as Rachel in Ramah, and the Alps retired for five months together into a solid blank darkness of unceasing deluges. In a more average season this is what happens: About the end of May or beginning of June the fine weather breaks: cloud-banks advance steadily out of the south-east, and rain becomes more frequent and violent, especially at night. As June matures, the rain becomes more impartial in its distribution over all hours of the twenty-four, and by the third week of the month amounts to a fairly persistent soaker from dawn to dark, and round again. The new moon often brings a break of a few days, but July marks the real climax of the rains, and for a week on end at a time nothing is heard but the incessant roar of water on rain-forest or thatched bungalow. After this, matters insensibly begin to ameliorate. I have been favoured with a break of miraculous duration in August, and, generally speaking, the breaks become longer, and the spells of down-



(Photograph by Reginald Farrer.)

FIG. 13.—NOMOCHARIS PARDANTHINA FLOWERING IN ITS NATIVE HABITAT.

the valley zone: the gravelly soil, the acute slopes, make this a dry region, despite deluges the most Noachian. Rhododendrons will not tolerate it at all, except on the actual cliffs of the river ghylls. From six to nine thousand feet matters begin to amend, and plants of this region may or may not be hardy, as their mood and the gardener's fortune may prove. Some certainly are, some as probably are not, for this is the zone of the upper grass slopes, and the rain forest. I call it generally the middle zone, and we could divide this again into Lower, Middle and Upper, where at about 9,000 feet the rain forest definitely passes into the Alpine zone with the appearance of the great Hemlocks, Pines, Piceas and the Campbellioid Magnolia. Of the two notable Lilies, *Lilium Wallichianum* belongs to the lower middle zone, and *L. nepalense* (to my surprise) to the middle—both being plants of the open grass slopes, but hardly, if at all, occurring together, as *L. nepalense* only begins where *L. Wallichianum* leaves off. From nine to eleven thousand feet the Alpine zone is forest, with glorious open glades of *Nomocharis* (see Fig. 13) tailing off at eleven thousand feet into the Upper Alpine zone of scrub, Bamboo, etc.; and this again, at twelve thousand feet, lands us at long last into the bare openness of the high Alpine zone.

It is almost with a sense of detachment that one passes along, peering out through the dense vallance of rain perpetually streaming off the brim of one's hat. But, even if it be only for the greenhouse, I have my eye on a Saxifragaceous bush of some five feet, with large domed heads of turquoise-blue blossom; *Luculia gratissima* is more charming than ever in the rocky gorges of the Ngaw Chang; and there are queer Scitamineads, with fantastic spires of azure or canary colour, that I should like to try conclusions with. After all, let cultivators remember that a large number of species quite hopeless of cultivation in the open of an English garden may easily find themselves safe and at home in the deep, close shelter of some shady overhanging ghyll or dell in an English wood. In this direction I am quite sure that experiment will prove almost as profitable as it will certainly be interesting. As for the Rhododendron after which I undertook these long days of dripping peregrination, it proved to be *R. crassum* or thereabouts—a noble, great white-trumpeted species, and another fit subject for the experiment suggested above. And so, having found it, I turned homeward again: whereupon the rain immediately left off and the weather became brilliant. *Reginald Farrer.*

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, and January 3, 1920.

VEGETABLES.

EXHIBITION ONIONS.

ONE of the most important items in the successful culture of large Onions is thorough preparation of the ground the plants are intended to occupy. The position chosen should receive the maximum amount of sunshine and have full exposure to air. The size of the plot will be according to the number of rows planted; there should be a space of fifteen inches between the rows and of one foot at each end of the bed. Take out a trench at one end, the width of the bed, and one spit deep, and wheel the soil to the other end. Next shovel out the finer soil, and place this also at the opposite end. Then put a good layer of farmyard manure in the trench, and fork this into the bottom soil, thoroughly mixing the soil and dung. If the subsoil is heavy add old road scrapings, potting shed refuse, mortar rubble, or anything that will keep it open and facilitate a free passage of water. The Onion is a deep-rooting plant, and should be grown in deep, sweet soil. Turn over the second spit of soil on the site of the one excavated, and put the "crumbs" from the bottom of the second trench on the top. Continue in this way until the whole bed has been trenched, using the soil wheeled from the first trench to fill in the last one. Leave the surface as rough as possible, and dust it freely with soot and lime or wood ash.

The seed should be of a good strain; nothing is gained by using cheap seed. It should be sown early in January in boxes or pans, which should be clean and well-crooked, with rough pieces of turf placed over the drainage. The compost should consist of two parts fibrous loam, one part leaf-mould, and one part manure from a spent hot-bed, sifting the whole through a half-inch mesh sieve. A little sand or fine charcoal mixed with the soil will help to keep it open and sweet. Three parts fill the pans or boxes with the compost, and make the latter moderately firm; finish with a sprinkling of the finer soil. Sow the seeds thinly and evenly, and merely cover them with fine soil, which should be pressed down by means of a flat piece of board. Label the pans, water them, and place them in a house having a temperature of 60°. Cover the seeds with a piece of glass, and on the latter spread a sheet of paper. They will soon germinate. Therefore a close watch should be kept after a day or so, and, as soon as the seedlings appear, remove the covering, and place the receptacles in a light place.

SUBSEQUENT TREATMENT.

The young plants may be pricked out when ready for transference into boxes two feet long, one foot wide, and four inches deep. The boxes should be clean and carefully crooked with rough turf or leaves over the drainage material. Use similar compost as advised for seed sowing, with the addition of a little bone meal. Make it firm in the boxes, and lift each plant as carefully as possible, as the roots are very long and every one should be retained in order that the plants may grow quickly. Make a good hole for each one (about two inches apart) and drop the roots straight down into it, allowing the base of the plant to be just under the surface of the soil. Press the soil firmly around each seedling and make the surface level as the work proceeds. Care in transplanting is an important detail to observe. Plants put out with only half their roots never make good headway afterwards. When the boxes are all filled they may be placed in a vinery or Peach-house that has been recently started, as near the roof glass as possible to encourage the development of sturdy growth, or, failing this, in a frame with one row of four-inch piping running through it is suitable. Keep the plants close for a day or two, syringing them overhead in the early afternoons, and watering them whenever they appear to be dry, taking care, however, not to over-water. Air should be admitted on all favourable occasions, but on cold, windy days, such as are frequent in early spring, they may be kept in somewhat closer conditions. As the season

advances admit more air, until, as the plants gain strength, the lights may be removed entirely during warm days. Early in April or thereabouts the boxes may be removed to cold frames or shelters, where they may remain until planting-out time arrives.

SUMMER TREATMENT.

In the meantime the bed should receive attention. About a fortnight before planting-time give it another dressing of soot and wood-ash, and fork this material well below the surface, breaking up the surface soil as finely as possible and leaving it for a few days to settle. On a fine day, when the surface soil is dry, tread the bed firmly, but on no account do this when the soil is at all wet and sticky. Weather permitting, the second or third week in April is a suitable time in which to plant Onions, and if the advice given above is followed, the young plants should then be ready for transference to the bed. Mark the lines at the distance stated, and use boards to stand on. Lift each plant carefully, with a ball of soil, and plant firmly with the bulb just under the surface, but no deeper. It is a good plan to water each row with a rosed can as it is finished. The plants may be syringed every afternoon in warm, dry weather, but should cold weather prevail do not wet the plants, as moisture is productive of mildew. Rather use the Dutch hoe to stir the surface soil thoroughly. Hoeing at all times is very beneficial, as it favours quick, healthy growth.

When the plants have become well established, give the roots a good soaking of diluted manure water and, in another ten days or so, apply a dusting of concentrated fertiliser, or, failing this, soot and wood-ash, and water this in, or, better still, apply it in showery weather. Watch closely for mildew and, if this disease appears, dust the affected part with flowers of sulphur. In some seasons the Onion maggot is very troublesome. It may soon be detected, as in infected plants the growth begins to flag and turn yellow; and if the bulb is examined the maggot will be found at the roots. A sprinkling of lime round the roots will sometimes arrest the injury, but, more often than not, it is best to root up the plant and burn it. The soil from which these unhealthy Onions are removed should be dusted with fresh lime. The bed should be well watered in dry weather; light waterings are worse than giving none at all as it encourages roots to develop near the surface, and the hot sun shrivels them. About the middle of June or before, if thought necessary, give the bed a top-dressing of manure from a spent Mushroom bed or from an old hot-bed, as this will keep the surface roots cool and encourage good growth. Every effort should be made at that stage to keep the plants growing healthily, and a liberal syringing overhead each afternoon in sunny weather will be of great benefit to them. Use the hoe whenever possible, as there is no greater aid to growth. As the bulbs begin to swell the loose skins should be removed from them and any tops that are likely to bend over should be supported by neat stakes. As autumn approaches and the bulbs begin to colour, give less water both at the roots and overhead, as the night dews will be sufficient to satisfy their needs in this respect.

During early autumn the grower should frequently examine the crop, removing all loose skins to allow the sun and air to reach the bulbs and develop the straw colour, which indicates good culture. As they ripen, the tops will bend over easily. Bend the tops in between every two rows, with the foliage all laid one way. This allows the sun and air to reach the bulbs. In about a week's time lift each bulb with a fork, but do not quite sever all the roots. Allow them to remain for a few days, and then lift them completely and rub the soil gently from the roots. Dry the bulbs on boards or old staging raised off the ground, and in a few days' time remove them to a greenhouse or airy shed and lay them down carefully to allow the tops to wither completely. When this occurs cut the tops off close to the bulbs and tie each neck tightly with a piece of string. *R. W. Thatcher, Carlton Gardens, Market Harbor.*

VALUE OF DEEP CULTIVATION.

WAR conditions have compelled many growers to demonstrate the possibility of gardening well on lines altogether opposed to long-held opinions and theories. The fact that Grapes have never been better than when produced almost or wholly without applied heat has been already commented on in these pages. And what happened in England has been the case also in Scotland. Not only in the more favoured parts, but even in the Highlands, equally favourable results have been obtained. My own experience, however, goes to show that late Grapes without fire heat do not keep well.

But it is rather to experiences in the open garden that I wish to refer. It was impossible to cultivate deeply much of the garden during the war, let alone trench it, and it was only during the past autumn that all vacant ground was retrenched for the first time since before the war. In each successive year conditions became worse, so that up to the present year I had to produce crops practically without cultivating the ground at all. This can be done quite well with certain crops, e.g., Brussels Sprouts, Broccoli, and Spinach immediately succeeding Potatoes. For Strawberries, however, such conditions would appear to court failure. Yet one-year-old Strawberries were seldom, if ever, better than they were last year, and these, as well as the crop for the present year, were planted in undug ground. The process was simple. The runners were encouraged to root quickly by means of an application of chemical manure, and when ready they were lifted by means of a trowel, each with a ball of soil attached, and planted in a hole made also by the use of a trowel, similar manure being mixed with the loose material moved in making the hole. This was made firm around the roots of each plant, which was then watered and left to itself, except for hoeing, till spring, when cow-dung and more fertiliser were applied. Kentish Favourite was the most successful variety. This year I have this sort, also Givon's Late, Sir J. Paxton and Bedford Champion treated similarly, and to date they all look well. Two and three years ago plantations of Raspberries had to be renewed, and these were planted in unprepared ground, but well mulched. These, too, are doing well. Part of the recent year was by far the worst for garden work, and winter crops generally had to be planted with scant preparation. Savoys, for instance, were treated as the Strawberries had been, with the difference that the site for each plant was loosened by a spade, a little manure being sprinkled on the ground previously and the plants set with a dibber. Two kinds of fertilisers were used, and the plants, though all doing well, showed a great difference in growth and appearance, and at the present moment the two batches might well be taken for very distinct varieties, though all were raised from seed of the same packet sown at the same time.

The only flowers that had no previous cultivation were respectively Geraniums and Dahlias. The latter were not very successful, but the former did perfectly well.

Some grass land that had been planted for about 25 years with Narcissi was cropped for three years, after being broken up, without the addition of any manure beyond a sprinkling of an artificial fertiliser during the period of growth.

Some readers may assume that I am in the foregoing remarks recommending a system of non-cultivation. On the contrary, had the ground not been deeply cultivated for a very long period, I should have been courting disaster in attempting to grow crops as just related. Part of the grounds were deeply trenched over 200 years ago, and in that ground trees have made vastly superior timber to those in the immediate vicinity, but in ground unprepared. Similar variations may be seen in farming. If it is believed that the soil, and not the farmer, is to blame, it may, on the contrary, be shown that the gardens of the labourers on the farms produce crops equal to any. So we must conclude that deep cultivation on the farm would yield equally good results as the workmen's plots. *R. P. Brotherton, Tynningham Gardens, East Lothian.*

ORCHID NOTES AND GLEANINGS.

CYPRIPEDIUMS FROM WESTONBIRT.

From Sir George L. Holford's gardens, Westonbirt, Mr. H. G. Alexander writes: "Herewith I am sending you a selection of blooms of some of our Westonbirt *Cypripediums*. We have a goodly number of plants in flower and many fine things to follow. As you will see from the blooms sent, they are getting back to their old form in spite of the rather bad time they have had during the war." The flowers are magnificent examples and include the following:—*C. Golden Fleece* (insigne *Sanderæ* × *Antinous*) the best recommendation of which is that it is an improvement on *C. insigne Sanderæ*, with the same clear yellow and pure white colour. *C. Rossetti magnificum* (insigne *Sanderianum* × *Mandiae*), coloured like *C. Golden Fleece*, but with emerald green lines in the petals and dorsal sepal.

C. Lord Wolmer, Westonbirt variety (*Hera Euryades* × *Leeanum Clinkaberryanum*), upper sepal white with dotted lines of purple colour, the lower sepals being enlarged and coloured like the dorsal sepal. *C. Pixie* (*Alabaster* × *Alcibiades*), a grand flower of the same class as the last named and also having the abnormally large lower sepals.

C. Lucifer (*F. C. C.* var.), (*Niobe*, Westonbirt var. × *Hera Euryades*), a very large and handsome flower of *Niobe* style, but much enlarged.

C. Brighteyes (*Earl Tankerville* × *Sultan*), a charming, very dark flower, the large maroon blotches on its fine white dorsal sepal being very showy.

C. Cyclops (*A. M.* var.) (*Actæus* × *fulshawense*), a gigantic flower of the *C. Dreadnought* class and coloured like *C. fulshawense*, but darker and formed on a larger scale. *C. Corsair* and *C. Baldur*, two fine Westonbirt hybrids, are also very distinct and pretty, both derivatives of *C. Niobe* Westonbirt variety.

THE ALPINE GARDEN.

ONOSMA ALBO-ROSEUM.

STUDYING the records of *Onosmas* known to the botanist the rock gardener feels that he, at all events, is no Alexander with no more worlds left to conquer. *O. albo-roseum* has, however, been in cultivation for a considerable time and is the one which ranks next to *O. tauricum* in popularity. It is many years since I first met with it and was induced by its beauty to cultivate it. It charmed me then and charms me still with its rather woody branches and its hairy leaves and lovely tubes of waxy white tinged with red in the most delightful way. It is lovely on level rockwork but is still more beautiful when growing from a fissure of rock or between the stones in a wall garden. *O. albo-roseum* loves loam, peat, or leaf-soil and sand, and ought to have a dry sunny place wherever it is planted. Its one enemy, which tends to shorten its life, lies in the wet of our winters. If it can be shielded from this by a shelving rock well and good, but this is not easily done without depriving it of sun, and it is possibly better to cover it with a sheet of glass during the months from October to April. Cuttings root readily in a frame or cool greenhouse. *S. Arnott.*

ANEMONE CYLINDRICA.

A scathing criticism on *Anemone cylindrica* appears in Mr. Reginald Farrer's valuable work, *The English Rock Garden*. He dismisses it with: "A. *cylindrica* turns out to be a really worthless weed, with flowers of a feeble yellowish-green, carried singly on long naked foot-stalks." And it is impossible for those of us who have cultivated this Windflower to take exception to the verdict. I believe I first received specimens from the late Max Leichtlin, and, as most of the race are of much beauty, I expected to have some pleasure in the plant when it flowered. But it was a great disappointment. The stems were from nine to twelve inches high and the flower was, as Mr. Farrer says, of a "feeble yellowish-green." I write this note as a warning that *Anemone cylindrica* is not worth growing. *S. A.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Silver Leaf.—Adverting to my previous note (Vol. LXVI., p. 212) on this all-important subject, I am glad *Market Grower* has entered so heartily into the question. It is quite true there are experts who experiment, and, if the first trial succeeds, take it for granted that the experiment has been a success; but, when practised elsewhere, it is not always a success. With regard to the specific which I have introduced for the eradication of Silver Leaf, it has been in the experimental stage for about eight or nine years. One important point to bear in mind is the season at which the spores of micro-fungi go to rest, and awaken again to activity. So far as I know, mycologists have said but very little, horticultural mycologists practically nothing, about this aspect of the question; therefore at about the time of, or soon after, the fall of the leaf, as resting spores of micro-fungi are being formed, is the season for

The banding of Plum trees with a penetrating paste that will not kill the bark nor injure the layers of cambium cells, has proved an excellent remedy. *Market Grower* inquires on page 502 regarding a surface banding only; it would be useless; there are many things, such as carbolic acid, which will destroy the fungus, and it will also penetrate and kill the subject. I shall be pleased to communicate with readers interested in the prevention and destruction of this malady amongst Plums. *Magister Palae.*

Big Bud Mite on Red Currants.—Last year you were good enough to publish an appeal of mine for Red Currant twigs in connection with Black Currant Gall Mite. Owing to the lateness of the season I had very few replies, and I should be greatly obliged if I might appeal to your readers again for material. The position is this: I can find *Eriophyes ribis* almost anywhere on Red Currants growing in the grounds of the Research Station. The question, therefore, is whether that is a peculiar state of the bushes here or whether, as is far more probable, the

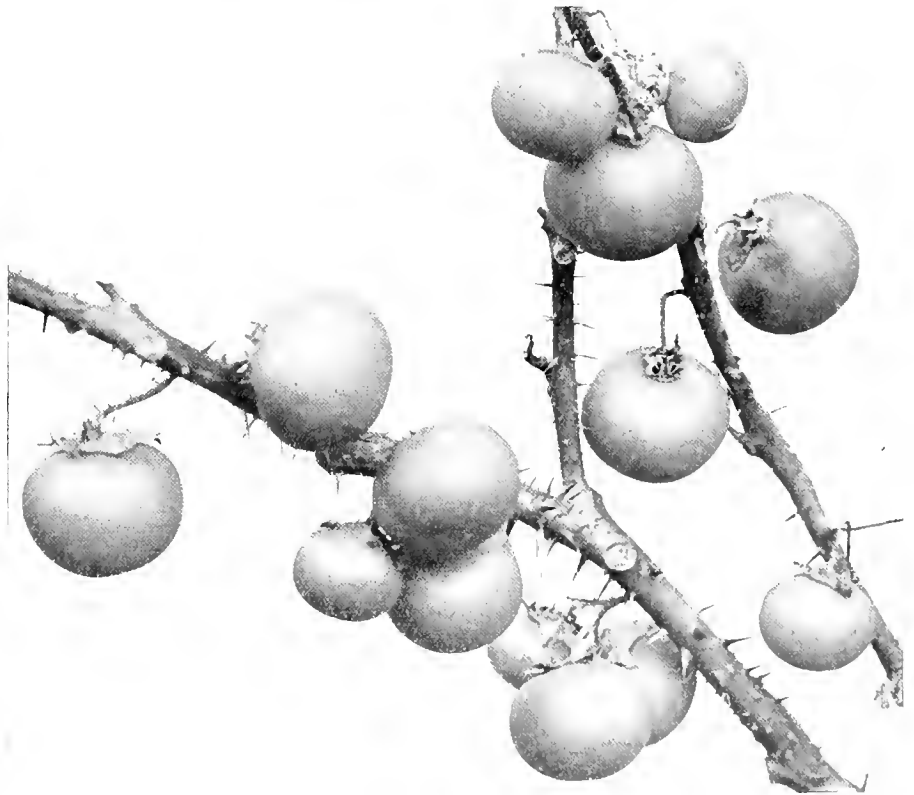


FIG. 14.—FRUITS OF SOLANUM ACULEATISSIMUM.

(See p. 32.)

attacking them. In spring the spores germinate and the disease spreads very rapidly. Having studied the character of the spores, and the life of the mycelium, experiment was largely—so to speak—made easy. The year 1919 was very favourable to the propagation and the development of Silver Leaf, and, having sprayed in early April, 1919, against the disease, and, further, finding such trees flourishing and free from attack, whilst controlled trees near by, unsprayed, unattended to, were suffering badly, one was bound to confess that the cure was effective. Then it was, that, after (1) careful study of the life history of the spore, (2) the correct time for attack, and (3) the strength at which the spray can be used, I considered the time was ripe to make the remedy known to the fruit-growing world. My experiments have been carried out without any fee or reward, partly owing to a deep interest in the subject of micro-fungi, and, secondly, to endeavour to preserve our Plum trees from destruction. Spraying Apple trees in winter destroys many forms of fungi, besides destructive insects,

distribution of *E. ribis* on Red Currants is far wider than is generally supposed. I find the most common place for infected buds on the Red Currant is towards the base of a side shoot. It would help me in this investigation if growers would kindly send me a few twigs (preferably side shoots), taking care to preserve at least the four basal buds. The name of the variety and the approximate distance from the nearest Black Currants should be stated. *A. H. Lees, Agricultural and Horticultural Research Station, Long Ashton, Bristol.*

Grape Madresfield Court and Inside Borders.—Mr. Besant (p. 5) does well to call attention to the good qualities of this Grape, not the least of which is that it succeeds well in a cool Peach house where there are generally many opportunities for running up a single rod of a vine between the Peach trees, especially near the path where it need not be syringed daily. In such a house desirable Grapes will be ready to cut early in September. I am well acquainted with the vines at Melton, which Mr. Besant manages so well, and where he has such ample opportunity.

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 13.—The first horticultural meeting of the year, held on the above date at the Royal Horticultural Hall, Westminster, was of an interesting character, but of comparatively small extent. The attendance was good. Orchids were the plants most largely shown, and the *Calanthes* and *Laelias* were particularly good. Carnations were scarcely so good as usual. Alpine flowers and shrubs, *Chrysanthemums*, *Poinsettias* and *Azaleas* were other interesting subjects, while several exhibits of fruits and one of vegetables lent variety to the exhibition.

Floral Committee.

Present—Messrs. H. B. May (in the chair), W. J. Bean, R. C. Notcutt, John Green, J. Reuthe, John Heal, C. R. Fielder, Thos. Stevenson, W. H. Page, Arthur Turner, C. Dixon, H. J. Jones, Chas. E. Pearson, E. F. Hazelton, W. P. Thomson, E. H. Jenkins, George Paul, J. F. Bennett Poe, H. R. Darlington, W. B. Cranfield, J. Jennings, Jas. Hudson, Sydney Morris and E. A. Bowles.

AWARD OF MERIT.

Chrysanthemum The Favourite.—A shapely, pure white, *Chrysanthemum* that is likely to prove popular because of its lateness of flowering. The blooms are of medium size and with evenly-reflexing outer florets and incurving central ones. The blooms are of very firm texture and the foliage is neat and light coloured. Shown by Messrs. GODFREY AND SON.

GROUPS.

Dwarf shrubs suitable for planting in a rock garden were exhibited in variety by Messrs. G. G. WHITELEGGE AND CO., and the kinds included *Juniperus sabina prostrata*, *J. canadensis*, *J. japonica aureo-spicata*, *Retinospora obtusana*, *R. pisifera nana aurea* and the very graceful *Thuja occidentalis Ellwangeriana Rheingold*. The same firm showed *Saxifragas* flowering in pots and the charming *Iris reticulata* (Silver Flora Medal).

Messrs. ALLWOOD BROTHERS also showed Carnations in good style, and had fine blooms of Wivelsfield White, Enchantress Supreme, Beacon, Triumph, Mary Allwood and the new perpetual-flowering Malmesbury variety Jean Allwood, with clear yellow flowers (Silver Banksian Medal).—Perpetual-flowering Carnations were shown well by the President of the Society, Lord LAMBOURNE, and grown at Bishop's Hill, Romford. Of Mrs. H. Burnett, May Day, Baroness de Brien, Rose Dore and Nora West there were capital blooms (Silver Flora Medal).—Messrs. STUART LOW AND CO. submitted Carnations and included in their group a vase of the new variety, Mrs. T. Ives (see *Gard. Chron.*, December 27, 1919), with Brilliant, Sunbeam and Red Ensign. The firm also showed a few Indian *Azaleas* (Bronze Banksian Medal).

Varieties of *Azalea indica*, well-flowered, were exhibited by Mr. L. R. RUSSELL, the leading varieties being Fred Sander, rose pink, very handsome; Mdme. Petrick, pink; *Vervaenaena*, bluish and bright pink; and *Vervaenaena alba* (Silver Flora Medal).—Ferns, *Cyclamen* and *Hydrangeas* were exhibited by Messrs. H. B. MAY AND SONS (Bronze Flora Medal).—*Rhododendron* blooms, cut out of doors in Cornwall, were shown by Messrs. R. GILL AND SON. These included *R. argenteum*, *R. barbatum*, *R. Harrisii*, *R. Cornubia* and *R. arboreum* seedlings. With these were flowering sprays of *Erica colonades* (Bronze Banksian Medal).

The graceful and vivid scarlet *Euphorbia jacquiniæflora*, so useful for winter decoration, was splendidly shown by C. A. CAIX, Esq. (gr. Mr. T. Pateman). The *Nodæ*, Welwyn, Herts. The graceful plants were well grown and associated in a large group with equally well grown *Poinsettias*, the latter represented by the scarlet, pink (*Trebsii*) and cream-coloured forms (Silver-gilt Banksian Medal).

An attractive group of *Chrysanthemums* from Messrs. K. LUXFORD AND CO. included large

vases of blooms of such good late sorts as Winter Cheer, Enfield White, Mdme. R. Oberthur (an elegant white variety), and Baldock's Crimson (Bronze Flora Medal).—*Begonia Gloire de Lorraine* var. *Lady Waterlow*, exhibited by Sir P. WATERLOW, Trosley Towers, Wrotham, is a white-flowered form that appears not to be so effective as the Turnford Hall variety, already well known.—Mr. J. J. KETILE once again made a delightful display of Violets, and put up about three dozen bunches of his new variety named Mrs. David Lloyd George which has large and fragrant flowers (Bronze Flora Medal).

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. secretary), William Bolton, Walter Cobb, A. McBean, R. Brooman-White, E. R. Ashton, T. Armstrong, J. E. Shill, Arthur Dye, Frederick J. Hanbury, J. Wilson Potter, Chas. H. Curtis, R. A. Rolfe, Gurney Wilson, C. J. Lucas, J. Charlesworth, S. W. Flory, Fred K. Sander and Pantia Ralli.

Awards.

FIRST-CLASS CERTIFICATE.

Odontioda Alcantara Ralli's variety (*Oda Cooksoniae* × *Odm eximium*), from PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes). A magnificent hybrid, and nearest to the fine *Oda*, *Lady Veitch*. The flowers are of large size and perfect in form. The colour is deep crimson with a golden glow, the margins of the segments being pure white. This was exhibited under the name of *Oda*, *Nada Ralli's* var.

AWARDS OF MERIT.

Laelio-Cattleya Alborak (L.-C. Isabel Sander × C. Maggie Raphael alba), from Baron BRUNO SCHRÖDER, The Dell, Englefield Green (Orchid grower Mr. J. E. Shill). A large flower near to the best form of L.-C. Isabel Sander. The sepals and petals are pure white, and the lip light violet with white margin and yellow disc.

Odontoglossum Thwaitesiae Facey's variety (*Harrvanum* × *Rossii rubescens*), from W. R. FASEY, Esq., The Oaks, Holly Bush Hill, Snaresbrook (gr. Mr. E. J. Seymour). The flowers show much influence of the *O. Rossii* parent. The petals are bluish-white barred with claret colour, the lip mauve, and the crest yellow.

OTHER EXHIBITS.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), showed a fine specimen of *Odontoglossum Gatton Princess*, forms of which have been illustrated in *Gard. Chron.*, and a similar variety was described in the issue of December 13, 1919, p. 299.

Baron BRUNO SCHRÖDER showed fine forms of the Dell strain of *Laelio-Cattleya Schröderae* and *Cypripedium Eurybiades*, both of which have received the highest awards.

Lady WATERLOW, Luton Hoo (gr. Mr. Metcalfe), was awarded a Silver Flora Medal for a grand group of the handsome *Laelia Gouldiana*, comprising sixty plants bearing, altogether, 450 flowers of bright mauve colour. Great credit is due to Mr. Metcalfe for so successfully cultivating this showy species.

Mrs. WILLIAM RAPHAEL, Castle Hill, Englefield Green (gr. Mr. Brown), staged a most beautiful and effective group of vases of cut spikes of the pure white *Calanthe Harrisii*, the spikes bearing from thirty to forty flowers each. A Silver Flora Medal was awarded.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a fine group of *Odontoglossums*, *Odontiodas* and *Cypripediums*. An interesting novelty was seen in *Oncidium incurvophorum* (*incurvum* × *corynephorum*), a very distinct hybrid adhering in form, and in its branched inflorescence, to *O. incurvum*, but with the light violet tint on the inner halves of the segments, as in *O. corynephorum*. It was recommended to the Scientific Committee for a Certificate of Appreciation. Novelty in Messrs. Charlesworth's group were *Odontoglossum Thetis* (*Solon* × *Dusky Monarch*), a noble, dark coloured flower; *Brasso-Laelio-Cattleya Dellingtonii* (B. L. Mrs. M. Gratrix × B. Digbyana), and *Laelio-Cattleya Thetis*

with inside borders, to grow this Grape to perfection. All vines should have their roots restricted to an inside border as they are then more under control. I saw the vine growing from which the late Mr. Meredith, of the Garston Vineyard, Liverpool, cut those bunches with the large berries that really brought this Grape to public notice. The vine was planted inside a lean-to house, facing east, and grown on the extension principle, which is in every way suited to this variety. Later, part of the vine was carried through the partition and eventually occupied the whole of the structure, annually producing fine crops of excellent fruit. Those wonderful bunches, too, of Mrs. Pince, which Mr. Meredith grew, and which caused such a sensation, were from vines growing in an inside border. To return to the variety Madresfield Court, I know of no other Grape that will produce the quantity of high-class bunches, combining size of berry and flavour, that this variety will. Vines of Madresfield Court planted at Swannore in 1879 have borne heavy crops ever since. *E. Molyneux*.

Spade r. Plough for Potatos.—Few will disagree with Mr. Taylor (p. 8) as to the advantage of manual labour over horse labour in the production of the largest crops of Potatos. In the garden it is usual to trench the soil in alternate years as much as three feet deep, at the same time adding manure near the surface, not always for the Potato alone, but for crops to follow in due course. This method of cultivation will produce a crop at the rate of 30 tons per acre. But surely Mr. Taylor sees a huge difficulty in such preparation where hundreds of acres are cultivated on one holding as compared with the few rods in a garden. At the present price of labour the most enterprising of our Potato growers would hesitate before launching on such a programme, especially when such men produce from ten to twenty tons per acre by the aid of plough. Does not Mr. Taylor see what little difference there is between the maximum crop of the hundreds of acres and the crop from the few rods, taking into consideration the cost in time and money? *E.*

Solanum aculeatissimum.—Frequenters of Covent Garden Flower Market are aware that some very interesting subjects arrive at various times, in wicker baskets or "pads," among the flowers imported from France. At the present time these exports include pads of *Solanum aculeatissimum* (see Fig. 14). The stems are stiff spiny and leafless, but they carry numbers of roundish fruits, dry and firm, not unlike small Tomato fruits if the latter were hard skinned and dull instead of glossy. The colour is rich vermilion red. Set up in suitable bowls and vases, with contrasting or harmonious foliage, these fruiting growths of *Solanum aculeatissimum* are effective for home decorations, especially during the dull season when flowers are scarce and expensive. Moreover, if kept free from dust the showy fruits last a very long time in a bright and attractive condition. *S. aculeatissimum* is rarely grown in this country, but in the warmer, sunnier south of France it grows freely and ripens its fruits. *C.*

A Plague of Aphis.—This county was plagued last September with a visitation of winged Aphides in countless myriads, and it is remarkable that hardly any notice has up till now been taken of it in public prints. Cyclists were almost blinded when rushing through swarms, and people's clothes were smeared all over with the insects. They are most active during sunshine and in the greatest numbers then, but for days together, at no moment of daylight, was their presence un-noted. The evolutions of these insects were very pretty and one could watch them for long periods without being tired, and with a wonder whence they sprung and why they were there. Could it have been a result of the abnormal heat and drought of the preceding months? So far as plants were concerned the vast number was never touched, but in October the Peach trees on walls and under glass had leaves, stems and fruit literally covered with wingless Aphides, the effect of which was premature defoliation, and probably there will be a deficient crop this year. *R. P. Brotherton, East Lothian.*

(L.-C. Myrtica x C. Trianae Grand Monarch), all choice nevelties.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for an effective group of Laelio-Cattleyas, Odontoglossums and interesting species. Noteworthy among the Cypripediums were C. Mimosia F. M. Ogilvie's var. C. British Lion (Curtmanii x Pyramus), a grand and finely-coloured flower; and C. Marshal Haig var. Victory (Clio x G. F. Moore), a finely-proportioned flower.

Messrs. FLORY AND BLACK, Slough, were awarded a Silver Banksian Medal for a group of Sophronitis hybrids, Brasso-Cattleyas, and Sophro-Laelio-Cattleya Ruboris (L.-C. Rubens x S.-C. Doris), which has bright mauve flowers, ruby-coloured lip and a yellow disc.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), G. F. Tinley, W. Poupert, H. S. Rivers, W. H. Divers, G. Berry, W. Bates, Owen Thomas, E. Beckett, H. Markham, A. Bullock, G. Reynolds, W. E. Humphreys, E. A. Bunyard, P. A. Tuckett and Rev. W. Wilks.

Mr. Cheal, who has been absent from recent meetings owing to indisposition, received a hearty welcome from the members.

Several Apples were submitted for award, but none was considered of sufficient merit. The most interesting variety was Christie Manson, which the Superintendent brought from the Wisley Gardens to draw attention to its fine appearance, late keeping qualities and prolific cropping. The fruits resemble those of Hornmead Pearmain in size and shape, but are flushed with red. The quality is poor.

Three exhibits of Apples received medals. The best collection was shown by Mrs. LEVESON GOWER and was awarded a Silver-gilt Banksian Medal. The fruits were very highly coloured and splendid specimens generally, especially those of Fearn's Pippin, Lady Henniker, King of Tomkin's County, Adams's Pearmain, Withington Fillbasket, Baumann's Red Remette, Blenheim Pippin and Crimson Queening.

Col. W. DAVIES, Salt Hill House, Slough (gr. Mr. R. Bullock), was awarded a Silver Banksian Medal for a collection of Apples in which Blenheim Pippin was outstandingly good. There were also excellent fruits of Claygate Pearmain, Court-Pendu-Plat, Egremont Russet, Chas. Ross and Adams's Pearmain.

F. M. VOKES, Esq., Southampton, showed a small, but select, exhibit of Apples of such well-known sorts as Blenheim Pippin, Belle du Pontoise, Mabbot's Pearmain, Lane's Prince Albert and Calville Rouge (Silver Banksian Medal).

Messrs. SUTTON AND SONS, Reading, were awarded a Silver-gilt Banksian Medal for a collection of vegetables staged in first-class style. There were capital heads of Christmas White and Winter Mammoth Broccoli, large roots of Student and Tender and True Parsnips, excellent Carrots and the Scarlet Horn variety, good heads of Chicory, large bulbs of Selected Ainsa Craig, Improved Reading and Sutton's A 1 Onions, Golden Ball Turnips, Savoys, and Kales.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

DECEMBER 4.—Committee present:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, F. K. Sander, W. Shackleton, E. W. Thompson, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Victor Hugo var. King John (Becktoniae x Lathamianum), from B. J. BECKTON, Esq.

Brasso-Cattleya Euchariss (B. C. Digbyano Mendelii x C. Fabia), from S. GRATRICK, Esq.

Odontoglossum Col. Leith Haddon House var. (Rossii majus x Uro Skinneri), from P. SMITH, Esq.

Catasetum viridifolium (Botanical), from Sir H. LEON, Bart.

AWARDS OF MERIT.

Vanda coerulea var. Bluebeard and *Cypripedium Moonbeam* var. W. G. Groves, from Mrs. BRUCE and Miss WRIGLEY.

Cypripedium Cyclops var. Renown, from S. GRATRICK, Esq.

Laelio-Cattleya Eltrick Bletchley Park var. from Sir H. LEON, Bart.

Cypripedium Frenchay (Lawf-hel x bellatulum), from A. J. KEELING AND SONS.

AWARDS OF APPRECIATION—FIRST CLASS.

Cypripedium Angela (niveum x Fairieanum), from B. J. BECKTON, Esq.

Brasso-Cattleya Princess Mary var. equisetum, from S. GRATRICK, Esq.

GROUPS.

Large Silver Medals were awarded to Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), and Sir HERBERT LEON, Bart, Bletchley Park, Bucks (gr. Mr. W. W. Field); and a Silver Medal to Messrs. CYPHER AND SONS, Cheltenham, for groups.

DECEMBER 13.—Committee present:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Howes, A. Keeling, D. McLeod, Dr. F. T. Paul, E. Tack, E. W. Thompson, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Our Prince, *Odontoglossum crispum Yuletide*, and *Cattleya Moira alba*, from S. GRATRICK, Esq.

Cypripedium Cyril Lee (Thisbe x Idina), from Mrs. W. R. LEE.

AWARDS OF MERIT.

Cypripedium nanum var. W. A. Stewart, *C. Christopher*, var. *Præsigne*; *Calanthe Papilio* and *C. burfordense*, from B. J. BECKTON, Esq.

Cypripedium Draco Lee's var., from Mrs. W. R. LEE.

Cattleya Fabia atro-purpurea, and *Cypripedium chrysotomum striatum*, from S. GRATRICK, Esq.

Cypripedium Orva (King George x Germain Opox), and *C. Sanactaeus var. Golden Dawn*, from P. SMITH, Esq.

Cypripedium Tigris (Earl Tankerville x Mrs. Mostyn), from Messrs. KEELING AND SONS.

GROUPS.

The following Medals were awarded for collections:—Gold Medal to S. GRATRICK, Esq., Whalley Range (gr. Mr. J. Howes); Silver Medals to Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns); B. J. BECKTON, Esq., Irlams-oth'-Height (gr. Mr. W. A. Stewart); Capt. W. HORRIDGE, Bury (gr. Mr. Coningsby); and Messrs. CYPHER AND SONS, Cheltenham.

BRITISH GARDENERS' ASSOCIATION.

JANUARY 3.—A meeting of the Leicester Branch of the B.G.A. was held at the Engine Hotel, Leicester; Mr. J. H. Baum, president.

Mr. Greenfield, who gave the address, had a warm reception. He congratulated the branch upon the splendid progress made since its inauguration and hoped this would continue, with the endeavour to obtain the rate of wages as set down in the Association's national standard. The speaker referred to the hard work which the Executive Council had done during the past year, and the difficulties which had to be faced. He asserted there was more blacklegging in gardening than in any other trade union, and declared that railwaymen, gas-workers, and boot and shoe workers, were acting very unfairly by securing the eight-hour day and then making use of their spare time to undercut their fellow-workers' wages. Mr. Greenfield said that the policy of the B.G.A. was not direct action, but the surer weapon of boycotting. He stated that the membership of the B.G.A. had increased four-fold during 1919.

MARKETS.

COVENT GARDEN, January 13th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit: Average Wholesale Prices.

	s. d. s. d.	s. d. s. d.
Apples (English)		Bananas, singles 25 0-35 0
—King of the Pippins per 4 bus.	3 6- 6 0	—Specials ... 40 0 —
—Cox's Orange Pippin per bus.	8 0-11 0	Grapes Alicante 2 6- 3 0
—Blenheim Pippin per bus.	6 0-10 0	—Special per lb. 3 6- 4 0
—Newton Wonder	5 0- 8 0	—Gros Colmar ... 2 6- 3 6
—Lane's Prince Albert, per bus.	5 0- 8 0	—Special ... 4 0 4 6
—Bramley's Seedling per bus.	5 0- 8 0	—Muscat, per lb. 10 0-15 0
—Brit. Columbian	20 10- —	—Canon Hall 10 0-15 0
—Cox's Orange Pippin	20 10- —	—Almeria per barrel .. 25 0-40 0
—Jonathan	20 10- —	Lemons 300's 21 0-25 0
Grime's Golden Nonesuch	19 0-20 0	Oranges—
Northern Greening	18 6- —	Nuts—Brazilis(new) per cwt. 130 0-135 0
New Town	20 10- —	Chestnuts—
Oregon New Town	20 10	Naples 36 0-40 0
—Nova Scotian	—	Cob Nuts, per lb. 1 2- 1 4
—G. Russets	40 0-50 0	Walnuts 25 kilo. 45 0 —
		Pineapples, each.. 2 6- 5 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.	s. d. s. d.
Asparagus, English.		Parsley, per doz. bunches ... 2 6- 3 6
Devon 50's ... 7 0- 7 6		—do. per doz. bunches ... 2 6- 3 6
— 100's ... 22 6-25 0		Parasutis, per bag 7 0- 8 0
Middlesex ,, ... 8 0- —		Potatoes, per cwt. 11 6-14 0
Beans Guernsey, per lb. ... 6 0- 7 0		—Guernsey per lb. 2 0- 2 6
Beets, per bag ... 10 0-11 0		Radishes, per doz. bunches ... 1 6- 2 0
Cabbage, per doz. 1 6- 2 0		Rhubarb, Forced per doz. ... 2 0- 2 6
Carrots, per bag 6 0- 8 0		—do. per punnet 2 0- 3 0
Cauliflower, per doz. ... 3 0- 4 0		Spanish Onions 4 tier ... 16 0-18 0
Celery, per fan, (12 heads) ... 3 6- 4 6		5 tier ... 18 0-20 0
Cucumbers, per doz. 2 0-12 0		Spring Onions, per doz. bunches ... 4 0- —
Garlic, per lb. .. 1 6- —		Sprouts, per bag 28 lb. 4 0- 5 0
French Lettuce, per doz. 3 6- 4 0		Tomatoes, English, New Crop per doz. lbs. .. 12 0-14 0
Herbs, per doz. bun. 15 0- —		—do. per bundle 40 0- —
Mint, per doz. bun. 15 0- —		—do. per bundle 40 0- —
Mustard and Cress, per doz. punnets 1 3- 1 6		Best, per bundle 40 0- —
Mushrooms, per lb. 3 0- 3 6		Furnips, per bag 8 0- 9 0
Onions, per cwt. 10 0-14 0		Watercress, per doz. 0 9- —

REMARKS.—An unusual falling off in business has been experienced during the past week, there being an almost entire absence of demand in many sections. Trade in English Apples has been particularly slow, in addition to which the quantities available are much above normal. Except for selected fruits of Cox's Orange Pippin in good condition, prices are unfavourable to the grower. A shortage of lathouse Grapes has caused a slight advance in their value. A shipment of fruit from the Cape is due next week, and should be of interest, seeing that it consists of Peaches, Nectarines, Apricots, Plums and Pears. The market is fairly clear of British Columbian Apples from the last steamer, but a new shipment is shortly expected. Pines are all practically cleared, and no consignment of these fruits is expected for about a week. A few fruits of the new crop of English Tomatoes are available, but trade in Tomatoes is mainly dependent on supplies from Tenerife, which are short, and all good brands are realising the maximum arranged price. English Asparagus (forced) continues a slow trade. Prices for Guernsey Beans and Potatoes are well maintained owing to the small quantities arriving. Cauliflowers are selling well and arriving in fair quantities. Green Vegetables are an easier trade, due to the recent open weather. Potatoes are unchanged in price.

Plants in Pots, &c.: Average Wholesale Prices.

	s. d. s. d.	s. d. s. d.
Aralia Sieboldii 48's per doz. .. 10 0-12 0		Cyclamen 48's per doz. 24 0-30 0
Asparagus plumosus .. 12 0-15 0		Erica hycalis— 48's per doz. 24 0-36 0
—Sprengeri .. 12 0-18 0		Erica melanthera, per doz. ... 30 0-36 0
Aspidistra, green 48 0-72 0		—do. per doz. ... 18 0-24 0
Begonia Gloire de Lorraine 48's per doz. 24 0-36 0		Palms, Kentia .. 24 0-36 0
Azaleas, each 3 0- 5 0- 7 6		—60's .. 15 0-18 0
Cacti, per tray 12's, 15's .. 5 0- 6 0		—Coccos .. 24 0-36 0
Chrysanthemums, 48's per doz. 24 0-30 0		Poinsettia 48's per doz. 24 0-30 0
—do. per doz. 24 0-30 0		Roman Hyacinths 7 0- 8 0
Cinerarias, per doz. 15 0-24 0		on bulbs.

REMARKS.—The chief flowering plants offered are Daffodils and large Hyacinths in pots, Azaleas, Cinerarias, Margerites, also a few Cyclamens and Eucas and some boxes of Tulips.

Ferns and Palms: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Adiantum cuneatum 48's per doz.	12 0-15 0	Nephrolepis, in variety, 48's	12 0-18 0
— elegans	15 0-18 0	— 32's	24 0-36 0
Asplenium 48's per doz.	12 0-18 0	Pteris, in variety	12 0-21 0
— 32's	24 0-30 0	— 48's	5 0-6 0
— nidus 48's	12 0-15 0	— large 60's	4 0-4 6
Cyrtodium 48's	10 0-15 0	— small 60's	3 6 4 0
		— 72's per tray of 15's	

Cut Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Azalea white, per doz. bun.	12 0-15 0	Richardia (Arums), per doz. blms.	12 0-15 0
Camellias per doz.	6 0-7 0	Roses per dozen blooms—	
Carnations per doz. blooms, best	6 0 8 0	— Mme. Abel	9 0-15 0
American var.		— Chatenay	
Chrysanthemums—		Roman Hyacinth	2 0-2 6
— White, per doz. blooms	4 0-10 0	per doz. spikes	
— Yellow	4 0-8 0	Tulips, White,	36 0 48 0
— Pink	4 0-8 0	per doz. bun.	21 0-24 0
— Spray White per doz. bun.	30 0-48 0	Scarlet	
— Coloured per doz. bun.	30 0-48 0	Violets Single large per doz. bun.	8 0-10 0
Daffodils, Single, per doz. bun.	21 0-24 0	— Ordinary	5 0-6 0
Freesia, White per doz. bun.	7 0-8 0	French Flowers—	
Heather, white per doz. bun.	10 0-12 0	— Anemones, Pink per doz. bun.	6 0-9 0
Lapageria, per doz. blooms	5 0-6 0	— Lilac white per doz. spray	4 0-6 0
Lilium longiflorum, per bunch	18 0-20 0	— Marguerites yellow per doz. bun.	5 0-6 0
Lilium speciosum album per bunch	6 0-7 0	— Mimosa, per pad 12 0-15 0	
— rubrum per bunch	6 0-7 0	Narcissus, Paper White per pad	12 0-15 0
Lily of the Valley per bunch	2 6-3 6	Soleil d'Or, per doz. bun.	4 0 5 0
Narcissus, Soleil d'Or, per doz. bun	10 0-15 0	— Ranunculus, Carmine per doz. bun.	12 0-15 0
Grand Primo per doz. bun.	10 0-12 0	— Scarlet	12 0-15 0
— Cattleyas	24 0-30 0	— Violets, Parma, per bun	10 0-12 0
— Cypripediums per doz.	5 0 10 0	— Roses, Ulrich Brunner, per doz.	6 0-8 0
Pelargonium, double scarlet, per doz. bun.	15 0-24 0	— Frau Karl Druschki, per doz.	4 0-8 0
		— Safrano, per doz.	2 6 3 0

REMARKS.—Chrysanthemums are gradually becoming less plentiful, and stocks show signs of finishing, especially of coloured sorts. Supplies of Carnations are sufficient for the demand, and the prices of these flowers are the same as last week. Roses from home growers are very few. White and red blooms are practically unobtainable. Daffodils Golden Spur and Henry Irving are now getting more numerous, and their prices are falling. Small quantities of Freesia are arriving in good condition. Lily-of-the-Valley of very good quality does not attract many buyers. Small consignments of Tulips are now being received from home growers. Large quantities of these blooms have been arriving from Holland during the past two or three weeks; also large quantities of white Lilac. Small consignments of Daffodils, yellow Narcissus, Freesia, and Smilax continue to arrive from the Channel Islands. Consignments of flowers from the South of France were not so heavy during Friday and Saturday last, but the flowers are arriving in better condition. They consist chiefly of white and yellow Narcissus, Mimosa (Acacia), Violets, Anemones, Ranunculus, Parma Violets, and Roses of such varieties as Ulrich Brunner, Frau Karl Druschki, and Safrano, all of which are in good demand.

GARDENING APPOINTMENTS.

- Mr. J. Wynn, for the last 18 years Gardener at Sedgford Hall, King's Lynn, Norfolk, as Gardener to A. W. HICKLING, Esq., Wing Old Hall, Oakham, Rutland.
- Mr. W. Stewart, as Gardener and Superintendent of the Royal Hospital Gardens, Chelsea, in succession to the late Mr. T. W. Turner.
- Mr. F. W. Mason, for three years and three months with His Majesty's Forces (twelve months as Sergeant-Instructor in Horticulture), and previously Gardener to the late Sir EDGAR SERRICHT, Beechwood Park, Dunstable, as Gardener to G. CADURY, Esq., Northfield Manor, Birmingham. (Thanks for P.O. 2s. 6d. for R.G.O.F. Box.—EDS.)
- Mr. W. J. Stables, for more than 18 years' Gardener and Orchard Grower to DE B. CRAWSHAY, Esq., Rosefield, Sevenoaks, as Gardener and Orchard Grower to CLIVE COOKSON, Esq., Nether Warden, Hexham-on-Tyne.
- Mr. H. G. Smith, for eight years Gardener to the late G. P. SICEB, Esq., Voeewood, Malden, Surrey, and two years and nine months with H.M. Forces, as Gardener to Mrs. RADCLIFFE, Broomfield Court, Chelmsford.
- Mr. Ben Ashton, over twenty-three years' Gardener to three Earls of Lathom, Lathom House, Ormskirk, and for eleven years previously Gardener to Lord HOWARD OF GLOSSOP, Glossop Hall, Derbyshire, as Gardener to W. E. WAINSWAY, Esq., Leighton Court, Neston, Cheshire.
- Mr. James McGregor, recently General Foreman at Jordanstone, Meigle, Perthshire, as Gardener to Sir STUART COATS, at Ballislie, Stanley, Perthshire.

TRADE NOTE.

AGRICULTURAL WAGES.

A meeting of the Agricultural Wages Board was held at 80, Pall Mall, London, S.W.1. on Thursday, the 8th inst. Sir Ailwyn Fellowes presiding.

Under the Regulations governing the constitution of the Board, the term of office of the "appointed" members expired on December 3, and it was announced that Lord Lee had appointed Sir Ailwyn Fellowes (Chairman), Sir Henry Rew (Deputy-Chairman), the Rt. Hon. F. D. Acland, Mr. J. H. Ismay, Mr. C. S. Orwin and Mrs. L. Wilkins to be "appointed" members for the ensuing two years. It was also reported that vacancies for representative members of the Board caused by the annual retirement of a proportion of such members in December had been filled by the reappointment of Messrs. Colin Campbell, H. Padwick, G. G. Rea and S. Roelotham as representatives of employers, and of Messrs. R. Green, T. Lovall, R. Richards, R. D. Walker and Denton Woodhead as representatives of workers.

After consideration of the objections which had been received to their proposal to fix lower rates of wages for boys engaged in learning agriculture, together with reports from the District Wages Committees on the subject, the Board decided that the proposal should not be further proceeded with.

Mr. W. R. Smith, M.P., Chairman of the Workers' Side of the Board, gave notice that at the next meeting of the Board he would move a resolution for a general advance in the minimum rates of wages for agricultural workers throughout England and Wales.

ANSWERS TO CORRESPONDENTS.

BROWN ELM DUST AS A SKIN IRRITANT: T. R. P.
We do not know of any reason why the brown dust between the bark and wood of Elm logs should cause skin irritation, as it usually results from decay or the action of beetles feeding on the wood or bark, and in some cases by wood-boring Caterpillars.

CLIVIA ROOTS: T. R. P. There is no reason why the lower roots of Clivia should perish each year, that is if they are in good condition. In your case the trouble is doubtless due to some wrong cultural condition, such as choked drainage, or over watering, or possibly both combined. The fluted and crimped appearance of the leaves is caused by the ill health of the plants, induced no doubt by insufficient root action. The plant should be shaken out, and the roots washed in tepid water, carefully removing any that are decayed, also the end of the root stock, if decayed; when dry, replot the plant in as small a pot as will accommodate it, keeping the soil on the dry side until plenty of roots are formed, as Clivias are very impatient of much water at the roots after replotting.

- NAMES OF FRUITS: J. G. E. D'Arcy Spice** (*Syn.* Baddow Pippin).—J. W. 1, Radford Beauty; 2, Woodcock; 3, Cullen; 4, Lord Lennox; 5, King of the Pippins.—J. S. 1, Small's Admirable; 2, Requette van Mons; 3, Baumann's Winter Requette; 4, Sturmer Pippin; 5, Lord Burgley; 6, Lady Henniker; 7, Emile d'Heyste; 8, Requette Franche.—E. H. J. 1, Yorkshire Greening; 2, Vicar of Beighton; 3, Lord Lennox; 4, Madame Eliza; 5, Duchesse d'Angoulême.—E. I. Mayor. 1, Scarlet Golden Pippin; 2, Orange Pippin.—J. S. 1, Stone's Apple; 2, Warner's King; 3, decayed; 4, Small's Admirable; 5, Horned Pearmain; 6, Court of Wick.—H. W. 1, Waltham Abbey Seedling; 2, Blenheim Pippin; 3, Potts's Seedling; 4, Melon Apple; 5, Cellini.—W. A. W. 1, Northern Spy; 2, Lemon Pippin; 3, Bedfordshire Foundling; 4, Bramley's Seedling; 5, Hanwell Souring; Pear decayed.—Anxious. 1, Minchull Crab; 2, Emperor Alexander; 3, Herefordshire Beeding; 4, Scarlet Tiffing.—C. H. Christie's Pippin.—T. A. C. 1, Cox's Pomona; 2, Shepherd's Fame; 3, 7, 11, and 13, decayed; 4, Margil; 5, Flower of Kent; 6, Tom Putt; 8, Lemon

Pippin; 9, Sturmer Pippin; 10, Requette Franche; 12, Fondante du Panisel; 14, Josephine des Malmes.—J. W. S. Blenheim Pippin.

NAMES OF PLANTS: C. E. F. The flowers were not in a suitable condition for identification; further, we do not undertake to name florists' varieties of flowers. A. H. L. *Cypripedium* Orpheus. (*venustum* × *callosum*).—E. B. The material (dried skin of the fruits only) is insufficient for determining the name of the plant. It may be *Solanum aculeatissimum*, (see Fig. 14), which is being sent from France to Covent Garden market for decorations.

PEAR DANA'S HOVEY: J. H. D. Pear Dana's Hovey is an American variety with somewhat small fruits that become yellow, with brown russet markings when ripe. Hogg gives its season as from November to January. The variety was illustrated in *Gard. Chron.*, Jan. 29, 1910, Fig. 39, from specimens which received the R.H.S. Award of Merit. As the nurserymen you have tried do not stock it possibly Messrs. E. Bunyard and Co., Maidstone, or Mr. J. C. Allgrove, Langley, may supply trees.

SLUDGE MANURE: E. V. The analysis you send of the sludge only adds up to 65 per cent. Taken, however, as it stands, it is practically worthless, since it contains no potash or phosphates, and the nitrogen content is very low and probably only slowly available. Both organic matter and lime could, no doubt, be obtained more cheaply in other forms. The sludge would probably not be worth the cost of carting.

SHRUBS FOR A CHALKY SOIL: C. R. The following plants will be found suitable for growing in chalky soil:—*Berberis Darwinii*, *B. stenophylla*, *B. Wilsonae*, *Buddleia variabilis*, *Ceanothus*, *Cistus*, *Cornus*, *Cotoneaster*, *Cytisus*, *Diervilla*, *Escallonia*, *Genista*, *Hypericum*, *Kernia japonica* fl. pl., *Lonicera*, *Philadelphus*, *Magnolia stellata*, *Ribes sanguinea*, *Spartium*, *Spiraea*, *Syringa* and *Viburnum*.

SUITABLE PLANTS FOR CARPET BEDDING: B. L. S. Suitable subjects are blue and white Lobelias. Sweet Alyssum is also a splendid white subject, especially if a dwarf form such as Little Dorrit or White Carpet is used. For a yellow subject, Golden Feather (*Pyrethrum aureum*) is best, and any good seedsmen will supply a dwarf form of it. All the above can be raised from seeds sown indoors about the beginning of March; the seedlings should be pricked off into boxes, which, in due course, can be placed in cold frames where they may be hardened off for planting out. *Alternanthera paronychioides aurea*, may also be used as a yellow subject, while for red *A. paronychioides*, or its var. *magnifica*, are useful. Purple colouring is difficult to obtain, the only dwarf plant being the hardy *Ajuga reptans purpurea*, with purple foliage; it is increased by division. There are so called purple Lobelias, but they are really dark blue, and might serve as a contrast to light blue Lobelias. *Antennaria tomentosa* and *Veronica incana* are both grey foliaged, hardy plants, very suitable for carpet bedding, while *Stellaria graminea aurea*, is a hardy subject with yellow foliage. If a freer arrangement is used, red, white and good purple-flowered subjects may be had in *Verbenas*, which, if distinct colours are required, should be propagated from cuttings of named varieties, but *Verbena venosa*, a purple flowered plant, is best raised from seed sown indoors at the end of February. *Coleus Verschaffeltii*, *resine Lindenii*, and *l. Herbertii*, are all good foliage subjects in varying shades of red or crimson, and may be kept dwarf by pinching. They, in common with *Alternantheras*, are readily propagated by cuttings in a stove temperature, at the end of March or beginning of April, as they grow rapidly, and it is not safe to bed them out until the middle of June.

Communications Received.—Anxious—A. C.—W. J. S.—W. J. W.—J. H. A.—A. M.—F. J.—W. R.—J. B. A.—E. C.—W. R.—J. C. J. F.—S. L.—C. A. J.

THE
Gardeners' Chronicle

No. 1726—SATURDAY, JAN. 24, 1920.

CONTENTS.

Apiary, the ...	45	Obituary—	
Begonias, winter flower-		Seklik, Countess of ...	44
ing ...	43	Dr. John H. Wilson ...	44
Caruation stem rot in			
▶ America ...	36	Orchid notes and glean-	
Cuttings ...	42	ings—	
Flowering bulbs, cultiva-		Cattleya Epid. Dover-	
tion of, in the United		court variety ...	39
States ...	36	Cypripediums from Bir-	
Food trains ...	36	mingham ...	39
Forestry notes—		Odontioda Nada Rali's	
Brown oak timber ...	37	var. ...	39
Asi, Australian moun-		Petersham Flower Show	
tain ...	37	... ..	35
Acacia, timber of the		Pitwood, sale of ...	36
Edinburgh Parks, games		Plant hygiene ...	40
in ...	35	Propagation, hints on ...	42
<i>Gardeners' Chronicle,</i>		Roses, some new ...	41
seventy-five years ago,		Royal Hort. Soc. ...	36
the ...	36	Societe Dendrologique de	
<i>Gardeners' education</i>		France ...	35
<i>and training, the ...</i>	42	Societies—	
<i>Gardeners' Royal Ben.</i>		United Hort. Ben. and	
<i>Inst. ...</i>	35	Prov. ...	45
Hedges, evergreen ...	44	Surrey, small holdings in	
Helichry sum coralloides		Trade notes ...	45
in youth and age ...	35	Trees and shrubs—	
Horticultural Club ...	36	Ceanothus Gloire de	
Home Farm, crop and stock		Versailles ...	41
on the ...	45	Pistacia lentiscus ...	41
Insects spray-proof ...	35	Free stems, earthing up	
Iris trials in U.S.A. ...	36	Weather—	
Kew, new flag-staff at ...	37	Weather in December	
Lopezia minata ...	43	the ...	44
Mistletoe, hosts for the ...	44	Weather in Scotland	
National Dahlia Soc. ...	35	in 1919, the ...	44
Norfolk and Norwich		Week's work, the ...	38,39
Hort. Soc. ...	36	Wisley, trials at, in 1920	35

ILLUSTRATIONS.

Begonia Gloire de Seaux, a fine specimen of	43
Ceanothus Gloire de Versailles	41
Flag-staff, new at Kew	36 and 37
Odontioda Nada Rali's var.	39

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.68°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, Wednesday, January 21, 1920, 10 a.m.: Bar 30.0; temp. 46°. Weather—Bright

Helichrysum coralloides in Youth and Age.

In the large majority of plants of our own country the transition from youth to age is marked by no striking change of form other than that which increasing bulk makes inevitable. Sometimes the seed leaves are succeeded by small bract-like leaves before the first rough leaf appears, but although the latter may be of simpler form than the later, mature leaves, it generally resembles them with fair fidelity. But in other countries where climate offers a greater range of variety there are many plants whose juvenile and adult forms are totally dissimilar from one another. The best known example of this dimorphism is that presented by certain species of *Acacia*, and it is a botanical class-room exercise to trace the transition on one and the same seedling from the much divided juvenile leaf to the undivided, broadly-expanded leaf base, in which no trace of the true leaf-blade remains. To the list of plants which exhibit such disparity of form *Helichrysum coralloides* must now be added, for, as Dr. Cockayne shows in a recent contribution*, the seedling of this species—the Coral Shrub of New Zealand—is altogether different in habit and leaf-shape from the adult.

As is indicated by its popular and specific names, the adult form of *H. coralloides* suggests a coralline shape. The thin, smooth stems are hidden beneath the numerous small leaves which are closely appressed to the surface of the stem, and the spaces between the leaves are white with the cover-

* "On the Seedling Form of the Coral Shrub, *Helichrysum coralloides*," by L. Cockayne, *N.Z. Journal of Science and Technology*, 11, Nos. 4 and 5, 1919.

ing of hairs produced on the under surface of the leaves and projecting beyond their edges. The under (grated) surface of each leaf is smooth, pale, and membranous for more than half its length, but its upper part is thick, hard, horny and of a glossy, rather dark green colour. These apical ends of the leaves stand out like tubercles from the white tomentum as though partly embedded therein.

The habit of the adult plant varies according to the situation in which it occurs. *H. coralloides* is essentially a rock-crevice plant, and its peculiar xerophytic form evidently adapts it to the dry conditions in which it lives. According to the severity of the conditions of wind and sun to which it is exposed the Coral Shrub either takes the form of a dense rigid cushion of about 1½ feet high by 1 foot wide—this where it is exposed to frequent gales and direct sun—or becomes in less severe conditions of climate an erect shrub of open habit and rather smaller size.

The seedling of which, so far, Dr. Cockayne has found only one example presents a striking contrast with the adults. It consists of a straight stem unbranched above, but bearing near its base eleven short branches. Covering the stem are white woolly leaves sheathing at the base, though the younger leaves spread out their blades. These leaves when fully grown are broadly spatulate, three times as long (¾-inch), as those of the adult plant and covered on both surfaces with a long tangle of silky hairs, through which the green of the leaf shows faintly. On the younger stems that are produced as the plant begins to mature the leaves begin to approximate with those of the adult; they are smaller than the earlier formed leaves, imbricating, and less hairy on the upper portion of the under surface. Protected by its diminutive size, the seedling is not constrained to arm itself against the weather, and only does so when the increasing inclemency to which it is exposed imposes the change of form as an alternative to destruction.

The resemblance of the seedling form to *Haastia Sinclairii* is strikingly illustrated in the figure published by Dr. Cockayne, who points out in emphasis of the dissimilarity between the juvenile and adult plants that they differ from one another at least as much as do two different species of *Haastia*, *H. Sinclairii* and *H. pulvinaris*.

Not the least interesting fact in connection with these dimorphic plants is that in some of them heredity imposes the change from juvenile to adult, whether the situation in which the plant is growing requires it or not. This is the case apparently with *Helichrysum corallina*. In other New Zealand plants—*Aristotelia fruticosa*, *Dacrydium laxifolium*, *Pittosporum divaricatum*, and *Rubus cissoides* heredity is less imperious, and given a suitable environment the juvenile form may persist throughout the life time of the individual. Without the severe test of climate such a plant never grows up. It should therefore be immortal in the sense that it could not die a natural death from old age and could only succumb at an advanced age to a mortal infantile ailment.

Trials at Wisley in 1920—The Royal Horticultural Society will carry out the following Trials in their Gardens at Wisley, Ripley, Surrey, during 1920:—Antirrhinums, Coreopsis, Broccoli, Early Peas, Second-Early Potatoes, Spinach, and late Turnips. A packet of seed of each variety for trial (of Peas ½ pint; of Potatoes 40 tubers) should be sent to the Director, from whom the necessary entry forms may be obtained, not later than February 20, 1920.

Gardeners' Royal Benevolent Institution (Worcester and District Auxiliary).—It is gratifying to learn from the annual report of the Committee of the Worcester branch of the Gardeners' Royal Benevolent Institution, that the sum of £85 has been handed to the parent Society as the results of efforts made on behalf of the Institution in the locality. The Worcester Auxiliary sets a fine example to other districts, and its results show what may be done on behalf of this deserving gardening charity by a strong and representative local committee. The Right Hon. the Earl of Beauchamp is President and the executive committee consists principally of gardeners in charge of local establishments.

National Dahlia Society.—The annual general meeting of the National Dahlia Society will be held on Monday, the 26th inst., at 35, Wellington Street, Strand, at 4 p.m.

Games in Edinburgh Parks.—A series of important recommendations dealing with the provision of additional facilities for games in the Edinburgh Parks, together with others relating to the scale of charges, have been made by the Parks Committee to the Town Council. The additional facilities suggested include new tennis courts at Redbraes, with extensions of the existing ones at the Meadows and Inverleith Park, the additional courts at the two last to be reserved for ladies, together with half of the existing courts at Bonaly. A recommendation is also made that an additional bowling green be formed at Montgomery Street at a cost of £400. The recommendations regarding the charges for the games involve large increases. The scale for a round of the 18-hole golf course at the Braid Hills it is proposed should be 6d. instead of 3d., and that for the 9-hole course, 2d. instead of 1d. The charge recommended for the tennis courts is 2d. each, where the players are ladies, and 3d. each where the party consists of ladies and gentlemen. The suggested charge for bowlers is 3d. each player for a full rink of eight players instead of 1½d; and for pairs and singles the charge would be 4d. each instead of 2d. The charge for the use of shoes would be 1d. instead of ½d.

La Societe Dendrologique de France.—After an interval of five years, caused by the war, the Societe Dendrologique de France has resumed its monthly meetings. It has appointed a new Committee, with M. Tisserand as President, and le Prince Roland Bonaparte and M. Lecomte, professor at the Museum of Natural History, as Vice-Presidents. M. Hickel will continue to act as general secretary and M. Dode as treasurer.

Petersham Flower Show.—The Petersham, Surrey, Horticultural Society, which, like many similar societies, has suspended its operations during the past five years, is to renew its activities. At a general meeting held on the 12th inst., it was unanimously agreed to hold a show and fête on July 14, 1920. In former years the Petersham show attracted a large attendance and, as a strong sub-committee has been appointed to make the necessary arrangements, a renewal of its success may be confidently expected.

Small Holdings in Surrey—The Small Holdings Committee of the Surrey County Council has received 516 applications for small holdings, representing 6,587 acres of land. It is interesting to note that of the applicants 419 were ex-service men, who required 5,236 acres. The purchase of part of New Inn Farm, Guildford, from the Earl of Onslow, has been decided upon. This holding, comprising 26 acres, with a cottage and garage, will cost £1,600. Twenty cottages are being erected on the Homewood Farm, Ripley, and provision is being made for 78 cottages at Little Woodcote, Epsom.

Spray proof Insects.—It is reported that Professor Melander, head of the Department of Entomology of the Washington State College, has stated that it is quite possible that one of the results of repeated spraying of fruit trees with insecticides will be the production of hardier, resistant races of insect pests, better able to withstand the poisons used in the washes. "In other words," he said, "it is possible, from

a biological standpoint, that we are breeding the resistant insects. If there is such a thing as this, it is a big, big thing in the fruit world. A few years ago we were sure that sulphur-lime would kill red spider eggs, and would kill eggs of the green aphid, yet I have examined I do not know how many millions of red spider eggs and failed to find them dead after being sprayed with sulphur-lime. The same may be said of the green aphid in many localities. Whether it is a biological fact that scale and other insects are becoming resistant by a gradual process of weeding out the individuals that are not hardy, I do not know. But I do know that some of our standard washes are not nearly so sure and effective as they used to be. If the biological theory is true that we are breeding up scales that are resistant to this or that spray, it may be that we shall have to switch our methods of fighting the pest, we will say, every 20 years. We will spray with sulphur-lime; that will be the best for 20 years. Then we will switch over and take up the oil emulsion, and spray with that for 20 years, until we get a scale that is resistant to oil emulsion, and then come back and switch to the other. Biologically, it is possible to rear up a breed that would be resistant." This is an interesting and somewhat alarming announcement, yet it may well be that Professor Melander's conclu-

requirements. This early notice is given in order that specimens and papers may be prepared in good time. Further particulars will be published in due course, and all communications should be addressed to the Secretary, Royal Horticultural Society, Vincent Square, Westminster, London, S.W.1.

Carnation Stem Rot in America.—Dr. George Peltier, of the Illinois Floriculture Experimental Station, estimates that Carnation Stem Rot causes a loss to American growers of an average of over 2 per cent. in the glasshouses, and over three per cent. in the field. The organism responsible for the disease lives normally in the soil and sterilisation by steam will destroy the fungus, but this is not entirely effectual, as whenever Carnation plants are lifted from infected soil the fungus is re-introduced with re-planting. The same cause renders the use of insecticides ineffective and, moreover, as the fungus penetrates deeply into the tissues of the plants, surface-sprays are useless. Professor Lehmbauer, in an article in *The American Florist*, states that the best method of control is to grow the plants in relatively cool conditions in a house having a temperature of 50° to 55° by night, and 60° to 62° by day. If these temperatures are not exceeded healthy plants that are watered carefully and grown in a house

markets in a perfectly fresh condition. The "huge wastage" of food, adds the resolution, "which has been caused by railway delays and inefficiency," would thus be prevented. The conference have also asked the Great Northern and Great Eastern Railway Companies and the Midland and Great Northern Joint Committee to arrange daily train services from Lincolnshire, Cambridgeshire and Huntingdonshire to the London markets, in accordance with this proposal.

Norfolk and Norwich Horticultural Society.—This Society will hold its Spring Show in St. Andrew's Hall, Norwich, on April 22; its Rose Show at Catten Park, on July 8; and its Chrysanthemum Show on November 18, 19 and 20, in St. Andrew's and Blackfriars Hall.

Horticultural Club.—The annual meeting of the Horticultural Club will be held in the new Club Room, Royal Horticultural Hall, Vincent Square, Westminster, on Tuesday, February 10, at 4.50 p.m. The President, Lord Lambourne, will occupy the chair.

Iris Trials in U.S.A.—At the New York Botanical Garden, Bronx Park, New York City, an Iris garden will be established next spring, embracing approximately two acres. The Director of the Garden has asked the American Iris Society to co-operate with him in establishing this garden and through his kindness this will become the Society's first test garden. The garden will include a permanent collection of all available species of Iris, and also of all available horticultural varieties. A special portion of the garden will be devoted to the testing of unnamed seedlings. Special committees of the Society will conduct various types of work in this garden, and members of the Society will be asked to contribute plants. The situation of the garden is ideal, and it will be under the direct charge of Dr. H. A. Gleason, who has been one of the prime movers in the organisation of the new American Iris Society.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Hares and Rabbits.*—We have been much troubled with these pests for years, and have tried tar, oil, soot, lime, string tarred and oiled, but all to no purpose. In the autumn of 1843, we had a fine plantation of Sturmer Pippins spoiled in one night, as well as other young Apple trees. So very destructive were these creatures that we determined upon having every plant of Crab and Apple removed into another garden; but one of our men observing that he had seen brimstone tried, and that it had the desired effect, we immediately set to work, and made a quantity of matches, like those used for suffocating bees, and stuck them about the ground (the matches were not lighted), and since using the sulphur not a leaf has been touched. As to rabbits not eating Rhododendrons, we have proof to the contrary, for on a piece of land where we have not used matches, the Rhododendrons are bitten off as clean as if the pruning shears had been at work on them. In very severe weather rabbits have been known to attack and bark the stems of standard Roses. We melted the sulphur in an iron pot, and when hot dipped the matches, which were made by winding tow, rags, or anything we could lay hold of round sticks, and firmly binding it on. *S. and J. Dillstone, Nurseries, Sturmer. (Gard. Chron., January 25, 1845.)*

Publications Received.—*Journal of Forestry.* Royal English Arboricultural Society, Avenue Press Limited, Drury Lane, W.C. 2s. *Brooklyn Botanic Garden Leaflets*, 10, 11, 12 & 13. New York: The Brooklyn Institute of Arts and Sciences, Washington Avenue, Brooklyn. *Your Book and Diary for 1920. The Fruit, Flower and Vegetable Trades.* London: The Lockwood Press, 1, Mitre Court, Fleet Street, E.C.4. *Quality and Value of Important Types of Peat Material.* Alfred P. Dachnowski, United States Department of Agriculture, Bulletin No. 802. Washington: Government Printing Office. *Nature and Control of Apple Scald.* Charles Brooks, J.S. Cooley and D. F. Fisher. Washington: Government Printing Office. *Studies of Philippine Bananas.* Edwardo Quisumbing y Arguelles. The Philippine Agricultural Review, Manila Bureau of Printing.

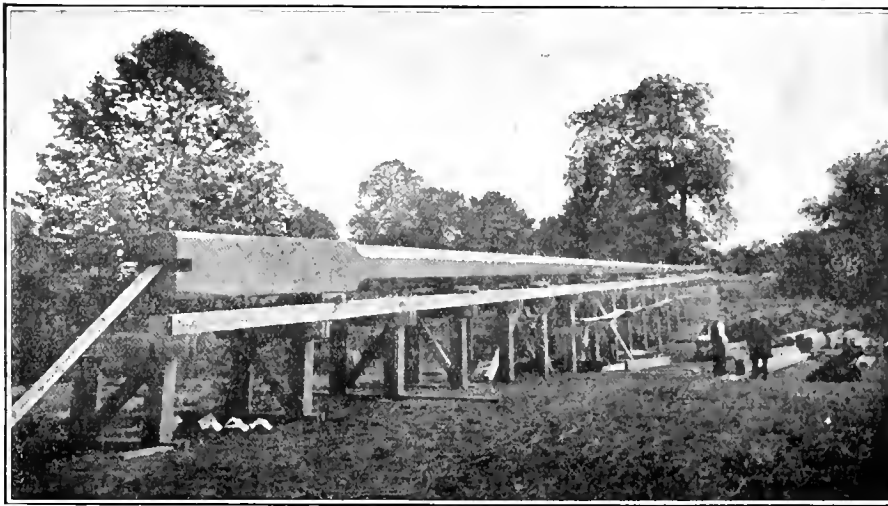


FIG. 15.—THE NEW FLAGSTAFF AT KEW, LYING ON TRESTLES, BEFORE ERECTION.
(See p. 37).

sions will not be come out, for it is possible that, owing to the abnormal times, the spraying materials have not been so pure, and consequently not so effective, as formerly.

Cultivation of Flowering Bulbs in the United States.—In normal times the United States of America pays about two million dollars a year for its spring flowering, or "Dutch" bulbs, the value of the bulbs grown at home only amounting to about 25,000 dollars. An effort is being made to increase home production, and with that end in view the U.S.A. Department of Agriculture has issued *Bulletin 797* of the Bureau of Plant Industry, which shows that the commercial culture of Narcissi, Tulips and Hyacinths is confined mainly to the Atlantic and Pacific seaboard, notably in the north of Norfolk and the north of San Francisco. In the Ohio and Mississippi valleys, the Gulf State, Michigan, and even in Alaska, some kinds of bulbs have been grown successfully. Particulars of suitable soil and temperature are given, as well as general methods of cultivation, harvest and cleaning, together with lists of varieties and a vocabulary of sixty-four definitions of terms used by bulb growers. The *Bulletin* is illustrated.

Classification of Saxifrages.—The President and council of the Royal Horticultural Society propose to hold a conference in London, in May, 1922, on the classification of Saxifrages from the garden point of view, and their cultural

with a small amount of atmospheric moisture are not very susceptible to the disease.

Sales of Pitwood.—The Board of Trade announces that the Pitwood Order, 1919, has been revoked as from January 2 and all restrictions with regard to supplies and prices of pitwood are accordingly removed.

Grand Yorkshire Flower Show and Gala.—The Yorkshire Gala will be held in Bootham Park, York, on June 16th, 17th, and 18th, 1920. Prizes to the value of £850 will be offered for flowers, fruits and vegetables. Mr. H. W. Pulleyn, Coppergate, Yorks, is the Secretary.

Royal Horticultural Society.—The Committees of the Royal Horticultural Society will meet on Tuesday, the 27th inst., on the occasion of the usual fortnightly meeting.

Food Trains.—At a joint conference of representatives of the Holland (Lines) branch of the National Farmers' Union, the South Lincolnshire Wholesale Potato Merchants' Association, and London members of the National Federation of Fruit and Potato Trades Associations, a resolution was passed urgently requesting the Minister of Transport to provide without delay a goods train service for perishable foodstuffs to all the principal towns in Great Britain from producing and distributing centres, such trains to be run to scheduled times, like the passenger train service, and at such hours as will allow the produce to be delivered and sold in the

NEW FLAG-STAFF FOR KEW.

For more than fifty years, that is to say, from 1861 to 1915, the flag-staff of Douglas Fir standing on a mound in the Berberis Dell, constituted a conspicuous landmark in the Royal Gardens, Kew. It was a present to Kew from Mr. Edward Stamp. The original staff was 159 feet high, and calculated to be about two hundred and fifty years old. It was repaired and rehoisted in 1896, but in 1915, when it was being varnished, it was found to be affected with dry rot, consequently it had to be taken down and, as further repair was out of the question, there came an end to the finest flag-staff of its kind in Europe.

The provision of a new staff created a great deal of interest, not only at Kew, but throughout this country and in British Columbia, whence the original flag-staff came. An interesting account of the history of the new flag-staff, finally erected on October 18, 1919, is given in the *Kew Bulletin*, No. 10, 1919. From this we gather that the Provincial Government of British Columbia offered to present a new spar of Douglas Fir to the Royal Gardens, Kew, to replace the old one, and on February 25, 1914, this offer was accepted. As a result, the forests of British Columbia were searched by skilled woodmen until a tree was found that fulfilled the exacting ideal of the searchers; yet it was not until eleven trees had been felled that the requirements were met. The tree selected was found some thirty miles north of the city of Vancouver. After it had been felled, its length was reduced to about 220 feet, but its height as it stood in the forest was probably between 280 and 300 feet. The tree was conveyed by rail and water to Vancouver, and there shaped to its present form by expert axemen. It is square at the base for 15 feet up, then octagonal up to 157 feet, thence to the summit (214 feet) it is round. Its diameter at various heights is as follows:—Base, 33 inches; 16 feet, 33 inches; 52 feet, 29½ inches; 89 feet, 25½ inches; 115 feet, 22½ inches; 190 feet, 19 inches; 214 feet, 12 inches (summit). The pith is not in the centre, but five and a half inches from one side at the butt end; from the pith to the other side of the margin there are 360 annual rings. The first 100 rings occupy 17½ inches, the next 100 rings 7 inches, and the third hundred are compressed into 3½ inches. The tree was 6 feet in diameter at the base when felled, and practically all the sap wood was taken off in shaping it. It is estimated to be about 400 years old and the weight, roughly 18 tons, is about four times that of the old flag-staff.

The directors of the Shire Line of steamers undertook to convey the flag-staff from Vancouver to the River Thames, and on December 29, 1915, the s.s. "Merionethshire" arrived safely at the London Docks and dropped the spar into the Thames. It was towed up the river to Kew, and finally conveyed through the Gardens to the base of the flag-staff mound, where it remained for a period of 2½ years and was a source of pride to the many Canadians who saw it. It was hoped at one time that the Canadian Forestry Corps would undertake the task of erecting the staff, but they were unable to do so, although the concrete blocks forming the base were set in the mound under the direction of engineers of the Canadian Forestry Corps. Messrs. Coubro and Scrutton eventually raised the flag-staff, under the direction of H.M. Office of Works, by means of a derrick 100 feet high. A square block of steel, 7 inches in diameter, is fitted into a groove at the base of the staff and thus supports it. The new flag-staff, which towers far above the surrounding trees, is a magnificent exhibit for Kew, a testimony to the generosity and Imperial spirit of the Premier and Government of British Columbia, and an example of the marvellous tree growths that make the forests of that fine Province some of the richest on the face of the globe. By the courtesy of H.M. Stationery Office we are enabled to reproduce two of the illustrations of the flag-staff given in the *Kew Bulletin*. The one in Fig. 15 shows the spar resting on its support whilst awaiting erection, the other, Fig. 10, the flag-staff in its permanent position.

FORESTRY NOTES.

BROWN OAK TIMBER.

This is extremely scarce and valuable, and no wonder, for it does not exist on the Continent, being a strictly English product, and more or less confined to the Midland and Eastern counties. In Northamptonshire it occurs in the Welbeck and Rockingham woods; in Bedfordshire at Woburn and Amphill, particularly the latter; while in Hertfordshire splendid examples are found at Ashridge Park.

Brown Oaks may be said to occur sporadically, and are characterised by the timber being of a pleasant foxy-brown colour, remarkably hard and close grained, and susceptible of a rich polish. For panelling and furniture-making it is highly prized, and in America it is used in the ornamentation of Pullman cars, while the magnificent dining-room in the White House, at Washington, is entirely panelled with English brown Oak. Strange as it may appear, the finest brown Oak trees have been sent to America, where they are cut either into veneers or wainscot or used for the best class of furniture.

The price of brown Oak timber is comparatively high, being fully four times that of the best of the ordinary wood. For a single tree at Welbeck £50 was paid, while in the famous Rockingham Forest, or what remains of it, £41 was realised for a clean, but by no means big, specimen.

AUSTRALIAN "MOUNTAIN ASH."

This timber, a species of Eucalyptus, has been found of great value for the making of oars, and large quantities are annually exported to various parts of the country. So well suited is this timber for oar making that in the space of a few years it has largely taken the place of American Ash for this important purpose. Strength and elasticity are the main qualities required for oars, and though our native Ash timber was at one time much used for the purpose, the weight of even well-seasoned wood of that kind precluded its use at a later period with the introduction of foreign and better substitutes. It appears, however, that the true Australian Mountain Ash—owing chiefly to the restricted areas over which it is growing, is being substituted by an inferior wood, that of the Mountain Gum, which greatly resembles the genuine timber, but is vastly inferior to it for the particular purpose required. The Government have become alive to this substitution of an inferior timber, and have requested buyers to stipulate that all deliveries are subject to Government inspection and certificate, both of which are obtainable free of charge.

For many purposes, American Ash has taken the place of British, but we question whether, when a fair trial has been conducted, this will remain the case, for it is generally believed that in the long run, Ash of home growth has better lasting properties than that obtained from abroad. It is pretty evident that, owing to the use of rough, brittle Ash wood, chiefly from hedge-row and field, harm has been done to the reputation of the best class of this timber, such as is cultivated in close woods, where the trees are clean-grained and supple, and of first quality for use in the most important services where Ash timber is employed. Old Ash timber, too, is inferior where bending properties are of first consideration to that of, say, from 30 to 50 years' growth.

TIMBER OF THE ACACIA.

At one time the excellent qualities of the timber of the false Acacia were extolled in this country to such an extent that large numbers of the tree were planted in Scotland and England. Certainly, as fence and gate posts the timber would appear to have almost sur-

prising lasting properties and not a few experiments in this way proved quite satisfactory, and led many planters to believe that the Acacia was well worth cultivating from a purely economical point of view, to supply timber for use both in and out of doors. The wood is of a beautiful cream colour, and works smoothly under the tools of the carpenter, taking a fine polish. It is, however, hard to season and warps and splits readily. Gate posts of this wood have lasted in the ground for 30 years.

For all its excellent timber-producing qualities the Acacia has never become popular as a British forest tree, as it is not very hardy, and apt to die out prematurely. *A. D. W.*

EARTHING UP TREE STEMS.

WHERE large quantities of soil have to be dealt with and the cost of removal to a distance

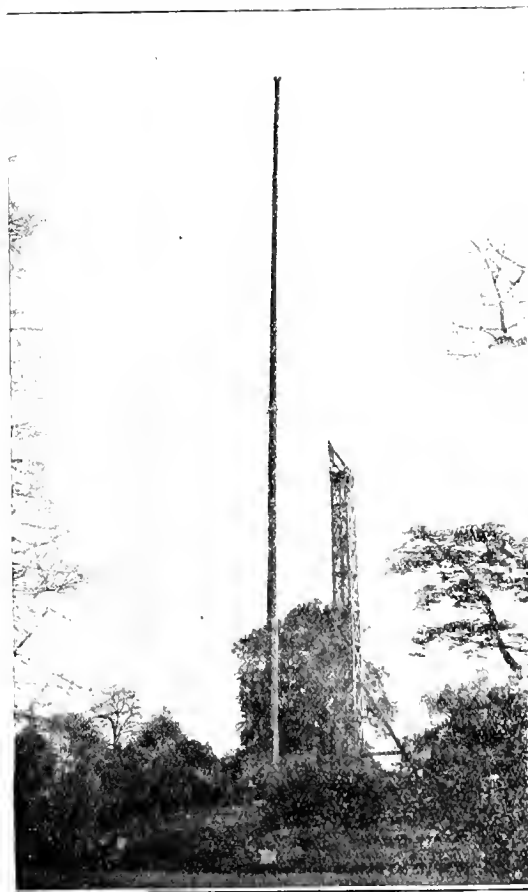


FIG. 16.—THE NEW FLAG-STAFF AT KEW AS SEEN IMMEDIATELY AFTER ERECTION.

is prohibitive, injury to adjoining trees by placing it over their roots and around the stems most commonly takes place, and where it cannot well be avoided "dishing" is recommended. This consists in forming a saucer-like receptacle in the soil around the tree trunk and at a distance of, say, 6 feet from it. Sometimes a retaining wall of old bricks is built loosely around the stem to keep the earth in position, but in most cases it will be found sufficient to slope the soil gradually from the trunk backwards at an easy angle, and thus allow of the proper aeration of the ground. Trees, the roots of which have been covered with soil to such a depth that an unhealthy condition is brought about, quickly fall a prey to fungous diseases and the attacks of injurious insects. That the forming of a properly constructed cavity in the soil around the tree trunk is of the greatest benefit is well known to planters. *A. D. Webster.*

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Successional Pines.—The plants should be allowed to grow slowly for some time to come in a house having a night temperature of 60°. Guard against sudden changes, either in the temperature or amount of atmospheric moisture; the temperature may be allowed to rise a few degrees on bright days. Endeavour to keep the plants growing steadily and thus prevent the fruits developing prematurely.

Vinery.—The second division may now be closed, also the first Muscat house. Guard against a too liberal sprinkling of water, especially during the dull, damp weather, in houses in which vines are approaching the flowering stage. Remove all the weaker shoots from spurs developing several growths, retaining only the strongest, which should be prevented from becoming injured by tying it loosely to a wire, but do not attempt to train it to its permanent position for some time to come. Raise the temperature a few degrees by night and day as the vines increase in growth, maintaining a steady temperature as recommended when the vines were started in the second early houses. The Muscat houses should be about 3 degrees warmer, that is to say, 48° to 50°. Syringe the rods moderately until they break into growth.

Bottling Grapes.—Bunches of Grapes still hanging on the vines should be cut at once and the stems placed in bottles of water in the Grape-room. The Grapes will now keep better in bottles in a temperature of 45° than in the vinery. Examine the bottles frequently the first few weeks, and keep them well filled with water; remove all mouldy berries. The removal of the bunches will allow the vines to be watered, pruned, and the houses washed and painted, and alterations to be made to the borders, besides giving the vines a long season of rest.

Ventilation and Temperatures.—There have been sudden changes in the day and night temperatures of late, necessitating great care in ventilating, the use of moisture and fire-heat. An excess of fire-heat should be guarded against as much in severe weather as on mild days. It is always safest to maintain a relatively low temperature in the early stages of forcing, especially at night; yet it must be remembered that a close, stagnant atmosphere is just as injurious as a very warm, dry one. Gentle warmth in the early stages of forcing is beneficial, provided the damping and syringing are regulated in accordance with the weather. Ventilation at this stage is also an important cultural detail; the evil effects of currents of cold air are not evident immediately, but appear later, when the edges of the leaves become discoloured.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Woburn Castle, near Cardiff.

Broad Beans and Peas.—In the light soil of a warm border facing south a sowing of Broad Beans and also of Peas may be made on the first favourable occasion. If the soil and situation are not favourable, raise the seedlings of these early sowings under glass and transplant them out-of-doors later. Peas may be sown in pots or in wooden troughs 4 inches wide and the same in depth, made with detachable bottoms. Place the coarse soil in the bottom and cover it with fine earth, in which sow the seeds. Seven seeds may be placed in each five-inch pot. If wooden troughs are used, place the seeds one inch apart, covering them with an inch of soil. Broad Beans should be placed thickly together in a box containing a little light soil and just covered with sand. They will germinate in a week from

sowing and should then be potted singly in five-inch pots, selecting only those which have perfect tap-roots. Grow the plants in a warm house, such as a newly-started Peach-house or Vinery.

Raising Asparagus from Seed.—Where it is intended to raise plants of Asparagus from seed for forming new beds, much time may be saved and stronger plants obtained by sowing the seeds in pans and germinating them in warmth than if they are sown in the open. As soon as the seedlings are large enough they should be potted singly in 3-inch pots and kept growing steadily in a moderately warm house. As Asparagus will occupy the ground for a long period, the ground should be trenched deeply, well manured and enriched with bone-meal and other materials that will tend to promote a light texture, and finally the surface should be brought six inches above the surrounding level. Three rows at 18 inches apart make a convenient sized bed, the plants to be the same distance apart in the rows. Where new beds are made annually, trench an additional three feet of ground by the side of the original bed and plant two additional rows, allowing a space of one foot only between the plants. Sufficient one-year-old roots will then be available next season to make another bed and obviate the necessity of raising plants each year.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Lakes and Streams.—Advantage should be taken during the next few weeks to cleanse lakes, ponds, fountains and streams, of weeds and decaying matter. Plants that grow and spread freely may need checking to keep them within due limits. Preparation should be made in readiness for the planting of suitable subjects at the water's edge. Where the water supply of ponds and streams is somewhat limited, care should be taken that it is not allowed to waste by percolating through the retaining sides. Should water be lost in this way and the emptying of the pond entail a difficult or inconvenient operation, the following method may be adopted:—A little distance from the water's edge, skirt the sides by taking out a trench 18 inches wide and somewhat deeper than the natural clay sub-soil. Afterwards, fill the trench with clay "puddle" and continue to add puddled clay until it is a few inches above the water-line. The soil between the clay puddle and the actual water's edge will offer a suitable rooting-medium for waterside plants. Take immediate steps to exterminate water rats and moor hens. The moor hen takes a delight in pecking the flowers of Nymphaea and is often responsible for an indifferent display of these beautiful flowers. Fountains may be cleansed by applying spirits of salts with a stiff brush. Care must be taken that the acid is not allowed to come in contact with fish or plant life.

The Rubbish Heap.—The practice of having a special dumping place for weeds, trimmings and lawn mowings—as many gardening enthusiasts deem essential—is open to serious criticism. The practice entails much laborious work in barrowing and carting and should be avoided whenever possible. Weeds should not be allowed to seed and then they may, together with any soil removed, be used as a mulch for shrubs and conifers. If practicable, trimmings should be burned on the spot and the ashes used to nourish plant life at close quarters. Where manure is scarce, a mixture of leaves, dead flower stems and lawn mowings applied judiciously during the spring and early summer will be of decided benefit to plants in the Bamboo garden. The soil where Rhododendrons are massed may receive large quantities of fallen tree leaves to the ultimate benefit of the plants. Leaves that have accumulated in shrubberies should be evenly distributed and forked into the soil. Collect Oak and Beech leaves from the open and take them to a properly constructed leaf-store where they may be turned during inclement weather to assist decay. A light dressing of gypsum applied as the work of turning proceeds will help to destroy fungi.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Soil for Cherry Trees.—The best soil for Cherry trees is a moderately rich loam, with a well-drained sub-soil. If the soil is heavy it should be well prepared by disturbing it to a depth of two feet six inches and working in plenty of drainage material and lime rubble.

Planting Pears on Walls.—It is not too late to plant Pears against walls, but the work should be completed at the earliest opportunity. It is not advisable to plant Pears in cold, wet land unless the soil is specially prepared for the trees. It would be far better to defer the work until next autumn, when the borders may be well prepared in advance. Where the soil is of a good depth and either naturally or artificially drained time will be saved by planting now. Although Pears will not succeed in dry soils, stagnant moisture at the roots is productive of serious evils.

Pruning and Training Wall Trees.—Wall Pear trees are usually trained horizontally in fan shape, or as cordons. Certain varieties succeed best when horizontally or fan-trained, and the following sorts are suitable for these methods of training:—Beurré Hardy, Beurré d'Amanlis, Marie Louise, Doyenné du Comice, Emile d'Heyst, Pitmaston Duchess and Josephine de Malines. The following varieties do well as cordons:—Clapp's Favourite, Marguerite Marillat, Beurré Superfin, Durondeau, Beurré Alex. Lucas, Chas. Ernest, and Comte de Lamy. Very little winter pruning will be necessary if the trees were judiciously summer pruned. It may be necessary to remove useless spurs and thin others where they have become too thick. Before nailing the branches in position, trees that are affected with oyster scale should be treated as previously advised. All old ties and shreds should be burned.

Plums on Walls.—The work of planting wall Plum trees should be completed at an early date. The border should have been well prepared by trenching the soil deeply. Lime in the soil is essential, and this material may be applied in the shape of mortar rubble or freshly slaked lime, sprinkling it evenly over the entire width of the border. Fan-trained trees are the best for walls as they admit of the tree being frequently renewed by training in young wood. Cut out badly placed and ill-ripened growths. Train in young shoots arising from the base of the tree to form new branches. Shorten the leading growths and cut back all others not required for furnishing the wall space to within three inches of their base. Plums are sometimes affected with mussel scale. Where this is the case the bark of the trunk and branches should be well scraped and afterwards washed with an alkaline insecticide.

The Fruit-room.—Examine carefully all Apples and Pears in store and remove any that are decayed. Let the temperature of the fruit-room be kept as even as possible and admit a little air on all dry days.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq., Castleford, Chepstow.

Atmospheric Moisture.—It is almost impossible to lay down any hard and fast rule regarding the number of times it is necessary to damp the bare places in Orchid houses each day. During dull, moist weather very little damping is needed, but during a spell of cold, frosty weather, it will be advisable to damp the floors and stages once or twice daily to counteract the drying effects of the heat from the water pipes. The locality also makes a difference; in low-lying districts scarcely any additional moisture is needed throughout the winter months, but if the houses are situated in an exposed position, the atmosphere of the interior will dry much more quickly. Damping should always be done with a rising and not a falling temperature. Endeavour to prevent steam rising from the hot water pipes.

Zygocloxax.—These plants are hybrids between Zygopetalum and Colax, and include Z.C.

Amesianus, Z.-C. leopardinus, Z.-C. Veitchii, Z.-C. Charlesworthii, and Z.-C. Wigamianus. They require similar treatment to Zygopetalum, and should be grown in a house having an intermediate temperature. Repotting is not done when the new growths are about two inches high. The *quana* (*Colax jugosus*) may be grown in the same house. The compost for these plants should include partially decayed leaves. When the pseudo-bulbs are fully developed, keep the roots slightly on the dry side. Trips are extremely partial to the young shoots of these Orchids, and the plants should be dipped occasionally in an insecticide, afterwards placing them on their sides to allow them to drain.

Phaio Calanthes.—These Orchids are semi-deciduous, and do not need such a decided rest as *Calanthes*. As they pass the mowering stage they should be placed in the driest part of the Cattleya house, and be given only sufficient water to maintain the pseudo-bulbs in a plump and rigid condition. It is very rare that these plants are quite free from "spot" disease, but if grown in dry conditions the complaint is not nearly so prevalent. After a few weeks' rest the plants will begin to grow afresh, when any that need fresh soil or a larger pot may receive attention. A mixture of peat and fibrous loam forms a suitable compost, and the receptacles should be filled one-fourth of their depth with drainage material. Provided the plants are healthy, and not pot bound annual disturbance at the roots is not necessary.

PLANTS UNDER GLASS.

By JOHN COULTS, Foreman, Royal Botanic Gardens, Kew.

Seed Sowing.—Many indoor plants may be raised from seeds sown now, including tuberous and fibrous-rooted *Begonias*, *Grevillea robusta*, *Gloxinias*, *Streptocarpus* (if not raised last autumn), *Eucalyptus globulus*, *E. cordata*, *Asparagus Sprengeri*, *Asparagus medeoloides* (*Smilax*), and its slender-growing variety *myrtifolia*; *Asparagus plumosus*, and its variety *lanus*; *Albizzia lophantha* and *Acacia Baileyana*. The soil for seeds should be much lighter than that in which the plants are grown. Let the seed pans or pots be clean and dry, and provided with ample material for drainage. In the case of very fine seeds, such as those of *Begonia* and *Gloxinia*, the pans should be filled with soil and watered several hours before the seeds are sown. Small seeds should be strewn on the surface without any soil covering. If a sheet of glass is placed over the seed pan and the glass shaded, the soil should require no further watering until the seeds have germinated. When water is required the pots should be held in a vessel of water. The seeds of *Grevillea robusta* should be stood on edge, as they are very apt to rot when sown flat, and this fact is the cause of the frequent failure of this plant. Although usually raised from seeds, it is not generally known that the top shoots root readily as cuttings. This plant is useful as a stock for grafting other species of *Grevillea*, some of which, such as *G. punicea*, are very difficult to root. Hard-coated seeds like those of *Canna*, *Acacia*, and *Asparagus* germinate the more readily if they are soaked for some twelve hours in warm water.

Table Plants.—The propagation of stocks of so-called table plants should be continued to obtain supplies of young plants ample to meet all the demands of the establishment. The following are all useful subjects for this purpose: *Codiaeum* (*Croton*), *Cordylina*, *Dracaena*, small plants of *Cocos Weddiana* and *Phoenix Roebelinii*, *Pandanus Veitchii*, *Pilea muscosa*, small Ferns, pots and pans of *Selaginella*, *Aralia elegantissima*, *Pittontias* and *Panicum*. Grow them in as small pots as possible. Young plants of *Codiaeum* and similar subjects rooted last autumn require repotting. For decorative work and floral arrangements it is often difficult to get fresh, green moss, or suitable plants for carpeting; where quantities of such material are required there is no better subject than *Helleine Solierolii*.

ORCHID NOTES AND GLEANINGS.

CULTURAL MEMORANDA.

CATLEYA ENID, DOVERCOURT VARIETY

Two flowers of this very pretty cross between *C. Warszewiczii* Frau Melanie Beyrodt and *C. Mossiae* Reineckiana var. *Shiela* are sent by Fred Bedford, Esq., Dovercourt, Fulford, York. The original cross had rose sepals and petals and purple lip, but later the cross was made between *C. Warszewiczii* Fran M. Beyrodt and *C. Mossiae* Wagneri, which resulted in a form with pure white sepals and petals and violet-purple front to the lip. This form is closely followed by the Dovercourt variety, which differs, however, in having the colouring of the lip displayed as purple veining on a lighter ground.

ODONTIODA NADA RALLI'S VARIETY.

The illustration in Fig. 17 represents the fine *Odontioda* for which Pantia Ralli, Esq., Ashtead Park, Surrey, obtained a First-Class Certificate at the Royal Horticultural Society's Meeting on the 13th inst. The colour is deep crimson, with a golden glow, the margins of the segments being white. We are informed by Mr. Farnes, Orchid grower to Pantia Ralli, Esq., that the parentage of *Oda. Nada Ralli's* var. is *Oda. Red*

EULALIAS.

THESE Japanese grasses are among the best foliage plants for the summer, and it is a matter of surprise that they are not more often met with in amateurs' greenhouses, from which frost is excluded. The plants are now at rest and very little water is required at their roots. *Eulalias* are easily raised from seeds sown in spring, especially when a little heat can be afforded, but from an amateur's point of view it is wisest to purchase a plant or two of the different varieties, and divide them in February or early March when growth begins afresh. Cut the last year's growths close down to the pot, with the exception of the variegated form, which is a weaker grower than either *E. japonica* or *E. zebrina*, as this retention of a few shoots that still have a little life in them, appears to assist new growth from the base.

The ordinary compost commonly employed for greenhouse subjects—loam and leaf-soil, with enough coarse sand to ensure the free passage of water—will suit these grasses perfectly.



FIG. 17.—ODONTIODA NADA RALLI'S VAR. (F.O.C., R.H.S., January 13.)

Cross × *Odm. eximium*, and not *Oda. Cooksoniae* × *Odm. eximium*—which makes *Oda Alcantara*—as given when the plant was entered before the Orchid Committee.

HYBRID CYPRIPEDIUMS.

Mr. GEO. W. MARSH, Orchid grower to H. Green, Esq., Amberley House, Gravelly Hill, Birmingham, sends flowers of the following four large and handsome *Cypripediums*:—

C. Hyacinth, a cross between *C. Hera Euryades* and *C. hirsutissimum*, constituting a new record. The white dorsal sepal is tinged with bright mauve and spotted with claret colour, the sides of the lower sepals being coloured like the upper.

C. Winifred, obtained by crossing *C. Curtmannii* and *C. Pyramus*, is a very large and handsome flower, the petals and lip partaking much of *C. Beckmannii*, the fine white dorsal sepal having the dark claret blotching of *C. Mons. de Curte*.

C. King Ferdinand the Great, purchased from The Shrubbery collection and probably a form of *C. Pyramus*, has a broad white dorsal sepal, blotched with dark claret colour, and remarkably broad petals tinged and spotted with claret colour.

The fourth is a *C. Alcibiades* cross.

provided the plants are not watered freely until the roots are established in the new soil. Useful little plants of *E. gracillima* and *E. variegata* may be grown in 4-inch pots, while for *E. japonica* and *E. zebrina* 6 inch pots are the best.

As soon as the roots are seen at the drainage hole ample supplies of water should be afforded them, supplemented by a suitable stimulant twice weekly. The foliage should be well syringed daily in bright weather, as red spider is the plant's greatest enemy. Pot plants grow 2½ feet to 3 feet in height, and give a lightness to heavier foliage plants, also to flowering plants of a more spreading nature. With the exception of *E. gracillima* the *Eulalias* are quite hardy in Devon and Cornwall, and form huge clumps in a few years, especially *E. japonica* and *E. zebrina*, the former having light green foliage, while the latter has cross bars of yellow on the green. The plants grow nearly eight feet high in sheltered positions, and appear quite at home among Bamboos and other moisture-loving plants on the margin of streams, their drooping inflorescences towards the end of summer being much admired. The withered grasses should be cut down early in spring and a top-dressing of fine rich soil should then be put over the clumps. *James Mayne, Eltham.*

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PLANT HYGIENE.

HYGIENE has been defined as a series of rules necessary to keep a body of people in health, and is based on cleanliness. Cleanliness is obviously necessary amongst animals, and the question arises as to whether it is necessary for plants. There is a great and increasing opinion that it is, and it has to be remembered that one has to deal mainly with masses and not individuals.

A crop depends for its success on (1) soil, situation, climate and cultivation; (2) manures, and variety of plant; and (3) absence of pests and diseases.

Hygiene has most effect on (3). The loss due to disease amongst plants must average at least 10 per cent. of the crop, and may rise to so much as 80 per cent., or 90 per cent., in extreme cases. So accustomed is the cultivator to the normal loss of 10 per cent. that it is usually unnoticed. There is no doubt but that it would pay large growers to keep a trained assistant doing nothing else but to look after the sanitation of their crops. Such a man would distinguish outbreaks of disease at an early stage, and in many instances would prevent an epidemic. He would also see that spraying, etc., were undertaken at the proper time and spraying materials properly used and not wasted. His salary would be saved over and over again. In India and Malay, "pests gangs," as they are called, are kept on many estates merely to deal with diseased plants. It is not generally realised what great losses are incurred, both financially and in food, by disease. The following figures will give some idea of the loss in such crops. The Potato crop in England in 1919 was 2,730,000 tons. It would have been at least 10 per cent. greater but for disease of various kinds, although it was not a "blight" year. Thus 273,000 tons of food were lost and roughly (at £8 per ton), £2,185,600 sterling. The Sugar-Beet Leaf-hopper causes in some seasons a loss of £200,000 to the sugar industry. The Codlin Moth is believed to cause an annual loss of £2,400,000 in the United States alone. Canada loses over £40,000,000 worth of staple crops annually through depredation of insect pests, and Mr. J. G. Sanders, the Director of the Pennsylvania Experimental Station, recently stated in England that the annual loss due to

pests in the United States was 2 billion dollars (£400,000,000). Mr. J. E. Collin, quoted in the *Journal of the Scottish Board of Agriculture* for July, 1919, calculates that there was a loss of 12,126,198 bushels of Oats owing to Frit Fly, in 1912. More recently it has been stated that the Cotton Boll Weevil costs Texas Cotton growers £5,400,000 annually.

As an instance where money was saved by simple sanitary measures, it was calculated that after grease banding came into something like general use, the value of the Dutch fruit crops was increased by over £10,000 annually.

It will thus be seen that by simple sanitary measures undertaken throughout the world, there would be a gain of millions sterling as well as a great increase of food. Cleanliness—and sanitation chiefly stands for this—is therefore necessary for plant life, and I propose to consider in what way a grower can apply his knowledge in the prevention of disease. This may be divided into four parts, (1) exclusion; (2) protection; (3) eradication; and (4) immunisation.

(1) EXCLUSION OF DISEASE.

While it is obvious that a grower can do little or nothing to prevent the entrance of pests which are wind blown, yet he can arrange his crops so that similar kinds of plants do not adjoin or follow each other. One of the reasons for rotation of crops is that pests associated with one crop shall have little opportunity of increasing on the following crop. Thus Cabbage and Turnip should be kept apart as regards time and space as they are attacked by similar pests such as Gall Weevil and Club-root. The grower should also try to arrange his cropping so that similar families are separated and where possible provide wind breaks, which will tend to prevent spread of infection by air. Thus patches of Gooseberries and Currants should be separated by Raspberries or top fruit trees with a view to minimising the spread, say, of American Gooseberry Mildew and Black Currant Mite.

There is one thing, however, that he can do and that is to see that all newly brought stock is free from disease. At present it is not illegal to sell plants or seed infected with disease, and many fruit trees, for instance, are sold and brought infected with one disease or another. A few of the commonest diseases which are transmitted in the course of trade may be cited.

First as regards seed. Various fungi are disseminated sometimes mechanically and sometimes associated with the internal structure of the seed. Where the former is the case, treatment of the seed by means of fungicides is successful. Thus Celery blight is carried on the seed to uninfected soil and is ready to attack the seedlings when they come up. Treatment with formalin or hot water before sowing will prevent infection although such treatment is of no avail if the soil is infected. The well-known treatment of Wheat for smut by bluestone, etc., is carried out for similar reasons. In cases where the fungus is carried internally, treatment before sowing is useless, and care must be taken to select seed from uninfected sources. "Seed" Potatoes may be subjected to similar treatment when certain common scabs are in question, but no treatment is of any value when they are infected with Wart Disease. Every effort, therefore, should be made by growers who have clean soil to obtain their seed from uninfected districts, as once they have introduced this disease into their land there are no means known at present of eradicating it.

Turning to the case of plants introducing disease, it is common knowledge that diseases like Big Bud in Black Currants, American Blight

on Apples, American Gooseberry Mildew on Gooseberries, Gall Weevil and Club Root on Brassicas are introduced by plants. These, with the exception, perhaps, of the first named when infection is slight, can all be detected when received and it behoves the grower, therefore, to go over his plants carefully and either reject them or treat them if disease is present. Enough has been said to show that the grower by care exercised at the onset can prevent the spread of many diseases. It is, of course, still more necessary for the seed grower and nurserymen to see that diseased stocks are not sent out, especially as in the near future administrative action will be taken if they do so.

(2) PROTECTION.

Having dealt with instances of exclusion, we may discuss cases where protection may be obtained when disease is already in the district in some form, or where the pest is practically universal. Where plants are indoors, such disease as "mildews" (whether true mildew or not) may be largely controlled by ventilation and every practical grower of Tomatos and Roses under glass knows that errors in ventilation or watering will almost inevitably lead to mildew and loss of crop. It is not that a draught or excessively close atmosphere causes the disease, but it gives rise to conditions which render the plant more susceptible and also gives the fungus a better chance of reproducing itself.

Every grower should realise that, with exceptions such as the mildews which grow and reproduce on the outside of the host, a plant attacked by a fungous disease can seldom be cured owing to the fact that the fungus usually develops inside the plant and its results are commonly seen only when it has finished its growth and has appeared on the surface to shed its spores. Hence prevention is essential when dealing with fungous diseases. This is well exemplified by ordinary Potato disease or "Blight." This disease is caused by a fungus which seems universal, but which can only become epidemic when atmospheric conditions are warm and moist. At such times, the plants are covered with Bordeaux or Burgundy Mixture so as to leave a thin film of a neutral copper salt on the leaves. If the fungus is already in the plant, little or no good is done, although it may prevent the pest from producing its spores, but it will prevent healthy plants from being attacked, as the wind blown spore on coming in contact with a sprayed leaf is killed at an early stage and fails to obtain entrance into the plant. Similarly, fruit growers spray fruit trees, especially Apple and Plum, before and after blossoming to prevent attacks of such diseases as Apple Scab and Brown Rot.

Protection through treatment of the soil is of great value, more especially where soil can be sterilised, as in small plots and in greenhouses. This may be done by means of steam or by chemicals. Thorough sterilisation, as when the humus is burnt out, is harmful and plants fail to grow properly in such soil. Partial sterilisation not only kills such enemies as wireworms and millipedes, but minute organisms such as eelworms (the cause of the knotted roots in Tomatos and Cucumbers), and fungus spores, which give rise to various diseases such as "damping off" of seedlings. It also destroys the minute animal organisms (Protozoa) believed to feed on and destroy the bacteria which render food materials in the soil available for the plant. The bacteria themselves are reduced to a certain extent, but they have greater recuperative powers and so get to work again unhampered by their foes.

Proper manuring is also a means of protection from disease and growers should see that

necessary substances are supplied to the soil. Lime, for instance, is frequently lacking and the country must have lost thousands of pounds of foodstuffs owing to the fact that many growers, nowadays, fail to lime their soils. Most plants do not grow freely in acid soils, Brassicas being especially liable in such cases to Club Root. Buntner, in his recent paper on Silver Leaf, seems to think that the absence of lime predisposes Plum trees to this disease, and it is certain that *Plum* require lime in the soil.

It has been noted on the Rothamsted plots that where potassium is absent, plants are more liable to disease, and certain diseases are present in that plot which are almost entirely absent from other parts of the field where potassium has been supplied.

Careful cultivation is also necessary if protection against disease is to be afforded. The overcrowding of plants, with corresponding lack of light and air, so that they become drawn and spindly predisposes them to disease, and such plants soon "damp off" if there is an excess of water. The hoeing and cultivation of land on which fruit trees are growing should be carefully done. Many tree diseases such as canker, "Silver Leaf" and "die back" in Gooseberries, start from a wound made by careless hoeing or pruning, which allows the entrance of the fungus causing the disease. Forest trees are infected in a similar fashion through a wound made by the breaking of a branch or by some gnawing animal. *Geo. C. Gough, B.Sc.*

(To be concluded.)

SOME NEW ROSES.

The first quality required of a new Rose is that it shall grow. If it will not grow readily and without excessive requirements in cultural treatment, it must soon disappear. However lovely its flowers may be, however fragrant or perfectly formed, if the plant will not grow, and grow well, we shall soon discard it and go back to our old favourites of proved constitution and merit, or we shall seek elsewhere till we find this necessary quality.

The variety Mrs. Geo. Norwood has fragrance, good form and pleasant colouring, but if its best effort is to give a single bloom on a stalk barely a foot high it can find no place as a garden Rose; and Lady Mary Ward, even more lovely in form and colour, is in little better case. Fortunately, however, we can find some among the new Roses which are more satisfactory in this respect, and I propose to mention one or two that have proved notably useful in this connection.

Joanna Bridge is one of the first that occurs to me. It was brought out by Mr. Hicks, who has shown it well. The flowers are thin, of a nankeen yellow, slightly tinged with pale pink, very freely produced, and gracefully carried on the plant. The habit is bushy and this Rose makes an excellent bedder, the growths pushing up to nearly 4 ft. by autumn. The foliage is lasting and good, not suffering noticeably from disease, and the variety is in every respect one to be recommended as a good grower to those who like this type of flower. No one, of course, would grow it for exhibiting in boxes, for the flower has only a few more petals than a single Rose, and, consequently, its only pretension to form is in the bud state, which is not very long lived. Still, when arranged with the buds, some of the expanded flowers make a graceful vase.

Walter C. Clark (*W. Paul and Son, 1917*), is another variety that has made good growth in my garden. The flowers are fairly full, of medium size, and a deep maroon-crimson. In fact, it is one of the darkest Roses I have. As a flower it is likely to be more useful to many than the first-named, but, so far as I can judge in one year, it is not so free in the production of blossoms in the later part of the season, nor is the plant so bushy, but it makes long growths of 4 to 5 feet, and it is quite likely that, as a cut back, it may develop a better habit and become more floriferous.

Covent Garden is a variety that took my fancy when first shown by Messrs. B. R. Cant and Sons, and it is great satisfaction to find it is apparently a really first-class flower. The flowers are somewhere about the same size as those of

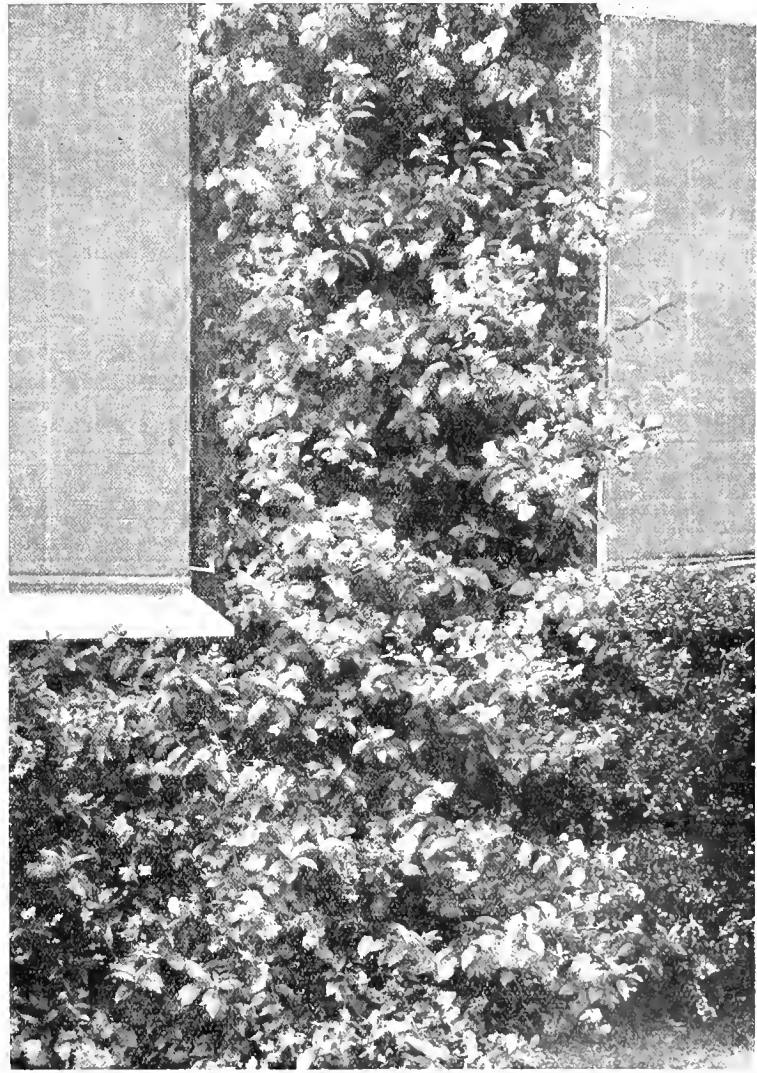
Richmond, and are a very bright and attractive crimson. The plant branches well and bids fair to make one of our best bedding Roses. The foliage is pleasing, leathery and deep green, and so far seems free from disease. Taken all round, this Rose should have a great future.

Golden Ophelia, from the same firm, though not quite so vigorous as the preceding varieties, has made much better growth with me than it seemed to promise when I wrote of it a year ago, and seems rather above the average in vigour of growth. The plant is well shaped and will, I think, be useful for bedding purposes. The flower is well formed with reflexed petals and is bright and good in the summer. The only thing I have against it is that, like so many yellow Roses, the colour gets somewhat washed out in the late autumn flowers. *White Rose.*

suggest the protection of a wall, fence, or ever green shrubs if the locality is notably cold; and whether grown against a building or as bushy shrubs in the open, the position should be well drained. Some of the *Ceanothuses* are ever-green, but the variety *Gloire de Versailles* is deciduous. *C. Turner, Amphill Park Gardens.*

PISTACIA LENTISCUS.

Covent Garden market has recently received from the South of France flowering sprays of *Pistacia lentiscus*. The plant is the source of "Mastic," a resin obtained by making incisions in the bark, the chief source of supply being the island of Scio, in the Greek Archipelago. The resin appears in commerce in the form of small tears, and in this country is used in dentistry and in the manufacture of



(Photograph by C. Turner.)

FIG. 18.—CEANOTHUS GLOIRE DE VERSAILLES, FLOWERING AGAINST A WARM WALL.

TREES AND SHRUBS.

CEANOTHUS GLOIRE DE VERSAILLES.

Lovers of flowering shrubs should not fail to plant one or more specimens of the Mountain Sweet. These shrubs are equally satisfactory whether kept in bounds more or less as dwarf shrubs, or encouraged to grow high enough to hide a piece of wall, as shown in the illustration (see Fig 18). An example of the former treatment, used to be seen in the Royal Gardens, Kew, where there was a large bed of *Gloire de Versailles*. Most of the *Ceanothuses* bear flowers of some shade of blue, and so associate very happily with brick or stone walls. To those planting this subject for the first time, I would

varnishes. Its principal consumption is in the East, where it is used as a masticatory and for preserving the teeth and gums. In the East it is also used for fumigating and in the preparation of confections and cordials. It has also been used in medicine in the same way as Chian turpentine, which is obtained from another species, viz., *Pistacia Terebinthus*, and was formerly used in medicine, and also in the treatment of cancer.

Pistachio-nuts are the fruits of *Pistacia vera*, a small tree native of Western Asia and the Levant, and now spread all along the shores of the Mediterranean. There are several other species of *Pistacia*, native of India, Palestine and Algeria, which are used for dyeing, tanning and also medicinally.

HINTS ON PROPAGATION.

THOUGH it is difficult to fix a date for the beginning of the gardening year, January is undoubtedly the beginning as regards propagation. With the gradually increasing amount of sunlight, seed sowing may be commenced under glass. Whether pans or boxes are best in which to sow the seed is a question of individual opinion—or of necessity. For the liner seeds I prefer pans. Though the soil in them dries out sooner than when boxes are used, they are easier to dip and less prone to encourage damping off and other fungous pests. Within limits, one cannot give too much care to the preparation of the receptacles. Cleanliness and thorough crocking are essential; if pots are to be used, half fill them with drainage material—it is almost better to have too little soil than too great a depth.

Even for the largest seeds a level surface is necessary to ensure even germination, but it is a great mistake to provide a bulk of fine soil for small seeds. The sittings of the compost may be placed immediately over the drainage, working up gradually to the fine soil for surfacing. This will ensure porosity, without which the young roots would suffer from want of air. The seed pans should be dipped, not watered overhead; this ensures thorough saturation, and will, in most cases, suffice until the seeds germinate. Pans for *Rhododendron* and *Erica* seed require special preparation. The light, peaty mixture should be very thoroughly rammed, the pans well soaked and left to drain for 24 hours before sowing takes place. Another most important point is the even distribution of the seed. When it is large enough to handle, it is time well spent to space the seeds instead of scattering them; each resultant seedling then has an equal chance.

A start may also be made with cuttings: there may still be months of winter before us, but with the increasing light, vegetation will commence to grow again at the first favourable opportunity, and, with the large majority of plants, propagation is best effected at the time when growth begins. It is then possible to take full advantage of the co-ordination between root and top growth, most cuttings striking best when the parent plant is in active growth. With the help of glass protection, the stock plants may be started, but it is a great mistake to do this before the turn of the year—added warmth cannot make up for a shortage of light. But from now onwards, plants which are to be propagated from cuttings may be introduced into heat in order to encourage the development of quick, young growth. This method may sometimes be necessary; for instance, with *Rhododendron imbricatum*. The growth which it produces naturally is hard to strike, but if the plants are lifted now from the open, potted and brought into a house temperature of 50° to 55°, young shoots will quickly develop, and with gentle bottom heat will strike easily.

The art of taking and striking of cuttings, like all artificial methods of propagation, can only be learned by experience. We may learn to have a sharp knife; to make the rooting medium firm and level; to water well; but no one can tell us exactly what kind of growth to take; hard and soft, ripe and unripe, are terms the degree of which the propagator must judge for himself, and it will vary, too, from plant to plant. In most cases soft growth will strike easily, with or without a certain amount of bottom heat, but sometimes (as in *Onosma taurica* or *Iberis sempervirens*) the wood must be half ripe, whilst the majority of cuttings of shrubs root when the wood is ripe.

A method of propagation which is being more and more resorted to is by root cuttings—it is astonishing how many fleshy-rooted plants may be increased in this way. It is simple, quick and sure. The roots, cut into one-inch to two-inch lengths and inserted in sand, will soon callus and produce shoots. *Anchusa*, *Papaver orientale*, the perennial *Verbascum*, *Eryngium* and *Statice* respond particularly well to this method

of increase, and each root-cutting may be reckoned on as a potential plant. Among the smaller herbaceous plants or alpines to be propagated in this way are some of the *Ceraniums* and *Morisia hypogaea*. All these make callus buds, but *Aneione japonica* and *Ostrowskia magnifica* produce their buds from the outer layers and the cuttings must therefore be laid in horizontally instead of upright.

From November to February, while the plants are dormant, is the best time to insert these cuttings; it is therefore not too late to begin now. Though little can be done outdoors yet, it is not too early to make preparations, such as ordering seed and digging the soil. An ever present difficulty is that of obtaining manure. A mixture of leaves, poultry manure and woodash provides an excellent fertilising material, and especially for Sweet Peas, whilst for more permanent crops, basic slag or super phosphate may be added.

Writing of Sweet Peas reminds me that if they were not sown in October—the ideal time for most climates—the present is a good time to sow this annual. Sow five seeds in a large 60 or long Tom pot, and germinate them indoors. Grow the seedlings near the glass in a cold frame, and strong plants will be ready for planting in the open by March or April. S. O. S.

CUTTINGS.

THE article on Cuttings by J. Clark (see page 7) is full of interest, especially to one who, like myself, has had many years' experience of propagating different plants by means of cuttings. It will prove of great service if only to call attention to the fact that cuttings of half ripened wood, taken with a heel, furnish by no means the only form in which they can be used for the propagation of plants in general. In my younger days, now, alas! many years ago, "with a heel" was the method generally adopted for most plants. However, after a time, I worked under a clever nursery propagator, and found that there was very much to learn. Increase by soft cuttings was, I found out, available for many classes of plants. Still, even then, a great deal depends upon the treatment the plant has undergone before the cuttings are taken. Many plants which in the ordinary way are difficult to strike may be propagated readily from cuttings, provided the parent plant is taken—before growth commences—into a structure kept a few degrees warmer than the one in which it was before. If this is done in early spring the plant will at once start into growth, and directly the shoots have lost some of their succulence, but are still soft, they make the best of cuttings. In many such cases it is not necessary to press the soil down as firmly as is usually recommended for cuttings in general.

Very soft cuttings should be inserted as soon as possible after removal from the parent plant, watered, and placed in a close propagating case before they have time to flag. A curious point in the rooting of cuttings of greenhouse Heaths is that if they are covered with a bell glass, and a cutting should happen to be bent down by the edge of the glass, it is often one of the first to root.

Many Proteaceous plants, especially the *Banksias* and *Dryandras*, are exceedingly difficult to strike. Belonging to the same order is *Embothrium coccineum*, of which at one time I wished to obtain a stock of young plants. Having an old plant established in a pot, I placed it in a heated house and the young shoots then produced rooted without difficulty. The advantage of making internodal cuttings with a sloping cut at the base, as mentioned by your correspondent, is in entire agreement with my experience. The warm-house *Rhododendrons* of the Javanese section root far more readily from a long sloping cut than they do if cut off squarely at the base. In the case of short-jointed growths the whole shoot may be taken as a cutting, but it should be cut off entire, as from the slightly swollen base roots are produced more readily than from any other part. W. T.

THE GARDENER'S EDUCATION AND TRAINING.

THE reading of your excellent résumé of the year 1919 induces me to send a few notes on the subject of making an effort, first, to improve the education, and, secondly, to improve the training, and thereby raise the status of gardeners during the period ushered in by the year 1920. Now that the world war is over, and the dawn of a new and better era has arrived, would it not be well that the gardening profession should put its house in order, and, by promoting education and efficiency, endeavour to keep in the van of world-output, which alone can work out our national salvation.

The lack of education in our ranks to-day is grievous, and the prospects for the future in this matter, unless some very material improvement can be effected, are scarcely less so. The low wages now being paid to gardeners cannot be expected to attract intelligent, clever and pushful boys now leaving school; even the agricultural labourer has the advantage in respect of wages, so that we are likely to have an influx into our ranks of very indifferent material. I take it that it is the ambition of every lad who enters the gardening profession to rise to be head of an establishment, and every one who does so aspire has an enormous task before him.

The gardening profession has one peculiarity shared by few others, in that the head of an establishment comes daily into contact with ladies and gentlemen of the very best education, and he who would retain the respect and goodwill of his employers must so educate himself that he may be able to converse properly, concisely, and intelligently on any matters connected with his profession which may arise from day to day. To do this entails a knowledge of English grammar, botany, and a sound knowledge of horticulture, and he who would rise to the head of his profession would do well to acquire this knowledge. At the present time little is being done in the country districts in the way of night schools, but a return to the practice which prevailed some twenty years ago would be money well spent. The two first above-mentioned subjects could be taught by the local school staffs, and horticulture could be taught at convenient centres where the necessary number to make up a class could attend.

Education in the practical side is no less chaotic, and the old-time, all-round gardener is fast giving place to the modern, sectional specialist—a condition of things which is, in my opinion, undesirable, so far as the private gardener is concerned, but which is undoubtedly necessary in the commercial section of the profession. Occasionally in the advertisement columns of *The Gardeners' Chronicle* appear advertisements for gardeners, preferably Scotsmen, and I have heard it stated many times that this was merely prejudice. It is not so, however. In Scotland it is a general practice to put the boys through a fixed course of work, after which they are considered to have qualified as journeymen. This, followed by periods as foremen of departments, has raised the profession to a higher level of efficiency in Scotland than obtains in England.

This lack of a curriculum is a genuine calamity in England, no two head gardeners following the same procedure in the training of their subordinates. The general adoption throughout the country of the course followed, say, at Kew, or Wisley, would be of incalculable benefit; it would establish a high standard of efficiency, and give each individual the same chance of thoroughly learning the profession, instead of some being pushed forward and others remaining as "bothy boys" until reaching manhood, as at present. Technical education, it has been stated, was the prime cause of German commercial success prior to 1914, and I venture to appeal to the powers that be to provide it in no stinted measure for the profession of which *The Gardeners' Chronicle* is the leading organ, feeling certain that British thoroughness will make the utmost of the opportunities provided. Ben H. Martin, Moreton Paddox Gardens, Warwick.

WINTER-FLOWERING BEGONIAS.

THE large flowered race of hybrid Begonias, which were a feature of the R.H.S. exhibitions a few years ago at this season, are valuable plants for the decoration of conservatories and warm greenhouses. Before the introduction of *B. socotrana*, the only Begonias suitable for indoor decoration in winter were the perpetual-flowering and evergreen fibrous-rooted kinds. The first species supposed to be introduced into this country was *B. nitida*, obtained from Jamaica in 1777. This is still a very useful plant for the warm greenhouse; its flowers are pale pink. Others are *B. fuchsoides*, bright coral red, and *B. Dregei*, white. The latter is one of the parents of *Gloire de Lorraine*. Other species and hybrids include *B. ascotensis*, pink; *B. Digswelliana*, soft pink; *B. insignis*, a free, vigorous plant with lilac pink flowers; *B. Ingramii*, reddish pink; *B. parvifolia*, pure white; *B. Knowsleyana*, bluish, a most valuable plant for providing cut blooms; *B. Haageana*, which has handsome foliage, and large trusses of bluish-white flowers; and *B. kewensis*, which develops white flowers freely in clusters and is a most suitable subject for growing in baskets. All these Begonias claim a place in gardens on account of their flowering freely during the winter. They require to be grown in a warm or intermediate house, but during the summer they may be placed in frames, provided they are taken into a house having a temperature about 50° to 60° on the approach of cold weather. The plants may be propagated freely from cuttings, and the raiser should be careful to select healthy shoots free from insects and rust. Cleanliness is the most important detail in the successful cultivation of these Begonias.

Begonia socotrana was discovered by Professor Bailey Balfour, of the Edinburgh Botanic Gardens, on the island of Socotra, and the plant was put into commerce by Messrs. James Veitch and Sons. This species is remarkable in that it is the originator of two distinct races of winter-flowering Begonias. It does not belong to the shrubby or evergreen kinds, or to the tuberous flowering section, but has clusters of bulbils at its base, from each of which a plant is developed. During the summer it goes to rest, and commences to grow actively again in the early autumn. *Begonia socotrana* is a handsome, free-flowering species and has proved a useful plant for the warm greenhouse. The foliage is very distinct. Messrs. Veitch were not long in proving its good qualities for hybridising purposes. They produced from it a new race of winter-flowering hybrids of beautiful and brilliant colours, which have proved most useful for the decoration of conservatories and greenhouses during this dull season. The members of this section are all the result of crosses effected between *B. socotrana* and summer-flowering, tuberous-rooted species. The habit of the hybrids is intermediate and quite distinct from that of both parents. While they partake of the winter-flowering character of *B. socotrana*, the flowers have the large size and the many bright colours of the other parent.

All these winter-flowering Begonias possess a strong, vigorous constitution. The single and semi-double varieties withstand fog and dull weather far better than the double sorts. The doubles drop their flowers quickly and the trusses hang heavily on the plant, whilst those of the singles and semi-doubles are poised gracefully and the blooms remain fresh for a long time. Amongst the best of the first hybrids are *Elatior*, with semi-double flowers of rose-carmine; this variety has a neat, compact habit, and is very free flowering. *Ideala* has semi-double, bright, rose-carmine flowers and blooms freely in 60-sized pots. Mrs. Heal has single flowers, each 3 to 3½ inches in diameter, coloured rose-carmine, toned with scarlet; the plant is a vigorous grower and the trusses hang gracefully. Other good varieties are *Winter Cheer*, with semi-double, rose-carmine coloured flowers, each more than 3 inches in diameter. *Ensign*, with semi-double flowers of light carmine colour toned with scarlet, and *Winter Perfec-*

tion, semi-double, bright rose pink; a very distinct shade. Later hybrids superior to some of the older varieties are: *Emita*, single, orange-scarlet, flowers 3 to 3½ inches in diameter. This *Begonia* was illustrated in colours in *Gard. Chron.*, November 1, 1913; *Exquisite*, single, a fine salmon-pink variety with a lighter centre; *Fascination*, single, rich apricot shaded salmon; *The Gem*, a semi-double variety of great merit, very floriferous, with intense brilliant rosy-scarlet flowers; *Rose Queen*, single,

best. The plants are easily propagated from cuttings at any time between May and August. The later cuttings make young plants that are a mass of flower from November to January. *B. socotrana* also crossed readily with the shrubby or evergreen species before mentioned, and gave another race of plants unrivalled for their free flowering, free growing, and compact habit. They are suitable for all kinds of winter decoration.

Begonia Gloire de Lorraine, is one of the most popular indoor flowers and is extensively grown in hanging baskets. It was raised by Mon. Lemoine, nurseryman of Nancy. *Agatha* resembles the variety *Gloire de Lorraine*, but has larger flowers of richer colour, and the blooms are more lasting when used for house decoration. Other good Begonias of this section are *Agatha compacta*, a free-flowering, dwarf growing variety; *Mrs. Leopold de Rothschild*, a vigorous grower, and *Turnford Hall*, blush white. The noble variety, *Gloire de Sceaux* (see Fig. 19) has leaves of a bronzy, metallic lustre, crimson beneath; the flowers, which are freely produced, are bright rose-pink.

During the past few years many other Begonias of great merit have been raised in this country, on the Continent, and in America. All the winter flowering Begonias are easy of cultivation if given proper care and attention, and kept free from insect pests. They should be grown in a house having a temperature of about 55° in winter; in a warmer house they are liable to become infested with insects. The cultivator should be careful not to give the plants too much water before they are well rooted, as over-watering is as injurious as over-potting. A moderate amount of air should be admitted when the state of the weather permits. The houses should be damped two or three times daily. Winter flowering Begonias should be allowed a rest during early spring and summer, and under no circumstances should they be treated as are the summer tuberous varieties. They commence to make their growth after resting and when the shoots are about 3 inches high they are suitable for making cuttings. During the resting season the plants require very little water at the roots, only sufficient to keep them moderately moist. Do not repot the plants until they have started into growth. When repotting is done remove most of the old soil, and use larger pots as required. The compost should consist of about two-thirds light, turfy loam, and one-third fibrous peat or leaf-mould with silver sand added. The greatest secret in the successful cultivation of these Begonias is to keep the plants clean and free from insect pests. *John Heal, F.M.H.*



FIG. 19.—A FINE SPECIMEN OF BEGONIA GLOIRE DE SCEAUX.

LOPEZIA MINIATA.

This is a very pretty greenhouse shrub of a remarkably distinct character and exceedingly free flowering. It is a native of Mexico, and was introduced about a century ago, but would appear to have been lost to gardens for a long time. At all events, when it was brought forward about ten to a dozen years ago, it was almost, if not quite, unknown, but being readily propagated it soon became distributed. It has, however, I think, declined in popularity within the last few years. This *Lopezia*, which is botanically a near relative of the *Fuchsia*, forms, if stopped once or twice when young, a freely branched little bush furnished with ovate leaves about an inch long, thin in texture, and of a rather pale green colour. The flowers, which are borne singly on long slender stems towards the upper parts of the shoots, are of a pleasing shade of bright reddish pink. They are so numerous that, though individually only about half an inch in diameter, a specimen when in full bloom is very attractive. The flower is of a peculiar shape, the most notable feature being a comparatively large wing on either side. Cuttings formed of the young growing shoots, inserted in the spring, will strike root in a very short time in a close propagating case. It is a very useful plant for greenhouse decoration in the summer. *H*

deep rose in colour, and very distinct; *Admiration*, a variety of very compact habit, producing single, fine bronze-yellow blossoms; and *Optima*, single, of good habit, with pale yellowish-salmon flowers; a fine decorative variety. A successful grower of this *Begonia* writes: "I wonder the members of the Trade do not grow *Optima* by the thousands; or ten of thousands would not be too many if grown in large 60's or 48-sized pots, as a market decorative plant." There are several others, but those enumerated are the

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Evergreen Hedges.—I heartily endorse the remarks of Mr. E. Molyneux on this subject (see p. 15). Those who contemplate planting hedges or wind screens during the spring will do well to follow the advice he gives. Here we have several evergreen hedges composed of the different plants mentioned, and they are at all seasons of the year objects of beauty, requiring very little labour to keep them in order. In addition to the subjects mentioned by Mr. Molyneux, *Thuja dolabrata* is a very desirable plant for a hedge, and when well established is hard to surpass for this purpose. Some of the best hedges in these gardens are composed of it, and the only attention required is an annual or biennial topping of the leading shoots with a knife. A few years ago I planted a few roots of *Tropeolum speciosum* against this hedge, and also against a hedge of *Cupressus Lawsoniana*, and the scarlet flowers among the green foliage of the evergreen hedges make a very pretty picture. Evergreen hedges are much more tidy than deciduous ones. *Wilmot H. Yates, Itoherfield Park Gardens.*

Hosts for the Mistletoe.—I am interested in the recent correspondence in your columns on this subject. In 1915 I conducted an inquiry as to the occurrence of the parasite in England, the results being published in the January issue of the *Quarterly Journal of Forestry* for 1914. In that inquiry no instance came to light of the occurrence of Mistletoe on Birch, Hornbeam, Elm, Cherry, common Walnut, Beech, Lombardy Poplar, or White Poplar, and I should be glad to know if any reader can refer to specific instances of such cases. Although no one reported Mistletoe on Plum and Pear, I have since heard of such instances. More particularly I should be grateful to J. F. if he can inform us where the parasite can be seen on Beech, and English Elm (two trees included in his list in the *Gard. Chron.* of January 3, p. 9), as these trees have not, so far as I know, been recorded as hosts for the parasite either in this country or in any other part of Europe. *W. Somerville, Oxford.*

—In addition to those trees mentioned by J. F. as hosts for the Mistletoe, we have it here, at Arley Castle, Bewdley, also on *Quercus rubra* and *Crataegus tanacetifolia*. *Mary T. Woodward.*

—The Medlar as a host plant for the Mistletoe (see pp. 20, 21) is new to me, though there seems nothing impossible about it, since I can now mention twelve species or well marked forms of Rosaceae on which it grows. I admit the validity of the single Red Thorn (*Crataegus Oxyacantha punicea*) as a record, for the Mistletoe often shows a partiality for certain trees in preference to other closely allied ones, which may be more or less immune or unsuitable, though this may extend to individuals. I mentioned only the common Hawthorn, *Crataegus monogyna* and *C. odoratissima*, but omitted *C. Oxyacantha rosea* (single Pink Hawthorn), on which the Mistletoe grows strongly, in the Oxford Botanic Garden, in 1901. The two British Hawthorns are considered distinct species by many botanists, and all the coloured garden forms, single and double, are varieties of *C. Oxyacantha*. The *Acacia* mentioned by Geo. W. Stacey I presume to be *Robinia Pseudacacia* or False *Acacia*, which I included in my list under the botanical name to avoid ambiguity, because one species of true *Acacia* (*A. dealbata*) grows to the size of a tree on the south coast of Devon and in Guernsey. If allowed to extend my observations to Switzerland, I could add the Peach as a host plant. At Sion in that country a forest of Pines was more or less covered with the parasite within the last two years. It was also frequent upon Silver Firs. At Verona, in Italy, it grows upon Loranthus, the type of the order which includes the Mistletoe. *J. F.*

Snowy or White Fly.—The wretched pests *Aleyrodes proletella* and *A. vaporariorum*, the two forms of the Snowy or White Fly that are

such a trial to the gardening community, appear to be on the increase and, I am wondering whether any of your readers have knowledge of a method of exterminating the pests after they have become established. Amongst trade growers, and especially Tomato raisers, much time and money have been expended in this direction, and I am afraid without anything like complete success, and it has occurred to me that possibly in some out-of-the-way quarter or a small garden there may be a man lucky enough to have thought out and efficiently tested a method of getting rid of these unwelcome visitors. If there is, may I appeal to him to give other less fortunate growers the benefit of his experience? *E. Beckett, Aldenham House Gardens.*

The Best Potatos.—Potatos vary greatly in different districts on different soils, and it is surprising to me that no classified list of the best varieties in particular districts on varying soils has been published. The compilation of such a list would be valuable and I should be pleased to hear from gardeners working in different parts of the country, on different soils, as to which variety of first early, second early, and main crop Potatos succeeds on their particular soil. Letters should be sent to me at my private address, and if sufficient are forthcoming by the beginning of March, I will let you know what the general opinion is, as regards the three best Potatos for three different kinds of soils. *E. T. Ellis, Westwood, Eccleshall, Sheffield.*

Potatos: Spade versus Plough (see pp. 8 and 20).—Your correspondents do well to call attention to the poor yield of Potatos from land cultivated by the plough; but the average yield of 5.7 to 6.6 tons to the acre covers a great deal of good and bad land and good and bad cultivation. Potato Up-to-Date, when first put into commerce did and, in all probability yet, will produce 10 tons to the acre in the drained areas of Lincolnshire and Cambridgeshire. Throughout the country, farmers have to deal with much less suitable soils, and they have not yet reached a stage when they can discard the plough. There has been no mention of the sub-soil plough for breaking up the hard pan formed in the course of years by the ordinary horse-plough. The sub-soil plough was in use in the early seventies of last century and was still well known twenty years later. The body and handles resembled an ordinary plough, but the whole was much lighter, being furnished with one strong tine. It was drawn by one horse and followed along the furrow, immediately behind the ordinary plough, tearing up the sub-soil several inches deep. Nor need we overlook the possibilities of the steam plough, and the other implements, such as cultivators or scarifiers, drag-harrows, zigzag-harrows, and chain-harrows, in getting a deep tilth for Potatos. *J. F.*

Grapes in Unheated Houses.—Some years ago a dwelling house, with a vinery attached, was unoccupied for nearly three years; it was owned by my employer, but was some distance away, and so I could not attend to the needs of the vines. The vinery was closed more than two years. I had the key of this vinery, and no one could get into it but myself. The larger portion of the border was outside. The vines had looked after themselves. Before this time the Grapes always shrank badly. My first visit to this vinery, after it had been closed for over twelve months, was during September, and a great surprise awaited me. The Grapes were all sound, and there was no sign of shanking or of insect pests, and if the berries had been thinned the bunches would have been all that could be desired. The vinery must at times, during a hot summer, have been very hot. During the following winter I pruned the vines, but during the succeeding summer they were again left to themselves, and once more there was a good crop of Grapes. I may also state that the vines themselves were much improved in vigour by allowing them to produce all the growth they could during the two years. The vinery was kept without ventilation, water, or fire heat. *James Atkinson, Torkington Lodge Gardens, near Stockport.*

Obituary.

Dr. John H. Wilson.—The death of this distinguished Scottish scientist and horticulturist occurred on the 15th inst., at St. Andrews. Dr. Wilson, who was 61 years of age, was lecturer in Agriculture and Rural Economy at the University of St. Andrews, and his efforts in raising strains of Potatos resistant to disease were successful. We hope to give an appreciation of his work in our next issue.

The Countess of Selkirk.—It is with much regret that we learn of the death on the 10th inst. of the Countess of Selkirk, at Balmae, Kirkcudbright, after a brief illness, the result of a chill. Lady Selkirk, who was about 83 years of age, took a keen interest in gardening and instituted a cottage garden competition for cottagers on St. Mary's Isle estate and in the town of Kirkcudbright. Lady Selkirk was a warm supporter of the Royal Horticultural Society's War Relief Fund, and was convener of the fund in the Stewartry of Kirkcudbright.

THE WEATHER.

THE WEATHER IN DECEMBER.

FOLLOWING a cold November, the month under review was comparatively mild, with a mean temperature three degrees higher than that of the previous month. Rain fell on 21 days, yielding the considerable total of 4.28 inches, the wettest day being the 30th, with 1.05 in. Of bright sunshine 54.5 hours were registered, an average of 1.8 hour per day and a percentage of 24; there were 7 sunless days. With a mean of 29.55 inches, the barometer pressure varied from a highest of 30.15 inches on the 5th to a lowest of 29.02 inches on the 27th. The mean temperature was 37.5° with a mean range of 13; and an absolute range of 28°. On the 19th and 20th the highest maximum of 48° was reached, and on the 28th the lowest minimum of 20°. The lowest maximum was 33° on the 25th and the highest minimum 38° on the 20th. For the maximum and minimum the means were 44° and 31° respectively. On the grass the mean minimum worked out at 27° with a lowest of 15° on the 26th; there were 26 nights of ground frost. At 1 foot deep the soil temperature, with a mean of 35°, rose from 35° to 37° and then fell to 34°. Snow fell on 4 days. The prevailing winds were from the north, south and west, with gales on the 12th and 19th.

THE WEATHER IN SCOTLAND IN 1919.

THE mean temperature for the year was 44.5°, being 1° below the average. This was largely the result of the very cold November, although there was a deficit for other seven months. August had the highest mean of 57° and November the lowest of 34.5°. The highest maximum was 78° on July 10th, and the lowest minimum 11° on November 14th. The highest temperature of which we have a record is 82° and the lowest 6°.

Ground frosts were registered on 153 nights during the year; they occurred in every month, December having the highest record of 26, while June, July and August had one each.

Rain fell on 174 days to a total of 25.35 inches, a deficit from the available average of 4.31 inches. May to October were dry months with a falling off of 8.04 inches; November and December were wet, with an excess of 2.80 inches. November was the wettest month of the year, with 4.75 inches, and July the driest with 0.50 inch. The most rain collected in one day was 1.22 inch on August 20th.

No rain fell from 18th to 31st May, a period of 14 days, while the only 3 rainy days in July were separated by intervals of 13 and 12 days. A "rainy spell" lasted from 26th October to 12th November inclusive, when a total of 3.01 inches was collected. From 1st December to 27th April snow fell on 15 days, the last fall being a blizzard. There was a slight fall on October 25th and on other 9 days to the end of the year.

There were no severe thunderstorms. Bright sunshine was registered on 290 days with a total of 1695.5 hours, an excess of 17.6 hours over the average. All months contributed to this excess with the exceptions of January, February and April. The average number of hours per day works out at 4.4 and the percentage at 33.4.

The brightest month was June with a total of 247.2 hours, being an average of 8.0 hours per day and 47.7 per cent. of the possible, while January was the dimmest month with a total of 35.4 hours, a daily average of 1.1 hour and a percentage of 10.8. August had a higher percentage than any other month—viz., 49.5, the total number of hours being 239.6 and the average 7.6 hours.

SUMMARY.—The weather for 1919 was colder, drier and sunnier than that of the available average.—*James Malloch, Director of Studies, Training College Gardens, Kirkton-of-Mains, near Dundee.*

SOCIETIES.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE monthly meeting of this Society was held in the R.H.S. Hall on Monday Jan. 12th, Mr. Charles H. Curtis, presiding. Five new members were elected. One member was allowed to withdraw the double amount of his interest, viz., £5 1s. 0d. One member who had reached the age of 70 years was allowed to withdraw the sum of £60 2s. 2d., still leaving £10 to his credit; and two lapsed members withdrew £37 11s. 3d. from their lapsed account. The death certificates of three members were received and the sum of £150 9s. 5d. was passed for payment to their respective nominees. The sick pay for the month on the private side amounted to £56 14s. 4d., and on the State Section to £35 3s. 4d., and Maternity benefits to £6. The trustees reported that they had invested a further £500 in War Bonds.

THE APIARY.

By CHLORIS.

THE high price of sugar and the reduction of the sugar ration will cause many to seriously consider the advantages of becoming bee-keepers. Honey is an excellent sweetener, of greater food value than sugar, and may be used for nearly every purpose that sugar is employed for.

Site.—Hives should be placed in suitable positions. The site should be protected from north and west winds, and failing a wall, protection may be obtained by planting an evergreen hedge. Boards may be used, but they form an expensive screen. Having secured the necessary protection, clear the ground of all grass and weeds, which is easily done at this season of the year, when the ground is soft. When the site is cleared and levelled, cover it with a good layer of sifted ashes. The hives should not be crowded, and at least six feet must be allowed between them. Each hive should rest on a separate stand, which should be low, and the alighting board of each sloping towards the ground to throw off the rain-water and to facilitate the return of the heavily laden bees. This is of especial importance in the early spring, for the bees are then liable to be blown to the ground under the hives, when they become chilled and die. The path should be behind the hives, not in front, for this would interfere with the free flight of the bees. The openings of the hives should face south or, better, south-east, in order that the insects may be induced to go out foraging by the warmth of the early morning sun.

Value of Bees.—Beside producing an invaluable food, bee-keeping cannot be ignored by those who are contemplating growing all kinds of fruit. The best flavoured honey is that from fruit bloom, and this brings with wax an extra source of income to the fruit-grower, beside the insects ensuring pollination of the blossoms. In districts where pastures have a sprinkling of white Clover, bee-keeping becomes very lucrative, and the nectar yielded by this plant is very choice. Other vegetation providing good forage for these insects are Lime trees, Alsike Clover, Mustard, Rape, Buckwheat, Brassicas growing for seed, and Borage. Ling Heaths are splendid for supplying late nectar and honey from these plants realises excellent prices.

Present Needs.—Those who have hives should examine the roofs to find out if they are leaking, but no examination of the interior of the brood chamber should be attempted, as the season of activity has not arrived. Should there be leaks, stop them, and supply dry, warm quilts, as dampness is the main cause of dysentery. Many hives have had their roofs blown off during the recent bad weather. Some

bee-keepers place bricks on the roofs, but these cause water to collect under them. The best plan is to fix a wooden plug in the ground securely on one side of the hive, tie a rope to it, and on the other end a brick with just enough rope to pass over the roof of the hive, so that the brick will not touch the ground on the other side. Where bees are suspected of being short of food, a cake of candy or a frame of honey, the sealing of which has been scored with a blunt instrument, may be slipped under the quilt. Take a piece of bent wire and clear the floor-board of any dead bees, but take care when the operation has been completed, to nearly close the entrance. When snow falls, let a board rest against the hive to prevent reflected or direct sunlight from being thrown into the entrance. This often induces bees to attempt a cleansing flight on a bitterly cold day, and the snow is soon strewn with chilled, dead bees.

TRADE NOTES.

THE century old business of Messrs. Toogood and Sons, of Southampton, Seedsmen to H.M. the King, is being reconstituted as a limited company, with a share capital of £250,000 in £1 shares issued at par. The management and staff of the business are not in any way to be changed, and Messrs. William George Toogood, E. Kemp Toogood and W. Cecil Toogood will continue to devote their whole time to the direction of the business. By what seems to be a very sensible provision, applications for shares from customers and the staff will receive preference. The subscription list will close on February 3rd.

MR. C. VAN DER SLUYS has taken over the nurseries, including the stock of plants, seedlings, and goodwill of Mr. H. Burnett, Carnation Grower, Guernsey. Mr. van der Sluys will add this business to that of his own which has been established over twenty years.

CROPS AND STOCK ON THE HOME FARM.

THE BEST SEEDS FOR SILAGE AND SUMMER SOILING.

IN choosing seed for silage crops or summer fodder, preference is usually given to Tares or other legumes, because they produce a forage containing a high proportion of albuminoids. In the case of Tares or Peas, the stems are so weak that they cannot support their own weight, and some other plant becomes necessary to provide the support required; if this is not given the crop lies on the ground, is liable to rot at the base and becomes very difficult to cut. The inclusion of a small proportion of Beans will help to mitigate this defect. The addition of Oats to the mixture is also an advantage; they serve not only to support the weaker legumes, but also to provide a suitably balanced fodder.

Both Tares and Peas are relatively scarce at the present time, Tares being the more expensive of the two. Peas therefore may be used to replace Tares in whole or in part.

A suitable mixture for spring sowing per acre would be:—2 bushels Oats, 1 bushel field Peas or Vetches, ½ bushel Beans.

Forage mixture such as the above may be used with advantage for silage, for soiling, or making into hay; they may partly replace roots on the heaviest classes of soils. (If intended for hay, Beans should be omitted.)

A moderate dressing of farmyard manure, where available, will give good results in most circumstances; so also will the following mixture of artificials per acre:—½ cwt. sulphate of ammonia, 2 cwt. superphosphate, ½ cwt. sulphate of potash.

MARKETS.

COVENT GARDEN, January 20th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Apples (English)		Bananas, singles	25 0-35 0
—King of the Pippins per 4 bush.	3 0-5 0	—Specials	40 0 —
—Cox's Orange Pippin per 4 bush.	8 0-11 0	—Grapes Alicante	3 0-3 6
—Blenheim Pippin per bus.	6 0-10 0	—Special per lb.	4 0 —
—Newton Wonder	5 0-8 0	—Gros Colmar ..	2 3-3 0
—Lane's Price Albert, per bus.	5 0-8 0	—Special	3 6 4 6
—Bramley's Seedling per bus.	5 0-8 0	—Muscat, per lb.	10 0-15 0
—Brit. Columbia	20 6 —	—Cannon Hall	10 0-15 0
Jonathan	19 0-20 0	—Almeria per barrel ..	30 0-40 0
Grime's Golden Nonesuch	20 6 —	Lemons 300's	21 0-25 0
Northern Greening	18 6 —	—Oranges—	
New Town	20 10 —	Nuts—Brazilis (new)	130 0-135 0
Oregon New Town	20 10	—Chestnuts—	
—Nova Scotian—	40 0-50 0	—Naples	36 0-40 0
—G. Russets	40 0-50 0	Cob Nuts, per lb.	1 2-1 4
		Walnuts 25 kilo.	45 0 —
		—Pineapples, each.	2 6-5 0

Vegetables: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English		Mushrooms, per lb.	2 6-3 0
—Devon 50's ...	7 0-7 6	Onions, per cwt.	10 0-14 0
—100's ...	22 6-25 0	Parsley, per doz.	2 6-3 6
—Middlesex ...	8 1 —	—bunches	2 6-3 6
Beans Guernsey, per lb.	6 0-7 0	Parsnips, per bag	8 0-10 0
Beets, per bag	10 0-11 0	Potatoes, per cwt.	11 0-14 0
Cabbage, per doz.	2 0-3 0	—Guernsey per lb.	2 0-2 6
Carrots, per bag	6 0-8 0	Radishes, per doz.	3 0-4 0
Cauliflower, per doz.	3 0-6 0	—bunches	2 0-2 6
Celery, per fan, (12 heads)	3 6-4 6	Rhubarb Forced	2 0-2 6
Chicory, —English, per lb.	0 6-0 8	—per doz.	2 0-2 6
—Belgian	0 8-0 10	Scalpe per punnet	2 9-3 6
Cucumbers, per doz.	36 0-42 0	Spanish Onions	4 tier ... 16 0-18 0
Garlic, per lb.	1 6 —	4 tier ...	18 0-20 0
Endive, per doz.	4 0-8 0	Spring Onions, per doz. bunches	4 0 —
French Lettuce per doz.	2 9-3 0	—doz. bunches	4 0 —
Herbs, per doz. bunch.	4 0-6 0	—bags 28 lb.	4 6-5 6
Mat, per doz. bun.	15 0 —	Tomatos, English, New Crop per doz. lbs.	12 0-14 0
Mustard and Cress per doz. punnets	1 6-2 0	—Teneriffe, per bundle	35 0-42 0
		—Turmps, per bag	8 0-9 0
		Watercress, per doz.	0 9- —

REMARKS.—There has been considerable improvement in business during the past week, many sections showing renewed activities. English Apples continue in heavy supply, although quantities of selected, well-packed parcels in good condition are not plentiful, and prices for such in view of quantities available, have been steadily maintained. A few fruits of Cox's Orange Pippin are still coming to hand in excellent condition. The advance in price of hothouse Grapes is maintained, mainly due to slightly decreased quantities. A shipment of fruit from the Cape is of interest, and in view of the scarcity of choice fruit from home growers, Peaches, Nectarines, Apricots, Plums and Pears should be in some demand. Except for a few fruits of Jonathan, Nonesuch and Fancy Greening, the market is clear of British Columbian Apples, and the shipment due in a week's time is eagerly awaited. English Tomatos are now in such negligible quantities that the requirements of the trade are centred on supplies from Teneriffe, which are realising maximum arranged prices. English Asparagus (forced) is a slightly better trade. Guernsey forced Beans and Potatoes remain firm in price, due to supplies being below requirements. Mushrooms, owing to open weather, are more plentiful. Cauliflowers are in good demand. Green Vegetables are plentiful and cheap, but a cold snap would have an adverse effect on quantity and cause an increase in price. Potatoes continue a difficult trade and are firm in price.

Plants in Pots, &c.: Average Wholesale Prices.

(All 48's, per doz. except where otherwise stated.)		s. d. s. d.		s. d. s. d.	
Aralia Sieboldii	10 0-12 0	Cyclamen	48's per doz.	24 0-30 0	
Asparagus plumosus	12 0-15 0	Erica byemalis	—	24 0-36 0	
—Sprengerii	12 0-15 0	Erica per doz.	—	24 0-36 0	
Aspidistra, green	48 0-72 0	Erica melanthera,	per doz.	30 0-36 0	
—de Lorraine	24 0-36 0	Marguerites—white	18 0-24 0		
—48's per doz.	24 0-36 0	Palms, Keotia	—	24 0-36 0	
Azaleas, each	3 0-5 0	—60's ..	—	15 0-18 0	
Cacti per tray	5 0-6 0	—Cocos ..	—	24 0-36 0	
12's, 15's	5 0-6 0	Polunetia	—	24 0-30 0	
Chrysanthemums	48's per doz.	48's per doz.	—	24 0-30 0	
—48's per doz.	24 0-30 0	Roman Hyacinths	—	7 0-8 0	
—Carrarias, per doz.	15 0-24 0	on bulbs,	—	7 0-8 0	

Ferns and Palms: Average Wholesale Prices.

a. d. s. d.		Nephrolepis, 10		a. d. s. d.	
Adiantum	cuneatum 48's	per doz.	12 0-15 0	32's	12 0-18 0
—elegans	15 0-18 0	Pteris, in variety	48's	per doz.	12 0-21 0
Asplenium 48's per	doz.	—large 60's	per doz.	5 0-6 0	
—32's	per doz.	—small 60's	per doz.	4 0-4 6	
—nidus 48's	per doz.	—72's per tray of	15's	per doz.	3 6 4 0
Oyttonium 48's	per doz.				

Cut Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		Richardia (Arums).		s. d. s. d.	
Azalea white, per	doz. bun.	12 0-15 0	per doz. blms.	10 0-12 0	
Camellias per doz.	6 0-7 0	Roses per dozen	blooms—		
Carnations per doz.	blooms, best	—Mme. Abel	Chatenay	per doz.	9 0-15 0
—American var.	4 0-6 0	Roman Hyacinth	per doz. spikes	2 0-2 6	
Chrysanthemums—	White per doz.	—Snowdrops	per doz. bun.	6 0 8 0	
—Yellow	per doz. bun.	—Tulips, White,	per doz. bun.	24 0-36 0	
—Pink	per doz. bun.	—Scarlet	per doz. bun.	18 0-24 0	
—Spray White	per doz. bun.	—Coloured var.	per doz. bun.	36 0-48 0	
—Coloured	per doz. bun.	—Viola	per doz. bun.	24 0-36 0	
—per doz. bun.	30 0-48 0	—large per doz.	8 0-10 0		
Daffodils, Single,	per doz. bun.	—Ordinary	per doz. bun.	5 0-6 0	
—per doz. bun.	18 0-24 0	—French Flowers—			
Freesia, White	per doz. bun.	—Anemones, Pink	per doz. bun.	6 0-9 0	
—per doz. bun.	5 0-6 0	—Lilac white	per doz. spray	4 0-6 0	
Heather, white	per doz. bun.	—Marguerites yellow	per doz. bun.	5 0-6 0	
—per doz. bun.	10 0-12 0	—Mimosa, per pad	8 0-10 0		
Lapageria, per doz.	blooms	—Narcissus, Paper	White per pad	10 0-15 0	
—per doz. bun.	5 0-6 0	—Racunculus, Carmine	per doz. bun.	12 0-15 0	
Lilium longiflorum,	per bunch	—Scarlet	per doz. bun.	12 0-15 0	
—per bunch	18 0-20 0	—Violets,	Parma, per bun	8 0-10 0	
Lilium apicatum	per bunch	—Roses,	Ulrich Brunner,	per doz.	6 0-8 0
—album per bunch	6 0-7 0	—Frau Karl Druschki	per doz.	4 0-8 0	
—rubrum per bun	6 0-7 0	—Sarrono, per doz.	2 6 3 0		
Lily of the Valley	per bunch				
—per bunch	3 0-4 0				
Narcissus, Soleil	d'Or, per doz. bun				
—per doz. bun	10 0-15 0				
Grand Priou	per doz. bun.				
—per doz. bun.	10 0-12 0				
Orchids per doz.:	—Cattleya	per doz.	24 0-30 0		
—per doz.	5 0-10 0				
Pelargonium, double	scarlet, per				
—per doz. bun.	15 0-24 0				

REMARKS.—Daffodils, Freesias, and Tulips are all arriving in larger quantities. Varieties of Tulips consist of La Reine, Thomas Moore, Prince of Austria, and Yellow Prince; the blooms have long stems, and are the finest offered this season. Snowdrops are available in limited quantities. The supplies of Carnations are sufficient for the demand, and their prices are again lower. Large quantities of Violets are being received from home growers; also Roman Hyacinths and white Camellias. The supplies in Lily-of-the-Valley are reduced, and prices for these flowers are firmer. Supplies of Lilium longiflorum are limited, but Richardia (Arums) are more numerous than last week. Supplies of flowers from the Channel Islands are increasing. Yellow and white Narcissus, also Daffodils are arriving in excellent condition from this source. Since Wednesday last the consignments of flowers from the South of France, consisting mostly of paper white Narcissus, Mimosa, and Violets, have reached the market in a very bad condition, and very few packages were suitable for redispach to the provinces. Several consignments have been a long time in transit owing to the recent gales, whilst there have been heavy rains in the South of France, and these have damaged many crops. The flowers, moreover, were packed in a wet condition. The largest consignment of the season, numbering about 25,000 packages, reached the market this morning, but many hundreds will not even realise the cost of transit.

APPOINTMENTS.

The following Appointments are announced in the *Kew Bulletin*, No. 10, 1919—

- Mr S. T. Dunn, as Assistant for India, in the Herbarium at Kew, temporarily.
- Mr R. S. Tronp, Assistant Inspector General of Forests, India, as Professor of Forestry in the University of Oxford.
- Mr H. R. Jones, a student in the Imperial College of Science, as Mycologist to the Ministry of Agriculture, Egypt.
- Mr H. B. Sharpe, a former member of the gardening staff at Kew and for some time Plant Import Inspe for in the East Africa Protectorate, as an Assistant District Commissioner in the East Africa Protectorate.
- Mr Alec Holm, Under-Secretary to the Ministry of Agriculture, Union of South Africa, and lately in charge of the Experimental Farm, Potchefstroom, as Director of Agriculture, East Africa Protectorate.
- Mr W. H. Birchenough, as Tropical Agricultural Instructor in the East Africa Protectorate.
- Messrs. F. B. Butler and J. Sparrow, members of the gardening staff at Kew, as Agricultural Instructors in the East Africa Protectorate.
- Mr C. B. Ussher, formerly a member of the gardening staff at Kew, as Horticulturist in the East Africa Protectorate.

Messrs. P. Chandler and C. Hazel, members of the gardening staff at Kew, as Assistant District Agricultural Officers, Uganda.

Messrs. A. M. Henderson, T. J. Shaw and D. Prain, as Agriculturalists in the Department of Agriculture, Nyasaland.

Mr W. C. Fishlock, formerly a member of the gardening staff at Kew, and for several years Curator of the Botanic Station in the Virgin Islands, as Senior Curator in the Department of Agriculture, Gold Coast.

Mr T. Laycock, formerly Agricultural Inspector, as Mycologist in the Department of Agriculture, Nigeria (Southern Provinces).

Mr G. R. Piercez, to be an Assistant Superintendent in the Department of Agriculture, Nigeria (Southern Provinces).

Lt. Col. F. Summers, R. E., to be Economic Botanist in the Department of Agriculture, Ceylon.

Mr F. de la Mare Norris, as Assistant Agricultural Inspector, to be Assistant to the Director of Agriculture, Federated Malay States.

Mr W. N. C. Belgrave, B.A., as Assistant Mycologist to be Plant Physiologist in the Department of Agriculture, Federated Malay States.

Mr B. Bunting, as Assistant Agriculturalist, to be Agriculturalist in the Department of Agriculture, Federated Malay States.

Mr H. H. Stirrup, M.Sc., as Assistant Agricultural Inspector, to be Assistant Mycologist in the Department of Agriculture, Federated Malay States.

Mr W. N. Sands, F.L.S., formerly a member of the gardening staff at Kew, and since 1899 Agricultural Superintendent in St. Vincent, West Indies, as Assistant Economic Botanist in the Department of Agriculture, Federated Malay States.

Mr F. Birkinshaw, Agricultural Instructor, Department of Agriculture, Mauritius, a former member of the gardening staff at Kew, and for some time Assistant Agricultural Superintendent, St. Vincent, as Assistant Agricultural Inspector in the Department of Agriculture, Federated Malay States.

Mr T. Jackson, formerly a member of the gardening staff at Kew, and since 1905 Curator of the Botanic Station, Antigua, as Agricultural Superintendent in succession to Mr Sands, St. Vincent.

Mr G. E. Bodkin, B.A., Economic Biologist, as Assistant Director of the Department of Science and Agriculture, British Guiana.

Mr F. Stell, of the Imperial College of Science and Technology, as Mycologist in the Department of Science and Agriculture, British Guiana.

GARDENING APPOINTMENTS.

Mr E. R. Beames, for six years before the war Gardener to LORD BRAYE, Stamford Hall, Rugby, and since discharged from active service Gardener at The Grove, Aiviston, Bristol, as Gardener to Mrs. HAGGE, Norman Hill, Dursley, Gloucestershire.

Mr S. A. Young, of Rampton Manor, Retford, as Gardener to S. E. Godwin, Esq., Mattersea Hall, Bawtry.

Mr W. H. Tissington has resumed his duties as Gardener to Mrs. LOCKE LAMPSON, at Birlborough Hall, nr. Chesterfield.

Mr John Traill, recently with Col. A. M. GAGE, Sydney Lodge, Hamble, as Gardener to A. F. BENTLEY, Esq., Woodlands House, Woodlands, near Southampton.

Mr Joseph Sheperd, recently with His Majesty's Forests, and formerly Foreman for three years at Roseleigh Gardens, Woolton, Liverpool, as Gardener to W. STAVELEY TAYLOR, Esq., Springcroft, Aigburth Hall Road, Aigburth, Liverpool.

Mr A. J. Lee, as Gardener to Lt. Col. H. V. BAVENSCROFT, Storrington Abbey, Pulborough, Sussex.

Mr Jas. Stevens, for the past fourteen years Gardener at Grantlands, Uffculme, Devon, as Gardener to Mrs. TULLOCK, Purley Hall, Pangbourne. (Thanks for P.O. 2, for R.G.O.F. Box.—Eds.).

ANSWERS TO CORRESPONDENTS.

ADDRESS: C. N. The address you require is The Homefinders Company, Ltd., 160, Piccadilly, W.1.

BLACK SPOTS ON CALANTHE PSEUDO-BULBS: A. C. The dark brown spots on the pseudo-bulbs of Calanthes are due to some cultural error, and generally result from imperfect nutrition caused by unhealthy roots. Unsatisfactory root action may be caused by an excess of moisture about the roots or by low temperature combined with an excess of atmospheric moisture, or all these combined. It is possible to bring affected plants back to good health in the course of a year or two provided special attention is paid to watering and temperature. The affected pseudo-bulbs should be kept dry until new growth commences, and the diseased portions should be treated with charcoal dust and flowers of sulphur in order to dry the diseased tissues. When potting takes place, after new growth has commenced, the pots used should be only

large enough to just accommodate the old pseudo-bulbs, and in subsequent shifts the increase in the size of the pots should be determined by the quantity of roots made and the general progress of the plant.

DESTRUCTION OF CHARLOCK: E. C. In view of the immense number of seeds produced by a single plant of Charlock and the extraordinary vitality of the seed (which may remain buried in the ground for years without losing its germinating power), it is most important that seeding should be checked as far as possible. If only small numbers of plants are found they may be pulled out by hand in due course, but in the case of a badly infested field spraying is the only remedy. Charlock is more easily killed when in flower than at any other stage. The Corn in which it is growing may be damaged a little by the spray but will soon recover. In the eastern counties it is usual to apply 40 to 50 gallons per acre of a 3 per cent. solution of copper sulphate (i.e., 15 lbs. copper sulphate to 50 gallons of water per acre), but in western districts a 4 per cent. (i.e., 20 lbs. to 50 gallons per acre), or even a 5 per cent. solution may be employed.

NAMES OF PLANTS: W. C. We do not undertake the naming of florists' flowers; you should send specimens of your varieties to the specialist from whom you purchased your stock, as, having a collection, he will be better able to determine the varieties. We may add, however, that No. 2 is Rayonate.

NATIONAL KNAPSACK SPRAYER: C. C. The makers of the National Knapsack Sprayer are De Muzy Frères, 4, Knatchbull Road, Camberwell, S.E.

PEACH SHOOTS DISEASED: W. E. A. The Peach shoots are affected with Botrytis disease, which generally attacks unripened growths near the nodes, i.e., the points from which the leaves are produced. Cut out all diseased shoots, and spray the trees with a rose-red solution of permanganate of potash.

POLLINATING TOMATOS: F. G. The Tomato is self-fertile and the pollen escapes through pores at the end of the stamens, so that merely tapping the plants will generally suffice to ensure a good "set." The pollen is more readily disseminated when the conditions are dry, and artificial pollination is best done about noon, when the atmosphere of the house is likely to be dry and warm. When the plants are in bloom keep the atmosphere dry and circulating by allowing a little top ventilation. A rabbit's tail fastened to a thin, pliable stick is useful for dusting the trusses of flowers, as it catches the pollen and conveys it from flower to flower.

VINE ROOTS UNSATISFACTORY: Correspondent. Judging from the soil accompanying the vine roots, it is plain that the rooting medium is not sufficiently retentive. Too much light material was mixed with the loam. While there was some organic matter to decompose, the vines might have grown fairly well, but when that was exhausted, trouble would follow. We advise making a trench about 4 ft. from the stems, then working back with a fork, and with the fingers remove the soil from amongst the roots as far as this can be done without disturbing the plants, then lay the roots in fresh soil without exposing them longer than necessary. The fresh soil should consist, preferably, of loam, rather heavier than light, mixed with steamed bone flour, 1 cwt. to 5 loads, a bushel or two of good ash, or burned vegetable refuse, and also a bushel of old lime, chalk or, what is preferable, mortar from an old building. If the soil consists of new, turfy loam with much grass upon it, the grass should be partly scorched over a flat fire. Soil which has been stacked a month or two will not need this treatment, but it should not be stacked too long, or the fibre will be decayed. Much improvement in the fruit must not be expected this year, as the bunches are already formed in embryo in the buds.

Communications Received.—H. S.—J. G. B.—H. H. R.—A. W. P.—J. P.—H. H. D.—G. S., U.S.A.

THE
Gardeners' Chronicle

No. 1727.—SATURDAY, JAN. 31, 1920.

CONTENTS.

Alpine garden, the	46	Onion on light soil	56
Double Soapwort, the	46	Plants, American in	52
Apples, October dessert	49	England	52
Apples, home-grown—		Plant hygiene	54
causes of low prices		Primula Wattii	48
for	47	Rabbits eating tree-stems	55
Books, notices of:		Societies:	
Forests, Woods and		Gardeners' Royal	
Trees, in Relation		Benevolent Institu-	
to Hygiene	54	tion	56
Epiphyllums	48	National Chrysanthe-	
Chrysanthemum, le	47	num	47, 50
Douglas Firs	48	National Dablia	50
Epiphyllums	48	National Rose	58
Florists' flowers:		Reading and District	
Anthrinum	53	Gardeners'	59
Candrina campanulata		Royal Caledonian	59
Chrysanthemum, new		Royal Horticultural	57
53	53	Scottish Hort.	59
Fruit register:		Sugar Beet in the West	
Grape	55	of Scotland	47
Madresfield		"Sweet Pea Review"	47
Court	55	Trade Notes	60
"Gardeners' Chronicle"		Trees and shrubs:	
seventy-five years ago		Celastrus articulatus	55
48	48	John Downie, and	
Hedges, deciduous	49	Dartmouth Crabs	55
Horticulture, the	47	Pyraecantha, a yellow-	
Chamber of	47	fruited	55
Maekaya bella	51	60	50-51
Mistletoe, hosts of the	56	Worshipful Company of	
Library	60	Fruiterers	47
Farrish, William Robert	60		
Gurney, Geo.	60		
Tressler, Geo.	60		
Wilson, J. H.	59		

ILLUSTRATIONS.

Chrysanthemum Mrs. H. E. Dixon	53
Gurney, Mr. G.	60
Hedge of Hawthorn, A well-kept	49
Maekaya bella	51
Primula Wattii	48
Pyraecantha crenulata Rogersiana forma flava	55

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.5°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, Wednesday, January 28, 1920, 10 a.m.: Bar, 29.6; temp., 47°. Weather—Dull.

The Chamber of Horticulture.

The memorandum issued by the Chamber of Horticulture at the conclusion of its first year's work demonstrates in precise and definite manner the value of the institution and the importance of the work which it is conducting on behalf of horticulture.

There are many reasons why horticulturists should be represented in a central, common organisation. The first among these reasons is to be found in the fact that horticultural industry covers an extraordinarily wide field. It includes fruit growing, market gardening, nursery and florists' work, growing under glass, seed raising and the trades dealing with the supply of materials accessory to these departments of the industry—artificial manures, fungicides and insecticides, horticultural machinery and all those garden implements and materials supplied by the horticultural sundriesman. In addition to this not inconsiderable list have to be added the industry of distribution of horticultural produce, that of market men and salesmen, makers of "agricultural" baskets and the like, and to these again must be added the jam manufacturers who use a large proportion of the home-grown fruit crops, and whose goodwill toward and co-operation with fruit growers is of the greatest importance to their industry.

Evidently a central clearing house of ideas, a meeting place for discussions and a strong organisation to give effect to agreed policies are essential if the needs of horticulture are to be encompassed. Moreover, there is a special reason why a Chamber of Horticulture is necessary at the present time. Governmental *laissez aller* is a thing of the

past. On all hands are to be seen signs that the State is taking an active interest in the promotion of agriculture and horticulture. During the past year, for example, a Seed and Weeds Bill has been introduced which imposes certain conditions on the sale of seeds. Orders regulating the sale of artificial manures and the cultivation of fruit trees (the Order relating to Silver Leaf) have been put into operation. It is therefore essential not only that representatives of the horticultural industry should be consulted during the drafting of such Bills and Orders, but that the industry as a whole should have an opportunity of ascertaining and expressing its views on matters vital to that industry. For State assistance to an industry can only prove successful if there is close co-operation between the officers of the Government Department on the one hand and the industry on the other. Horticulture is fortunate in that provision has been made for securing this co-operation by the establishment both of the Horticultural Advisory Committee of the Ministry of Agriculture and the Chamber of Horticulture.

Among the many services rendered by the Chamber of Horticulture during its past year of existence, special mention may be made of the discussions held between representatives of manufacturers of insecticides and fungicides and of the Board of Agriculture. As a result of these discussions a measure is in course of preparation to secure that the chief fungicides and insecticides shall be of known and published composition and strength. Following upon this useful piece of work will undoubtedly come investigations which will add to our knowledge and thereby prepare the way for a further advance in the means of controlling plant pests. Although mention might be made of the many other useful services rendered by the Chamber of Horticulture and referred to in the Memorandum, sufficient has been said to show that this organisation deserves the support of all sections of the horticultural industry. With close co-operation between the Chamber and the Royal Horticultural Society, the great industry of horticulture should develop more and more to the benefit, not only of those engaged in it, but also of the whole community.

National Chrysanthemum Society.—The annual general meeting of members of the National Chrysanthemum Society will be held at Essex Hall, Essex Street, Strand, London, W.C., on Monday, February 2, 1920, at 6.30 p.m., to receive the report of the Executive Committee and the financial statement for 1919, to elect officers and one-third of the Committee for 1920, and to transact such other business as pertains to an annual meeting. The President, Sir Albert Rollit, LL.D., D.C.L., V.M.H., will preside.

Sugar Beet in the West of Scotland.—The report on the trials of Sugar Beet in the west of Scotland, conducted by the Glasgow and West of Scotland College of Agriculture, is of a satisfactory character. The district covered the counties of Ayr, Dumfries, Kirkcubright, Lanark, and Wigtown. The average sugar production in the roots themselves showed a percentage of 15.15, and in the juice of 15.95. The yield of washed roots averaged 14.01 tons per acre. Professor Berry remarks that the experiment would show that where the lifting of the crop is deferred until October or November that the storage of sugar by the root continues.

"The Sweet Pea Review."—Mr. C. Harman Payne writes:—"Having recently been engaged on a bibliography of the Sweet Pea, for publication in the National Sweet Pea Society's current Annual, I have had occasion to come across the little pamphlet bearing the above title. It is

an anonymous one, published by the Sunset Seed and Plant Co., of San Francisco. From one source I gathered it was written by that eminent Sweet Pea enthusiast, the Rev. W. T. Hutchins, but this was subsequently contradicted. In the recently published Catalogue of the Massachusetts Horticultural Society's Library the book is catalogued under the name of the Sunset Seed and Plant Co. But there must have been an author. Are any American readers of the *Gard. Chron.* aware who it was? I should be glad to know."

"Le Chrysanthemum."—We are pleased to welcome the reappearance of this publication after five years' cessation. The issue has now reached its fourth number, and is quite as interesting as in the pre-war days. After making all allowances for resignations, deaths and other contributory causes, the Society still has on its books 649 members, of which 69 are affiliated societies. We fancy our own National Chrysanthemum Society can hardly claim such a post-war condition. At present, owing to increased cost of paper, printing and labour, our familiar yellow-covered contemporary is now published bi-monthly, instead of monthly. We are hoping, some day, to see a definite promise about the pocket edition of the *Repertoire des Couleurs* which was under consideration in pre-war days.

The Worshipful Company of Fruiterers.—The St. Paul's Day banquet of the Worshipful Company of Fruiterers, which was held in the Haberdashers' Hall, Gresham Street, on Monday, January 26, was attended by a distinguished company, including: The Master, Mr. F. R. Ridley; the Wardens, the Rt. Hon. the Lord Mayor and the Sheriffs of the City of London, the Rt. Hon. Lord Erle, formerly President of the Board (now the Ministry) of Agriculture, the Solicitor-General, the Rt. Hon. Lord Lambourne (President of the Royal Horticultural Society), Admiral A. W. Waymouth, Major-General Sir C. V. F. Townshend, Sir Daniel Hall, F.R.S., Sir J. A. Cockburn (formerly Prime Minister of South Australia), Mr. Stanley Machin and Mr. Alderman E. C. Moore—Past Masters of the Company—Prof. Frederick Keeble, F.R.S., Mr. Geo. Monro, Jnr. (Chairman of the Chamber of Horticulture), Major Wheeler, M.P. (President of the National Federation of Fruit Growers, and Master of the Gardeners' Company), Mr. T. Major (Acting President of the National Federation of the Fruit and Potato Trades Association), Mr. R. Wynne (Secretary of the Chamber of Horticulture), and the Clerk of the Fruiterers' Company. In the course of the proceedings, the Master made reference to the importance of placing the most recent knowledge of means of controlling the pests of fruit trees at the disposal of fruit growers, and announced that the Upper Warden, Mr. J. Q. Rowett, had subscribed £500 towards the cost of publication of a standard work on the control of fruit tree pests. Both Lord Erle and the Master made reference to the valuable work carried out by the Chamber of Horticulture, and the former urged upon the fruit growers the desirability of holding in London in the near future a great commercial exhibition of British-grown fruits.

Causes of Low Prices for Home-grown Apples.—The Board of Agriculture, in discussing the unsatisfactory prices which growers have realised for their Apples during the past season, attributes the reason to the old failing of neglecting the essential work of grading and packing. It is reported that high-grade Apples have been sold in some parts of the country at less than £5 a ton, although it may be remarked that fruit of the same grade coming from other areas has sold for six times as much. If growers could attend regularly at the great distributing centres in cities like London, Birmingham, Manchester and elsewhere, and could see the condition of their fruit on arrival, they would learn a useful lesson. They would be able to compare the returns of well-packed, well-marketed samples with the returns of fruit that has been put up badly and bruised in transit. The necessity for proper grading and packing is being emphasised by all sections of the trade, but, unfortunately, growers

will not take the warnings to heart. It may be admitted that the low prices that some farmers and fruit growers are receiving this year are mainly due to the abnormal size of the British crop. At the same time, imported fruit has been making higher prices than that from home growers throughout the season and, as the latter is quite as good in quality as the former, the reason for the English growers' failure to compete must be set down to faulty methods of grading, packing and distribution. Those English growers who have adopted up-to-date methods of cultivation and marketing have obtained fairly good returns. If their produce has been reduced in value, it is on account of the enormous quantities of badly packed, ungraded fruit that have been thrown on the market. There are certain principles that fruit growers in general, and Apple growers in particular, should observe carefully. In the first place, there must be uniform grading both in regard to size and quality; there must be no "topping." Secondly, packages should be made up so that each fruit is held in position by its neighbours; only in this way can packages be filled and bruising reduced to a minimum. Growers should remember that retail buyers have little time to spend in markets and cannot waste that time in estimating the proportion of sound and unsound or large and small fruit in an ungraded sample. If they must buy ungraded fruit they will only give such a price as is safe to yield profit, and on this price no grower is likely to thrive. It is an unfortunate fact, and one that English fruit growers would do well to ponder, that, although they are raising fruit that can hold its own in any company, they are losing the best results of their labours because they will not take the trouble to send their produce to market in a fashion to enable it to compete with supplies coming from abroad.

Primula Wattii.—Sir George Watt, after whom the dainty *Primula* illustrated in Fig. 20 is named, has settled in Dumfriesshire, where he cultivates many flowers with attentive care. The exquisite *Primula* which bears his name is a charming plant which has called forth enthusiastic comments from even the most ardent and critical *Primula* devotees, who can hardly find adjectives sufficiently complimentary to apply to this gem-like plant. But, alas! like so many of the best things, it is not a plant for the ordinary garden or gardener. Its cultivation calls for special care, as so many of that exquisite but capricious section, the Soldanelloid *Primulas*, require. It is not absolutely hardy in our climate, though some seem to think so, and is subject to damping off, even in a cool house, after flowering. P. Wattii calls for such paradoxical treatment as a stony, yet rich soil, with plenty of water below, but ample drainage, and rest in winter is essential—not easy to provide in our humid climate. The whole plant is exquisite, from its delightfully lobed, toothed, white-haired Primrose-like leaves, to its bronzy scape, surmounted by a pendant head of fringed bells of a hue which is so difficult to describe that one calls them "purple" and another "sapphire blue"—perhaps the former is the more appropriate.

Westminster Hall Roof.—The work of restoring and strengthening the roof of Westminster Hall is expected to take at least another two years to complete. Meanwhile the hall continues to be filled with the scaffolding, and is quite inaccessible to the public. The original estimate of the cost was £60,000, but owing to the enormous rise in the cost of material and labour, especially labour, it has now doubled. The main object for which the work was undertaken—the preservation of the oaken roof erected by Richard II. in 1399—is absolutely secured. Very little new wood has been put into the roof.

The Douglas Firs.—At a meeting of the Royal Irish Academy, in Dublin, on the 26th inst., a paper was read by Prof. A. Henry on the various species of Douglas Firs, an important group of forest trees. The distinguishing characters, distribution, and silviculture of each species were detailed. An investigation into the anatomy of the leaves, carried out by Miss M. G. Flood, M.A., proved of great interest, no two species being alike in their microscopic structure. The paper also contained the results of a research

by Mr. C. T. Bennett, B.Sc., into the peculiar oils yielded by the leaves on distillation. The Oregon Douglas Fir, much cultivated in this country for its fine timber, owes its characteristic fragrant odour to the presence of geraniol in the oil contained in the leaves. The inferior species of the Rocky Mountains has a very different and strong odour, like turpentine mixed with camphor, due to the presence of pinene and bornyl acetate.

Royal Gardeners' Orphan Fund.—The annual general meeting of the subscribers to this Fund will be held at "Simpson's," 100, Strand, London, W.C., on Wednesday, February 4, for the purpose of receiving the report of the Committee and Statement of Accounts for the past year; to elect officers for the ensuing year; to alter rule 13 by deleting the word "fourteen" in the second line and substituting the word "fifteen"; to elect eighteen candidates to receive the benefits of the Fund; and to transact such other business as may arise. The chair will be taken at three p.m.

Rhododendron Nobleanum Flowering in a London Cemetery.—Mr. J. D. Robertson, the Superintendent, informs us that a fine tree of *Rhododendron Nobleanum* is at present in bloom in the City of London Cemetery, Little Ilford. The plant is bearing upwards of 300 blooms, each



FIG. 20.—PRIMULA WATTII; A SMALL-GROWING SPECIES WITH PURPLISH FLOWERS.

of fair size and good colour. The season of flowering of this species of *Rhododendron* varies from the end of October to February; when it blooms early in October or November a second crop of flowers usually appear early in the following year.

The "Gardeners' Chronicle" Seventy-five Years Ago. *An Unusual Fruit:* A plant of *Pyrus japonica*, of the scarlet-flowering variety, planted in a border of strong sandy loam, collected from a coppice on the wood-sown land (part of the plastic clay formation), placed on a sub-soil of chalk, with a good southern aspect, and trained to a brick wall, on an elevation of 250 or 300 feet above the sea, has this year produced with me a dozen or fifteen ripe fruit filled with abundance of fine, plump, brown, well-ripened seeds; the fleshy parts of the fruit being strewn with sugar, made as good a marmalade as the fruit of the *Pyrus cydonia*, or common Quince. It did not, however, retain the highly fragrant smell which the fruit, when fresh gathered, possesses, but perhaps this may be owing to some inattention in the dressing, and might have been remedied by more care.—*Hautoniensis, Gard. Chron.*, February 1, 1845.

EPHYPHYLLUM TRUNCATUM AND ITS VARIETIES.

AMONG winter flowering plants that were at one time far more generally grown than they are at the present day are the different varieties of *Epiphyllum truncatum*. Being of a partially drooping habit of growth the most general method of culture is to graft the plants on stems of *Pereskia aculeata*, with which they readily unite. The stems may be from one foot and upwards in height, but from 12 to 18 inches is usually preferred. Grafting is an exceedingly simple matter, all that is necessary being to head the stock down to the required height, insert the graft in the cleft manner, and hold it in position by passing one or two of the sharp spines of the *Pereskia* through it. The graft may also be held in position by tying, but securing with a spine is usually preferred. *Epiphyllums* are not at all exacting in their cultural requirements. A suitable compost consists principally of loam, lightened by a little leaf-mould, broken brick rubble and sand. After the flowering season is over the plants should be kept somewhat dry at the roots until the end of February, when, if necessary, they may be repotted. At that time they should be grown in a house having a minimum temperature of 55°. Thorough drainage is very essential. In handling the plants great care must be taken not to break the slender stem of the *Pereskia* as the head of flattened branches is weighty. Grown for a time in a warm house the plants may, by the latter part of the summer, be exposed to more air and sunshine. This will lead to ripening of the wood and ensure the production of blossoms. As autumn advances less water will be required. The flowers will expand in a house having a temperature of 50° to 60°.

Beside this method of growing *Epiphyllums* they may also be cultivated in hanging baskets. For this purpose grafting is not necessary, as cuttings strike root very readily, and plants obtained in this way are more suitable for hanging baskets than standards.

As cut flowers, *Epiphyllum* were, about half a century ago, much appreciated. In those days the formal pinushion-like bouquet was popular. Every flower was wired, so that the individual blooms of the *Epiphyllum* could be used. Being of a curious, oblique shape, they were often employed to form the outer floral fringe of the bouquet. In times gone by there were several well marked varieties of *E. truncatum*, but it is questionable if many of them could be obtained nowadays. Favourites were bicolor, coccineum, elegans, magnificum, salmonium, and violaceum superbum.

A second species, *E. Russellianum*, with rose-coloured flowers is, or has been, but little grown.

In about the middle of the 'nineties of the last century the late Mr. William Bull of Chelsea introduced a pretty *Epiphyllum* from Brazil. The plant received a first-class certificate from the Royal Horticultural Society in the autumn of 1898, under the name of *E. truncatum* Princess. On being submitted to Mr. N. E. Brown of Kew, he assigned it specific rank under the name of *E. delicatum*. The flowers are white with a slight suffusion of purple that deepens with age. There is a ring of purple lake at the entrance to the throat. According to Mr. Brown, *E. delicatum* is more erect in habit, the branches are more strongly toothed, the flowers are larger, very different in colour, more regular, less oblique at the mouth of the tube, with longer and less reflexed petals; the tube of the corolla and the style are less abruptly bent at the base and the recurved processes at the apex of the short staminal-tube are only about half as long as they are in *E. truncatum*.

Differing from the above in the regular shape of the blossoms are *E. Gaertneri* and *E. makoyanum*, which bloom in the spring. The flowers are red. They greatly resemble each other; in fact, in the *Kew Hand List* they are regarded as synonymous. It has been suggested that this form of *Epiphyllum* is the result of a cross between *E. truncatum* and a species of *Cereus*. W.

DECIDUOUS HEDGES.

HEDGES of deciduous subjects not only afford shelter from cold winds, but some are more useful than evergreen hedges, if I except the common Holly, for enclosing cattle. Many deciduous trees and shrubs make good hedges, and such hedges provide interesting as well as useful objects in the garden.

From the end of October to the beginning of March is a suitable time to plant deciduous trees and shrubs suitable for the purpose. It is an advantage to do the work early in the autumn, as the plants are then less liable to suffer from drought the following season. The evil effects of drought, however, may be guarded against by the timely application of a mulch of half-decayed animal manure, leaves, vegetable refuse, or even old potting soil; in fact, anything that will check the evaporation of soil moisture and keep the ground cool by protecting it from hot sunshine and drying winds.

The growth of all kinds of hedge plants is much accelerated by a thorough preparation of the soil before planting. Where the site is naturally wet, effective means should be taken to get rid of surplus water caused by heavy rains. A bank, 1 foot high above the level of the surrounding ground should be provided, with a ditch at least 1 foot deep, having a suitable outlet. In damp, waterlogged soil, even the common Quick becomes covered with moss and lichen and its growth is slow. The soil, whatever its nature, should be trenched 2 feet deep, 3 feet in width, and manure added to the upper spit. Trenching is especially valuable in the case of heavy soils, as it not only gives the plants a free root run, but enables the roots to enter the lower, moist soil, from which they can obtain moisture in dry weather.

After the hedges are established it is wise to keep the surface for one foot on either side free from weeds and stirred with the hoe occasionally during dry weather. A light mulching of manure spread over the surface early in April will help to conserve the soil-moisture, and as the manure decays it will encourage the roots to grow near the surface.

Where a hedge is required for shelter or to enclose cattle, nothing equals the common White Hawthorn or Quick.

It is a debatable point as to whether a single or a double row of Quick makes the best hedge. From experience, I advise the planting of a single row, setting the plants 4 inches apart. Single-row hedges form a thick base. On this estate there are several hedges more than one hundred years old; some are not more than 5 feet high. The illustration shows a well-kept Quick hedge that is trimmed twice yearly with a sickle, commonly known in this county as a fag-hook—a much better tool in the hands of an expert than the ordinary garden shears when miles of such hedges have to be trimmed yearly, as on this estate. This tool enables the work to be done expeditiously, and men used to the work cut the hedges evenly notwithstanding the rapidity of their progress.

It is no advantage to plant large specimens; those of the thickness of a cedar pencil grow more freely than larger plants. After planting they should be cut down to within 4 inches of the soil to ensure thick growth at the base.

For a double row the lines should be 10 inches apart and the plants spaced 9 inches asunder. The land should be raked level, a line stretched exactly where the hedge is to be formed, and a trench chopped out close to the line by means of a spade. The trench should be sufficiently deep to allow the roots to be spread out evenly. Plant the Quicks upright, and tread the soil firmly about their roots. As the shoots grow, they should be stopped twice the first year to ensure dense basal growth.

In some districts the Myrobalan Plum is employed for hedges on account of its rapid growth, but it does not make nearly so service-

able a hedge as the Quick, being more liable to become "thin" at the base. The same method of preparation and planting as advised above for Quick should be followed for this Plum.

As a wind screen for the garden where cattle have not to be considered, the common Beech grows freely to any height and makes an ornamental hedge, retaining its leaves through the winter until they are pushed off by new growth. Although Beech is not injurious to cattle the latter eat the ends of the shoots, especially during dry weather in summer, thus checking the growth of the trees. Hornbeam is equally as good as Beech for making hedges. Planted in light soils, and especially on chalk land, the leaves of the Beech develop beautiful shades of red in the autumn. The Hornbeam, like the Beech, will grow to any height and may be cut to any shape. Perhaps the most serviceable hedge is one of wedge form at the top, with upright sides, as heavy falls of snow do not cause such damage as when the top is wide and flat. Select plants two feet high and set them three to the yard. If large plants are employed, fewer will be needed; they should, however, be bushy at the base.

Subjects of a purely ornamental character add interest to the garden where cattle fences are not required.

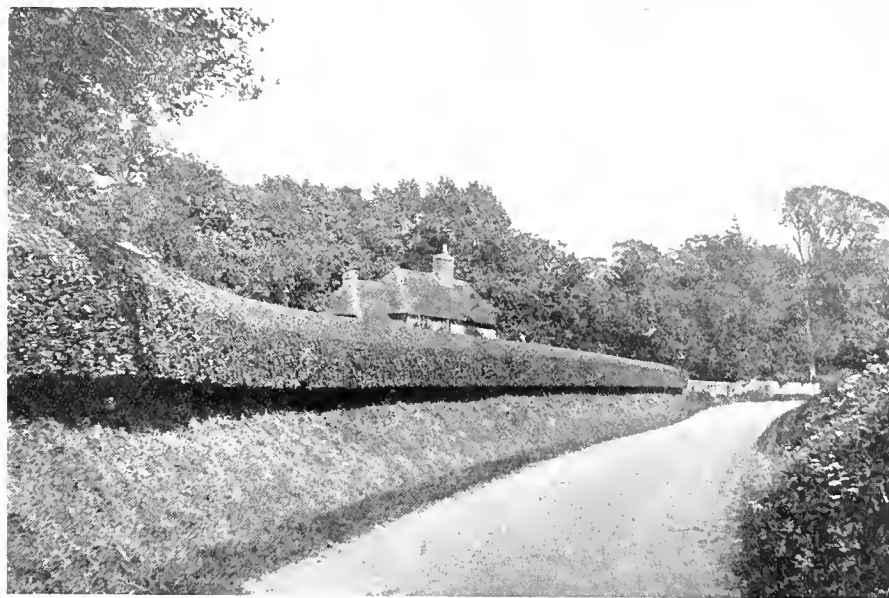


FIG. 21.—A WELL-KEPT HEDGE OF HAWTHORN OR QUICK.

Pyrus japonica, when closely cut, gives an abundant crop of brilliant red blossoms early in the year. When the plants reach a suitable height, the more frequently the subsequent growths are pinched during the summer the greater the quantity of flowering spurs that will be found on the main branches.

Ribes sanguinea—the flowering Currant—is a free, early-flowering bush, and flowering spurs develop plentifully if the leading shoots are shortened when the plant is well established. When planted the subsequent top growth should not be too rapid, as in that case there would be a danger of the hedge becoming thin at the base.

Another interesting and early-flowering plant suitable for a hedge is *Forsythia viridissima*, which produces its yellow flowers early in February.

Weigela rosea (syn. *Diervilla*) may be used for the same purpose. The pruning or clipping of this plant should be deferred until the flowering is over; shoots of the current season produce the best crop of flowers. The Tamarix, with its rose-coloured blossoms and elegant, feathery foliage, makes a good hedge plant and is extensively employed for this purpose in gardens near the sea. *E. Molyneux, Swanmore Park, Bishop's Waltham.*

THE ALPINE GARDEN.

THE DOUBLE SOAPWORT.

DIPPING into Parkinson's *Paradisus* in a leisure moment I was interested to read again the description of the Double Soapwort (*Saponaria officinalis* fl. pl.) in that great work, and it struck me that a brief note upon the plant might be useful, as it is still occasionally offered and even recommended for gardens. Parkinson discusses the Double Soapwort along with the Gentians on account of the resemblance of the leaf, and, with a short reference to the single form of *Saponaria officinalis* he speaks of "*Saponaria flore duplici*, the Double flowered Soapworte," as follows:—"This with double flowers is farre more rare, and of greater beautie. It hath many long and slender round stalkes, scarce able to sustaine themselves, and stand upright, being full of joynts and ribbed leaves at them, every one like a small Gentian or Plantane leafe; at the toppes of the stalkes stand many flowers, consisting of two or three rowes of leaves, of a whitish or pale purple colour, and of a strong sweet scent, somewhat like the smell of Iasmin flowers, standing in long and thicke pale greene huskes, which fall away without giuing any seede, as most double

flowers do that increase by the roots, which spreadeth within the ground, and riseth up in sundry distant places like the single."

With all its quaintness there is no non-botanical description which could surpass that of Parkinson, and one need not venture to add anything to it for the benefit of those unacquainted with the Double Soapwort. But, as my object is to point out the defects of this old plant for the garden, I would remark that the chief objections are fully disclosed in *Paradisus* in the above description. It is evident that Parkinson knew the plant well. The "stalkes, scarce able to support themselves" constitute a defect of the plant, while another is that of spreading at the root and sending up shoots "at sundry distant places," to the annoyance of the gardener and often to the injury of other flowering plants, through which they frequently appear. The double flowers are rather pleasing, though hardly distinct enough in colour and the perfume is quite agreeable. On the other hand, the stalks are too weak and the spreading habit is a great source of inconvenience. It is, therefore, not a flower which I could recommend for inclusion in any but the wild garden, where it might grow at will and do little harm. The plant seems to enjoy a light soil and I have seen it growing excellently in poor, sandy ground. *S. Arnott.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATMUN, Gardener to C. A. CATS, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Raspberries.—The Raspberry will succeed in any good garden soil, but it does best in fairly rich, moderately light ground. The situation should be open and sunny, but sheltered from bleak, boisterous winds. In view of the favourable weather for planting during the past few months, most growers have made their new Raspberry plantations, but it is not too late to undertake the work. The ground should be well trenched, and, if of a heavy texture, mixed with mortar rubble, leaf-mould, and well-decayed farmyard manure. Bone meal may be also added. The pruning and tying of the canes of established plants may be done now. The growths may be regulated in various ways; the most general method is to plant the stools two feet apart in a continuous row, and train the shoots to horizontal wires. Three wires strained between iron standards, the latter set with good feet, either of iron or wood blocks, will last a considerable number of years. If the old canes and weaker growths were removed immediately after the fruits were gathered, the remaining canes should be well ripened. The stronger and better developed canes should be tied at regular distances of about one foot. Digging should not be done between rows of established plantations, but the ground should be cleared of weeds and afterwards mulched with leaf-mould and well rotted farmyard manure. The varieties Superlative, Baumforth's Seedling, Hornet and Lloyd George are amongst the best. The last was sent me for trial three years ago, and I can strongly recommend it to growers. It is a vigorous variety, a most prolific bearer, the flavour of the berries is of the best, and it is also a perpetual fruiter.

Autumn-fruiting Raspberries.—The ground chosen for planting autumn fruiting Raspberries should be prepared as advised for the summer fruiting varieties. Select the strongest canes and plant them in rows made about four feet apart. Shorten the shoots after planting to within three or four buds from the base. Tread the soil firmly and apply a light top-dressing of well decomposed farmyard manure.

Birds and Fruit.—If the weather turns very cold, with snow, it will be advisable to protect the buds of Plums, Gooseberries, Currants and other fruits from birds. The damage is often done in February. The best deterrent is a dressing of hot lime-wash and quassia sprinkled on the trees by the use of a whitewash brush. Black cotton may be intertwined among the top branches of Gooseberries and Currants, whilst Plum trees on wall should be netted.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSIGHT, Esq.,
Castleford, Chepstow.

Cypripedium.—The autumn and winter-flowering Cypripediums constitute a useful and popular series of Orchids. They are easily cultivated, choice forms may be propagated quickly, the flowers remain in full beauty for several weeks, and fog causes very little injury to the plants. They are valuable for growing in gardens near large manufacturing towns where Orchid flowers of finer texture are injured directly a dense fog settles over the district. The plants are very suitable for decorative purposes in the dwelling house. Flowering specimens may remain in a warm drawing-room for three weeks without being harmed. In many gardens a house or division is set apart exclusively for Cypripediums, while in others they form the bulk of the Orchids cultivated. Even where no attempt is made to cultivate a collection of Orchids, I strongly advise growers to grow a few Cypripediums amongst their indoor plants.

A collection for purely decorative purpose should include the best forms of *C. insigne* such as *Sanderae* and *Harefield Hall*; the beautiful varieties of *Leeanum*; *Euryades*, *Actaeus*, *Thalia*, *Arthuriatum*, *nitens*, and others of equal merit.

The Cypripedium House.—The ideal house for Cypripediums is of the low, span-roofed type, with ample top and bottom ventilators, and it should not be near trees and large buildings. The house should contain sufficient water pipes to maintain a minimum temperature of 50°. During hot, summer weather a temperature of 80° will do no harm. Light is an important factor, for although the plants need protection from strong sunlight, excessive shade is detrimental. Dense shade will result in weak foliage, and, eventually, flowers of poor quality. Light and ventilation should be considered together; a judicious use of the ventilators will often permit the blinds to remain up for another half hour or so. Careful ventilation is necessary, and the outside temperature, force and direction of the wind must be noted. When admitting air it is far preferable to open all the ventilators an inch or so rather than one to its fullest extent. A moist atmosphere may be maintained by sprinkling the paths and stages with water twice or thrice daily according to the weather and season. Frequent dampings are needed on bright, hot days, and when cold weather renders it necessary to use much fire heat.

The Cool House.—Most plants of the crispum type of *Odontoglossum* are making their season's growth; some are forming new pseudo-bulbs, whilst a few are sending up flower spikes. Every encouragement should be given the plants to make well developed and mature pseudo-bulbs. A low temperature at this period is detrimental to their well-being; if a minimum temperature of 50° is maintained with a rise of a few degrees during the day, more air may be admitted when the weather is favourable. Plenty of light is needed, and in some districts it will be necessary to wash the outside of the roof glass at intervals. Examine the plants about three times each week for watering, selecting, if possible, a bright day for applying moisture. Guard against excessive drought at the roots, and the other extreme, a saturated soil.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Luffield, Surrey.

The Orchard House.—Make provision for introducing the main batch of fruit trees into the house with a view to having plenty of ripe fruits in June. Pot trees are rather more under the grower's control than trees in borders, and their development may be hastened or retarded a week or two, according to the time the fruits are most in demand. The same varieties should be selected as given in the calendar of January 15, with the addition of *Crimson Galande*, and *Peregrine Peaches*. Treat them as advised in the previous calendar in a house with a steady temperature; Peaches and Nectarines should be grown in a division by themselves wherever this is possible. A few trees of Plums and Cherries may also be introduced to the orchard house; these trees give excellent returns with careful treatment. A night temperature of 40°, with a rise of 5° during day, is suitable for the first few weeks, but much will depend on the weather, for in very mild times it will be impossible to keep the temperature so low as 40°. Early Transparent Gage, Denniston's Superb and Jefferson Plums, are all reliable varieties for starting now, also Cherries *Guigne d'Annonay*, *Early Rivers*, *Bigarreau de Schreken* and *Elton Bigarreau*.

Routine Work.—Endeavour to complete the work of cleansing the trees and houses and the training of the branches to permit of the trees starting naturally. See that the borders are in a sufficiently moist condition always and the houses kept as cool as possible. One of the principal causes of bud dropping in Peaches is drought at the roots during winter, combined with high temperatures, through using fire-heat for wintering tender plants in the Peach houses.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs JENNER, Wenvoe
Castle, near Cardiff.

Shallots and Garlic.—These bulbs should now be planted. Single bulbs of Shallots should be pressed firmly, 12 inches apart, into moderately good ground, leaving the tops just visible. This vegetable is commonly used for pickling purposes, therefore there is no object in growing very large specimens. Plant Garlic slightly deeper than Shallots. The rows should be 12 inches apart and the sets 9 inches apart in the rows.

Horse-radish.—Horse-radish is best grown on raised beds made 3 ft. 6 in. wide. Mark out the position, take out a trench around it, place 3 inches of soil on the bed, fork well-decayed manure into the ground, and make the surface level. The roots for planting should be straight, 12 inches long, and possess a single crown. Put them one foot apart flat on the bed with the crowns flush with the outside and the roots pointing to the centre, then cover them with 4 inches of soil. Space may be economised by adding one or more rows, but the bed must be raised another 8 inches for each additional row grown. Given good ground, this system of growing Horse-radish produces very fine roots. The planting should be done on the first favourable occasion.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NORBERNOLM, Warton Priory, Yorkshire.

The Rose Garden.—The Rose garden often presents a very formal appearance and is not always as pleasing as it should be. Where space permits, all sections of the Rose should be included. Dwarf Roses—Teas especially—should be massed for effect. A few bushes of Lavender or Rosemary planted in close proximity to Rose beds relieve the appearance of formality and enhance the general effect. Where large, irregular beds are planted in masses, an informal edging of *Nepeta Mussini* may be used with good effect. Strong, climbing Roses, if planted in an open situation without supports and left unpruned, will form handsome bushes. A pergola consisting mainly of Roses, with *Clematis viticella*, *C. Jackmanii*, *Wistaria multi-juga* and an occasional cordon of *Laburnum Vossii*, is very easy to manage, and far more pleasing than a pergola formed of Roses only. A deep, cool loam provides an ideal rooting medium for Roses, and well-rotted manure should be thoroughly incorporated with it at the time of its preparation. Autumn is the best time for planting Roses, but the work may be done in open weather until the end of March. Plant firmly and spread the roots evenly. Care should be taken in planting Tea Roses worked on the Briar to cover the union of the scion and stock in order to protect the more delicate varieties from intense cold, and cause them to send out a few roots from above the union. This method of planting is also recommended for other dwarf Roses which have been "worked." Roses budded on the Manetti stock should not be used in the making of permanent plantations.

Pelargonium.—Rooted cuttings of Paul Crampel, Maxime Kovalevski and other Pelargoniums at present in cutting boxes should have their points removed and preparation made for transferring them to pots, three weeks hence. Crocking the pots is not essential, and the ultimate planting out is more easily performed if crocks are not employed.

Seeds.—Make sowings of *Antirrhinum*, *Celsia cretica*, *Geum*, *Pentstemon*, *Linaria macedonica speciosa*, *Tritoma hybrida* and various sub-tropical plants. Use plenty of drainage material in the seed pans, and fill these to within one inch of the rim with finely-sifted, light compost pressed moderately firm and evenly. Water the soil thoroughly, using a fine rose on the can, and allow the pans to drain. Sow the seed thinly.

cover them very sparingly with fine soil, and place the receptacles in a house having a temperature of from 60° to 68°. Sheets of glass may be used to cover the pans to hasten germination. When the seedlings appear those other than of sub-tropical species should be grown in cool conditions.

Chrysanthemum.—Old stools of early-flowering Chrysanthemums wintered in frames are now furnished with sucker growths. These may be used as cuttings and inserted in a light compost. When well rooted, pot the plants singly and firmly in 3-inch pots and grow them in a cool, airy house or pit.

PLANTS UNDER GLASS.

By JOHN CURTIS, Foreman, Royal Botanic Gardens, Kew.

Nerine.—When out of flower, these bulbous plants are frequently neglected, and this fact largely accounts for them failing to flower satisfactorily. The same remarks apply to many other bulbous plants, such as Freesias and Lachenalias. During the non-flowering period give strict attention to watering and feeding the roots to obtain strong growth that will enable the plants to flower the following year. Grow the plants in a light position near to the roof-glass, in a cool house; a warm, close atmosphere is not suitable. An ideal place for them is a shelf in a Carnation house. Lachenalias throwing up their flowers should, if growing in cold frames, be removed to a light position in a cool greenhouse, where there will be a free circulation of air.

Gloxinia and Caladium.—Tubers of these plants that were ripened early may be started as an early batch. Gloxinias are best laid out in shallow trays in leaf-mould and sand until they have started into growth, when they may be potted in receptacles of a suitable size. Caladiums may be potted direct into suitable sized pots, using a light, rich compost. *C. argyrifolius* is a very useful plant for decorative purposes, and the tubers, in common with those of the larger species, may, if desired, be divided to increase the stock; use a sharp, thin-bladed knife for this purpose. The cut surfaces should be rubbed over with powdered charcoal, and it is advisable to start the plants in boxes as advised for Gloxinias, as they will be less liable to rot than when potted singly. Tubers of *Gesnera cardinalis* should also be started in the same way, and this plant may also be increased by division of the tubers. Seeds germinate readily, and it is advisable to raise a batch of seedlings frequently as young plants are more vigorous than old specimens.

Bouvardia.—Where Bouvardias are required in quantity, and it is desired to raise young stock, they may be propagated now. Stock plants should be introduced into a warm propagating house having a moist atmosphere. With frequent syringings, the plants soon break into growth, and when the shoots are some three inches long they may be used as cuttings, which will root readily in a warm propagating case. The frequent failure to root Bouvardias is due to the fact that many cultivators do not realise the importance of selecting young, soft growth for cuttings. The plants may also be freely increased by means of root cuttings, and for this purpose some old plants should be shaken out, the thickest roots cut into pieces some two or three inches long, and the cuttings dibbled into pans of sandy soil. They will succeed in a warm propagating case. Certain varieties of Bouvardia do not come true from root cuttings, due to the fact that the growth proceeds or develops from different layers of cells. Thus President Cleveland has recently given a pink variation from root-cuttings. Bridesmaid also varies from root-cuttings. Bouvardias, in common with many other indoor plants, are frequently ruined by the attacks of the Begonia mite, or what is generally called "rust." This pest may be entirely eradicated by the use of Campbell's sulphur vaporiser.

MACKAYA BELLA.

MACKAYA BELLA, which is illustrated in Fig. 22, is a choice plant for the greenhouse, and one of the best indoor flowering subjects in early spring, but its cultivation is not always attended with success. We publish below the experience of two cultivators of this useful plant, both of whom have flowered it successfully under their respective treatments:—

A native of Natal, this beautiful dwarf shrub is not quite hardy, and succeeds best in a warm greenhouse, although it will exist without fire heat. It is a valuable plant for forcing, and only requires a minimum temperature of 55° in winter to enable it to produce many terminal sprays of bloom early in the spring. The flowers are a delicate shade of lavender crape, reminding the elderly amongst us of our great-grand-

soot water, older plants will grow to the height of about four feet. *I. L. Richmond.*

MACKAYA BELLA flowers upon the extreme ends of the shoots made the previous year. The blooms are pale lavender, campanulate, two inches long, and are beautified by the presence of reticulated, purple veins in the throat. The plant thrives in rich loam, and an intermediate temperature suits it. The growths should be exposed to plenty of light, syringed frequently during summer, and subjected to a ripening out of doors during August and part of September. Keep the plants rather dry during the late months of the year and January; place them in heat in February and they will flower in March. After the flowering period cut back the shoots to within two inches of the previous break; as soon as new shoots appear turn the



FIG. 22.—MACKAYA BELLA; FLOWERS PALE LAVENDER.

mother's cap-ribbons. These elegant sprays are well set off by the dark shining foliage. The plant has the habit of blossoming whilst in a small state, and its uncommon colour tint is very effective amongst the warmer tones of Pelargoniums.

Cuttings should be inserted in April, and they will root readily in a shady, moist position in the greenhouse. If potted on once or twice in the summer in good loam with a sprinkling of soot—keeping them growing under glass—they will flower the following season, making pretty little plants for decorative purposes. They should receive another shift after blooming. They are extremely thirsty plants at all times, and when they are in bud they must never lack moisture at the roots. The slight pruning they may require should be given directly after flowering, in order to keep the plants in shape; but hard pruning is not required, and with a good supply of soil, water and liquid manure or

plants out of their pots and shake off as much of the old soil as will easily come away without damaging the roots, and pot them in good loam mixed with dry cow manure. As soon as the roots have fully taken hold of the soil, liquid manure may be given liberally. Propagation may be effected by means of cuttings inserted in May and June, keeping them under a bell glass in a warm pit. The rooted cuttings should be potted in sandy soil and kept near the light. Plenty of air and shade from strong sunshine are desirable. Pinch the young plants frequently to induce a bushy habit. In a year and a half the plants will flower profusely if given a fairly high temperature in which to flower. I place them in a stove temperature and they bloom in March, making a very pleasing display. Mackaya bella was introduced in 1869. It grows wild in the bed of the Tongat River, Natal, where it was first discovered by Mr. J. Sanderson. *H. W., Tolvan, Redruth.*

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AMERICAN PLANTS IN ENGLAND.

THE early phases of the importation of North American plants into Great Britain and of the exportation of British plants to North America form two topics of considerable interest, historical as well as botanical, and neither subject has attracted the notice it deserves. The Englishman has always been famous for taking his prejudices with him wherever he goes, and in settling in another country his first ambition seems to be to surround himself with the things that remind him of his home, more especially flowers and fruit. This was the case with the early colonists in North America, where the climatic conditions were favourable for many of the plants common to Great Britain. These colonists were equally anxious to extend the cultivation of the plants indigenous to their new country by exporting roots and seeds to their friends in Great Britain.

There can be no doubt that the importation into this country of plants from what were then the North American colonies had assumed very considerable proportions in the 18th century. We know from Peter Collinson's letter to Dr. Richard Richardson, April 4, 1746, that the eighth Lord Petre (1713-1742) had a "great variety of Pines" and of "all other hardy American Trees and Shrubs" at his seat at Thorndon Hall, Essex, and also that the famous nurseryman, James Gordon, of Mile End, had a "great variety of rare hardy exotic seeds, both from America and Europe," in the raising of which he had "a peculiar skill and fortune." Peter Collinson (concerning whom I wrote two articles in the *Gardeners' Chronicle* of July 6 and 13, 1895) and Dr. Richardson were both enthusiastic cultivators of American plants.

Much of the importing of plants from North America was, in its early stages, done by and for amateurs; but it must have soon developed into a considerable business, for the British nurserymen and seedsmen began to find money in it; yet it is rather in the byways than in the highways that we have to seek data.

One of the most interesting contributions to the subject appeared in the *Gentleman's Magazine* of December, 1751. The anonymous writer of the article speaks of "the present excellent taste of the nobility and gentry to embellish their plantations with all the variety of trees and shrubs which are produced in our North American colonies" as having "given the greatest encouragement to the annual importation of seeds, which arrive here in the spring months." He gives some hints relating to the culture and management of these plants, and based it on his "long experience." He

adds a long list of "seeds arrived this year from our North American colonies," and that list is so remarkably interesting that I quote it in full, *verb. et lit.*—

Honey Locust Triacanthus, White Cedar, Red Cedar, Small Magnolia or Swamp Laurel, Evergreen Rhamnus or Rose Laurel, Tupelo or Sour Gum, Gale or Myrtle, Poplar-leaved Birch, Sassafras, Evergreen Privet, Ash-leaved Maple, Dwarf Pine, Spruce Fir with large cones, Spruce Fir with small cones, Swamp Harex, Balm of Gilead, Mountain Two-leaved Pine, small-coned Pine with short leaves, Upland Wild Roses, Swamp Wild Roses, Large Cranberries, Small Shagbark Hickery, Hollyberries, Great Shagbark Hickery, Jersey Tea, Mountain Flowering Shrub of New York, Opulus with scarlet berries, Mountain Viburnum, Anona or Papaw with large fruit, Prinos or Caperna, Arbor Vitae, Aralia Spinosa, Three-leaved Pine Cones, Sea Beech Pine, Evonimus Scandens, Dwarf Maple, Paper Birch, Cephalanthus or Button Tree, Lotus or Nettle Tree (yellow fruit), Hamamelis or White Hazel, Vitis Idocæ or large huckle berry, Tulip Tree Cones, Five-leaved Pine—scarce.

The names are doubtless those under which the plants were known in North America, and the list is therefore an interesting one as a contribution to the early literature of plant names. Probably most of the plants may be still identified. I had the good fortune recently to obtain a still more extensive list of importations in the "Catalogue of Hardy American and European Fruit and Forest Trees, also Flowering Shrubs and Evergreens, etc.," sold by William Wright, nurseryman, "Bottom of Leith Walk," doubtless the Leith end of the great road from Edinburgh. The Catalogue extends to 12 pages, and not the least interesting point about it is the note at the end:—

"The SEEDS of the above American Trees and Shrubs were sent from Canada by JOHN WRIGHT (my brother), who was employed by a Society of Noblemen and Gentlemen in Scotland to go there for that purpose, and he succeeded so far as to collect near 600 different kinds, a Catalogue of which was printed at London."

Unfortunately I have not been able to find either John Wright's catalogue or any other record of his activities; possibly they may be found in the library of the Edinburgh Botanical Society; in any case his career must be one of considerable interest in the annals of horticulture. His brother's catalogue is especially noteworthy in that all the plants raised from imported seeds from Canada and other parts of America are indicated by an asterisk. The list is too long to quote here, but of forest trees there are 45 so marked, and of shrubs there are 30, and plants are offered at prices which vary from a few pence to a shilling or so each; but the scarlet Hornbeam, the deciduous Cypress, the great Canada Service, the Nettle Tree and the shining leaved Viburnum, are priced at 2s. 6d. each, whilst for the purple-leaved Beech, and the variegated Birch 6s. and 10s. each respectively were asked, owing probably to difficulty of raising these from seeds.

The London newspapers of the 18th and early 19th centuries contain many advertisements and news paragraphs concerning plants from North America. The earliest which I have in point of date shows that in 1798 Nathaniel Powell (of whom I wrote in *Gard. Chron.*, June 1,

1918), was advertising "North-American seeds of trees and shrubs just imported"; a similar advertisement was inserted in the papers in 1766 by George Ferne, "Netmaker and Seedsman at the Raven, opposite Water Lane, in Fleet Street"; he had, it seems, "just imported a quantity of the New-England and other Pines, warranted new." The imports were presumably of the seeds and not of the plants. In 1783, American tree, shrub and flower seeds were advertised by James Hains, who was at No. 26, St. James's Street, London, and of which he offered collections of 50 sorts at two guineas and one guinea, evidently, according to the quantity of seed. Two years later, David Watts, who was at No. 83 in the same aristocratic thoroughfare, was offering American White Spruce, 3 years old, at 5s. per 100.

In an advertisement of 1785 we meet with a name more famous perhaps in American horticulture than in that of Great Britain—Peter Thorburn, who had a nursery at the lower end of Hogmore Lane, Brompton, "near London," and who specialised in "curious American plants." For a subscription of five guineas for a "very valuable assortment of hardy American plants," which he specifies, he throws in "an infallible recipe for preventing or curing the Mildew Blight and Red-Spider on wall-trees, Peach-houses, etc." In April 1792, John Lyon, of the garden adjoining the Marlborough Tavern, Blackland's Road, near King's Road, Chelsea, "informs the curious in Plants and the Public, in general," that he has just returned from America with "a large and curious collection of Plants," many of which were never before introduced into this country, in all comprising over 400 species. His catalogues were to be had of the leading nurserymen of London, notably the famous firm of Lee and Kennedy of Hammersmith. In April, 1812, we have the advertisement of Frederick Pursh, "Botanist, from New York," who had just arrived in this country, and who was to be found at Mr. Munro's, the nurseryman and seedsman of No. 38, Westminster Bridge Road; he brought with him a valuable collection of hardy American plants, of which he offered collections of about 130 Pine plants at five guineas each. He tells us that for the last 12 years he had been making botanical researches in the greater part of North America, and in all the different West India Islands.

But of all the imports from America, the one which seems to have been the most popular was the American Aloe. All through the greater part of the 18th and until well into the 19th century, this was a never-failing source of attraction. A newspaper paragraph of Oct. 20, 1761, informs us that an Aloe was "now opening for bloom" in the Physic Garden at Oxford. At Bagnigge Wells, among other attractions in 1785, there were two "just entering into bloom." At Smith's nursery at Dalston, in 1790, sixpence was charged for seeing two large American Aloes in flower. And finally at Cochran's nursery, opposite the church, Paddington, a gold striped American Aloe, which "blows once in a hundred years," might have been seen in August, 1814, for a charge of one shilling, together with "a very magnificent and wonderful plant, called Bonaparte, a fine specimen, and the largest plant of the kind ever seen in this country." The "Bonaparte" was probably the *Agave geminiflora*, which came from Mexico in 1810.

These few data, derived from many sources, may help the future historian to piece together the interesting story of the introduction and distribution of North American plants into Great Britain. *W. Roberts.*

FLORISTS' FLOWERS.

ANTIIRRHINUMS

By reason of their adaptability to almost all forms of garden decoration Antirrhinums occupy a position of importance among hardy flowers. Their rise in popularity has been rapid, but it is no less secure, as in both public and private gardens few plants have proved to be more useful for summer bedding, and the best strains have been responsible for some of the most brilliant colour effects ever produced.

To provide plants ready for planting out towards the end of May seed should be usually sown in pans or boxes of light soil and placed in gentle heat early in February. When large enough to handle the seedlings do well pricked off into boxes or slightly heated frames. When once established, cool and airy treatment will encourage steady, short-jointed growth, and early in May the plants should be gradually hardened off in readiness for planting out. Although the present race of Snapdragons is the result of much close attention on the part of a few leading seedsmen, improvement has not been made at the expense of vitality. As is the case of the older type from which they have been produced, the modern race is comparatively hardy, and capable of resisting drought to a remarkable extent. While other subjects around them are evidently suffering under the scorching sun and heat of a hot summer they apparently suffer little when once they have become established. In low situations, where the soil is usually damp, Antirrhinums rarely bloom as freely as when grown in full sunshine in a well-drained soil. The addition of fresh manure to soil of average fertility in beds and borders is of no advantage so far as flowering is concerned, indeed it has a tendency to produce growth instead of blooms, especially in a dull, wet season. However, practically all plants are improved by a light dressing of superphosphate forked in before planting. If water is applied a little in advance of planting it is an advantage, as the soil can then be made tolerably firm round the roots of the plants, thus helping them to become established quickly. Under fair treatment flowering will commence in June and continue until frost comes, provided attention is paid to the removal of the seed pods, as the plants are unable to perfect seeds and continue flowering.

When time is pressing and space under glass cannot be spared for raising plants in spring, seeds may be sown in August, and the resultant plants pricked out in a cold frame where, with the lights protected during very cold weather, they will winter safely. Antirrhinums may also be propagated from cuttings inserted in September and wintered in similar conditions. Thus raised the plants will be ready for planting out in April, and where large borders that have been vacant all the winter are to be planted, there is much to be said on behalf of this method of raising Antirrhinums, as it allows much work to be completed before the very busy season arrives. If, on the contrary, the plants are to be used in formal bedding schemes, it is desirable to remove them from the frame in order to check them a little and thus bring them into a proper condition for planting at the appointed time. They should spend the few intervening weeks in the poorest soil the garden affords, and it should be made firm so as to prevent excessive growth. This will not prevent the more forward plants from forming flower spikes before the beds are ready for them, but the spikes should be allowed to remain, as they have a steadying effect on growth and it is an easy matter to remove the spikes, if necessary, when the plants are placed in their permanent position.

The Intermediate varieties are the most popular for bedding purposes, as they have a neat, bushy habit, and do not often exceed eighteen inches in height. They are available in all the choicest colours, and good strains come true from seed. The tall varieties reach twice the height of the former. In bold groups they are very effective, and only in exposed situations do they need support. The dwarf varieties are useful for edging purposes, but are rather too "dumpy" for any other position of prominence. There are named sorts in all three sections, but the plants from strains supplied by the

leading seedsmen give excellent results. In their varying heights few flowering plants make a border more attractive especially if the colours are kept separate, and planted in curved oblong groups, so that when in bloom the whole scheme represents waves of the brightest colours. In beds, the colour harmony is best preserved by keeping the varying shades of yellow, orange, and light-scarlet together, also the rose, pink, and fawn tints. White is never displayed to more advantage than when associated with the darker colours. F. T.

NEW CHRYSANTHEMUMS.

ONE of the finest of the new Chrysanthemums seen at the Royal Horticultural Hall last autumn was the variety Mrs. H. E. Dixon (see Fig. 23), which has light bronze colouring over yellow and broad reflexing florets which

its flowers, it is likely to occupy a very important position among novelties. Unfortunately, stock is limited, and Messrs. K. Luxford and Co. will not be distributing it until 1921. Like all the foregoing, it was raised by Mr. Bryant, and is quite up to the high standard of size and quality set by the popular varieties which have already made him famous as a raiser.

Now that happier times prevail growers will doubtless resume the cultivation of these large and imposing varieties of Chrysanthemums. C.

CANARINA CAMPANULATA.

AMONG the plants not grown to the same extent as formerly *Canarina campanulata* must be included. Introduced from the Canary

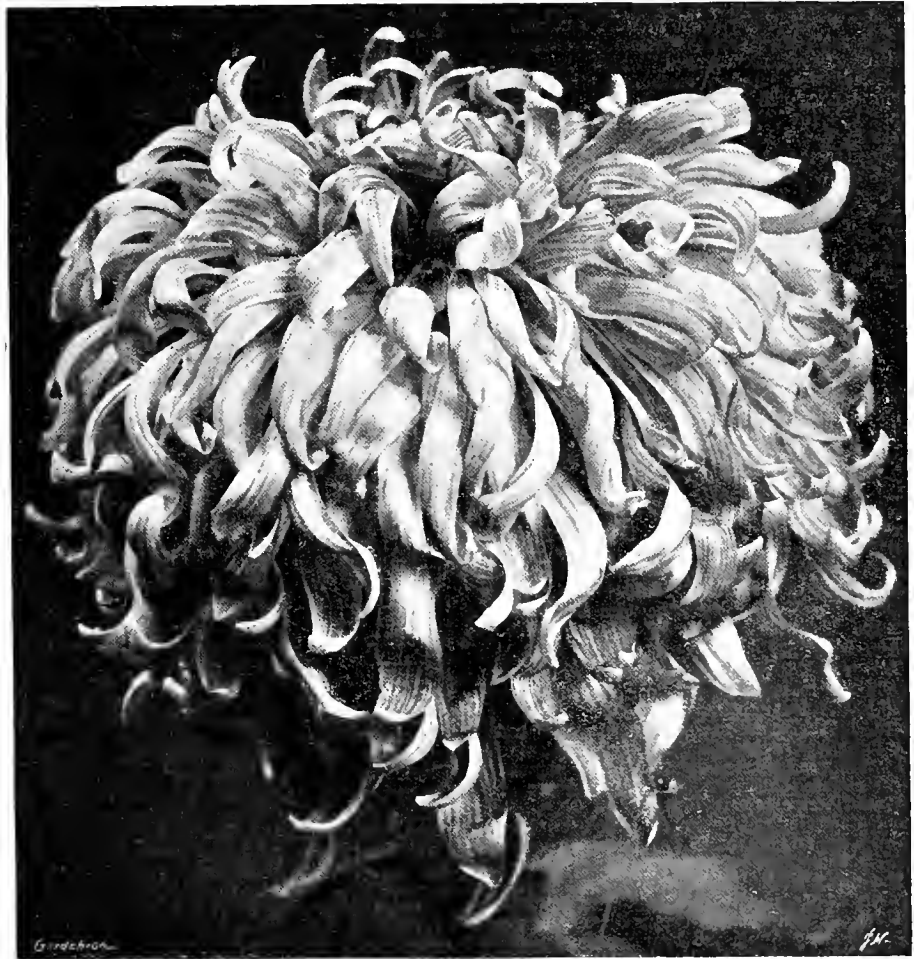


FIG. 23.—CHRYSANTHEMUM MRS. H. E. DIXON. First-class Certificate, National Chrysanthemum Society, Dec. 1, 1919; and Award of Merit, Royal Horticultural Society, Dec. 2, 1919.

give it a particularly handsome appearance. It was raised by Mr. Bryant, who was also the raiser of Mrs. Gilbert Drabble and Queen Mary. Mrs. H. E. Dixon was exhibited by Messrs. Keith Luxford and Co., Sheering Nurseries, Harlow, and was awarded a first-class Certificate by the National Chrysanthemum Society on December 1 last, and the Award of Merit of the Royal Horticultural Society on December 2nd., 1919. Another novelty which this firm is introducing is named A. S. Watt. This flower is of a deep yellow colour and may be described as a glorified Princess Mary. The variety L. C. Thorne has beautiful, mauve-pink flowers, is similar in growth to Mrs. G. Drabble, and succeeds under the cultural treatment that has been found successful with the latter variety.

Another new variety of great promise was exhibited by Messrs. K. Luxford and Co., on the 13th inst., at the Royal Horticultural Society's meeting. It is a large, reflexing, white variety, and as it is quite late in opening

Islands in 1696, it is of a herbaceous character and forms a stout, fleshy root stock, whence arise thick, succulent shoots that reach a height of three feet or more. These growths branch out towards the upper part, on which the flowers are produced. Individually the blooms are drooping, bell-shaped, and about the size of those of *Abutilon Darwinii*, to which they bear a resemblance, being of a yellowish-red colour, veined with a deeper tint. *Canarina campanulata* flowers in the early months of the year, and then gradually goes to rest, passing the summer in a dormant state and commencing to grow again in the autumn. When the leaves begin to turn yellow after the flowering period is over, the water supply must be lessened and discontinued as soon as the plant is totally dormant. During the summer the plant may remain on a sunny shelf in the greenhouse. By the end of the summer or in early autumn the new shoots will be visible, and the plant should be turned out of its pot and repotted. H. T.

PLANT HYGIENE.

(Concluded from p. 41.)

THERE are certain insect pests which can be dealt with best by protection. Such are the flies which attack various vegetables. Examples are the Celery Fly, the Onion Fly, Carrot Fly, Cabbage Fly, and abroad the various fruit flies. In each case the fly lays eggs in or near its food plant and these hatch into maggots, which burrow into the tissues of the plant so that the pest cannot be destroyed without destruction of the plant. If the fly can be prevented from laying its eggs on the plant no damage is done. This may be accomplished sometimes by providing a thin syrup poisoned with arsenic, on which the fly feeds before ovipositing, but the method has only been tried to any extent abroad for the fruit flies. The usual method is either to spray the plants frequently with paraffin emulsion or to dust them with ashes, sawdust, or other convenient absorbent material which has been sprinkled with paraffin, cresote or other strong smelling chemical. Whether the flies are kept away by the strong smelling substance or whether this masks the characteristic smell of the food plant, which would attract the flies, is not known, but if consistently done from time to time during the period the fly is ovipositing, it gives good results.

Other cases of protection from insect pests are seen in grease-banding of trees to prevent the female Winter Moth and other wingless female moths from climbing trees to deposit eggs, or the placing of hay bands around Apple trees to induce Codlin Moth larvae to pupate in them.

(3) ERADICATION.

While hygiene deals largely with prevention, it has also to deal with eradication where the disease has obtained entry. Books have been written on the eradication of plant disease and only a few general principles can be touched on here. A rubbish heap is no doubt a necessity at certain periods of the year, but it should not become a manure heap. So many diseases are carried over from one season to another on the rubbish heap, that all rubbish, whether old plants, roots or prunings should be burnt and the ashes kept in the dry to be used as a potash manure.

Diseased plants, especially of such food plants as Swedes, Mangels and Potatos, which are usually fed to animals, should be burnt where possible. If fed unboiled, as is often done, the spores, in the cases where disease was caused by a fungus, pass through the animals unchanged and are placed on the land with the manure. Many serious outbreaks of disease, especially of Wart Disease among Potatos and Club Root amongst Turnips and Cabbages, have been caused in this way, and when soil is infected on a large scale it is impossible, in most cases, to get rid of the disease. It is becoming more and more apparent as our knowledge of mycology increases, that certain well-known fungous diseases, typical instances being Apple and Pear Scab and Brown Rot of Plums and Apples, overwinter in the twigs. In the spring spores are released which infect the new growth, both fruit or leaves, and later the shoots. Hence, careful pruning will remove the source of much of the reinfection which occurs annually. Pruning, therefore, must be looked upon not only as a pure cultural operation, but as a sanitary measure, for such diseases as Apple Canker, Silver Leaf of Plums, to say nothing of insect pests, may all be controlled by careful pruning. All such prunings, however, should be promptly burnt as most of the fungi will continue to produce their spores after removal of the wood from the tree.

In speaking of the eradication of insect pests, mention must be made of spraying. Two points to be kept in view are (1), sucking insects such as Aphides, Capsid Bugs, "Suckers," etc., must be attacked by contact washes, the principle of which is the killing of the pest either by absorption or by blocking the breathing openings; and (2), the poisoning of leaf-eating insects by spraying plants with arsenic compounds, nicotine, etc. Although nicotine is the most expensive substance to buy, it is probably as cheap as the others in the long run, as it is very

effective and can be used against both sucking and leaf-eating insects.

In America, eradication or control of a comparatively new pest has been accomplished by breeding and losing its parasites. The classic case of this is where the Orange groves of California were being rapidly killed by an introduced "scale," which in its original country did little or no damage. Investigation showed that it was kept under there by a "ladybird" beetle, and the introduction of this beetle into California soon reduced the "scale" to very small proportions. Similar methods are being tried by the United States authorities with greater or less success on all newly introduced insect pests, and a "wilt" disease of Caterpillars caused by a fungus is being used with great promise of success in their Brown Tail Moth eradication campaign.

Two other instances of extermination by simple means may be quoted. Strawberry Leaf-Spot is very common in Strawberry plantations and weakens the plant. If on a suitable day after the crop has been picked, the straw used is loosely shaken over the plants and the whole fired, the affected leaves will be burnt and the crowns will be uninjured, so that new, disease-free leaves are produced. Apple Sawfly and Codlin Moth may also be kept under where labour is available, by picking and destroying affected fruit before the larvae have left it. In this connection, fowls running in orchards or amongst plants they do not hurt may be mentioned as a means of keeping under insect pests.

The spraying of fruit trees in winter with a caustic or lime-sulphur wash may be looked upon partly as eradication, in that certain pests are killed, and partly as protection, in that the trees are freed from lichen and rough bark which afford protection to insect pests.

(4) IMMUNISATION.

The immunity of a plant from disease is now being used in connection with cropping, for breeders and selectors are bearing this in mind when raising new varieties. Unfortunately, no plants have yet been produced which are immune to all diseases, and it does not follow that a plant immune to any particular disease will yield a greater crop, as, owing to its susceptibility to other diseases, it may be destroyed. Apart from this its cropping powers may be less than those of the susceptible variety. Nevertheless, the attempts to breed or select immune varieties of plants have given promising results.

True immunity to a disease is a fact whatever the conditions, but there is a resistance due to conditions which can be varied, while there is often a resistance which is relative.

True immunity is best illustrated by Wart Disease of Potatos. Here land may be full of the spores causing this disease, and two similar looking Potatos such as Great Scot and Arran Chief may be planted side by side, so that the resulting plants grow up intertwined. The former, whatever the conditions, will show no signs of Wart Disease, the latter may be a mass of warts with no sign of a Potato. This is a case of absolute immunity where climatic or temperature conditions have little or no effect, but the cause of the resistance to this particular disease is as yet unknown. This fact is made use of in checking the ravages of Wart Disease, and where this is present only immune varieties of Potatos can be grown legally. Wheats are known which resist "rust," but whose cropping and other qualities are poor. Professor Biffen made various crosses and has produced Wheats which have good qualities in addition to resistance to "rust."

In America new disease-resisting plants have been produced by selection. When a field crop has been ravaged by some disease an occasional plant may survive.

The progeny from this is subjected to infection and selected until a resistant stock is obtained. Partial or complete resistance to some characteristic disease is obtained in several varieties of plants. Thus there are now mildew-free Roses and Peas, a variety of Cucumber resistant to Leaf Spot, the Pershore Plum apparently resistant to Silver Leaf, Apple trees like Bramley's Seedling resistant to Canker.

With the exception of Wart Disease in Potatos few examples of true immunity are known at present, another case quoted by Dr Butler, of

India, being "Buri," a variety of Cotton quite resistant to a wilt which kills all other varieties. In most of the other cases, the resistance breaks down if conditions of cultivation or climate are radically changed. This has been termed by Dr. Butler "Avoidance of Disease." It may be illustrated by the earlier sowing of Oats to avoid the attacks of frit fly: the use of early and second early varieties of Potatos to avoid "Blight," or planting late varieties like President, Templar or Champion, which have stiff haulms, for the same reason; the planting of varieties of Gooseberries with wood which ripens quickly, to avoid American Gooseberry Mildew.

It will be seen, therefore, that the grower of crops, although largely at the mercy of conditions, such as climate, over which he has no control, may yet exercise a considerable influence on his ultimate crop of taking advantage of plant hygiene. *Geo. C. Gough, B.Sc.*

NOTICES OF BOOKS.

The Sacred Groves of Hygeia.

TREES in the precincts of towns and their suburbs, trees in the woodlands and hedgerows, and trees in the forests, all claim attention from the aspect of their power of promoting health and happiness. The major portion of the book by Professor Henry* deals with the afforestation of the catchment areas, whence the water supplies of many of our towns are derived. He points out that though we are not dependent upon trees for the source of rain, as is the case in some countries, for the ocean supplies us with moisture abundantly, yet we ought to make more use of their power to conserve the rain that falls, so that it may be guided to reservoirs and not allowed to run at high speed back into the sea. Other considerations show that further advantages accrue from tree planting on catchment areas, not only by limitation of possible pollution of the source from human habitations and by wandering flocks, both of which are not without danger, but also in that it forms a source of profit from the timber which is grown. The antiseptic power of peat and its relation to polluting influences is a matter to which some thought might be given, for if the pollution cannot be avoided, and if by afforestation the peat is destroyed, the eventual results might not be altogether desirable.

The Forestry Sub-Committee (Reconstruction Committee) in its report considers that "it should be an invariable rule that on catchment areas all land which will produce a crop of marketable timber should be afforested." How far this has been done, how it should be done, and what sorts of trees should be planted are questions of which the answers will be found in Professor Henry's book. A great deal of experience as to the suitability of different kinds of trees in different places and soils has already been gained, and though experiments have no end, it is hardly conceivable that any authority will proceed with an afforestation scheme without a careful study of this book.

The share that trees take in restoring the sick to health is dealt with in a chapter on sanatoria in forests: here the balance of evidence is given in favour of a beneficial influence to be accredited to the emanations of Fir trees. But the huts must not be invisible on account of the trees, nor must the trees be invisible on account of the huts!

The aesthetic capability of bare pit mounds, slag heaps, etc., when planted up with trees forms the theme of a short chapter, wherein the disclosure of the commercial side of the venture may act as an incentive to hesitating owners. Here again the suitable kinds of trees are dealt with in much detail, so far as trials have gone: but in certain cases perhaps something might be said for trials of the less important growths of shrubs and bushes. The ghastly, snow-white, spoil heaps about the china-clay works are sites which have not yet been attacked—at any rate they are left severely alone in silence.

Trees in towns form a section which we should

* *Forest Woods and Trees in Relation to Hygiene* By Augustine Henry, Prof. of Forestry, Royal College of Science, Dublin. The Chadwick Library. 8vo; pp. 365, with illustrations and maps 50. Constable, London. 18s. net.

like to see very considerably extended. Here we do not get nearly so exhaustive a list of suitable species or varieties as must surely be possible. It seems that more separate treatment of various circumstances might be introduced; parks, squares, and open spaces group themselves together for similar needs; next, the town garden and small front gardens, for which shrubs may often be more suitable than trees. Streets, from the character of their needs, might merit rather separate treatment. Note is made of the evil influence of civilisation—gas mains, electric leads, their several leakages and their disastrous effect upon tree growth; but there is another side to consider, namely, the retaliation of the trees by sending their roots into and blocking drains. The tendency of some trees to subsist on a deep tap root, and for others to send out superficial spreading ones must surely not be without importance in selecting sorts for planting in certain places. It may be noted that the Ash tree is given short shrift as a street tree, partly on account of its foliage being late in coming out and early in falling; but such peculiarity, of this and some other trees, might indeed prove an advantage in certain sites, in that the obstruction to light and sunshine becomes least when there is greatest need to get most of what there is.

Fruit trees are hardly suitable for streets, though some Pears and Apples (notably Siberian Crab amongst the ornamental), Morello Cherries, and others will do well in certain parts of London, but some of the flowering trees may add a charm to the dull stucco or brick, like the Almonds in and about Avenue Road or Adelaide Road in Hampstead; the perfect tree gives joy by its blossom and fruit as well as by its leafage.

No doubt, where possible, the less man interferes with the growth of the tree by lopping and pruning, the more beautiful is the result, but may not the amenities of a street be enhanced by the presence of a row of trees which would have to be destroyed if they were not vigorously trimmed year by year? Even the close-clipped hedge may afford rest to the eye and so to the brain. Where sunshine and air are not unduly kept away, a screen of trees, more especially in suburban and country places, certainly adds health by fending off the dust upraised by motor traffic; if such trees can be left virgin of the shears and saw, so much the better, but the pruned screen is better than no screen at all.

These criticisms are not intended to prevent Town Councillors who are on parks and estates sub-committees from studying the book; on the contrary they, like their confrères on the Waterworks Committee, will find much to guide them therein. *H. D.*

FRUIT REGISTER.

GRAPE MADRESFIELD COURT.

I was interested in Mr. Molyneux's remarks (page 31) on this fine Grape. As neither Mr. Molyneux nor myself touched upon the commercial value of this variety, I may state that I consider it to be one of the best for market purposes; as an early market Grape I find it is the best.

In these gardens we have such a large quantity of Grapes that it is impossible for the household to use them all, consequently I have occasion to market a fairly large surplus each year. In August, 1918, the average price I received for Madresfield Court was 5s. per lb., and in 1919, 3s. 9d. per lb.

I wonder why this variety is not recognised as a market Grape? One never sees the name mentioned in the Covent Garden market list of Grapes. I can fully endorse what Mr. Molyneux says about the free cropping qualities of Madresfield Court.

I have more than once seen the spurs from an old rod, almost back to the main stem, with the result that dormant buds from the old wood started into growth in spring, and the same season produced a crop of fine bunches. *J. G. Besant.*

TREES AND SHRUBS.

A YELLOW-FRUITED PYRACANTHA.

THE beautiful-berried shrub illustrated in Fig. 24 received the R.H.S. Award of Merit on October 21 last, under the name of *Pyracantha Rogersiana forma flava*, when the fruiting branches shown in the illustration were exhibited from the Royal Horticultural Society's Gardens at Wisley, where the variety was raised. As the varietal names indicate, the fruits of this novelty are bright yellow, differing from those of the type, which vary in colour from orange to scarlet.

Mr. A. Bruce Jackson pointed out in *Gard. Chron.*, December 30, 1916, p. 309, that the plant named *P. Rogersiana* cannot be separated specifically from *crenulata*, although there are differences in the foliage, and he named it *P. crenulata* var. *Rogersiana*, after Mr. C. Coltman Rogers, of Stanage Park, who has raised plants of several *Pyracanthas* from seed collected by Mr. George Forrest in China.



FIG. 24 PYRACANTHA CRENULATA ROGERSIANA FOR FORMA FLAVA.

CELASTRUS ARTICULATUS.

This shrub, of scandent habit, is not very attractive in summer, as its small flowers are inconspicuous and the plant itself presents no special features of beauty, although the way in which the young growths will twine themselves round other subjects is interesting to the student of habits of plant growth. In autumn, however, after a good season, not too wet, it gives many bright fruits of scarlet with yellow arils. These not only look distinct and beautiful on the shrub, but last a long time in the house and are very useful at the Christmas season as a change from the Holly berries and those of the Mistletoe. Arranged in a bowl with the bronzy leaves of the Barrenworts, or *Epimediums*, the effect is most pleasing. *S. A.*

JOHN DOWNIE AND DARTMOUTH CRABS.

Market Grower (see p. 29) mentions the planting of John Downie Crab in hedgerows, I consider the Dartmouth Crab is far superior to John Downie. The fruits are equally attractive in colour, of better shape for market, and larger. I have found it an excellent cropper, the fruit being very useful for making jelly, while as a sweet dish for table they are exceedingly good when stewed whole in syrup. Unfortunately the present scarcity of sugar prevents unlimited operations of this larger kind, so we must push ahead and grow our own sugar before we can fully utilise our fruit crops.

Long branches of Dartmouth Crab cut when the fruits are mature are very useful for decorative purposes, especially for Harvest Thanksgivings, for which they are particularly appropriate. If grafted on the Paradise Stock the fruits grow much larger than on ordinary standards, but the trees are useful in either case and form most delightful objects in autumn when laden with fruits. If selected for hedgerow planting this Crab should not be used in populous districts or near public roads, as the rich colour of the fruits makes them too tempting to the public. *W. H. Divers, F.M.H., Westdean, Hook, near Surbiton.*

RABBITS EATING TREE STEMS.

LAST winter rabbits were unusually harmful to fruit trees, and I had to record serious damage done to a newly-planted orchard of bush Apples. Most of these had stems 18 in. long, which were surrounded by wire netting, but this did not

prevent rabbits from biting off many of the shoots above the netting and barking any part they could reach. I was forced to the unwelcome conclusion that there was nothing for it but to erect a rabbit-proof fence all round the orchard, and this has now been done. Dual meshed wire netting, 4 ft. wide, was used, the mesh being 1 1/4 in. at the bottom and 2 1/4 in. at the top. The procedure was to dig a shallow trench all round the field close to hedge or ditch, lay 6 in. of the netting flat on the bottom of this, bend the rest upright and secure to posts driven in at the edge of the trench. The soil was then returned to the trench and trodden in over the strip of netting. There is thus a fence a little over 3 ft. high with about 6 in. turned outwards at the bottom and buried. This buried portion is, of course, to prevent rabbits from burrowing under the fence, which they are said always to attempt close up to the netting. The posts should not be more than 3 yds. apart to insure rigidity, and there must be netting-covered gates where necessary. This plantation ought to be safe now, but so far this winter rabbits have done very little damage even to unprotected trees. Never again will I plant trees with stems less than 3 ft. high, so that they may be protected with a ring of wire netting round each. Unfortunately, most nurserymen send out so-called half-standards with stems considerably longer than this, so there is nothing for it but to buy maidens or else raise the trees at home. *B.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Hosts of the Mistletoe (see pp. 20 & 44).—When I was at the Chadbury Fruit Farm twenty-four years ago there was then a small piece of Mistletoe growing on a Pershore Egg Plum. Mistletoe was plentiful in the neighbouring Apple orchard, but I never saw another case on Plum either there, or elsewhere. There was no reason to think that the Mistletoe was sown by human agency. *Harold Evans, Llanishen, Cardiff.*

October Dessert Apples.—I write to thank you for publishing my letter under the above heading in your issue of the 10th inst., but the word "planting" (see page 20), in the passage "planting at 2 ft. 6in. deep, or at 3 ft. deep," is a mistake. It is obvious nobody would plant so deeply; what I desired to express was that soil 2 ft. 6 in. in depth by being raised 6 in. would become 3 ft. deep, and become a better medium for retaining soil moisture and one that would keep the roots cooler, thus, in effect, making a change of climate. *C. A. Jardine.*

Onions on Light Soil.—Being an enthusiastic grower of large Onions, I was much interested in Mr. Thatcher's article (p. 56) on "Exhibition Onions." I consider his advice to be excellent for those favoured with a medium or heavy soil, but on a very light sandy soil, such as we have here, his method of cultivation would result in the plants making too much top, thickening of the neck, and splitting of the bulb. For two seasons I pursued practically the same system as Mr. Thatcher (with the exception of the feeding and watering in the early stages of growth), with the result mentioned above. I then hit on a plan for which shortage of labour caused by the war was responsible. Three years ago I was so hard pressed for labour that no ground had been prepared for the "boxed" Onions; consequently I had a plot cleared of late Broccoli and simply surface cleaned the ground with Dutch hoes, applied a dressing of lime a week or two before planting, and, in the second week in April, raked the bed level and put out the Onions at the usual distance apart. The result was that I had a very fine bed of Ailsa Craig variety, although the plants were not watered or fed once during the season. Many of the bulbs weighed 2½ lbs. each and some more; all were firm right up to the neck, and well ripened. I have pursued the same method ever since, with unvarying success, except that I use a piece of ground previously occupied by late Cauliflowers, and apply the lime in mid-winter. I may add that the ground had been thoroughly trenched and heavily manured the previous year for the Cauliflowers, and was therefore in good "heart," but I am convinced that had I trenched the ground (even in winter) no amount of treading or ramming would have made it firm enough to produce the large, shapely, well-ripened bulbs which I harvested from the undug plot. Concerning the Onion Fly, may I ask if any of your readers have tried sowing Onions on ground previously occupied by Celery? Last season, in August, I visited a well-known garden in this county, and was delighted to see a half-acre plot of spring-sown Onions in splendid condition, when everyone else in the district had lost practically their whole crop owing to the ravages of the Onion Fly. The gardener informed me that he had lost his Onions for several years till he happened a few years ago to use ground for Onions that had been previously cropped with Celery, with the result that the crop was successful, and since then by adopting the same plan he has always a good bed of spring-sown Onions. I wonder if the soil retains the pungent smell of the Celery, which repels the Onion Fly, or is it because the seedlings make extra strong and rapid growth in the well-worked soil, and in consequence soon get strong enough to resist the attacks of the maggot? It is well known that if seedlings receive favourable conditions, which enable them to grow freely, they soon pass the stage at which they are most susceptible to injury by pests and diseases. *Norfolk.*

SOCIETIES.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

JANUARY 22.—The eightieth annual general meeting of the Gardeners' Benevolent Institution was held on Thursday, the 22nd inst., at Simpson's Restaurant, Strand. The Chairman and Treasurer (Sir Harry J. Veitch) presided, and there were present Messrs. G. Hillier, H. Cowley, W. A. Bilney, J. White, J. Hudson, Owen Thomas, A. J. Wood, Geo. F. Tinley, H. G. Cox, C. R. Fielder, P. C. M. Veitch, N. E. Barnes, D. Inganells, G. Monro, Jun., and R. F. Felton. The report of the Executive Committee for 1919 and the statement of accounts for the year were read by the Secretary (Mr. G. J. Ingram). They were as follow:—

THE REPORT OF THE EXECUTIVE COMMITTEE.

The committee have the pleasure to submit their annual report and statement of accounts (as audited) for the year ending December 31, 1919, and in doing so desire to express their thankfulness for the continued usefulness of the work which has been carried on for the past 81 years, with such marked success, in rendering assistance to necessitous old gardeners and others who have been engaged in horticultural pursuits, and their widows, in the evening of life, and whose gratitude for the help given them has been too deep to find adequate expression in words.

At the beginning of 1919 there were 261 annuitants—men and widows—in receipt of £20 and £16 a year respectively for life. Of that number several have passed away during the year. Five of the men left widows whose circumstances being of such a nature as to warrant it—were placed on the funds without election for the widow's allowance, in succession to their late husbands, in accordance with Rule III. (13). There are to-day 53 candidates for the annuity, and from that approved list the committee recommend that 20 be elected, in addition to a widow (Mary Hewitt) who has been nominated to receive the Royal Horticultural Society's "Schroder Pension," which has become vacant through the death of the former recipient.

Unfortunately, notwithstanding the larger number recommended for election this year—21 instead of 15 last year—no fewer than 32 candidates will be left on

the waiting list for at least another year before permanent aid can be afforded them.

It is gratifying, however, to know that those who have previously been subscribers will be assisted from the "Victorian Era Fund," which gives grants to candidates whilst awaiting aid.

The "Good Samaritan Fund" also, from which the committee are enabled to give immediate temporary assistance, has again proved invaluable as a means of relieving many urgent cases of distress in the past year. They would, however, again point out that only the interest derived from these two funds is available for the purposes of relief, so that special donations towards both or either of them will be warmly welcomed.

The year 1919 has been eventful, inasmuch as the annual festival dinner in aid of the funds, and which had been in abeyance owing to the war, was held, by kind permission of the Grocers' Company, in their beautiful hall on June 19. The festival proved most successful. Sir Harry J. Veitch (the valued Treasurer for more than 30 years), in response to an urgent and unanimous request, presided on the occasion, and his earnest advocacy of the claims of the charity of which he has such personal and intimate knowledge and for which he has done so much, coupled with the whole-hearted and liberal support accorded to him, resulted in a substantial sum being realised for the funds. The committee tendered Sir Harry Veitch their thanks in the following resolution:—

"That the very best thanks of this committee be conveyed to Sir Harry J. Veitch, F.R.S., V.M.H., for so kindly consenting to occupy the chair at the festival dinner on June 19, 1919, and for the skilful and lucid manner by which he expounded the needs and affairs of the society. The committee are fully cognisant that this highly gratifying result, which added the magnificent sum of nearly £3,700 to the funds, was entirely due to his influence, tact and urbanity, and they greatly appreciate the sincere and personal interest both he and Lady Veitch always take in every movement to help the cause."

They desire in this connection to record their sincere thanks to the Worshipful Company of Grocers for the use of their hall; to the stewards; the donors of flowers, etc.; the decorators; the Press, and all others who helped to make the festival such a success.

Very gratefully and respectfully the committee acknowledge the annual subscription from His Majesty the King (patron), a Christmas donation from Her Majesty the Queen (patroness), and they also again recognise the gracious kindness of Her Majesty Queen Alexandra (patroness) in allocating a grant of money to this charity from the "Alexandra Day" Fund.

It is with very great pleasure the committee have to announce that His Royal Highness the Prince of Wales has graciously consented to become President of

RECEIPTS AND PAYMENTS OF THE GARDENERS' ROYAL BENEVOLENT INSTITUTION FOR THE YEAR ENDING DECEMBER 31, 1919.

	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.				
To Balance with Treasurer, Jan. 1, 1919	1,432	7	11				By Annuities and Gratitudes			4,515	11	6				
.. Balance with Secretary, Jan. 1, 1919			7	13	11		.. Rent, Fire, Lighting, and Salary of Secretary, Clerk, Ac.	623	19	10						
On Deposit, General Account, Jan. 1, 1919	180	0	0				.. Expenses of Annual Meeting and Election		5	19	8					
On Deposit, Wolfe Legacy and Interest, Jan. 1, 1919	844	7	7			2,464	9	5	.. Printing, Stationery, etc.	136	0	7				
.. Annual Subscriptions	1,114	9	0				.. Cheque Books		12	13	0					
.. Donations	3,292	13	11				.. Postages, Reports, Polling Papers, Appeals and Ordinary		49	18	9					
.. Schroder Annuity	20	0	0				.. Telephone Charges		8	8	3					
.. Legacy, Exors. of Leopold Salomons, Esq.	500	0	0				.. Advertisement		3	3	0					
.. Legacy, Exors. of Miss Hillman (part residue)	101	18	11				.. Cost of Wreath for late Auditor		2	0	0					
.. Dividends and Interest (less Tax)	825	12	5				.. Carriage, Telegrams, Directories, Incidental Expenses		16	3	8					
.. Income Tax Refunded	215	0	7				.. Balance with Treasurer, Dec. 31, 1919	1,465	18	5						
.. Deposit Interest (Wolfe Legacy)	19	3	2			6,088	18	0	On Deposit, General Account	850	0	0				
							On Deposit, Wolfe Legacy and Interest		863	10	9					
						48,553	7	5				5,179	9	2		
														48,553	7	5

* £1,285 is required to meet the quarterly payments due on December 31, 1919.

The undersigned, having had access to the Books and Accounts of the Society, and having examined the foregoing General Statement and verified the same with the accounts and vouchers relating thereto, now sign the same as found to be correct, duly vouched and in accordance with law.

GEORGE H. COBLEY & CO., Honorary Auditors.
Chartered Accountants.

RECEIPTS.				PAYMENTS.									
	£	s.	d.		£	s.	d.						
To Balance, Jan. 1, 1919			136	7	7								
.. Dividends	163	6	8				263	15	0				
.. Income Tax Refunded	69	13	8				.. Balance, Dec. 31, 1919		105	12	11		
					233	0	4						
					4,369	7	11				4,369	7	11

RECEIPTS.				PAYMENTS.									
	£	s.	d.		£	s.	d.						
To Balance, Jan. 1, 1919			257	8	7								
.. Donations	201	1	6				By Grants, 1919			146	16	8	
.. Dividends	120	2	1				.. Balance, Dec. 31, 1919			482	1	11	
.. Income Tax Refunded	44	6	5			365	16	0					
					4,622	18	7				4,622	18	7

the Institution, a position formerly filled by His Royal Highness's grandfather and father, their Majesties King Edward and King George.

They likewise desire to place on record their grateful indebtedness to Sir Harry J. and Lady Veitch for their donation of £262 10s.; to Reginald Cory, Esq., for his second generous gift of £500; to the executors of the late Leopold Salomons, Esq., for a like amount; to Messrs. William and Edward Sherwood, for £250; Messrs. Sutton and Sons, for £105; to Joseph Rochford, Esq., J.P., for £105; to Joseph Rochford, Esq., J.P., for a donation of £31 5s., in addition to the interest from his gift of £31 Five per Cent. War Loan; William Robinson, Esq., for £52 10s.; James Sweet, Esq., V.M.H., for £52 10s., and to Geo. Monro, Esq., V.M.H., for the large sum obtained by his help from Covent Garden friends, including a donation of £100 from his son, Mr. Geo. Monro, jun.

Very cordial thanks are given to those noblemen, ladies and gentlemen who have again allowed their gardens to be opened to the public for the purpose of benefiting the Institution, viz., Right Hon. Lord Northbourne, The Lady Battersea, Sir Frank Crisp, Bart. (the late), and Roger Corbet, Esq., Yns-y-Maengwy Gardens.

The committee also desire to express their sincere thanks to Messrs. Geo. Cobley and Co., chartered accountants, for their kind honorary services in auditing the accounts. Reference also is made to the kindness of Sir Harry J. Veitch, V.M.H. (Treasurer), Arthur W. Sutton, Esq., J.P., F.L.S., V.M.H., and Geo. Monro, Esq., V.M.H., for again generously giving a year's allowance to three of the unsuccessful candidates of the last election.

The several auxiliaries still prove very valuable adjuncts in obtaining funds and in generally promoting the interests of the Institution. The committee cannot too strongly express their thanks for the kind and praiseworthy services of the honorary secretaries and officers, as follows:—

BRISTOL AND BATH.

Presidents: Hon. Treasurers: Hon. Secretaries:
Col. H. Cary Mr. George New Mr. F. E. Alling-
Batten. bury. ham.

WORCESTER.

Rt. Hon. Earl Beau John White, Esq. Mr. Percy G.
champ, K.C.M.G. White.

DEVON AND EXETER

Trehawke Keke Mr. W. Mackay, Mr. W. Mackay.
wich, Esq.

WOLVERHAMPTON.

C. T. Mander Mr. George Mr. George
Esq., J.P. Bradley Bradley.

BERKSHIRE, READING AND DISTRICT.

Mrs. Rowland Arthur W. Sutton, Mr. H. G. Cox
Sperling, Esq., J.P., F.L.S.,
V.M.H.

LIVERPOOL.

The Rt. Hon. the A. J. Crippin, Mr. R. G. Water
Earl of Derby Esq. man.
K.G.

With deep regret the committee deplore the loss of many warm friends and supporters during the past year; amongst the foremost of these were Sir Frank Crisp, Bart., J.P., D.L., V.M.H., Sir Walter Smythe, Bart., Sir Philip Rose, Bart., Amy Lady Tate, Lady Margaret Cecil, George Bunyard, Esq., V.M.H. (formerly member of committee), J. Willard, Esq. (also formerly member of committee and for many years an auditor), Edmund Rochford, Esq., John Rochford, Esq., W. G. Rigdon, Esq., W. Goldring, Esq., and J. McKechar, Esq. The interest and practical sympathy of these tried friends will be sorely missed and their places difficult to fill.

The committee are very glad to be able to make the gratifying announcement that H.R.H. the Duke of Connaught has very kindly consented to preside at the next festival dinner to be held on a date to be fixed in the present year, and they confidently hope His Royal Highness will receive the whole-hearted support of every friend of the Institution on that occasion. The names of gentlemen willing to act as stewards and to be placed on the Duke of Connaught's list will be gratefully received.

In conclusion, the Committee earnestly appeal for a continuance of the support which has hitherto been so liberally given, and for which they are most thankful, in order that the good work may not only continue but increase.

HARRY J. VEITCH.

Chairman of Committee and Treasurer
Geo. J. INGRAM,
Secretary.

The Chairman proposed the adoption of the report and balance-sheet. He considered that the report gave such a full account of the year's working, there was little left for him to add.

It was a matter for congratulation that the Prince of Wales had consented to accept the office of president of the Institution, and it was equally gratifying to know that the Duke of Connaught would preside at the annual festival dinner. The published list of candidates gave the number of pensioners to be elected that day as twenty, in addition to a widow nominated to receive The Royal Horticultural Society's "Schroder" pension. However, since the list was published several pensioners had died and they were in a position to recommend the election of twenty-five, which, with the

"Schroder" pensioner gave a total of twenty-six. The Institution was specially indebted to Mr. Reginald Cory for his second liberal donation of £500. His contribution of £1,000 in the past two years had helped the fund very materially. He was also pleased to announce that a sum of money had been handed to the Committee by a friend of the Institution, and it would enable them to give a sum of £4 to the twenty-seven unsuccessful candidates. Sir Harry referred to the loss by death of several warm supporters of the Institution, and he specially mentioned the names of Sir Frank Crisp, from whom the Fund had received some £60 to £80 yearly as part receipts from fees paid by visitors inspecting his interesting gardens at Friar Park; Mr. Geo. Bunyard, who had given valuable services as a member of the Committee, Mr. Jesse Willard, for over 40 years a member of the Committee and in recent years one of the auditors of the Fund; and Mr. J. McKechar. He also stated that their oldest pensioner had died, aged 99 years. The various auxiliaries had given valuable aid, and he was specially pleased to see Mr. J. White a representative of the Worcester auxiliary present at the meeting.

They would all regret the absence of Mr. Arthur Sutton through indisposition, and he expressed the hope that he would soon be restored to health. He also referred to the absence of Mr. Geo. Monro, a warm supporter of the Charity, and wished to convey to him through his son, who was present, the best wishes of the meeting. The adoption of the report and balance-sheet was seconded by Mr. Fielder and carried without further comment.

The meeting then proceeded to the election of officers. Sir Harry Veitch was re-elected treasurer, and Mr. Geo. Ingram was re-appointed secretary.

Messrs. Crump and Hudson, retiring members of the Committee were re-elected, and vacancies filled by the appointment of Mr. G. N. Smith and Major E. C. Monro. The auditors and arbitrators were also re-elected.

At this stage the meeting adjourned for the taking of the poll and Messrs. D. Ingamells, H. G. Cox, and Geo. Monro, junr., were appointed scrutineers of the ballot.

RESULT OF ELECTION.

	Age.	No. of Votes.
Cox, Hannah	67	3,953
May, Alice	69	3,814
Wise, Arabella	81	3,717
Raffill, Charles	71	3,634
Steer, George	80	3,548
Chemell, Eliza	80	3,388
Barnes, Frederick	68	3,666
Wills, Isaac E.	67	3,293
Bennett, William	75	3,281
Bannister, Mary A.	69	3,204
Weeks, William	78	3,163
Levell, Clara	61	3,158
Smith, Mary	74	3,137
Saunders, John	75	3,057
Cox, William	80	3,054
Evans, William	65	3,034
Green, William	76	2,986
Hamsbere, Mary	72	2,767
Cooper, Thomas W.	66	2,678
Nears, William	75	2,656
Fishpool, Maria F.	64	2,648
Wilkinson, John F.	71	2,567
Marsh, Eliza	70	2,528
Burden, Sarah	75	2,522
Smith, William	73	2,520

Following the declaration of the poll, Mr. Geo. Monro, V.M.H., offered the sum of £10 for an unsuccessful candidate, and a similar amount for a similar purpose was given by Sir Harry J. Veitch, V.M.H. A vote of thanks to the scrutineers closed the proceedings.

ROYAL HORTICULTURAL.

JANUARY 27.—Notwithstanding the dull, cold weather, there was a capital attendance of Fellows at Vincent Square on the above date. The exhibition was not a large one, but it would have been far more attractive if the several groups of Orchids placed in what is known as the Orchid annexe had been arranged in the body of the hall. If the hall is not sufficiently large to accommodate all the exhibits,

there appears to be every good reason for adding the annexes, but when there is ample room in the hall proper the annexes might well be left for the meetings of the Committees, and subsequently for the accommodation of those who wish to sit and rest awhile.

Orchids were well shown, and these with Carnations, Primulas, spring flowers and fruits made an interesting exhibition. The Floral Committee made no awards to novelties, and had a very short sitting.

Floral Committee.

Present: Messrs. E. A. Bowles (in the chair), W. J. Bean, John Green, Sydney Morris, H. Cowley, J. W. Barr, G. Reuthe, John Heal, Wm. Howe, J. F. McLeod, G. W. Leak, C. R. Fielder, Thos. Stevenson, Arthur Turner, John Dickson, C. Dixon, J. T. Bennett Pöe, Chas. E. Shea, Chas. E. Pearson, W. P. Thomson, E. F. Hazelton, George Paul, W. G. Baker, E. H. Jenkins, W. B. Cranfield, Jas. Hudson and John Jenning.

Groups.

A large group of finely-flowered Azaleas was contributed by Mr. L. R. RUSSELL. There were the usual neat, single-stemmed specimens groundwork, with pyramidal and tall standard plants rising above them. The edging was composed of Cyclamen and there were a few flowering Orange bushes among the Azaleas, the whole making a pleasing exhibit. (Silver Flora Medal.) The Rhododendrons shown by Messrs. R. GILL AND SON, cut from the open ground in Falmouth, were very bright, especially the trusses of R. barbatum, R. Nobileanum, R. Harrisii, and R. arboreum seedlings. (Bronze Flora Medal.) Early Rhododendrons, particularly R. macronulatum, which just now is flowering so well in the open at Kew, were included by Mr. G. REUTHE in his collection of hardy plants. Sarracenia and various Alpines were also on view. (Bronze Flora Medal.) Messrs. PIPER's exhibit consisted principally of garden designs, plans and photographs of garden scenes, the whole edged with pans of hardy Cyclamen. Spring flowers in variety, consisting of Primroses and Polyanthus, Daffodils, Hellebores and Daphne Mezereum were shown extensively by Mr. G. W. MILLER. (Silver Banksian Medal.) Mr. J. J. KETTLE once again showed his new Violet Mrs. David Lloyd George, and the flowers were as large, as finely coloured and as fragrant as on previous occasions. The flowers were all gathered from under glass. (Bronze Flora Medal.)

MESSRS. WATERER, SONS AND CRISP showed many Saxifrages and Adonis aestivalis, with a central little group of profusely-flowered Rhododendron praecox. Messrs. R. TUCKER AND SON included charming pans of Saxifraga Burseriana Gloria, and S. Griesbachii in their collection of Alpines. (Silver Banksian Medal.) Messrs. BARR AND SONS had a couple of stands of Crocus species, early Daffodils and other spring flowers.

The Misses HOPKINS arranged a neat collection of hardy Alpines and border plants.

MESSRS. SUTTON AND SONS arranged a magnificent collection of their famed Primula sinensis varieties on a floor space at the end of the hall. Each of the very many plants was a model of expert cultivation—a sturdy, compact rosette of rich green leaves surmounted by a generous truss of large flowers of fine substance. The colour arrangement was particularly entrancing. The central mound of glowing Crimson King was enclosed by the pure white flowers of Giant White and flanked by delightfully undulated groups of Brilliant Rose, Duchess and Giant Scarlet. The smaller mounds of Double Blue and the Coral Pink Star Primula were also very fascinating. (Silver Gilt Flora Medal.)

Messrs. H. B. MAY AND SONS brought their customary contribution of splendid greenhouse Ferns, with which they arranged many good examples of Cyclamen persicum, Primula obconica grandiflora and Hydrangeas, all of useful size and particularly well flowered. (Silver Banksian Medal.) Chrysanthemum Nancy Perkins, a pleasing, white, buff-centred, reflexing variety, was shown by Capt. H. DRUMMOND (gr. M. Lewis Smith), Cadland Park, Southampton

This is a useful late variety with blooms of good texture.

MESSRS. ALLWOOD BROTHERS' exhibit of Carnations consisted of numerous vases of such bright hued varieties as May Day, Jessie Allwood, May Allwood, and Triumph. (Silver Flora Medal.) Another very bright exhibit of Carnations was the one staged by Mr. C. ENGELMANN; here there were excellent blooms of Peerless, Carola, the brilliant Scarlet Carola, the pink, red-flushed Boadicea, Destiny, and the dainty pink Lady Northcliffe. (Silver Banksian Medal.)

MESSRS. STUART LOW AND CO. arranged many vases of fresh and fragrant Carnations. Several fancies, such as Circe and Ivanhoe, were much admired, as also were the blooms of White Wonder, Brilliant and the pink Eileen which opens so well during dull weather when many other sorts remain at a standstill. (Silver Banksian Medal.)

MESSRS. WM. CUTBUSH AND SON exhibited Saxifragas, Hellebores, Hamamelis Mollis, Iris hibernica, I. Danfordae and I. sindjarensis among early flowers, and also staged a small collection of perpetual-flowering Carnations (Silver Banksian Medal.)

Orchid Committee.

Present. Sir Harry J. Veitch in the chair, Messrs. Jas. O'Brien (hon. secretary), William Bolton, C. J. Lucas, Arthur Dye, J. Wilson Potter, Gurney Wilson, R. A. Rolfe, Stuart Low, W. J. Kaye, Frederick J. Hanbury, T. Armstrong, A. McBean, J. Cypher, J. Charlesworth, W. H. Hatcher, Chas. H. Curtis, Richard G. Thwaites, J. E. Shill, W. H. White and S. W. Flory.

AWARDS.

AWARD OF MERIT.

Cattleya Mrs. Jas. Watson, The Dell variety (Maggie Raphael alba × Trianae) from Baron Bruno Schröder, The Dell, Englefield Green. This fine hybrid, while retaining the form of the best varieties of *C. Trianae*, is an advance on that species in shape and colour. Sepals and petals broad and undulated at the margin, white. Lip reddish purple with gold lines to the yellow disc.

Cymbidium albavense Joicey's variety (very thrystylum × insigne) from J. J. Joicey, Esq., Witley, Surrey. The plant bore a fine spike of large bluish-white flowers with dark claret blotches and lines on the lip.

CULTURAL COMMENDATION.

To Mr. FARNES, Orchid grower to Pantia Ralli, Esq., Ashted Park, Surrey, for a fine specimen of *Oncidioda Cooksoniae*, with long sprays of bright red flowers.

SILVER GILT FLORA MEDALS.

To Messrs. ARMSTRONG AND BROWN, Orchid-hurst, Tambridge Wells, for a very fine group of hybrid *Odontoglossums*, *Odontiodas*, *Cattleyas* and *Cypripediums*. Many handsome seedling *Odontoglossums* were in the group, the most remarkable being *O. Horatio* (Menier × Rex), a finely-formed white flower with the inner halves of the segments prettily marked with claret-red. The central plant was a fine white *Odontoglossum crispum*, with a five-branched spike of forty-one pure white flowers.

SILVER FLORA MEDALS.

To Messrs. CHARLESWORTH AND CO., Hayward's Heath, for a fine group of well-grown Orchids, principally hybrids. Fine novelties were *Brasso-Cattleya Beaumont* (*C. Empress Frederick* × *B. C. Cliftonii*), two grandly coloured forms of *Odontioda Brackenburst* (*Oda. Charlesworthii* × *Odm. eximium*), one nearly black, and the other deep red; the clear yellow *Brasso-Cattleya Sofrano* and, among other *Sophranitis* crosses, the showy *Sophr-Laelio-Cattleya Isabella*.

To Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, for an effective group of hybrids, chiefly *Cattleyas* and *Laelio-Cattleyas*.

To Messrs. HASSALL AND CO., Southgate, for a fine group of *Cymbidiums*, including good forms of *C. Castor*, *C. Alexanderi*, *C. Sybil*, *C. Capella* and *C. Moira*.

SILVER BANKSIAN MEDAL.

To Messrs. J. CYPHER AND SONS, Cheltenham, for a very fine group of splendidly-grown *Cypripediums*, with large and well-developed flowers. Specially fine were *Prince of Asturias*, a massive flower with very broad and finely blotched petals, the dorsal sepal being pure white with claret blotches; *C. Lavertomanum*, showy and finely formed; *C. Alebiades magnificum*—the best of a fine and favourite class; *C. Ernest Reel*, a model flower, and one of the favourites of the late J. Gurney Fowler; *C. Sir W. Chandler*, and some good *C. insigne* *Harefield* Hall crosses.

To Messrs. SANDERS, St. Albans, for a group of *Cymbidiums*, *Odontoglossums*, *Odontiodas*, and *Brasso-Cattleyas*, with some interesting species.

OTHER EXHIBITS.

Sir JEREMIAH COLMAN, Bart. (gr. Mr. Collier) showed *Brasso-Cattleya Gaxton Lily* var. *Majestica* (*C. Trianae albans* × *B. C. Digbyano-Mendeli Fortuna*), a clear white form of the batch which has already received two awards; and *Odontoglossum Thwaitesiae*.

Dr. MIGUEL LAVROZE, Blynder, Roehampton (Orchid grower, Mr. Taylor) showed a very handsome dark *Odontoglossum* hybrid, *O. San Juan* (*Doris* × *Lambeauiannum*), a fine flower handsomely blotched; *Laelio-Cattleya Buenos Aires*, and *Sophr-Cattleya Santa Fé* (*C. Rhoda* × *S. C. Doris*).

G. W. BIRD, Esq., Manor House, West Wickham (gr. Mr. Redden) sent *Brasso-Cattleya Helen* (*B. C. Digbyano-Warneri* × *C. Fabia*), a good rosy-mauve flower.

C. J. LUCAS, Esq., Warham Court, Horsham (gr. Mr. Duncan) showed, with its first flowers, *Odontoglossum Dircium* (*Diree* × *eximium*) a good hybrid with the greater part of the segments claret red, the tips white.

W. R. FANSEY, Esq., sent a fine form of scarlet *Odontioda Cooksoniae*.

Fruit and Vegetable Committee.

Present. Messrs. C. G. A. Nix (chairman), J. Cheal, Owen Thomas, G. Reynolds, H. S. Rivers, E. A. Bunyard, W. E. Humphreys, A. Bullock, E. Harms, E. Beckett, W. Bates, W. H. Divers, Geo. F. Tinley and A. W. Metcalfe.

C. A. CAIN, Esq., The Node, Welwyn, Hertfordshire (gr. Mr. T. Pateman) was awarded the Silver-Gilt Hogg Memorial Medal for 57 varieties of Apples and Pears. This fine exhibit occupied the whole of a large table and was composed of splendid fruits, all of fine quality and carrying high colour. The more notable varieties were *Mabbot's Pearmain*, *Tyler's Kenel*, *Wealthy*, *Rival*, *Hoary Morning* (a very characteristic variety, having stripes of dull red on a lighter ground), *Paropet* (a variety of high colour), *Encore*, *Ribston Pippin*, *Emperor Alexandra*, *Comt-Pendu-Plat*, *Lane's Prince Albert* (exceptionally fine), *Warner's King*, *Mere de Ménage*, *Lord Dorby* and *The Queen*. Of Pears there were good fruits of *Santa Claus*, *Uvedale's St. Germain*, *Bellissime d'Hiver* and *Catillac*.

A Silver Knightian Medal was awarded to J. R. FORTESCUE, Esq., Dropmore, Maidenhead (gr. Mr. C. Page), for an exhibit of Apples and Pears. The finest of the Apples were *Newton Wonder*, *Barnack Beauty*, *Claygate Pearmain*, *Beauty of Kent*, *Norfolk Beauty*, *Scarlet Nonpareil*, *Egremont Russett* and *Gascoyne's Scarlet Seedling*.

Mr. ROBSON, Guildford Fruit Farm, Guildford, was awarded a Silver Banksian Medal for Apples packed in barrels as for market. The fruits were finely coloured, the sorts being *Cox's Orange Pippin*, *Newton Wonder* and *Lane's Prince Albert*.

NATIONAL ROSE.

Annual Meeting.

JANUARY 27.—The National Rose Society has entered on a period of increasing prosperity. At the Annual General Meeting, which was held on the foregoing date at the Cannon Street Hotel, London, there was a record attendance of

the members, and it was stated that the number of new members was greater than ever before in the history of the Society.

Mr. H. R. Darlington presided and the attendance included Mrs. Darlington, Mrs. Aitchison, Mrs. Giffard, Miss Pemberton, Vice-Admiral R. E. Grant, Messrs. Chas. E. Shea, John Green, T. Somers Rivers, A. Johnson, W. R. Chaplin, Geo. Prince, B. Cant, Elisha J. Hicks, J. R. Mattock, Reginald Cory, Dr. Lamplough, E. J. Holland, Walter Eastlea, Arthur Turner, R. de C. Escofet, James Brown, Cecil Cant, E. F. Hawes, Frank Cant, George Paul, H. G. Mount, H. P. Langdon, Chas. H. Curtis, Arthur Bide, H. Cowley, Oakley Fisher, C. C. Williamson, R. E. West, and the Rev. J. H. Pemberton.

In proposing the adoption of the Council's report for 1919, the President drew attention to various items of special interest. During the past year just over 1,000 new members have joined the Society, which is a record number for any one year. In 1914, he said, there were 5,500 members and, contrary to the expectations of many of the Council, who feared that the war would adversely influence the Society, at the close of the war there were 5,450 subscribing members.

The publications of the Society are greatly valued, and he contended that the present satisfactory position was due largely to the policy of the Council in regard to publications and to the success of the shows. The newly-instituted library is also meeting with great approval. The number of books has been trebled during the past year, and the President anticipated that increased accommodation would be needed in the near future, when it was hoped that the new library in Victoria Street would also provide a comfortable and convenient meeting-place for members coming to Town.

The three usual shows are to be held in London in 1920 and, in addition, a two-days' Provincial show has been arranged to be held at Leeds on July 13 and 14.

The losses by death, especially those of Mr. H. V. Machin and Mr. W. D. Prior, were sympathetically alluded to, and tribute was paid to the good work amongst Roses that had been done by these late members.

Mr. Chas. E. Shea, in seconding the adoption of the report, welcomed the increased attendance of ladies at the meeting, saying that he felt this was all to the good, as they were certain to bring new ideas which would add to the efficiency of the Society.—The report was unanimously adopted.

Mr. S. Preston-Hillary then presented the summary of receipts and payments for the past year, earning the congratulations of the meeting for the clear and lucid manner in which the statement was set out and compared with that of 1913 as being the last previous to the war. Mr. Preston-Hillary made a usually dry recital full of interest. One of the year's records was the £2,940 14s. 6d. received as subscriptions for the year. The income, from all sources and including last year's balance of £71 6s. 8d., amounted to £3,429 17s. 2d. On the expenditure side, the principal sums are £728 15s. 9d. for publications, £562 5s. 4d. for printing, stationery and advertising, and £306 3s. 5d. for postages and sundry expenses. Five hundred pounds has been invested in War Loan, leaving a balance of £37 4s. 7d. Mr. E. J. Holland seconded the adoption of the Treasurer's statement, and it was carried unanimously.

The President, Deputy-President, Honorary and Acting Vice-Presidents, Hon. Treasurer, Hon. Secretary, and Auditor for the ensuing year, were re-elected, and, on the ballot for the Council, the new members are Messrs. C. Chambers, S. F. Jackson, H. Oppenheimer, L. P. Roberts, F. Spooner and Dr. Panekridge.

Several proposed alterations of rules were adopted. In Rule 4 (e) all words after "Exhibition" are to be deleted. Rule 14 was altered to permit the Council to hold two-day Provincial shows when they consider this advisable. This alteration was made chiefly in order to enable the Council to meet the wishes of the executive of the forthcoming show at Leeds, but the principle of one-day Rose

shows will still be generally adhered to. Rule 17 now requires a voting paper to be sent by post to each member, whenever the nominations for the Council exceed 36, and the marked voting papers to be returned to the Secretary at least five clear days before the date of the annual meeting. It will be remembered that at the 1919 annual meeting there was a strong wish on the part of those present that the members as a whole should be allowed to elect the Council, without being compelled to attend the meeting in order to vote.

Mr. John Hart proposed a sincere and hearty vote of thanks to the officers and Council, and in so doing paid a handsome and well-deserved tribute to the most successful work of Mr. Courtney Page, the Hon. Secretary, who has done so much in furthering the scope of the Society's work and to whom so much of its success is due. This motion was carried with acclamation, as also was Mr. Frank Cant's proposal thanking the President for his able conduct of the meeting.

After the meeting, many interesting and instructive lantern slides, dealing with various phases of Rose culture, were shown to an appreciative gathering.

NATIONAL DAHLIA.

JANUARY 26.—The annual general meeting of the National Dahlia Society was held on the foregoing date at 35, Wellington Street, Strand. The President, Mr. Reginald Cory, was in the chair, and there was a moderate attendance of the members.

The Annual Report of the Executive Committee was read by the Hon. Secretary. The following are extracts from the Report:—

EXTRACTS FROM THE REPORT.

"The Committee again have the pleasure of recording another fairly satisfactory year's work. The season was not favourable to the growth of the Dahlia over the greater part of the country, the weather being abnormally cold and dry, followed by very early frosts in some districts. The membership remains satisfactory.

"The Annual Floral Meeting was held at the London Scottish Drill Hall, Buckingham Gate, on September 9, and was satisfactory. There was still a falling off in the number of exhibits in the open classes, but the amateur classes were well filled, the quality of the flowers being up to the average.

"The Floral Committee, acting in conjunction with the Floral Committee of the R.H.S., were only able to meet on three occasions, but numerous awards were made to all sections of the flower.

"The Committee do not consider the financial position warrants the renewal of the conferences or the publication of the Year Book. The new varieties and selections of the best sorts are compiled and published as a supplement to the schedule."

The Chairman, in moving the adoption of the report and balance sheet, stated that the condition of the Society was as favourable as could be expected, and he looked forward to a renewal of interest in the Dahlia and in the Society. The report and balance sheet were adopted.

Mr. J. Green proposed the re-election of Mr. Cory as President. He knew of no one in the country better fitted to fill the post, for Mr. Cory took the greatest interest in the Dahlia and its cultivation. Mr. Crane seconded, and it was passed with acclamation.

Mr. Cory thanked the members and said that he would be happy to be their President for another year. He was glad to know that the war had not killed the Dahlia nor all the kind people who cultivated it.

The Vice-Presidents were re-elected, and the name of Mr. J. T. West was added to the list. Mr. J. Cheal was re-elected Chairman, and the Secretary was asked to send him a letter hoping for a speedy recovery from his recent severe indisposition.

The other officers were re-elected, including Mr. J. Green, Treasurer; Mr. D. B. Crane, Auditor; Mr. Emberson, Hon. Show Superintendent; and Mr. J. B. Riding, Hon. Secretary.—The Secretary was complimented on his efforts on behalf of the Society and was voted an honorarium of £10.—The Committee was re-elected, with the exception of Messrs. G. Davidson and F. C. Treseder, who resigned. Mr. R. Holton was elected to one of the vacancies.

A vote of thanks to the Chairman concluded the proceedings.

READING AND DISTRICT GARDENERS.

THE annual meeting of the above Association was held in the Abbey Hall, and was well attended. There were present Mr. E. P. Fognett Sutton (who presided), Mr. Alderman F. B. Parfitt, Mr. Councillor F. E. Moring, Mr. W. B. Whitley, and members from Wokingham, Calcot, Maidenhead, Shenfield, Caversham, Tilchurst, Mapledurham, etc. The annual report and balance sheet, as read by the hon. secretary, showed that the Association was in a most prosperous condition. The meetings during the year had been well attended, the competitions keen, with numerous entries, and the discussions were animated and well sustained. The officers for 1920 were elected, including Mr. Councillor F. E. Moring as president, with Mr. H. G. Cox hon. sec. and Mr. E. J. Dore assistant hon. sec.

NATIONAL CHRYSANTHEMUM.

The members of the Floral Committee of the National Chrysanthemum Society dined together at the Comedy Restaurant, Haymarket, on the 21st inst. Formerly the dinner was an annual function, but it has not been held in recent years. Mr. D. B. Crane presided, and the only toasts honoured, after "The King," were "The National Chrysanthemum Society" and "The Floral Committee." Mr. T. Bevan responded to the former and Mr. D. B. Crane to the latter. Speeches were very short, and the usual programme of music was not provided as the company adjourned to the Coliseum, where a block of seats had been booked. Mr. D. Ingamells and Mr. C. H. Curtis made all the arrangements, with which everyone was satisfied.

SCOTTISH HORTICULTURAL ASSOCIATION

JANUARY 20th.—The annual business meeting of this Association was held in the Goad Hall, 5, St. Andrew Square, Edinburgh, on this date—Mr. R. Fife, president, in the chair.

The report by the Council stated that there had been a very marked increase in the admissions to membership during the year. It was also stated that the Council had recommended that a Flower, Fruit, Vegetable and Potato show be held in 1920, and it was decided by the meeting to hold this show.

The abstract of the accounts showed an excess of expenditure over income of £114 0s. 4d., £50 of which, however, represented the expense of a special appeal for new members by the honorary president, Lord Linnithgow, which had added £140 of life membership, and £34 in annual subscriptions. The account of the Scottish National Potato Exhibition showed a loss of £223 5s. 7d., which fell to be met from the Guarantee Fund.

Lord Linnithgow was re-elected honorary president; Miss M. E. Burton was elected president; Messrs. Massie and Innes were elected vice-presidents, and the following were elected to the vacancies in the Council:—J. C. Grove, J. Wylcock, V. M. H., W. J. Thomson, W. Fife, T. Fortune, D. Armstrong, and Dr. W. G. Smith. The secretary and treasurer and auditors were re-elected.

The following motion, which was moved from the chair and seconded by Mr. David King, was carried by a large majority:—

That the members of the Scottish Horticultural Association in annual general meeting assembled are of opinion that the interests of Scottish horticulture would be best served by the incorporation of the Scottish Horticultural Associa-

tion with the Royal Caledonian Horticultural Society under the latter name, provided that the Royal Caledonian Horticultural Society on its part agrees to carry out the objects contained in Article II. of the Constitution of the Scottish Horticultural Association, and any other parts of the aforesaid Constitution which may be reasonably applicable to the united body, and they instruct the Council of this Association to take the necessary steps to secure that end.

ROYAL CALEDONIAN HORTICULTURAL.

JANUARY 14th.—The annual general meeting of this Society was held in Dowells' Rooms, 18, George St., Edinburgh, on this date—Mr. Eric P. Laird, vice-president, in the chair.

It was stated in the annual report that the Council had under consideration the union of the Society with the Scottish Horticultural Association, on the footing that the two Societies should unite under the Charter of the Royal Caledonian Horticultural Society, and that the united body continue the work now being carried on by the Scottish Horticultural Association, the preservation of the name, membership, etc., of the latter to be continued on such terms as may be agreed upon by the Councils of the two bodies.

The abstract of the annual accounts showed an excess of expenditure over income of £24 6s. 4d.

It was intimated that there was no prospect of a spring show being held this year, but that the Council intended to arrange for an autumn show on the 8th and 9th of September, and that it had been arranged with the Garden Allotments Federation that their exhibition should be held with this show.

Lord Newlands was re-elected president; Mr. David King was elected to the vacant vice-presidency, and Messrs. James Fraser, John W. McHattie, and Alex. Chalmers, were elected to the vacancies in the Council.

Obituary.

Dr. John H. Wilson.—After a brief illness, John H. Wilson, D.Sc., Lecturer in Agriculture and Rural Economy at the University of St. Andrews, passed away on Tuesday, the 13th inst., at the age of 61, and was laid to rest on Friday in the family burial ground near the Cathedral ruins. His remains were preceded from his residence in South Street to the place of burial by a full Academic procession, headed by Sir John Herkless, Principal of the University, and Principal Galloway, of St. Mary's College. Students, male and female, numbering over 200, clad in their scarlet gowns, followed the University staff.

Dr. Wilson leaves a widow, to whom many friends among the readers of these pages will extend heartfelt sympathy. He is also survived by two brothers.

To adequately express an appreciation of Dr. Wilson's worth is hardly possible, but it is no exaggeration to say that such unbanded energy and enthusiasm as he possessed is seldom met with in an individual. He had no time for trifling, everything in nature appealed to him, and latterly it was a matter of regret to him that he had little time to devote to research in the garden owing to the importance of his work in the improvement of root and grain crops and the instruction of a large class of students.

For a number of years Dr. Wilson's energies had been chiefly centred in producing a strain of disease-resisting Potatoes, and his success may be measured by the popularity of at least three of his raising—Bishop, Rector and Templar.

Those who saw the exhibit he displayed at the Potato Conference in the Waverley Market last November could not fail to have learned much from the originality and precision of his methods. There was nothing haphazard about any of his crosses, and it is the opinion of many that had Dr. Wilson been spared he would in the course of a few years have evolved from the wild kinds a race of Potatoes capable of resisting disease perhaps for generations. Dr. Wilson's

interests were not confined to one channel; his recent work in hybridising Oats will be of more than passing interest to agriculturists. By the Doctor's own admission, they were "entirely satisfactory," which means a great deal.

Dr. Wilson was born in St. Andrews, the second son of the late Mr. James Wilson, founder of the Greenside Nursery. He was educated at Madras College, and took a course of chemistry at the University. Subsequently he studied at the Royal Botanic Gardens, Edinburgh, and at the University there, where he carried off the medal for class and practical work in Botany. He also studied in Belgium and Germany, obtained the degree of B.Sc. in 1837 and D.Sc. in 1839, was appointed the first Botanic Lecturer in St. Andrews University, and laid out the first Botanic Garden there. He was for a time connected with the University of Leeds, where he laid out a modern teaching garden. Returning to the city of his birth, he was appointed in 1900 to the post he held at his death. He was known and esteemed in many parts of the world, having visited Canada and the United States of America and consulted with eminent plant hybridists, including Mr. Luther Burbank. He was awarded the silver Banksian medal of the R.H.S. for a memoir on hybrid plants. He was a member of the Scottish Agricultural Commission to visit Australia a few years ago.

Rambles Round St. Andrews, a valuable book to students of nature, was published by Dr. Wilson, and is widely distributed. The camera was an important part of Dr. Wilson's equipment, and he was expert in its use. His collection of original lantern slides will provide a record such as few possess; he copiously illustrated his popular lectures by their aid, and always drew large audiences. He interested himself in Allotments, and was President of the local Horticultural Association.

William Robert Farish.—We have to record the death, on January 18th, at the advanced age of 74, of Mr. William Robert Farish, Langlands, Dumfries. Mr. Farish was for many years engaged in farming, but retired a considerable number of years ago. He was an able and advanced agriculturist, but he was best known to horticulturists as a successful raiser of many excellent varieties of the Potato. Mr. Farish entered upon the raising of new Potatoes as a hobby, and the commercial side of the work was of little account to him. From time to time many of his varieties were put into commerce and with two of these his name has lately been associated. These are Tinwald Perfection and Lochar. Mr. Farish did not exhibit much himself, but when he did so was generally very successful with his seedlings. He won a gold medal at Ormskirk. Mr. Farish was much esteemed by his friends and by a wide circle with whom he came in contact in business and public life. He filled a number of public offices with high satisfaction to his constituents. Mrs. Farish and three daughters survive him.

George Trussler.—We regret to learn that Mr. George Trussler, The Nurseries, Richmond Road, Twickenham, died from pneumonia at St. John's Hospital on Saturday, the 17th inst. Mr. Trussler was well known in the Richmond district and was a member of the Committee of the Richmond Horticultural Society for twenty-five years. He was born in the gardens, at Pope's Villa, in 1852, and commenced his horticultural career at Orleans House, the residence of the Duc d'Anville, in 1870. Later he was employed at Hampton Court House, and in 1887 became manager to the late Mr. Robt. Laing at Richmond Road Nurseries, and afterwards to his successor, Mr. H. E. Fordham. Mr. Trussler was a clever cultivator, exhibitor and decorator. He took considerable interest in local affairs and in the gardening charities, having subscribed to the Gardeners' Royal Benevolent Institution for 22 years. He is survived by his widow and four children. The funeral took place at Twickenham Cemetery on the 22nd inst., amid many manifestations of the affection, regard and esteem in which Mr. Trussler was held.

George Gurney.—Mr. G. Gurney, who died on the 18th inst., at the age of 56 years, had been head gardener to Lady Aberconway, Bodnant

Hall, Tal-y-Cain, since 1911. He was an enthusiastic and successful gardener, and passionately fond of flowers. He had been in failing health for some time, and had to take to his bed on January 3. His death came as a great shock to his family and many intimate friends. Mr. Gurney took an active part in War-Savings Associations, and the church and social events in the neighbourhood. The remains were laid to rest in St. Martin's Churchyard, in the tiny village of Eglwysbach, North Wales, on the 22nd inst. Mr. Gurney was a true patriot, loved and respected by all who knew him. He leaves a widow and two children to mourn their loss.

TRADE NOTES.

MESSRS. DOBBIE AND CO., seedsmen, Edinburgh, have formed their business into a private limited liability company, with a capital of £50,000. The partners and management remain unaltered.

Among the companies registered in Scotland during the week ending Jan. 23rd, was that of The Carsie Farming Company, Ltd., 69, George



THE LATE GEORGE GURNEY

Street, Perth (private company), to acquire the farm and lands of Carsie, Blairgowrie, and to carry on the business of farmers, fruit growers, market gardeners and dairymen, etc. Capital £6,000 in £1 shares.

ANSWERS TO CORRESPONDENTS.

ADDRESS: J. G. C. The address required is *Horticultural Trades' Journal*, Hortus Printing Company, Junction Road, Burnley.

ASH TREES CANKERED: W. H. The cankers are of bacterial origin. Although liable to disfigure the tree greatly, they do not kill it. No cure appears to be known; but it is possible if the newly cankered parts were cut out, the disease could be removed.

CANLIFLOWERS: J. G. Your Canliffowers should prove a remunerative crop if grown for the next two months in cold pits or temporary frames. If convenient, the strongest plants should be potted in 4-inch pots and the remainder pricked out in the bed of the frame which should not be more than 18 inches from the roof glass. Ventilate freely during mild weather in order to promote stocky growth. Never allow the plants to suffer from want of water at the roots. They should be ready for planting out about the 2nd week in April if the weather is favourable and should produce heads throughout June and July when prices are generally good.

DOUBLE WHITE NARCISSUS FAILING: H. B. The failure to flower—"blindness" so-called—of the double white *Narcissus poeticus* (N.p. fl. pl.) is unfortunately all too common. It is largely due to lack of moisture, both in the soil and atmosphere. The variety does not flower till May, and is, indeed, one of the latest of its race in this respect; and with dry, hot

weather supervening, the growing period of the plant is too suddenly terminated. In this way the germ of the ensuing season's flower is not perfected, and so-called "blindness" is the result. Planted in ordinary or much drained soil that condition is aggravated. All the May-flowering *Narcissus poeticus* prefer a cool-rooting medium, that under consideration no objecting to moisture within reach of its roots. Where the latter is not possible, deep cultivation of the soil and a goodly layer of cow manure placed 6 inches below the bulbs will be found helpful. The variety being continuous in its rooting, annual lifting and drying are opposed to success. Insert the bulbs not less than 6 inches deep—or even 8 inches. If transplanting is contemplated, July-August is the best time. We have more than once planted this *Narcissus*, and with success, by pond sides or in other moisture-charged soils, a fact would-be planters should not fail to note.

EMPLOYER'S LIABILITY DURING ILLNESS OF GARDENER: Gardener. Your employer cannot legally stop your wages during the week's illness, and you can sue him for the amount. If you wish to leave, you should give him a week's notice.

NAMES OF PLANTS: K. F. Forsythia intermedia;—1. P. 1, Berberis japonica; 2, Ruscus aculeatus; 3, Griseb. littoralis; 4, Grevillea rosmarinifolia; 5, Pittosporum undulatum; 6, Cassia corymbosa; 7, send in flower; 8, Azara microphylla.—*Insignis*. 1, Origanum Majorana; 2, Ornithogalum longibracteatum; 3, Scilla italica; 4, not recognised; send a flower; probably a Magnolia.

NAMES OF FRUITS: D. McC. 1, Court-Pendu-Plat; 2, Prince Bismarck; 3, not recognised; 4, 5, and 6, decayed.—*F. C. G. F. G.* Cockle Pippin.—*Capt. R. T.* Decayed.—*H. F.* 1, Reimette tres Tardive; 2, Claygate Pearmain; 3, Blenheim Pippin; 4, Scarlet Nonpareil.—*Anxious*. 1, Beauty of Kent; 2, Northern Spy; 3, decayed; 4, Reimette du Caux (syn. Dutch Mignonne); 5, Welford Park Nonsuch; 6, Emperor Alexander; 7, Lady Lennox.—*T. B. R.* Broad-eyed Pippin.—*H. H.* 1, American Mother; 2, Scarlet Pearmain.—*F. B.* 1, Melon Apple; 2, Adams's Pearmain.—*J. J. and Sons, Ltd.* King of Tomkins County.—*W. T. W.* Lady's Finger of Lancaster.—*A. J.* Wellington (syn. Dumelow's Seedling).

OUTDOOR TOMATOS: J. G. C. Most varieties of so-called outdoor Tomatos succeed under glass, but not all the varieties commonly grown under glass are equally successful when cultivated out-of-doors.

PROPAGATION OF DAMSONS AND BULLACES: E. L. 1, Damson and Bullace trees are generally propagated by budding on the usual Plum stocks. 2, Flute budding was at one time used for Figs, Cherries, and Mulberries, but it is rarely ever employed now. It may be done in the spring, when the sap begins to flow, or at the end of summer—at the usual times for grafting and budding respectively. To prepare the bud, a circular cut is made through the bark of the scion an inch above the bud, and another an inch below it, both cuts going right round the scion. A longitudinal cut is then made on the side remote from the bud to connect the first two cuts. The base of the leaf stalk attached to the bud is then gripped, and the entire cylinder of bark stripped off. If it does not come away easily, assistance with the spatula of the budding knife may be given. A patch of bark of the same size is stripped from the stock, the cylinder of bark from the scion fitted on in its place, and held there with raffia. If the stock is larger than the scion the bark need not be removed the whole way round. Any bare space left after fitting the bud can be filled in with a strip of bark. If this is done grafting wax is not required. The stock should not be headed down before the operation.

Communications Received.—H. S. M.—B. F. F.—G. M. S. L.—F. J. T. P.—W. J. E.—J. W. B.—J. S. H.—T. W. S.—L. J. C.—P. C. R.—M. E. D.—C. E. H.—M. P.

THE
Gardeners' Chronicle

No. 1728—SATURDAY, FEB. 7, 1920.

CONTENTS.

Agricultural research	61	Obituary—	
Allotments and the food shortage	62	Chappellier, Paul	70
Alpine garden, the—	66	Parsons, Alfred	70
<i>Ourisia coccinea</i>	66	Plants, new or noteworthy—	
Bulb garden, the—	67	<i>Caulophyllum thalictroides</i>	63
<i>Lilium auratum macranthum</i>	67	Plant quarantine in U.S.A.	62
<i>Bursaria spinosa</i> and Indian Wax Scale	61	Potato America	68
Cherries under glass	68	Royal Horticultural Society's examinations in 1920	61
<i>Cianthus</i>	63	Royal Horticultural Society, criticism of the	60
Dartmoor scheme, the	62	Seed sowing	68
Farmers' land purchase company, a	62	Societies—	
Farrer's, Mr. Reginald, second exploration in Asia	66	British Florists' Federation	69
<i>Galanthus Elwesii</i> var. <i>Cassaba</i>	62	Manchester and North of England Orchid National Chrysanthemum	70
Gardens in Edinburgh, lecture on	62	Reading and District Gardeners'	70
Gardeners' Royal Benevolent Institution	62	Royal Horticultural Trade Note	70
"Gardeners' Chronicle" seventy-five years ago	62	Tomato, white fly on	68
Gardeners' education and training	63	Truffaut, M. Georges	61
"Geo. Mouro, td." Concert	61	<i>Trydaea</i>	65
Herbaceous border, an interesting	67	Veitch, Sir Harry, resignation of	62
Iceland Poppies, a disease of	62	Week's work, the	64.65
Mistletoe, hosts of the	69	Woburn experiments in fruit growing	61

ILLUSTRATIONS.

<i>Caulophyllum thalictroides</i>	63
Cherry Governor Wood, pot tree of	63
<i>Galanthus Elwesii</i> var. <i>Cassaba</i>	62
Herbaceous border at St. Peter's Court, Broadstairs	67
<i>Tydaea amabilis</i>	65

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.4°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, February 4, 1920, 10 a.m.: Bar, 30.5; temp. 47°. Weather—Rainy.

The Woburn Experiments in Fruit Growing.

All fruit growers will welcome the publication in book form of the results of the experiments carried out at Woburn by the Duke of Bedford and Mr. Spencer Pickering on the growth and behaviour of fruit trees. A perusal of this volume* enables the reader to view the experiments and the results in better perspective than was possible when they appeared periodically in the Reports of the Woburn Experimental Fruit Farm, and certainly no one concerned with fruit growing and desiring to see that complex industry put on a scientific basis will withhold a cordial expression of thanks to the authors, both for their continued labours and for the publication thereof in this convenient form.

The experiments were begun in 1894 and have been in progress ever since. They cover a wide range—preparation of the soil, manuring, planting, pruning and other aspects of fruit growing. Many of the results obtained in the course of this comprehensive series of experiments have been contested and some are still contested. Nevertheless, we are of opinion that in the majority of them time has tended to justify their correctness. For example, when the beneficial effects of ramming the soil about the roots of fruit trees at planting time were first announced expert opinion was, to say the least, much more emphatically unfavourable than is the case to-day. For our part, we are prepared to accept the view propounded by the authors that the careful spreading out of roots at planting time is a work of supererogation, and that the planting cannot be too "firm." In defence of

the former statement, Mr. Spencer Pickering's observation that the fibrous roots die back in any case is, we think, conclusive.

Similarly, commercial growers are inclining more and more to accept "light pruning" as a general maxim, although they would probably modify the extent of pruning more according to the variety—whether a strong, medium or weak grower—than the authors appear to think necessary. In any case, no one will disagree with the dictum that excessive pruning as so often practised by amateur gardeners is the cause of the unfruitfulness of the fruit trees growing in their gardens.

One of the most puzzling results of the experiments in manuring top fruit is the failure of either dung or artificials to produce—in the experiments on one part of the farm—any beneficial effect. Nursery stock and bush fruit were found to respond to both artificials and natural manure, though considerably more to the latter than to the former; yet Apples and Pears did not. We take note of the recorded fact, but feel disposed to attribute it rather to some adverse condition obtaining in the experiment and blotting out of the beneficent effect of the manure.

The "grass effect" on fruit trees—that is the stunting influence which grass under trees has on their growth, first demonstrated by the Woburn experiments—is now generally accepted. Doubters, if any remain, may see in the confirmatory experiments at Wisley the remarkable check which grass exercises on young trees. Fortunately for practice, this effect tends to wear off—at all events in light soils—as the trees grow older; but there can be no doubt but that *planting* in grass is to be condemned. Grassing down, on the other hand, may be beneficial, particularly, as is pointed out by the authors, in improving the colour of the fruit.

The working hypothesis adopted by Mr. Spencer Pickering to account for the grass effect and to serve as an inspiration for further experiment, is that the roots of the grass excrete a toxin which poisons those of the tree. By means of appropriate experiments, the authors have convinced themselves of the truth of this hypothesis, and have been driven by the results which they have obtained to extend the hypothesis and to conclude that the roots of plants generally excrete toxins which are harmful to the growth of other plants and, indeed, of their own. Fortunately, the toxic effect is transient—at all events in well-cultivated soils—and hence this dog-in-the-manger attitude of a root does not have the disastrous effect which it otherwise would. This series of experiments is still being continued and, needless to say, is of the greatest interest both from a scientific and practical point of view. Although the authors are bringing their work at Woburn to an end, the results which they have achieved in the 25 years during which the station has been established will remain as a fine record of work and achievement, in which the authors must find satisfaction and future experimenters inspiration.

Only those who know how long and lonely is the experimental road will be able to appreciate to the full the magnitude of Mr. Spencer Pickering's undertaking in his attempt to strengthen the foundations on which scientific fruit growing are based. The occasion of his relinquishing those arduous and successful labours at Woburn is a fitting one on which to express to him appreciation of the services which he has rendered and we would venture to hope that it may be found possible for the Royal Horticultural Society to give effect to this appreciation in some concrete and suitable form.

Royal Horticultural Society's Examinations in 1920.—The following dates have been arranged by the President and Council of the Royal Horticultural Society and its Board of Examiners for the R.H.S. examinations this year:—General Examination in Horticulture, March 24; School Teachers' Written Examination (Preliminary and Honours), April 24; National Diploma Written Examination, May 23; School Teachers' Honours Practical Examination at the R.H.S. Gardens, Wisley, Surrey, June 17; National Diploma Practical Examinations at the R.H.S. Gardens, Wisley, Surrey, June 22 to 25. Further particulars and forms of entry may be obtained from the Secretary, Royal Horticultural Society, Vincent Square, Westminster, London, S.W.1, on sending a 1½d. stamped addressed envelope.

"Geo. Monro Ltd." Concert.—The twenty-first annual concert will be held on Thursday, February 19th, at the large Queen's Hall, Langham Place. The artistes will include a number of popular performers and the band of the Coldstream Guards will also give selections under the direction of Major J. Mackenzie Rogan, M.V.O. In former years various charitable institutions have received donations from the profits of these concerts.

M. Georges Truffaut.—His many friends in England will learn with pleasure that M. Georges Truffaut has received the Military Cross as a reward for the conspicuous services which he rendered to the British Army in France in connection with the raising and distributing of seedling food plants. This work, as we know personally, involved frequent visits to all parts of the lines, and on more than one occasion the dangers which he ran were brought home to him in forcible manner. On one occasion, for example, the enemy airmen treated him and his English companion with more attention than was desired, and M. Truffaut's valuable services well nigh came to a sudden and tragic conclusion.

Agricultural Research.—The establishment of a research department in connection with an industrial company is by no means uncommon in many branches of manufacture but, so far as we know, the recently-formed Olympia Agricultural Company is the first organisation to make provision for research in agriculture. The Director of the Research Department is Dr. Charles Crowther, formerly Professor of Agricultural Chemistry in the University of Leeds, and one of the chief members of the staff is Capt. C. T. Gunningham, who has relinquished his post at the Research Station, Long Ashton, to undertake, in the interests of the company, the direction of investigations into soil problems and those of plant nutrition. The purpose which it is proposed that the Research Department shall fulfil is two-fold—to act as advisors in connection with the farming of 20,000 acres owned by the company and to advance knowledge of scientific agriculture for the benefit of farmers generally.

Bursaria spinosa and Indian Wax Scale.—Mr. J. H. Maiden, Director of the Botanic Gardens, Sydney, writes:—"Our English nails are not entirely satisfactory yet, and, through an accident, the *Gard. Chron.* issue of August 30 last only came to hand in December. At page 118 (1919) I notice that a correspondent has succeeded in Cornwall with *Bursaria spinosa*. This plant is very common wild in eastern Australia, and especially in the Sydney district. As you are aware, it belongs to the Pittosporum family, and it is a favourite host of the Indian Wax Scale, *Ceroplastes ceriferus*, which Mr. Froggatt, our Government Entomologist, tells me, in spite of its name, is far commoner in Australia than India. With us it invades *Bursaria spinosa* to such an extent that I have seen, in one limited view, thousands of these shrubs so badly infested that they looked at a little distance as if they were almost entirely covered with snow. This waxy scale is a menace to fruit growers; for example, it immediately attacks the Persimmon, therefore a few shires and municipalities in New South Wales have taken steps to proclaim *Bursaria spinosa* as a noxious weed in accordance with our legislation. The pest seriously affects our native Pittosporum trees and hedges, whether of

* *Science and Fruit Growing* by the Duke of Bedford, K.G., F.R.S., and Spencer Pickering, M.A., F.R.S. Macmillan and Co., 1919, price 12s. 6d. net.

Australian or New Zealand species. *Bursaria* is one of the few native plants that is looked upon as a weed in Australia itself, and I hope that your readers will keep the plant under observation and see whether it displays any special attraction for injurious wax scales."

The Dartmoor Scheme.—In deference to the opposition from the Duchy of Cornwall and the Devon County Council to the proposed industrialisation of Dartmoor, to which we referred on p. 12, the promoters have decided to drop that part of the Hydro-Electric Bill by which they sought to utilise Dartmoor water for generating electricity. They will modify the Bill to restrict their powers to erecting overhead mains for supplying to consumers the surplus power beyond the requirements of their proposed copper-refining industry in mid-Devon, the copper being obtained from lignite beds they intend to develop.

Lecture on "Gardens" in Edinburgh.—On the evening of January 29 a most interesting lecture on "Gardens" was given at the College of Art, Edinburgh, by Mr. James Salmon. It was admirably illustrated with a series of lantern slides exhibiting many of the finest gardens in England, Scotland, Italy, France, Spain and Holland, these being selected to show the



FIG. 25.—*GALANTHUS ELWESII* VAR. *CASSABA*.

different features. Mr. Salmon ably depicted the charm of the garden and gave many interesting and valuable suggestions by which these charms could be formed and heightened. The lecturer dealt with the various aspects of the craft, and one point emphasised was that when a man had formed his garden he had half built his house, as it was half-a-dozen rooms in one—smoke-room, nursery, play-room, gymnasium, wash-house, reading-room and many others. Mr. Salmon advocated fires in the garden to add to its uses in Scotland. He suggested laying hearths down in a sheltered part of the garden, surrounded with natural couches, where, wrapped in plaids, people might recline comfortably by the fire built on the hearth. Even in the twilight and darkness such an arrangement would be delightful. Mr. Salmon spoke optimistically of the revival of garden design in Scotland.

Gardeners' Royal Benevolent Institution.—In addition to the sums contributed by Sir Harry J. Veitch and Mr. Geo. Monro to unsuccessful candidates, after the declaration of the poll, as announced on p. 57, Mr. Arthur Sutton, who was not present, subsequently gave a sum of £20 for a similar purpose.

Allotments and the Food Shortage.—Mr. Frank Smith, Chairman of the National Union of Allotment Holders, in his presidential address at

the Annual Congress of the Union held at Leeds, on the 51st ult., stated that allotment holders had broken the power of the Potato queues, but official neglect and inadequate facilities for the allotment movement would serve again to place the community at the mercy of the profiteer in food. The allotment holder had not received the just treatment to which he was entitled. Allotment holders represented the solution of the world's greatest problem—food shortage. There were only two ways by which increased production of food could be obtained—first, the will to work; and, secondly, land upon which to work. They asked that all obstructions should be removed, and appealed for greater facilities for labour on the land. Given this power no human being need go hungry. A resolution was passed urging that statutory powers should be immediately conferred upon the Ministry of Agriculture to enable allotment sites to be retained where proposed building was not in the public interest. Mr. P. F. Green, secretary of the Leeds Federation, was elected chairman for the ensuing year.

Galanthus Elwesii var. Cassaba.—Mr. Elwes' Snowdrop is one of the most beautiful as well as distinct of the race, and several beautiful forms, differing from the type, have been raised; one named *Cassaba* is illustrated in Fig. 25.

effectively carried out by a company incorporated by Act of Parliament. The Bill prohibits the company from paying any dividend in excess of 10 per cent. per annum, or any bonus.

Resignation of Sir Harry J. Veitch.—The announcement of the resignation of Sir Harry J. Veitch from the Council of the Royal Horticultural Society and the office of Treasurer will be learned with regret by the Fellows. The readiness with which Sir Harry took up the reins of the Treasurership, at a time when the holder of the office, Mr. C. G. A. Nix, was absent on war duties, was of great service to the Society, but it could not be expected that he would continue to bear the burden of such large responsibilities, especially in view of his advancing years. The fact that this venerable gentleman was, at an age when most men find such work beyond them, filling the office of Treasurer to two other horticultural institutions, *i.e.*, the Gardeners' Royal Benevolent Institution and the Horticultural Club, besides being one of the most active members of all three societies, points not only to his capacity, but also great self-sacrifice and devotion to horticulture. His election as a Vice-President of the R.H.S. will meet with the same unanimous approval, and is as deservedly earned, as his knighthood.

A Disease of Iceland Poppies.—The plant pathologist of Victoria, Australia, Mr. Brittlebank describes* a destructive disease which destroys Iceland Poppies in gardens in Australia. The affected plants wilt and at a later stage the bases of the leaves and the flower stalks turn brown and decay. The disease appears to be due to the attack of a species of *Phytophthora*, the genus of fungus which includes *P. infestans*, responsible for late blight of Potatoes.

The "Gardeners' Chronicle" Seventy-Five Years Ago. *Juculia gratissima.*—This splendid plant, although it has been an inhabitant of our gardens for upwards of 20 years, is still, with few exceptions, in its infancy as to cultivation. It is a native of Nepal, from whence also comes *L. Pinceana*, a species lately figured in the *Botanical Magazine*, and at present exciting considerable interest. That the cultivation of *L. gratissima* is not generally understood is sufficiently evident from the fact that one cultivator considers himself successful in producing five flowers, while Mr. Barnes, of Bicton, and his brother in Shropshire consider it no great feat to produce plants with from 50 to 100 flowers upon each. Mr. W. Barnes is equally successful, and has this season had, I am informed, some very admirable specimens. Why any person should wish to graft this upon a more hardy stock, I cannot imagine; for with me it grows with the greatest luxuriance, producing plants from 3 to 4 feet in height, and as much in diameter, with abundance of flowers, from a cutting, in the course of one season. Some of the leaves upon my plants this season were 9 inches in length and 5 inches in width, and the trusses of flower as large as good-sized *Hydrangea* blooms. It is not, however, when in such luxuriant growth that the plants produce the greatest quantity of bloom; but it is when they have been cut back for several successive seasons, and when they produce a great quantity of moderate-sized branches, that they become so beautifully studded with flowers, as has been represented by Mr. J. Barnes. An old stump of this plant, judiciously treated, will continue to produce abundance of flower for years, and will require little more attention than a common *Pelargonium*.—*Isaac Tomkins, Walton-le-Grand, Gard. Chron., February 8, 1845.*

Publications Received.—*Kew Bulletin, Appendix No. 1, 1920. List of Seeds of Hardy Herbaceous Plants and Trees and Shrubs.* H.M. Stationery Office, Kingsway, London, W.C., 2d. *Journal of the Ministry of Agriculture No. 10.* H.M. Stationery Office, 3, St. James' Square, S.W.1., 6d. *U.S. Department of Agriculture Bulletin No. 818.* L. P. Byars and W. W. Gilbert, Government Printing Office, Washington.

**Journal of Agriculture, Victoria, XVII., Part II, Nov., 1919, p. 700.*

G. Elwesii is most nearly related to *G. plicatus* and is a native of the summits of mountains north of the Gulf of Smyrna, where it was discovered by M. Balansa in 1854. It was introduced to this country by Mr. H. J. Elwes in 1874, who collected specimens from mountains in the Smyrna district. The Snowdrop is a favourite flower with all, and, although much of its popularity is owing to its flowering in winter, its chief attraction is its exquisite beauty.

U.S.A. Plant Quarantine.—The quarantine measures adopted by the United States of America seem to be extending internally, for it is reported that the State of Ohio has established quarantine against Christmas trees from Illinois, Michigan and the Eastern States. *The Florists' Exchange* observes that it seems before very long there will be no inter-state commerce in nursery stock in U.S.A.

A Farmers' Land Purchase Company.—The Farmers' Land Purchase Company, in a Bill for next Session, proposes to dissolve the limited company and to incorporate it as a Parliamentary company with a share capital of £2,000,000. The company considers that, in view of the desirability of enabling tenant-farmers to purchase their holdings, the objects and purposes for which the limited company was incorporated are of urgent national importance and can be more

THE EDUCATION OF YOUNG GARDENERS.

PROBABLY there never has been a period when the gardener was of such value as at the present time. Not only as a food producer has he come to his own, but also as a guide and teacher of others who wish to make the best of their soil, whether it be a small plot or a large field. Unfortunately it has also revealed the shortcomings of not a few gardeners, and many a man, practical and experienced though he be, has found that he has been confused by simple questions on the theory of his subject from an amateur, who is not always content with "blight" or "something wrong with the soil" as excuses for his failures. It is also well known that there are very few men to be found capable of taking administrative posts although fit from a practical point of view for any gardening task. This, with the fact that education is "in the air," leads one to ask whether the standard of education of gardeners could be raised, not only from the literary point of view, but chiefly from the technical standpoint.

One at once thinks of Wisley, Kew, Reading and other places where horticulture is taught soundly, but, with the possible exception of Kew, the average boy in the gardens is shut out from these by financial considerations. Evening courses are common enough now, but apprentices and improvers are found in the country villages to which technical education has not spread yet. Probably they are under famous gardeners in noted gardens, where to have been an employee for a year or two is sufficient to give a man a standing throughout his life, but this does not give him a knowledge of the theory of his subject and its sister sciences, such as botany and entomology.

In order that every youth or man capable of profiting by such knowledge should get it, I would suggest that the Royal Horticultural Society, in conjunction with the Ministry of Agriculture, should start correspondence courses in certain selected subjects, such as those mentioned above, together with sufficient chemistry, physics and geology as would enable a man to understand the composition of plants, manures and soils. Such courses should be open to any employee in a garden where he was getting a good practical knowledge of gardening, and he should receive notes which would enable him week by week to read and understand selected books. Every week or fortnight he should be set an examination paper on the work already done, and this he would answer to the best of his ability and return it to be corrected at headquarters. After a course of approximately twelve months, arrangements should be made by which the candidate might be examined locally, the head gardener, local schoolmaster or some responsible person acting as supervisor. On the results of these examinations, a certain number of men would be found capable of profiting by further instruction, and to these scholarships of an approximate pre-war value of £50 should be granted tenable at colleges or institutions where practical work in botany, entomology, and chemistry is given. A year's course in theory whilst still employed as a gardener and a year's course, chiefly practical, in elementary science subjects, would widen the outlook of every gardener who was not too old to profit by such instruction.

The majority of the men would probably be content with such a course which should confirm them in habits of private study and they would take up ordinary garden posts, but a few brilliant men would be discovered in most years to whom scholarships would be open, enabling them to take a degree in horticulture so that a supply of practical men capable of taking administrative and teaching posts would be assured. Such a scheme would give the poorest a chance of education, although he might be employed or living far from any of the ordinary sources of learning. A moderate fee might be charged, e.g., 5s. per quarter. It should also be understood by those taking the courses that failure, without sufficient reason, to answer the periodic examination papers satisfactorily would lead to the withdrawal of the benefits of the scheme. *G. C. Gough.*

NEW OR NOTEWORTHY PLANTS.

CAULOPHYLLUM THALICTROIDES.

A "GYMNOSPERMOUS" DICOTYLEDON.

THE Angiospermous group of flowering plants, with their ovules in closed ovaries, are so very sharply differentiated from Gymnosperms, with exposed ovules, that any of the former which show a Gymnospermous tendency are of exceptional interest. Such an exception is the above member of the Berberidaceae, a monotypic genus allied to *Epimedium*. The solitary species has a remarkable distribution, which, however, is shared by a fair number of genera of the Ranalean group of families, i.e., the Eastern United States of America and North-Eastern Asia, from New Brunswick to South Carolina, westward to Nebraska, on the one hand, and from Western Hupeh to the island of Sachalin on the other.



FIG. 26.—CAULOPHYLLUM THALICTROIDES: (1) carpel, (2) funicle, (3) seed.

The Asiatic plant has been described as a distinct species, *Caulophyllum robustum*, by the Russian botanist Maximowicz, but on comparing the excellent series of specimens at Kew with the American plant, I have failed to find a single distinguishing feature. Maximowicz, in founding his species, seems to have laid particular stress on the absence or presence of a leaf-stalk. I find that this is a very variable character in both areas of distribution.

It may be observed that the leaf in the North American plant is not always sessile, as stated by Maximowicz, neither is that of the Asiatic plant always petiolate. In the former the terminal leaflet has a little longer stalk and the leaflet itself is usually rounded or truncate, whilst in the latter the leaflet is often nearly sessile and somewhat cuneate at the base. But practically every stage of the intermediate condition may be traced. It seems very probable that the plants in the two areas are really the same species, on which slightly different ecological conditions are tending to produce small distinctions in the character of the leaves. Failing distinguishing features in herbarium material, the most satisfactory solution of the problem would be to grow plants side by side from the two areas.

In the United States, *Caulophyllum thalictroides* (Fig. 26) is known as "Blue Cohosh," from the colour of the seeds; other names are "pappoose root," "squaw root," "blueberry root," "blue ginseng," "yellow ginseng." The root is dug in the autumn and its price in the

drug market ranges from 2½ to 4 cents the pound.* It is used as a demulcent, antispasmodic, emmenagogue, and diuretic.

The most remarkable feature of the flower is the fugitive carpel; in fact, all parts of the flower are very fugacious except the seeds. As in all Berberidaceae, there is a single carpel (1), and in this case two erect basal ovules. Immediately after fertilisation, apparently, the tiny carpel opens and no longer protects the ovules, which continue their development without a carpellary covering. The funicles (2) of the seeds elongate and thicken, the seeds (3) assume a beautiful blue colour and are covered with "bloom" great resembling the ripe fruits of Mahonia, except in shape. The two-stalked seeds look exactly like stalked fruits. In the Monocotyledons the Indo-Malayan genus, *Peliosanthes* (Haemodoraceae) shows the same peculiarity. *J. Hutchinson.*

CLIANTHUS.

CLIANTHUS PUNICEUS and *C. Dampieri* do not seem to be so generally cultivated as they used to be. *C. Dampieri* is a very difficult plant to grow successfully, but *C. puniceus* is easily managed and best raised from seeds sown now in an intermediate house. There are several varieties, including *magnifica* and a white form, which should be propagated by means of cuttings. *C. Dampieri* (the Glory Pea of Australia) is an extremely difficult plant to grow successfully. It resents disturbance at the roots, hence it is best to sow the seeds singly in small pots, in order to admit of repotting without disturbing the roots. The most successful way of growing it is by grafting it on seedlings of *Colutea arborescens*, the Bladder Senna, a very delicate operation that needs to be done when both plants are small seedlings. The growing point of the *Colutea* should be removed close down to the seed leaves, the stock split with a sharp razor, between the cotyledons, then, having cut the seedling *Clianthus* to a wedge-shaped scion, insert it into the cleft of the stock, and carefully bind the two with a strand of soft cotton. I have also successfully grafted this plant by cutting a slit in the swollen portion of the stock just below the seed leaves, and then inserting the scion. The "worked" plants should be placed under a bell glass in a warm house. *Foreman.*

* *Bull. M.S. Dep. Agric.*, No. 107, p. 37, 1907.

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Saintpaulia ionantha.—Well-grown plants of *Saintpaulia* in small pots make charming subjects for the decoration of the breakfast or luncheon table, and may be raised from seed or by means of leaf cuttings, which may be rooted now. Dibble the leaf cuttings in fibre or light, sandy compost, in an open case or propagating bed. It is important not to have a close case as many fleshy leaves, when used for propagation, are apt to rot in a very close atmosphere.

Ventilation.—Care in admitting air is very necessary in the successful management of plant houses, especially during the spring, when bright bursts of sunshine may occur at a time when cold winds are blowing. Study the direction of the wind and, wherever possible, open the ventilators on the sheltered side of the building. Cold draughts are fatal to the well-being of plants, therefore the apertures should not be opened on both sides of the house when strong winds are blowing. Ventilate gradually—it is fatal to allow the temperature to rise excessively and then try to remedy the evil by admitting a lot of cold air. Box ventilators situated at the lower part of the house are a great advantage, and they should be fixed level with or below the waterpipes to allow the air to become warmed as it passes over the pipes. With such ventilators a little air may be admitted at all times, except during very severe weather. It has long been known to intelligent cultivators, and the fuel shortage has brought the fact home to others, that many plants do better when grown in lower temperatures than that generally accorded them. Much harm is often done to tender plants by syringing them when the sun shines full on them, with the ventilators open. Careful ventilation and watering, more than any other cultural operations, are always observed by the successful indoor gardener.

Achimene.—An early batch of these plants may be introduced to a warm house, leaving the main stock to be started later. The scaly rhizomes should be laid out in shallow trays and just covered with leaf-mould and sand. When the plants have made some two inches of top-growth they should be transferred to their flowering pots or pans. The latter receptacles are, on the whole, the most suitable for them. Some growers prefer to put the dormant rhizomes directly into their flowering pots: when this is done they require very careful attention in watering. *Achimenes* should be grown in a stove temperature of 60° to 65° until they approach the flowering period, when they should gradually be accustomed to cooler conditions. Some of the more slender-growing varieties are admirable subjects for filling hanging baskets.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Onions.—In certain districts the Onion Fly is very troublesome and many growers depend on transplanted seedlings for their main crop of Onions. To ensure the best results with this system it is necessary to have strong seedlings at planting time. The seed should be sown now, and a little warmth, such as that from a hotbed, is an advantage, or the seedlings may be raised in a heated pit where they may remain until they are ready for putting in the open. Prepare a bed 6 inches in depth consisting of fairly light, friable soil that has been passed through a ½-inch sieve; press the soil firmly. Sow the seed in drills made 6 inches apart and cover them lightly with fine soil. Water the seed bed

thoroughly, taking care not to disturb the seeds in doing so. The seedlings should be given air on all favourable occasions. Any of the main crop varieties may be raised in this way. Where it is desired to grow medium-sized varieties, such as *Crimson Globe*, *Silver Globe* and *Royal Keeper*, sow the seed now and follow the cultural directions given above.

Slugs.—These pests are especially troublesome in gardens where the soil is of a heavy nature. After trying many remedies I find the following the most effective against slugs. Across the plot intended for treatment, at a distance of three feet apart, rake the soil level in strips about one foot wide and place lines of old boards on these prepared sites. Sprinkle a small quantity of bran under the boards, which will attract the slugs in the immediate vicinity, and the boards will provide a congenial hiding place. If the boards are left in position for a few days, considerable numbers of slugs will be trapped and may easily be destroyed by scattering freshly-slaked lime on them. The boards may then be placed in fresh positions and the operation repeated on the first favourable occasion. The operator should walk on the boards to prevent treading the ground unnecessarily. A good but slower method is to lay thin slices of Parsnips in places where slugs are known to harbour. They will feed on the roots and remain under them, when they may be collected and put into a receptacle containing lime. Slugs are most in evidence in showery weather, and a careful watch should be kept at such times for these ubiquitous pests.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBERGHOLME, Warton Priory, Yorkshire.

Hardy Flower Borders.—The majority of hardy flower borders have been so neglected during the past two or three years that in many cases it will necessitate planting them entirely afresh to have them in good condition again. Remove the whole of the plants and put them carefully in vacant ground. Trench the border 4 ft. deep, breaking up the bottom layer and mixing it with basic slag. The top soil should be enriched with well-rotted manure. For heavy soils the addition of lime rubble, leaf-mould, wood ash and river sand will be beneficial; while on very sandy borders a surface dressing of Rape meal applied during the spring and lightly hoed in will help to conserve the soil moisture for the roots in hot weather. Where climbers growing on walls or trellises have their roots in the border care must be taken to use a fork instead of a spade and cover the roots with mats as the work of trenching is done. The shortening of the roots of the climbers may receive attention, but exercise discretion in this matter as to the character and vigour of the plants.

Planting.—Twelve years ago the system of planting in blocks of one colour was largely practised, but the colour schemes of to-day are more pleasing, if somewhat intricate. To gradually shade off each collective colour in bold, irregular drifts, as, for instance, from dark blue, through blue, light blue, mauve, and lavender, to silver-grey, provides harmony and relieves the garden from the effect of monotony. The same system may be applied as far as is practicable to plants on walls and trellises in proximity to the border. Ample room should be given each individual plant or clump, and small, outside portions of the plants should be selected for re-planting. The arrangement of the subjects in the foreground of a border needs to be carefully considered; a little "foaming over" here and there is preferable to straight lines, and bulbous-rooted species may be utilised to extend the season of flowering without interfering with the more permanent plants. Endeavour to have the front of the border gay with blossoms from spring until winter. As the season advances supports, in the form of forked or twiggy sticks should be afforded to plants not necessarily requiring stakes and strings.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pot Vines.—One-year-old pot vines that were shortened to two buds last month and have since been kept in a dry, cool place, may be placed in gentle warmth and the roots gradually moistened before they are shaken out and repotted. A dressing of vine styptic should be applied to the cut surfaces to prevent bleeding; in some cases a second dressing will be needed. When the new growths are one to two inches long, retain only the strongest and guard it against injury. Meanwhile, obtain a sufficient number of clean 11-inch pots and get the compost in readiness for use. All composts of which bone meal and other concentrated fertilisers form a part are greatly improved by remaining for two or three weeks in a warm house before being used. Sound, turfy loam, lime rubble and bone meal should form the staple of the compost, and a few handfuls of fine manure should be used according to the quality of the loam.

Vine Eyes.—If the planting of green vines is in contemplation, it is not too late to insert vine eyes in pots or turves, as recommended in my remarks in *Gard. Chron.*, January 3. The majority of growers who have facilities for propagating vines from eyes prefer to adopt this method, as it enables them to have healthy plants in readiness for planting out in May, which is possibly the best month for the work, as the conditions afterwards are more genial to enable the vines to make rapid growth. The vines should be repotted when they need larger receptacles and not allowed to become pot-bound. Pots of 8-inch diameter are the most suitable. To attain success the border should be made in advance, as warm soil at planting time is most important to ensure rapid growth. Drainage must be provided; a subsoil of gravel requires little or no preparation. Cold, wet, clayey subsoils are best cemented over and drainage provided by rough bricks covered with finer portions of brick, and the whole surface covered with a good layer of lime rubble. The drainage materials should be about 12 inches deep, with tiles or pipes having a properly prepared outlet. Two layers of fresh turf from a fairly strong loam, placed grass side downwards, should be placed on the lime rubble. The new border need not be more than 3 feet to 3 feet 6 inches wide and 2 feet to 2½ feet deep. For Muscats, use two-thirds rich loam, lime rubble, bone meal, burnt refuse, with a little rough vine-border compound. Vine borders can scarcely be too firm, and should only be made when the compost is fairly dry and in a good condition for working.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Mexican Laelias.—The typical or dark varieties of *Laelia anceps* have already passed the flowering stage, but the white kinds, such as *L. a. Stella*, *L. a. Williamsii*, *L. a. Schöderiana*, *L. a. Dawsonii*, and *L. a. Sanderiana* are usually at their best towards the end of January and early in February. Other Mexican *Laelias* include *L. majalis*, *L. albida*, *L. autumnalis*, *L. Gouldiana*, and *L. Eyeramiana*, and they require the same treatment as *L. anceps* and its numerous varieties. At this season most of the plants develop roots from the base of the last made pseudo-bulbs, and directly these appear the plants may be repotted or top-dressed. Some growers advocate giving fresh soil about the end of May, but I think it is advisable to preserve the roots that are made soon after the plants flower, for it is almost an impossibility to disturb the base a few months hence without injuring them. Whether teak wood baskets or pans are employed as receptacles, ample material for drainage must be provided. A suitable rooting medium consists of *Osmunda* or *Al* fibre three parts, and one part *Sphagnum*-moss. Plants that have outgrown their receptacles may have the leads or growing points, together with two or three pseudo-bulbs, re-

moved. The pseudo-bulbs that are not removed may be allowed to remain in the old pan, when some of the dormant eyes will eventually push into growth and form useful plants. The leading growths that have been removed may either be potted singly, or several employed to make a larger specimen, placing the leads evenly over the surface and arranging one or two towards the centre of the pot. If the number of plants is sufficient, there is no need to retain any of the back pseudo-bulbs. In that case the plants are turned out of their pots, all the old pseudo-bulbs removed except three, and the dead roots cut away, when repotting may be proceeded with. The soil should be made firm, and water afforded sparingly for the next few weeks.

Treatment of Recently Potted Plants.—Plants that have been disturbed should be placed at the warmer end of the Cattleya house (if a division is not set apart for this class of Orchid) and every encouragement given them to induce the roots to take possession of the fresh soil. Specimens that are not repotted should be placed in a house having a temperature of about 50°, and for the next few weeks air should be admitted on all favourable occasions. Only sufficient water to keep the pseudo-bulbs in a normal state should be given, the object being to allow the plants to rest for as long as possible. The later in the season the plants re-start into growth the better, for finer pseudo-bulbs are usually obtained from plants that have enjoyed a long rest. When, however, signs of renewed activity are visible, the plants should be so arranged that they may receive ample sunlight but care must be taken to prevent injury to the foliage. The roots will require more water and the surroundings must be kept moist. Air should be admitted during fine weather. As the season advances the house should be closed and damped down thoroughly, the plants sprayed overhead, and the blinds rolled up early in the afternoon. Later in the evening the ventilators may be opened an inch or so, and allowed to remain open throughout the night.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Outdoor Vines.—If the pruning of the hardy vines has been delayed from any cause, make an effort to complete the work. Outdoor vines are best pruned on the spur system, as the buds break into growth more regularly and are more likely to produce fruitful growth than with any other method of pruning. Shorten the lateral growths to two or three eyes, and when these break into growth select the best shoots for fruiting, rubbing off all the others. Extension growths may be shortened to about two feet six inches. Planting may be done any time before the sap begins to flow. If the young vines have been grown in pots, shake all the soil from the roots, which should then be carefully spread out and covered with some good loam, mixed with lime rubble and bone meal.

Propagation of Vines.—Hardy vines may be propagated by inserting single eyes in small pots or pegging them in a square turf and rooting them in a warm house. They may also be increased by layering, which is done by bending down one of the lower growths, opening a narrow trench of soil a sufficient depth to cover the stem and making the shoot secure in the soil by means of strong pegs.

Spraying Fruit Trees.—February is a good month for the winter spraying of fruit trees. Choose a calm day for the work, otherwise much of the fluid will be wasted. Where the spraying of fruit trees has been neglected in the past, a strong wash may be used. Concentrated alkali has a cleansing effect on trees covered with lichen growth; it should be applied after the trees have been pruned and are in a dormant state. Choose open weather for the work and do not spray in times of frost. In the application of all washes to trees let the specific be distributed evenly over the branches. Due precautions should be taken to protect the clothes and person of the operator.

TYDÆA.

AMONGST the Gesneraceous plants which are so decorative in the conservatory, the brilliant tints of the Tydæas are most conspicuous in a variety of shades of scarlet, salmon-pink and crimson, spotted with a deeper colour in harmony with the ground-tint. They are as easy to grow as the better-known Achimenes, only requiring a moist atmosphere and a temperature from 55° to 80°, with sunshine, to produce their velvety foliage and bright blossoms almost continuously, if stolons are started at the beginning of the year and again at intervals of a few weeks until June.

For summer blooming the stolons should now be placed in a shallow tray containing an inch or two of peat, leaf-mould and loam in equal

parts, with a sprinkling of fresh charcoal in small lumps and powder. A half-shaded place suits this class of plants better than the full sunshine, and in order to afford this, with a steady warmth, a box containing a few inches of fine ashes may be arranged over the hot water pipes on which the tray can rest, taking care to keep the whole moist without giving too much water to the Tydæas, which will require only one thorough soaking until they show signs of life, when a gradually increased supply (always lukewarm) will be needed. The box should be covered with glass, which should be wiped, or turned over, every morning, and must always be so arranged as to admit air at the corners and allow the escape of moisture.

When the Tydæas have started to grow, three stolons can be arranged in a five-inch pot in similar compost, or more in a broader pan, well drained. They should be grown in the same semi-shade as before, but given more light as the buds appear. Even when the flowers are fully expanded the plants should not be placed in a hot, dry place, and their need of a moist atmosphere should be met by throwing down water around them several times a day during hot weather. Natives as they are of South American forests, these Gesneraceous plants require this consideration, and may be well grown in a warm fernery or below a mass of creepers which will shelter them from the noon-day sunshine.

After flowering, the plants must not be neglected, for, although they will not require so much water at their roots, their foliage must not be allowed to droop, but be carefully preserved until it has finished its work and ripened gradually. The stolons may then be kept dry until they are required for restarting, yet



FIG. 27.—TYDÆA AMABILIS.

not in such a hot, dry place as might cause them to suffer from dry-rot.

A fine hybrid between another member of the Gesneraceæ and a Tydæa is named *Sciadotydaea*, the other parent having been a form of *Sciadocalyx digitalaeflora*. *Isoloma hirsutum* (one of the most desirable of Gesneraceous plants) gives flowers of pure scarlet, with the same tint as an edging to its fine, velvety leaves and is the parent of a very fine race, some of which attain the height of three feet, and bloom profusely in autumn and winter if cultivated on similar lines. Although for garden purposes the name Tydæa, under which these plants are best known, may be retained, they are now classed as *Isoloma*, and have been called by some authorities *Kohleria*. *T. amabilis*, the species illustrated in Fig. 27, is a native of New Granada and was introduced to this country in 1855.

I. L. Richmond.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

14.—UP TO CAMP.

At the end of July came a brilliant clearance. So, off set the whole caravan, and all the tents, for a month of camping up among the wild peaks at the head of the Sabiya-Kaw Valley. In this almost inaccessible country, small, indeed, is the amount of ground one can hope to cover, and many the favourable conditions required before even that can be covered. Coolie-back is the only possible method of conveyance for one's chattels along the very few tracks only to be found within close reach of Hpimaw. And even the getting of coolies depends on the season of the year and the good will of the few rare villagers. For, strange though it may seem, these people have lives of their own, and livelihoods to scrape out of the recalcitrant earth; it is not always possible for them to leave their fields, even if they want to, and go gallivanting into the green, wet wildernesses of the forest for even so primly a wage as eightpence a day. How I shall contrive to fare next year, when my hopes bend far further northward, where there are no tracks at all, or any villages, or any coolies, I tremble beforehand to think, and look back to the foot-wide highways of Tibet with respectful longing.

However, within radius of Hpimaw these transport troubles are not so pressing, and we successfully achieved our return to Sabiya Kaw. As before, the valley-region yielded nothing of hope or interest, except, at one point of the road, a paradoxical colony of some *Tyrola* with the white spires of *P. rotundifolia*, and the white-veined foliage of a *Goodlyera*. (Alas, when I returned that way in hopes of seed, I found that a goat had been there before me, and all the spires were shorn.) There is another small inhabitant of the valley zone, too, so pretty that I consider it well worth cultivation, however half-hardy. It is quite strange to me, though, and there is no use repeating Sairey

Gamp to me, and urging me to "give it a name, I beg." All I can say of it is that it forms wide sweeps and stretches on warm, open, gravelly faces of the open hill-sides, and sends up numbers of five-inch spikes, that delicately unfold a long succession of fringy, pearl-white trumpets. As for the Lilies, *Lilium Wallichianum* is now well over, and its fat green pods stand up among the Bracken, not by any means so copiously as the flowers that fore-ran them; while the stately *L. nepalense* only begins to occur higher up, and is not, anyhow in these parts, so abundant as on Hpimaw Hill. Seeing that *L. nepalense* flowers here at the end of July, after a summer certainly of no forcing quality, I am greatly puzzled at its late blooming tendency at home, that has gone so far towards disqualifying it for English gardens. I still nurse a hope that seed from here may yield an earlier-flowering strain, for here it is indeed a desirable beauty, clear and clean in colour and of agreeable scent. And, with deep planting, on very steep, warm, well-drained slopes, there ought not to be any difficulty in establishing both these Lilies.

Interest begins above Sabiya Kaw village, where the Middle Zone fades towards the Alpine. By the open wayside abounds a little *Campanula*, a genuine *Campanula* in this world of copious *Codonopsis* and *Adenophora*. It is not perhaps, a very rich treasure; and I incline therefore, Heaven knows with what justification, to think of it as *C. colorata*. But it has a prettiness of its own, too, of small, but richly purple bells, loosely scattered from stiff little branching stems of eight inches or a foot; and it seems a general wayside occurrence, throughout the region, at about 8,000 feet. A little higher and the clumsy, overgrown gullies, I recognise this now as Forrest's *P. seclusa*; unless I do it injustice (having only seen the flowers beginning to open). Professor Balfour shows the partiality of a parent in describing it as "a large, coarse-leaved plant, with many bright flowers." I grant, indeed, the largeness and the coarseness, but as I have so far seen them, the flowers are neither many nor bright. At least, though many, they unfold ungenerously without unanimity, and are of a wizen outline and indeterminate pink-to-crimson colouring. However, it may easily improve, or I may never have seen it in fine character; it is a very general lowlander of warm woodland dells throughout all the region, from the Feng Shui Ling to the Chimili and the Nyetnaw.

All the *Rhododendrons* of the Alpine forest are now over, and I grieve anxiously to note how very shy of seed is the already sufficiently shy-flowering Big Leaf. Not that shyness of flower is likely to be much regretted in a plant of such glorious foliage, but what about a sufficiency of seed to introduce it successfully? On one tree, where the remains of two flower-trusses promised capsules in May, now only two lone pods redeem that promise; and but too probably this will be the case throughout all these woods that are filled with the plant. A new *Ophiopogon*, however, cheers the way, with dainty little starry bells of ivory white, freckled and freaked with soft violet. This carpets the dank darkness of the forest floor, and in mossier places a tiny mossy-looking *Coptis* runs about. Otherwise, as usual, the Alpine forest gives little but dullness. Dull are its greenish little *Orchises*, and dull its dim *Adoxoid* weeds, and dull, above all, its *Balsams*. For the Alpine woodlands abound incredibly in the dreariest and dingiest of *Impatiens* in a series of species dozens-long

that, I am ashamed to say, have, so far, nearly all eluded the flower-press, owing to my companion's threat to abandon me altogether if I wasted time on flimsinesses so infinite in their variety of monotonous dullness. One or two, indeed, are handsome, but even these are lush and blowzy. Their chief use is as a subsequent overgrowth to the big and the little blue *Primulas* of these woods, which seem to like being thoroughly muffled up in rank vegetation at seeding time, after flowering all by themselves on the bare earth. The hint should be taken in culture. Where I believe both these beauties will be happiest is in moist dells of the woodland, and salubriously grown over after flowering. For this purpose many a woodland would serve. Of the local *Balsams* I dare only to commend a rather loose one, with really large and goodly helmets of pale violet; and another, stalwart and buxom and upstanding, with big flowers that seem to me to vary from yellow, through pink, to a dull purple. The rest are mostly all dull weeds, and probably pestiferously prolific into the bargain: one there is which covers the more open spaces in a dense jungle of large-leaved stems about six feet high without having ever yet vouchsafed me sign of any flower at all. Among this grows a round-headed *Garlic*, too, with pretty orbs of pink stars; this is henceforth abundant all over the Alps, even up to the high ridges, where a dwarfed and yet further refined form occurs in the grassy lawns. This plant is sedulously sought and devoured by the natives; but even more do they affect another, a very striking, broad-leaved species of three feet high, which abounds in damp places and open glades of the upper valley among the Alpine hay, making a notable effect with its ample, domed heads of solid pinky-mauve. Unfortunately for its garden claims, this also is very much—and indeed terribly—*Garlic*; and unfortunately for its culinary uses, has the disadvantage of bringing you out all over with unbecoming small white blisters. *Reginald Farrer.*

THE ALPINE GARDEN.

OURISIA COCCINEA

From my experience with this plant I do not share the rather pessimistic view expressed by Mr. Arnott on page 5. To what extent the fickleness referred to may be due to the conditions prevailing in that part of Scotland from which Mr. Arnott writes I am unable to say, though they might prove a factor in the case. And, if so, there is nothing for it but experiment on the spot; it is the only way, indeed, where orthodox methods fail. In this connection I read with interest and pleasure in a contemporary two years or so since the experiences of an amateur who, having been baffled in his attempts to flower the plant in one position and with divers kinds of treatment, eventually transferred the colony to an opposite side of the rock but a yard or two away. Here, with a new atmosphere created, the plant was a complete success. And the spirit such persistency demonstrates is bound to prevail in the long run; the lesson learnt all the more valuable because of the failures preceding it.

Without desiring to dogmatise, there would appear certain essentials which cannot be ignored. The plant is rhizomatous. Like other rhizomatous subjects, free flowering depends upon the development of the rhizome in the previous year. In this *Ourisia* the chief flowering is restricted to the last few inches of the main rhizome; though, where scope permits of development, it may, in a modified degree, occur in the laterals also. Adequate annual growth, therefore, of the parts named is essential to good flowering, and is only forthcoming in those instances where soil and other conditions

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3 and January 17, 1920.

are suitable. As Mr. Arnott states, "A cool, moist spot is good, so far as it goes, but it is not enough to secure flowers." True; with these a measure of sun and warmth are necessary; shade, so often an accompaniment to the above, being inimical to the flowering of *Oncisia*. Equally opposed, too, are dryness and full exposure. These conditions result in a stunted, undeveloped plant, while shade promotes undue leafiness at the expense of the rhizome.

Firm surface conditions I have found most helpful, and these are readily secured by pressing flattish pieces of sandstone an inch below the surface as planting proceeds, finally covering with soil. The rhizome that follows and presses tightly against damp rock will invariably flower, as will that which wanders on to a near pathway. Finger-posts like these no alert cultivator would think of ignoring. As to soil, I prefer a stiffish loam with plenty of decayed leaf-mould

AN INTERESTING HERBACEOUS BORDER.

We are indebted to Mr. H. Ball, gardener to A. J. Richardson, Esq., St. Peter's Court, Broadstairs, for the photograph of the interesting herbaceous border at St. Peter's Court, reproduced in Fig. 23.

The photograph, which shows about half the border, was taken from near the centre. The edge of the walk is broken up by dwarf plants, including Saxifrages, Veronicas, Aubrietias, Campanulas, Pinks, Phloxes and Helianthemums, with here and there taller plants of Irises, Delphiniums, Lilliums and Lupins to break up the formation.

The remainder of the border is planted with groups of Delphiniums, Pyrethrums, Asters, Irises, Sedums, Phloxes, Paeonies, Rudbeckia,

THE BULB GARDEN.

LILIUM ACUTUM MACRANTHUM.

In a recent article (p. 31) on a method of cultivating *Lilium acutum macranthum*, growers were advised, *inter alia*, that the stems of this Lily should not be removed till they have dried off, on the ground that "the gradual ripening of the foliage is necessary to the formation of flowers for the following season, a process which begins in the centre of the bulb as soon as the blossoms fade."

One would have supposed that in these enlightened times, it would hardly have been possible to revive a legend so ancient that the inception of it is lost in the depths of history, for whatever may be the case with other bulbous plants, it is certain that the ripening of the stem leaves of a Lily has no influence one way or the other on the welfare of the bulb.



FIG. 23.—VIEW OF THE HERBACEOUS BORDERS AND LONG WALK AT ST. PETER'S COURT, BROADSTAIRS.

and a quantity of grit. Greater importance, however, is attached to the conditions first named, and I am inclined to believe that the nature of the soil is of secondary consideration. The *Oncisia* forms mat-like growth, and, like other plants of that nature, repays for periodical division and replanting in September and early October, say, every second or third year. Judged from the temperature of its little island home in the South Pacific, a certain measure of warmth would appear to be necessary for the plant, though it is fairly hardy. Where it suffers from cold or frost, sprays of Yew or other light evergreen may be used to afford slight protection. While committing myself to the above remarks, I know that many fail to grow and flower the *Oncisia* successfully, though inquiry invariably shows that its special needs were not understood. The brilliant colour and neat habit of the plant render it suitable for the choicest associations and make worth while any endeavour on the part of the cultivator. E. H. Jenkins.

Oenotheras, Canterbury Bells and other old-fashioned flowers.

The borders are about 8 ft. wide, and there are several old Apple trees at the back, over which climbing Roses and Clematises ramble at will. Two Rose arches span the walk, and at one end there is a group of *Iris pallida* Princess Beatrice, with a background of Monthly Roses. The pale, lavender shade of the *Iris* and the pink tone of Roses provide a very pretty feature in summer. Mr. Ball states that the border is always an object of interest to visitors, which may be readily understood, judging by the beautiful picture, for the method of planting and designing is at once original and bold. Critics of the stiff herbaceous border would have no ground for complaint in such an arrangement of hardy flowers, which is not only informal but highly artistic. There is also no need, in such a system of planting, to restrict the individual subjects, which may encroach on the pathway and follow their own habit of growth without jostling their neighbours.

Often by accident, but more often of set purpose, have I broken off the stems of Lilies in every stage of their development and have yet to notice any diminution in stature or wealth of bloom in the succeeding season.

For four successive years the stem of a particular plant of *L. Hansonii*, in the writer's garden, had to submit to decapitation when less than half the normal growth had been completed, and when in the fifth year it was allowed to grow unchecked, the plant signalled the occasion by flowering more profusely than it had ever flowered before.

There are probably few growers of Lilies who, at one time or another, have not had to regret the loss of a fine Lily stem felled by a marauding slug, chopped up to make a succulent salad for hare or coney, or broken off short by some canine friend in pursuit of an alien cat, but the only result will have been to add to the vigour of the bulb.

Forty years ago that keen observer, Dr. Wallace, in his *Notes on Lilies*, referred to the point in the following words: "Lilies may get

their stems eaten off, injured, or destroyed in various ways. . . . But are the bulbs damaged? Not so, the roots at the base of the bulb are put forth, and the bulbs make their growth as usual, perhaps even the more so because there is no stem to draw nourishment from them."

From the physiological point of view there is much of interest in the relationship between the stem of a Lily and the bulb, and much to be explained—for when the problem is examined, seemingly inexplicable discrepancies betwixt theory and practice present themselves.

By all the canons of the physiologist's faith, the bulb of a Lily can only receive the carbonaceous nourishment necessary to existence through the leaves and in nine-tenths of the genus these spring from the stem. It follows that if the stem is removed early in its life, the bulb should die of inanition, but we know that it does not do so.

The physiological explanation of this apparent contradiction between theory and practice is that much depends on the period at which the stem is removed and that if, for instance, the removal is not effected before the stem has taken definite shape and thrown out leaves, there will have been time for the completion of the vital processes on which the life of the bulb depends.

That view will hardly satisfy the practitioner, for it does not meet the common case where the destruction of a Lily stem just as it is pushing through the earth is not followed by the collapse of the bulb, or, for the matter of that, by any apparent weakening of its functions.

Such a case may be met by the hypothesis that Lily bulbs have stored within themselves sufficient energy to enable them to carry on for a time; in other words, to live on their own "fat," but it is obvious that there must be a time limit to this, and if there is anything in the hypothesis it should be easy of demonstration.

For some reason, not easy of explanation, but possibly climatic, *L. auratum* seems to bear seed much less generally than it used to do in the closing years of the last century and a good harvest is now an exceptional occurrence. In 1911, when the autumn was hot and dry, there was a great crop of seed, but since then it has been to seek.

In *A Monograph of the Genus Lilium* (1880), *L. auratum* is reported as ripening seed freely under certain conditions, and the records of the time are clear on the point, especially in regard to Scottish gardens.

At the time of writing, the importation of *Lilium* bulbs from Japan has recommenced and no doubt the business will eventually assume even greater proportions than in the years prior to the war. Slowly but surely, however, Japan is being denuded of Lilies and of *L. auratum* in particular, and every year sees the rapacious collector forced to carry on his nefarious calling further and further away from Fuji Yama, where the species was common enough forty years ago.

Propagation by seed on a commercial scale is the obvious remedy, the more obvious one would have supposed, in a country where the edible bulb of the Tiger Lily is cultivated by farmers, much as Potatoes are cultivated in this country, bulbils taking the place of seed tubers.

Nine-tenths of the gardener's failures with Japanese Lilies are due to the fact that when exported, a very high proportion of bulbs is commonly infested with a fungus—*Rhizopus necans*—or infected with a root mite. A magnifying-glass at once reveals the presence of the latter and exposure to the fumes of carbon bisulphide is a remedy, provided the core of the bulb has not been eaten away on the long journey from Yokohama to the United Kingdom.

The fungus is less easily dealt with, but according to Dr. Cooke, immersion of the bulb for about 20 minutes in a 1 per cent. solution of salicylic acid is an effective cure, and Masser considered that this acid has no injurious effect on living bulbs provided they are not allowed to remain in the liquid for more than fifteen minutes. *A. Grove.*

CHERRIES UNDER GLASS.

In the most exposed districts of the north, Cherries—excepting the variety Morello—cannot generally be considered a success. As the Cherry, grown under ideal conditions, is one of the most prolific fruits it is possible to cultivate, it is a matter for serious reflection that considerable attention has not been given to the more extensive cultivation of these luscious fruits under glass. There is a vast difference between the quality, to say nothing of quantity, of Cherries grown under glass and those from trees exposed to our erratic climate. Another very important point favourable to the cultivation of this fruit under glass, especially at the present time, is the minimum amount of both fuel and labour necessary to bring them to a high state of perfection. Fire-heat is not absolutely neces-



FIG. 29.—POT TREE OF CHERRY GOVERNOR WOOD

sary—unless forcing is contemplated—although of decided advantage, as a buoyant atmosphere can be assured at the time of fertilisation if artificial warmth is available.

A spacious Cherry-house with its inmates wreathed in bloom from base to apex is a very pleasing sight, and especially when the trees have been trained properly. Then again, as the fruits hang in clusters from every branch, trees in fruit present a beautiful appearance. An ideal Cherry-house is a well ventilated, span-roofed structure about 25 feet wide and thirty or forty yards in length, running north and south. Side ventilators capable of admitting an abundance of air are necessary, and the house should be erected on a wall about two feet in height. The trellises on which the trees are trained should be at least four feet from, and run horizontally with, the roof. The borders in which permanent trees are planted should be somewhat restricted to insure complete control of the roots; a width of four feet is ample and allows a wide pathway, which

it is more economical to gravel than tile or flag. A more equable atmosphere can be maintained with gravelled pathways, and the initial cost is also worthy of consideration.

Until the permanent trees have covered their allotted space other Cherry trees may be grown in pots and stood about the pathway of such a house. These pot-trees (see Fig. 29) provide an added interest and are most satisfactory. The chief points to observe in the cultivation of the Cherry are:—Cool conditions, copious waterings in the growing season, comparatively loose tying and pruning directly the leaves begin to fall.

The best varieties for the epicure include:—Early Rivers, Bigarreau de Schrecken, Elton, Governor Wood, Bigarreau Napoleon, Noir de Guben, Late Duke and Duchesse de Pallua; *Sidney Legg, Warton Priory Gardens.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Seed Sowing.—Every year thousands of people are disappointed with results obtained from the sowing of "small" seeds, and the blame is attributed to the nurseryman or seedsmen from whom the seeds were bought. But in very many cases those who sow the seeds are at fault. A very ordinary way of sowing seeds is as follows, no matter whether pots, pans or boxes are used: The surface soil is pressed down to a moderate degree of firmness, then smoothed with a flat piece of wood; next the seeds are sown and covered with soil, and again the wood presser is used on the surface. The seeds are watered in due course and remain, as it were, between two crusts. After germination has taken place, the small seedlings are not strong enough to push through the top crust, and therefore perish. This method of sowing is, to my mind, wrong, but I have often seen it practised during my twenty years' experience in large gardens. The method I adopt is to press the soil, making the surface as level as possible without using the wood presser, then sow the seeds and press them firmly into the soil, afterwards covering them with soil in the ordinary way, but with no further pressure. By this method germination is quicker, as the warmth readily penetrates the loose soil on the surface.—*Arthur Allardice, Barworton Hall Gardens, Bridgnorth.*

Potato America.—Whatever may be the fate of this variety ultimately, it has at least two good points in its favour, namely, dwarf, upright habit, and good quality after being kept till January. The stems did not exceed 6.9 in. with me, after being earthed up, and they died away early. It was planted in a very light soil in a fully-exposed position, where much of the soil remained in the form of dust till the end of September. I would have placed half of the seed under entirely different conditions if I had even suspected that the season was going to be a dry one. A Potato of strictly dwarf habit is required for the many who have gardens that are too much sheltered by walls or fences for the welfare of Potatoes. Strong growing varieties grow too tall, fall down and smother each other for lack of air, unless they are staked, and very few people would think of that and fewer would adopt the plan. *J. P.*

White Fly on Tomatoes.—In answer to Mr. Beckett's query as to the destruction of White Fly on Tomatoes, I consider the best means of destroying the pest is to empty the house and then fumigate it with flowers of sulphur. For a house 2,000 feet square use one 48-sized pot full of sulphur; place a small shovel of red-hot coals in a large pot in the centre of the house and sprinkle the sulphur over the coals, slightly damping it at the same time. Be careful not to allow the fumes to escape to an adjoining house where plants are growing. If the plants are infested with the pest, vaporise the house with "Xl All," using one large-cupped dish full to a house of similar dimensions, on a calm evening. The following afternoon, syringe the plants with Bentley's Insecticide, by means of an Alol syringe. Repeat this operation a week afterwards. *W. Eyres, Guildford, Surrey.*

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

JANUARY 13.—Present: Mr. E. A. Bowles, M.A. (in the chair); Messrs. W. R. Dykes, H. J. Elwes, J. Fraser, W. Hales, G. Wilson, and F. J. Chittenden (hon. sec.).

British Plants.—Mr. Fraser showed preserved specimens of *Senecio squalidus*, a plant well known for long as growing upon Oxford walls, but now spread to other places, including London. He also showed a hybrid between *S. squalidus* and *S. viscosus*, originally from Ireland, and *Mercurialis annuus*, a weed of cultivated gardens in several parts of south and east England.

Pleione poponoides.—Mr. Elwes stated that he had been cultivating plants under this name, but had found them to be identical with *Pleione humilis* so far as he had been able to discover.

Oncidium × incurnephorum.—Mr. G. Wilson showed, on behalf of Messrs. Charlesworth, a hybrid between *Oncidium corynephorum*, a species with a scandent habit, and *O. incurvum*. The hybrid lacks the climbing habit.

Fruits of Davidia.—Mr. Bowles showed twin fruits of *Davidia involucreata* from the garden of Mr. Christie at Framlingham Pigot, Norfolk. The inflorescences producing these twin fruits had three bracts, and the phenomenon had occurred in earlier years as well as in 1919.

Two forms of berry on Holly.—Mr. Bowles also showed a piece of Holly bearing a red berry on an otherwise yellow-fruited plant.

Cypripedium insigne twin-flowered.—Mr. Smith, of Hatchford Park Gardens, Surrey, sent several specimens of *Cypripedium insigne* having two flowers on a scape. The plants producing them were particularly vigorous and the flowers lacked nothing in size. The plants had been manured occasionally with sulphate of ammonia.

Awards to Garden Swedes.

The following awards have been made by the Royal Horticultural Society to garden Swedes after trial at Wisley:—

AWARDS OF MERIT.

- No. 8. *Superlative Garden Swede* from Messrs. BARR and SONS.
- No. 10. *Yellow Garden Swede* from Mr. A. DAWKINS.
- No. 14. *Naylens Ruta Baga* from Messrs. THORBURN, New York.
- No. 20. *Aeme* from Messrs. GARTONS, Warrington.
- No. 22. *Nonsuch Purple Top* from Messrs. WATKINS and SIMPSON.

HIGHLY COMMENDED.

- No. 18. *Abundance* from Messrs. Alex. DICKSON and SONS.
- No. 24. *Eclipse Purple Top* from Messrs. DICKSON and ROBINSON.

COMMENDED.

- No. 12. *Premier* from Messrs. DICKSON and ROBINSON.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 5.—Committee present: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, A. Hammer, J. Howes, A. Keeling, J. McNab, D. McLeod, W. Shackleton, E. Tack, J. Thrower, E. W. Thompson, and H. Arthur (Secretary).

Awards.

FIRST CLASS CERTIFICATES.

Laelio-Cattleya Firminii (L.-C. Ceres × C. Dowiana aurea), and *Cypripedium Prince Albert* (Tomlin Carter × Hera Mostyn magnifica), from S. GRATRIX, Esq.

AWARDS OF MERIT.

Cypripedium Cyclops West Point var., *C. Joy Sander* and *C. Rhems Invicta* (Mrs.

Mostyn × Van Dyk); *Cattleya Victory* and *Odontoglossum amabile Alpha*, from S. GRATRIX, Esq.

Lycaste Skinnerii vars. *Fairy* and *Rosy Morn*, from Mrs. GRATRIX.

Cypripedium Zadic (Euryades New Hall Hey × Draco), and *C. Actaeus Lady Greenleaves*, from Mrs. BRUCE and Miss WRIGLEY.

Cypripedium Cavelier var. swintonense, from B. J. BECKTON, Esq.

CULTURAL CERTIFICATE.

To Mr. A. BURNS, for *Laelia Gouldiana*, *Calanthes*, and *Cypripedium Minos Youngii*.

GROUPS.

S. GRATRIX, Esq., Whalley Range (gr. Mr. J. Howes), staged a group, to which a Gold Medal was awarded. Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), were awarded a Large Silver Medal for a group consisting of a fine batch of *Laelia Gouldiana*.

JANUARY 22.—Committee present: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, J. C. Cowan, J. Cypher, J. Howes, A. Keeling, D. McLeod, W. Pickup, W. Shackleton, E. Tack, E. W. Thompson, and H. Arthur (Secretary).

Awards.

FIRST CLASS CERTIFICATES.

Laelio-Cattleya Schröderae Our Queen (L.-C. Bella alba × C. Maggie Raphael alba), *Cypripedium Memoria F.M. Ogilvie* (Corte magnificum × G. F. Moore magnificum), from S. GRATRIX, Esq.

Cypripedium Olympus var. The Chairman (Leeatum Clinkaberryanum × Alcibiades), from B. J. BECKTON, Esq.

Sophro-Cattleya Sara var. flamma (S. grandiflora × C. Trianae), from P. SMITH, Esq.

Cypripedium Euryades Carter Place var., from T. WORSLEY, Esq.

AWARDS OF MERIT.

Cypripedium Elise magnificum (Hermes × Lady Dillon), and *Cattleya Mendelii Diana*, from S. GRATRIX, Esq.

Cypripedium Virginia (aureum virginalis × Farrieanum), from Mrs. SLINGSBY.

Cypripedium Glorita, var. Purity (Actaeus × Golden Glory), from T. WORSLEY, Esq.

CULTURAL CERTIFICATE.

To Mr. BURNS, for *Cypripedium aurum Hyeanum*, *C. Lathamianum Wrigley's var.*, and *C. magnificum*; and to Mrs. SLINGSBY for *Cypripedium Virginia*.

GROUPS.

W. PICKUP, Esq. (gr. Mr. H. Mercer) was awarded a Gold Medal for a fine group. Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), were awarded a Large Silver Medal for a group of *Cypripediums*.

BRITISH FLORISTS' FEDERATION.

The third annual meeting of the British Florists' Federation was held on the 29th ult., at Pagani's Restaurant, Great Portland Street, W. There was a fairly good attendance of members, and Mr. George Monro, Jr., presided, supported by Mr. G. W. Leak, Mr. G. Shawyer, Mr. D. Ingamells, Mr. R. H. Page, Mr. H. C. Mount, Mr. W. A. Cull, and Mr. H. G. Gay (among members of the Committee), and Mr. H. Morgan Veitch (solicitor).

The usual formal proceedings were followed by the presentation of the Annual Report and Accounts. The former reviewed the work of the year 1919, and showed that the Federation had been successful in obtaining better conditions for the flower trade in Covent Garden Market, had materially assisted the trade in Guernsey and the Scilly Islands, had smoothed over difficulties between certain members, had published a Bulletin containing a large amount of useful information, and taken part in the resuscitation of the International Commercial Horticultural Conference. The accounts showed a turnover of over £400 and a balance of about £50 carried forward—a very good showing considering that

The Royal Horticultural Society.—The approaching change of pilots furnishes an appropriate opportunity for reference to one or two points in which the procedure of the Society seems open to improvement. Nowadays, when all such bodies find the cost of paper and printing a heavy burden, and the expense of producing the Journal must be considerable, there can be no excuse for the waste of space due to constant repetition, through page after page of the Journal, of the scientific, honorific and other qualifications to which Fellows are entitled. For many years past the practice has been carried to ridiculous lengths, and because, for example, Sir Emeritus Highbrow, Baronet, M.P., is entitled to the letters M.A., LL.D., V.M.H., F.R.S., F.L.S., K.B.E., after his name, that is surely no reason for the repetition of the whole gamut of letters a score or more of times in the same issue of the Journal. In his speech at the General Meeting a year ago, the President made a passing reference to an intended enlargement of the area of the Wisley gardens and according to the printed report of the proceedings, none of the Fellows present evinced the slightest curiosity as to the expenditure or cost of the enlargement. In the annual report for 1919 Fellows are informed that the purchase has been completed, but there is not a word as to the expense of it, and one may look through the accounts in vain for any direct reference to the transaction. The asset side of the Vincent Square balance sheet, however, reveals the fact that the value of the freehold land and cottages at Wisley has been increased during the year by no less a sum than £5,438, and in the absence of any information to the contrary, we are entitled to assume the cost of the Wisley enlargement at that figure. The fact that "more land would be required in the immediate future for experiment in such pressing matters as substitutes for the rapidly diminishing supplies of stable manure," seems to indicate that the Council intends to enter into competition with Rothamsted. But this is a poor excuse to offer for the expenditure of over £5,000, an expenditure made, by the way, without the authority or the knowledge of the general body of Fellows. In regard to Wisley generally, the Council would no doubt be well advised to lay the cards upon the table, tell the Fellows the extent of any further capital outlay that may be contemplated and what the annual cost of maintenance is likely to be. The Fellows are not likely to refuse their sanction to any reasonable expenditure, but unless there is a check to a tendency recently noticeable, to spend not inconsiderable sums of money without reference to the Fellows, the latter cannot be blamed if they insist on a more rigid control of the purse. *F.R.H.S.*

Hosts of the Mistletoe.—In reply to W. Somerville (see p. 44), I may say that Mistletoe grew upon Hornbeam, Elm and common Walnut, at Stoke Park, Slough, in 1912. It then grew on twelve different kinds of tree. For the convenience of golf, some of the trees had to be cut down. The old Manor House and a small portion of the grounds were sold, and some of the trees there, including the common Walnut (bearing Mistletoe), were cut down to effect improvements. For many years past, however, I have noted a fine colony of large plants of Mistletoe on the English Elm (*Ulmus campestris*) in the churchyard at Leatherhead, Surrey, and for all I know they are still there. In 1901, the late Mr. Burbridge, of Dublin, was recorded as saying that he had seen the Mistletoe growing weakly on Beech in the Botanic Gardens, Oxford, but he subsequently denied this. The parasite has been known to germinate on several widely distinct trees in that garden, though it did not get beyond that stage. In 1887 a collector of statistics about the Mistletoe sent a note upon the subject, including the Aspen and Birch as host plants for the parasite, but did not indicate the place of growth in these instances. In 1899, Mr. A. D. Webster recorded it on Poplars, Oaks and Birches in Windsor Park. He also said that it grew on Black and White Poplars, and that De Candolle found it on the Lombardy Poplar, Walnut, common Plum, Medlar, Spruce and Ash in France. London figures it germinating on the trunk of a Cherry tree in his garden at Bayswater, London. *J. F.*

the Federation had incurred the expense of representation at the International Commercial Horticultural Conference in Paris, and had become affiliated to the Chamber of Horticulture, subscribing £30 thereto.—The Chairman moved the adoption of the report and accounts; this was seconded by Mr. Gay and carried unanimously, after comments by various speakers, including a suggestion for more propaganda work from Mr. Hannibal, and one for closer working with the H.T.A. from Mr. Fincham. Mr. Leak and the Chairman both pointed out that delegates from the H.T.A. and the B.F.F. would shortly meet to consider the possibility and advisability of the scheme suggested by Mr. Fincham.

Mr. George Monro, Jr., the retiring President, was heartily thanked for the very able services he had rendered the Federation since its institution in 1917. Mr. D. Ingamells proposed and Mr. W. A. Cull seconded this vote, and several other members added their need of praise. On the motion of Messrs. A. Dimmock and E. Hawes, the Committee were thanked for their services, and then, on the motion of the Chairman, seconded by Mr. Shawyer, Mr. G. W. Leak was unanimously and enthusiastically elected as President for the ensuing year. The retiring members of the Committee were re-elected, with the addition of Mr. Geo. Monro, Jr., and Mr. Chas. Harding to fill two vacancies. Mr. H. Morgan Veitch was re-appointed Solicitor, and Messrs. G. H. Cobley and Co. were re-appointed Hon. Auditors. A vote of thanks to the Chairman concluded the business proceedings.

At 6.30 p.m. about seventy members and friends, including a number of ladies, dined together at Pagani's, under the presidency of Mr. George Monro, Jr. The tables were charmingly decorated by Mr. H. J. Gay, and an admirable musical programme followed the dinner, while speeches were limited in number and length. The Chairman proposed "Success to the British Florists' Federation," and referred to the continued need for combination and co-operation in the flower trade, and briefly outlined the aims and objects of the Federation and the work it had accomplished. In a delightful speech, Mr. G. W. Leak responded, and said he was very proud of the position of President to which he had been elected that afternoon. He then spoke of the innate love of gardening and flowers possessed by all Britishers and the wonderful influence that floriculture had upon character. He emphasised the Chairman's observations with regard to the need of co-operation, and referred to the many difficulties that are following in the trail of the war, and to those due to the presence of diseases and insect pests, which might, however, be very largely overcome by a combination of science and practice. In felicitous terms, Mr. D. Ingamells proposed "The Ladies," to which Mrs. G. Monro, Jun., responded. Mr. Artindale, who was responsible for the idea of holding a dinner, proposed "Our Next Merry Meeting." Mr. Gay was thanked for the floral arrangements, the members drank to the health of the Secretary (Mr. C. H. Curtis), and, on the proposal of Mr. W. H. Page, the toast of "The Chairman" was accorded musical honours. The whole of the proceedings proved so enjoyable that every one present expressed a hope that the dinner would become an annual function.

READING AND DISTRICT GARDENERS.

THE first fortnightly meeting of the spring session was held in the Abbey Hall on Monday the 26th ult., when, notwithstanding the unfavourable weather, there was an excellent attendance, presided over by Mr. F. Townsend. The subject for the evening was the Perpetual Flowering Carnation, its hybrids, and the new, hardy *Dianthus Allwoodii*. The lecturer was Mr. Allwood, Wivelsfield Nurseries, Hayward's Heath, and he gave an exceedingly racy and instructive discourse, tracing the history of this fashionable flower from its infancy to the present time. Special interest was added to his remarks by a series of over one hundred lantern slides. A useful discussion followed, mainly on diseases of the Carnation by Messrs. Townsend, Exter,

Reeves, W. Sharpe, D. Dore, Gear, Smallbone, Fulker and E. J. Dore.

First-class certificates for cultural merit were awarded to the following:—

Mr. W. CHISLETT, The Gardens, Bill Hill, Wokingham, for a magnificent collection of Apples and Pears; the fruits being of high colour and in sound condition.

Mr. W. SHARPE, The Gardens, Sidmouth Grange, for an excellent group of Carnations.

Mr. H. REEVES, The Gardens, Sidmouth Grange, for blooms of *Mdme. Oberthur Chrysanthemum*.

Six new members were elected.

NATIONAL CHRYSANTHEMUM.

Comparatively few members attended the annual general meeting of this Society, held at Essex Hall, Strand, on February 2. Mr. T. Bevan presided.

The annual report and financial statement were presented and adopted. The former reviewed the year's work and referred to the fine exhibition of November last and to the revival of educational work by the Committee. The accounts showed a balance of £29 on the right side, as against £17 brought forward from 1918, and also showed the deposit account of £75 still intact.

All the officers were re-elected, viz.: Sir Albert Rollit, President; Mr. John Green, Treasurer; Mr. J. Bevan, Chairman; Mr. E. F. Hawes, Vice-Chairman; Mr. C. Harman Payne, Foreign Corresponding Secretary; Messrs. Witty and Bayly, Auditors; and Mr. Charles H. Curtis, General Secretary. Mr. Kelly was added to the Committee and Mr. J. J. Ward to the Vice-Presidents.

The proceedings were more or less formal and did not last long.

Obituary.

Paul Chappellier.—We learn of the recent death, at la Commanderie, near Orsay (Lovant), at the advanced age of 99, of M. Paul Chappellier, doyen of the Société Nationale d'Acclimatation de France. M. Chappellier interested himself especially in the improvement of *Crocus sativus*, which is important economically as a source of saffron, and in that of the Yam, *Dioscorea batatas*, from which he aimed at securing a variety with short, swollen tubers which would admit of lifting more easily. M. Chappellier gave a summary of his result at the first International Botanical Conference (Conference on Hybridisation), held in London in 1899. His experiments with *Dioscorea* were finally crowned with success, and a variety bearing his name was put into commerce by Messrs. Vilmorin, Andrieux et Cie in 1907. *A. M.*

Alfred Parsons.—The news of the death of this distinguished artist will be learned with deep regret by horticulturists. He died on January 10, but, by his wish, the public announcement of his decease was withheld until the day after his remains were cremated. He was one of the few artists who painted a flower just as a gardener sees it, for he had not only the artist's but the gardener's instinct and passion. He was 72 years of age, having been born at Beckington, Somerset, in 1847. As a young man he was for a short time a clerk in the General Post Office; but his genius for painting soon showed itself, and from the early seventies he was a constant exhibitor in different galleries. In 1887 his picture, "When Nature Painted all Things Gay," was bought by the Chantrey Fund; and by that time he had won for his works in oil and water-colour the admiration of all who care for delicate and careful renderings of the bright side of Nature. To this he always adhered; his joy was in gardens and flowers. Indeed, he not only painted gardens, but designed them with skill and success, as many country houses can bear witness.

A good example of his ordinary landscape painting is "The Orchard," which was purchased by the Chantrey Bequest and is now in the Tate Gallery.

TRADE NOTE.

Messrs. Charles Sharpe and Co., Ltd., Sleaford, entertained 150 men, out of their staff of over four hundred employees, to a dinner in the Corn Exchange on Wednesday, January 28, in honour of the returned Service men. About 50 per cent. of their regular staff joined up, out of which ten made the supreme sacrifice for their country; Mr. C. Beecroft, head of the vegetable seed department, gained the Military Medal for a conspicuous act of bravery. Mr. A. L. Jessop, the head of the firm, presided at the dinner and welcomed the men who had resumed their accustomed work, and urged the great importance of every man doing his best now they had returned to civil life. Mr. W. H. Mitton, managing director, spoke of the progress made by the firm and of the great demand for stocks of Sharpe's seeds. Mr. Charles Jessop, who went to France as a commissioned officer with the 8th Lincoln's, has now joined the Sleaford firm.

ANSWERS TO CORRESPONDENTS.

ADDRESS: G. F. R. The address is Mr. J. J. Kettle, Corfe Mullen, Dorsetshire.

NAMES OF PLANTS: L. H. 1, *Thuya dolabrata*; 2, *Juniperus chinensis*; 3, *Pinus insignis*; 4, *Cedrus atlantica*.

NOTICE TO LEAVE: G. P. You are entitled to a month's notice as head gardener.

RIGHT OF REMOVAL OF TURF FROM LAWN. H. B. A tenant cannot remove turf as suggested. Anything growing in a private garden belongs to the landlord, and it would be no defence to contend that, in addition to the growing grass, some of the earth had also been removed! This, of course, would only make the matter worse.

SULPHATE OF COPPER SOLUTION: P. L. As a fungicide for use on hard-wooded plants or dormant subjects such as the Vine, 1 lb. of sulphate of copper may be dissolved in 25 gallons of water, but for soft-wooded subjects a very much weaker solution should be used, or damage may be done: $\frac{1}{2}$ oz. to 25 gallons is strong enough for very soft-wooded plants.

WINDOW-BOXES: F. J. H. If you cannot obtain fresh compost for your window-boxes some lime should be worked into the soil to sweeten it, as such soil—indeed, all soil in small gardens in London—is more or less acid with deposits from the smoke-laden atmosphere. For the same reason the variety of plants that will succeed in window-boxes is limited, plants with more or less smooth leaves being most successful, hence the almost universal use of Ivy-leaved Pelargoniums and Marguerites. For a spring display you could use Daffodils, early flowering Tulips and Croci. For a summer display it is difficult to get away from the conventional subjects that succeed in London. But Antirrhinums might be tried, using the intermediate varieties, which grow about 18 inches high; they are accommodating plants and succeed in very varying conditions. Summer-flowering Chrysanthemums should also succeed, using the dwarfier types such as Middle, Marie Massé and its varieties. Verbenas may be had in a variety of good colours and could be used to drape the front of the boxes, while Phlox Drummondii is a good annual subject which remains in flower all the season. If the position is sunny, scarlet Pelargoniums, with an edging of grey foliage, would prove bright and lasting. Cerastium tomentosum might be used as a permanent grey-foliaged subject, Mignonette is charming for window-boxes, but it is doubtful if it would succeed unless you provide fresh soil. Buses of the dwarf Lavender should succeed for at least two seasons, if the position is light enough.

Communications Received.—E. J. F. R.—W. S.—D. R.—D. H.—S. A.—J. E.—R. H.—Miss B.—A. S.—E. S.—J. B. M.—Constant Reader—D. M.—L. W.—T. E. H. I.—H. W.—A. H.—J. W.—J. G. E.—P. I. M.—J. S.—W. A. W.—J. S. T.—A. C.—F. T.—M. H. F.—S. W.—T. H.—T. H. M.—M. J. G.—S. A.—E. L.—G. W. S.—A. S.—Prof. L.—W. K.

THE
Gardeners' Chronicle
No. 1729.—SATURDAY, FEB. 14, 1920.

CONTENTS.

Aphides and frost .. 78	Peach, Amsden June .. 73
Banana growing in Queensland .. 71	Pear Winter Peach .. 73
Begonia Gloire de Lozaine .. 80	Potato crop, importance of the .. 72
Crystal Palace, fire at the .. 72	Rhododendrons in flower at Kew .. 71
Epiphyllum truncatum .. 80	Richmond Horticultural Society .. 71
Florists' flowers—Sweet Peas in 1920 .. 73	Rainfall, the .. 80
Foreign correspondence—Varieties, new, registration of .. 73	Silver Leaf, forthcoming lecture on .. 72
Fruit trees, hardy, assisting .. 73	Societies—Chamber of Horticulture .. 80
"Gardeners' Chronicle" seventy-five years ago .. 72	Royal Horticultural Royal Gardeners' Orphan Fund .. 83
Grassland campaign, a Hampton Court, accident at .. 72	Soil disinfection by hot water .. 71
Iris, hybrid bearded .. 76	Snowy fly .. 80
Mistletoe, hosts for the .. 80	Trees and shrubs—Hedges, evergreen .. 75
Orchid notes and gleanings—Cattleya amethystoglossa .. 77	Daphne Mezereum .. 75
Odontoglossum Trioumpe de Bruges .. 77	Vegetables—Artichokes .. 79
Orchis praetermissa var. pulchella .. 76	Parsnips .. 79
	Week's work, the "White City" exhibition .. 72

ILLUSTRATIONS.

Berbers orthobotrys .. 77
Blackberry Aphis .. 75
Dykes, Mr. W. R., portrait of .. 72
Evergreen Oak, hedge of .. 75
Rose Aphis .. 79

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.9°.

ACTUAL TEMPERATURE.—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, February 11, 1920, 10 a.m.: Bar. 29.7; temp. 40°. Weather—Bright and cold.

Soil Disinfection by Hot Water.

The use of steam for soil sterilisation has now become a routine practice among growers of Tomatoes under glass, and the beneficial results which are achieved by this method of soil treatment are so well known as not to require further emphasis; but for cultivation in small greenhouses and for seed raising in pots and boxes, steam sterilisation, owing to the fact that it entails a special plant, has never been generally adopted; for such work some simpler method is required. Of these methods the chief are the hot water process, the formaldehyde process and that involving the use of carbon bisulphide. There is little doubt but that if the gardener were persuaded of the beneficial results to be obtained by soil sterilisation for greenhouse work he would adopt it as part of his routine practice, and, therefore, it is desirable that his attention should be drawn to the results secured by Messrs. Byars and Gilbert in their recent experiments* in soil sterilisation by hot water.

For the purpose of their experiments these authors used, in the first place, soil known to be infected with various soil pests such as the root-knot nematodes, or eelworm, *Heterodera radicola*, which does serious damage to Tomatoes, and various soil fungi, including the "damping off" fungus (*Pythium debaryanum*) and species of *Rhizoctonia*, which cause lesions in the stems and root discoloration.

A preliminary series of experiments gave most encouraging results, which were confirmed by further investigations. In both sets the numbers of seedlings which grew and the

vigour of the plants which they produced were markedly greater in the pots which had been treated with hot water than in those which had not been treated and were used as "controls."

No less convincing was the appearance of the roots and stems of the treated as compared with those of the untreated plants; for, whereas the former were clean and healthy, the latter showed all manner of unhealthy symptoms indicative of attacks of soil pests.

In the pot experiments 4-inch and 8-inch pots filled with soil were treated in one of two ways; either the pots were immersed in boiling water for a definite period of time—2½, 5 or 10 minutes—or a measured quantity of boiling water was added to the soil in the pots; the amount in the case of the 8-inch pots was either 1 litre (1¾ pints), 2 litres or 3 litres per pot.

In addition to the pot experiments others were made with soil on greenhouse benches. In these experiments the soil, which was 5 inches deep, on a bench 3 feet by 4 feet, was divided by 1 inch boards into 4 sections and boiling water was poured in each of 3 of the sections at the rates of 2½ gallons, 5 gallons and 7½ gallons per section; the highest application amounting to 7 gallons per cubic foot of soil.

After this treatment the soil was allowed to drain and dry for four days and was then sown with Tomato or Lettuce seeds.

In all cases the treated soil gave results superior in every respect to those given by the untreated soil or that watered with cold water only. The plants in the partly sterilised soil were numerous and vigorous; the average number of seedlings in the part-sterilised soil and in the 4-inch pots was 42 as compared with an average of 12 in the untreated soil. Damping-off occurred in the last, but did not take place in the pots the soil of which had been subjected to boiling water. In the 8-inch pots the average number of seedlings two weeks after planting was, in part-sterilised soil, 74; in the untreated 22. The height of the plants in the 8-inch pots which had received the larger treatment was 4.5 inches, 3.4 inches in those which had received a lesser quantity of boiling water and only 2 inches in the untreated pots.

The remarkable differences between the seedlings is shown in a striking series of photographs which bring home in a most convincing manner the extent of the risks to which plants in their seedling stage are exposed and the heavy toll taken of them by soil pests. The practical conclusions reached in these experiments are:—

- (1) That soil in 4-inch pots may be rendered free of soil pests by submersion in nearly boiling water (208° F.) for 5 minutes.
- (2) That 3 litres (5¼ pints) of boiling water poured on the soil in 8-inch pots suffice to destroy the soil pests.
- (3) That bench soil is freed from them by the addition of boiling water at the rate of 7 gallons per cubic foot, and in end boxes 14 × 30 × 3 inches the soil requires 4½ gallons. It is important that the water used for sterilising should be kept on the boil during its use.

Less it should be thought that the treatment is only worth while when soil known to be heavily infected has to be used, it is worth while drawing attention to another set of experiments made by the authors in which they hoped, by using fresh soil side by side with soil known to be infected, to show how much of the beneficial effects of partial sterilisation was due to the destruction of the soil pests and how much to the action

of heat in liberating plant food from the soil. The experiment failed owing to the fact that the fresh soil was found also to be infected with soil pests. Indeed, it may be stated with confidence that most, if not all, soil likely to be used in this country for greenhouse work is, to a greater or lesser extent, infested with pests harmful to plants, and that, therefore, it is a wise precaution to treat it with hot water.

Since it is well known that the rate of growth of a seedling foreshadows the rate of growth of the mature plant it is much to be desired that experimenters would ascertain, by following the subsequent growth of seedlings raised in partly sterilised and unsterilised soil, whether it is not true that the former make larger, more vigorous, earlier maturing and more prolific plants than those reared in unsterilised soil.

Rhododendrons in Flower at Kew.—The following Rhododendrons were in flower in the open at Kew, on January 31:—*R. Nobleanum*, represented by two large and glorious masses of colour in the Rhododendron Dell: *R. praecox*, *R. mucronulatum*, *R. dauricum*, and its variety *atrovirens*, *R. barbatum*, *R. sutchuenense*, *R. Fargesii*, *R. parvifolium* and *R. haematocichilum*. This list is abundant evidence of the mild weather during January, rather suggesting the climate of Cornwall than a garden within a few miles of London.

Banana Growing in Queensland.—In view of the possibilities of extended trade in the import of dried Bananas to Great Britain it is interesting to note Empire production in this direction. Queensland is a great Banana producer, and according to the Government statistician's annual report for the period 1890-1899, the average production of Bananas in Queensland was 4,671 dozen per acre, or reckoning the bunches at 10 dozen each, 467 bunches per acre. That was when the northern trade was at its highest. In 1898 the average per acre was 8,843 dozen, and Queensland's record was 5,264 acres under Bananas for a production of 48,647,000 dozen. From 1910 to 1918 the average per acre dwindled to 158 bunches per acre, while in 1918 there were only 7,817 acres under Banana cultivation, and the published returns are 1,267,641 bunches, an average of 162 bunches per acre.

An Old Journal with a New Name.—For the first time in its history of twenty-six volumes, the official journal, issued from 5, St. James's Square, bears the title *The Journal of the Ministry of Agriculture*, instead of *Journal of the Board of Agriculture*. The change from the more familiar name is due to the passing of the Ministry of Agriculture and Fisheries Act. The price has been raised to 6d. instead of 4d., owing to the greatly increased cost of production. Among interesting articles in the January journal is a report by Dr. E. J. Russell, Director of Rothamsted Experimental Station, on the proposed electrolytic treatment of seeds before sowing. Some treatments have resulted in gain and some in loss, and Dr. Russell, in summing up the case, comes to the conclusion that the electrolytic treatment lacks certainty. "It cannot," he says, "be compared in effectiveness with manuring, which succeeds nearly every time if properly done." Dr. Russell is not prepared on present evidence to say that the treatment never succeeds, but he considers the risk of failure so great that "the farmer should look upon it as an adventure which may or may not prove profitable." A paper on "The Food of the Nightjar," by Dr. Walter E. Collinge, of the University of St. Andrews, is of interest to gardeners. Dr. Collinge, by careful analysis of the food found in the stomach of sixty-two specimens, is able to show that the nightjar consumes nothing but insects, of which eighty-two per cent. are harmful to crops, and twelve per cent. may be regarded as neutral.

Richmond Horticultural Society.—This old established Society, which has been dormant for the past three years, is now renewing its activities. The Committee, while endeavouring

* U.S. Dept. of Agric., Bull. No. 818, Washington, D.C., January 5, 1920.

to maintain the characteristic features of the Richmond Flower Show of pre-war days, is not unmindful of the necessities of the times and is consequently this year giving greater prominence than hitherto to vegetables and fruit. To this end a conference was convened of the members of the Committees of the Horticultural Society and the recently formed Allotment Holders' Association, together with the Borough Allotments' Show Committee, which during the period that the Horticultural Society has been in abeyance has held successful vegetable shows. Proposals for a joint show to be known as the Richmond and District Horticultural and Allotment Holders' Exhibition were warmly supported and a strong joint committee, with Viscount Cave as President and Mr. Reginald Hannen as Chairman, has been formed to make arrangements for an exhibition on Wednesday, July 23. The Society's district embraces a radius of eight miles from Richmond, while there are also numerous open classes. Amongst the trophies offered for competition are the Gunnersbury Challenge Cup for Roses, and the Courlander Challenge Cup for allotment produce. Copies of the schedule may be obtained from either of the Joint Hon. Secretaries, Mr. E. Skelton, 78, Townshend Terrace, Richmond, or Mr. J. Aikman, 69, Mortlake Road, Kew.

Lecture on Silver Leaf.—Mr. Jean Bintner, Ingénieur Horticole, Luxembourg, who has carried out extensive investigations in Silver-leaf disease, will deliver a lecture, illustrated by lantern slides, on the subject, before the members of the Horticultural Club, on the occasion of the monthly House dinner on the 24th inst. A limited number of seats will be available at the lecture for non-members and those interested are invited to make early application to the Hon. Secretary, Mr. G. F. Tinley, 41, Wellington Street, Strand.

A Grass-land Campaign.—At a conference of Agricultural Organisers and Principals of Agricultural Colleges and Agricultural Research Institutions, held at the Ministry of Agriculture, to consider the Ministry's scheme for the improvement of grass land, Sir Daniel Hall stated that, although the general programme of the Ministry was to secure as wide an extension of arable land as possible, it was just as serious a matter to get grass land into better condition. Much work had been done to show how enormously the produce of grass land could be increased with the aid of a little knowledge and a little expenditure, and the Ministry considered the time was ripe for a wide extension of demonstration work and for a considerable campaign of enlightenment among the farmers. The Ministry wanted to drive home facts which were perfectly well known to scientists. A great multiplication of experimental plots is required for the improvement of grass land throughout the length and breadth of the country. The work should be carried out in a simple fashion, each demonstration plot dealing with one or two large, broad points of improvement. The plots should be situated well in sight of the public, and bit by bit, by actual ocular demonstration, the improvement that can be effected in grass land would be brought home to the people. Sir Daniel Hall was sure that in comparison with other countries we had far too little of this simple kind of demonstration. In going about Ireland, for instance, one met demonstration plots as one went along. He hoped that these grass-land demonstrations might be the beginning of an extension of the plot system for demonstration throughout the length and breadth of England and Wales. To assist in the campaign, two very eminent authorities on grass land improvement—Dr. Somerville of Oxford and Professor Stapleton of Aberystwyth—had very kindly consented to give a series of lectures in different parts of the country. For the guidance of the Agricultural Organisers in the counties, the Ministry had prepared a scheme of suggested demonstrations, and from these a choice of trials most suitable to each county could be made. It was expected to obtain the services of Mr. T. J. Jenkin, of the University College of Wales, and of Mr. S. B. Mercer, of the Ministry's Seed Testing Station, to visit each county in turn and give all possible help and advice to local authorities with regard to these demonstrations.

Importance of the Potato Crop.—Some interesting information regarding the views of the Ministry with reference to the future of the Potato crop was given by Mr. Arthur Sutton, a member of the Advisory Committee on Potatoes, to the Ministry of Agriculture, in a paper on the "Future of the Potato Crop, with special Reference to Wart Disease and Immune Varieties," which he read before a meeting of the Farmers' Club on the 2nd inst. Mr. Sutton states that in, or about, 1917, Wart Disease began to give cause for alarm, and in the course of exhaustive enquiries by the Board of Agriculture in 1918, Mr. Gough, one of the Board's inspectors, noticed that several varieties were not only resistant but were never infected with the disease. Even if grown in infected land, and surrounded by plants of susceptible varieties, these immune sorts yield perfect crops. Of varieties immune from the disease he mentioned, as first early sorts, Dargill Early, Edzell Blue, Snowdrop, Witch Hill, and Sutton's Ashleaf; as second early varieties, Great Scot, Ally, Arran Comrade, King George, and Sutton's Early



MR. W. R. DYKES, M.A., THE NEW SECRETARY OF THE ROYAL HORTICULTURAL SOCIETY.
(See report on p. 82)

Market; and, as main crop, Abundance, Majestic, Kerr's Pink, Timwald Perfection and White City. Mr. Sutton stated that fully 95 per cent. of the Wart Disease in England and Wales was found in districts lying north of a line drawn from the Humber to the Bristol Channel, and in those parts growers must forsake their old and favourite varieties and cultivate sorts which are immune to Wart Disease. He recommended the yellow-fleshed varieties, which had high protein contents, and he advocated the extensive cultivation of such varieties. Mr. L. Weaver, Inspector-General of the Ministry of Agriculture, pointed out that the present consumption of Potatoes was practically the same as during the war period, but that production was not being similarly maintained, hence the present high prices. He hoped that there would be an extensive planting of Potatoes this coming season in order to prevent a shortage of the crop. The tests which the Ministry of Agriculture have carried out at Ormskirk since 1912 with relation to immunity from Wart Disease are about to be extended. In Mr. Weaver's opinion there appears to be no prospect for some years of a surplus of Potatoes which might be used for industrial purposes.

Crystal Palace Fire.—A fire in the stage and roof of the Crystal Palace Theatre on February 9 spread to the roof of the Palace itself, and for a time fears were entertained of extensive

damage. Happily the injury done was relatively small, and will not delay the opening of the exhibition fixed for next week, as only a few of the many exhibits were damaged.

Accident at Hampton Court.—At the end of last week, while the butts of fallen trees at Home Park, Hampton Court, were being split by explosives, preparatory to removal, a charge detonated prematurely with most unfortunate results. Mr. Hepburn, the Assistant Superintendent of Richmond Park, and Mr. Featherstone, a Hampton Court assistant, who were standing by, were severely injured in the face, and it is feared that the latter has lost the sight of one eye.

No "White City" Exhibition.—The Shepherd's Bush Exhibition Co., Ltd., hoped to have been able to revive their exhibitions at the White City, if not this year at least in 1921, but it is reported that the management has reluctantly given up all hopes of immediate revival. The grounds and buildings were commandeered by the Government in 1914 for war purposes and have been principally used by the Air Ministry. The estimated cost of rehabilitation is between £250,000 and £500,000, and so far, it is stated, the Air Ministry refuses to accept responsibility or to contribute to the cost of repairs. In the course of an interview with a member of the Press, Captain Albert Kiralfy explained that the damage was partly due to neglect, part of which was accidental, and some of which appeared to have been wilfully done. Costly plants in the Japanese garden had been uprooted by soldiers, who planted them around their huts. Motor lorries had been driven over the gardens and had crashed into stucco pillars. It was hoped to organise, in 1921, an inter-Allied Victory Exhibition, in which horticulture would, as on former occasions, take an important place.

The "Gardeners' Chronicle" Seventy-five Years Ago.—"Propagation by Leaves."—From experiments which I have made, I conclude that almost all leaves that have sufficient substance in them to allow of their being separated from the parent plant without withering will form callosities on their petioles under the ordinary treatment of tender cuttings. But the degrees of excitability in different plants is such that the callosity of some leaves will furnish buds in a week or so, while others require months to do this. Others, again, take years before they form buds. I have kept Camellia leaves, having large callosities, during four years, without their forming buds, and I have read of leaves which did not produce buds till the 10th and even 12th year. Orange leaves with me took from 12 to 18 months, and some even longer, before they formed buds. I have ascertained that old leaves will form buds much sooner than young ones, but young leaves will form a callosity in less time than the old leaves. Hence, the latter, if they are healthy, are best in cases that require a long time to make buds; the petioles of the old leaves, like all soft parts of a tree, are more charged with the organised matter which furnishes buds, than those of young leaves, and hence their power of sooner forming buds. The Dean of Manchester, in the *Gardeners' Magazine*, proposed a very curious experiment to be tried by gardeners, a few years since, which might easily be tested. He inferred that if the callosities formed by two allied plants could be made to mix with each other when being formed, that a bud from the united mass would partake of the habits of the two plants which formed the callosity. As this is a curious problem in vegetable physiology, and as there is nothing in science to oppose it, it is well worth trying."
—D. Beaton, *Gard. Chron.*, Feb. 15, 1845

Publications Received.—*Cotton Rootrot Spots*, C. S. Schofield, Washington Government Printing Office. *Physiological Study of the Parasitism of Pythium Debaryanum Disease on the Potato Tuber*, Hon. A. Hawkins and Rodney B. Harvey, Washington: Government Printing Office. *Christmas Guardian*, Trinidad, British West Indies, 6d. *Journal of Genetics*, Edited by W. Bateson and R. C. Punnett, Cambridge University Press, Fetter Lane, E.C. Price, 12s. net.

FLORISTS' FLOWERS.

SWEET PEAS IN 1920.

It is probable that during the next few weeks millions of Sweet Pea seeds will be consigned to mother earth. Many of the seeds have not yet been ordered, and as the list of varieties is lengthy, those who have not had the opportunity of visiting a good exhibition or gardens where collections are grown, may be in doubt as to which are the best sorts to cultivate, and may be disappointed after they have made a selection of what they consider the best varieties. In the hope of assisting some readers I am taking the bold step of naming what I consider the best twenty-four varieties, knowing quite well I shall be subject to criticism, as no two Sweet Pea lovers would select the same twenty-four varieties as the best. Those I enumerate are not selected because they produce huge stems, although some modern exhibitors seem to consider size and length of stem are far more important than the flowers, and unfortunately some judges support them.

The Sweet Pea is a lovely flower for any purpose provided the blooms are not driven out of character by this craze for huge stems. I have yet to see stems 2 ft. long carrying four well placed, highly coloured, flowers. I consider an ideal Sweet Pea spike is one with a stem 12 inches to 15 inches long, carrying 4 large, brilliantly coloured blooms, and when they are placed in a vase either for exhibition or home decoration, every individual flower should be seen. Therefore I am leaving out of this list those varieties that are always inclined to throw huge stems at the expense of the quality of the flowers.

For exhibition purposes I consider the old salmon variety, Barbara, the best Sweet Pea ever raised, but a good vase of it is seldom seen. In brilliant colours, Tangerine is a very fine orange variety. A lovely orange-pink sort is Hilda, whilst May Unwin and Alexander Malcolm, bright orange-scarlet, are also fine, but the latter is a very tall grower and rather inclined to give weak top blooms. In the pink section, La France is lovely, and Hawmark Pink, Mrs. A. Hitchcock, Hercules and Valentine, are other good sorts. Black-seeded Cream I consider the best of its colour, with Constance Hinton as the best white. The latter I consider an ideal Sweet Pea, and I hope the day is not far distant when we shall have the Constance Hinton type represented in all colours. Mrs. Tom Jones is the best mid-blue and Faith about the best of the pale-blues, with Royal Blue as the best deep blue I have seen.

Warrior is a grand maroon variety and King Mauve the best of a large number of its colour. Of lavender varieties the list is bewildering and it is a difficult task to select the best, but that lovely, refined variety Austin Fredrick should give satisfaction to every grower. Prince George is a distinct Sweet Pea of pretty heliotropemauve shade, but it is seldom well grown. Annie Ireland is an improved Elsie Hulbert, and Jean Ireland is about the best of the buff-ground, piceote-edged varieties. Mrs. Wakefield is also a lovely buff-ground sort flushed with red. Charity I consider the best of the crimsons, whilst Hawmark Scarlet is a fine variety which will withstand the bright sun. Royal Purple is a grand variety and makes a lovely bunch in an exhibition stand or for home decoration. A. E. Usher, *Ranston Gardens, Blandford.*

AMSDEN JUNE PEACH.

This Peach is so valuable for providing early fruits, that information likely to be of use to growers of the variety should prove welcome. It must be confessed that although the fruits of Amsden June are large, and early, there is room for complaint as to its annual yield. Over-matured huds are often a source of trouble with Amsden June Peach as many gardeners are aware, so that the expedient resorted to by Mr. H. Prime, of Hatfield House Gardens, to overcome this defect may be worth noting. A few weeks ago when visiting these famous gardens, I commented on the appearance of an Amsden June tree in

one of the Peach houses, and Mr. Prime related the following rather interesting facts in connection with its career there. He planted the tree in 1908, and for some years it was a source of disappointment, because of its poor crops. It produced a few fruits of large size and fine quality, but they were so few that he had almost decided to discard the variety.

In Mr. Prime's opinion the trouble was caused by over-ripened wood, which in turn caused the buds to become hard, and although these over-matured buds never fell from the trees, they rarely expanded satisfactorily. About mid-summer of 1915 Mr. Prime decided to cut out practically all that season's new wood and to tie in all the lateral and sub-lateral growths, the result of this rather unusual treatment being that a full crop was produced in 1916. It is satisfactory to be able to record that the same treatment has secured good crops every season since. When I saw the tree this winter it looked well and was carrying a fine lot of fruit buds. Mr. Prime, however, was able to show me in one or two places where he had been compelled to leave some of last season's growth for the purpose of filling in the space, the same over-matured buds obstinately refusing to develop. For my own part I was glad that this wood was still there, for it enabled me to draw an interesting comparison between that and the lateral and sub-lateral growth that had been tied in.

It is possible that this method of pruning Amsden June Peach is followed by other gardeners, but if not, this note may be useful to those growers who have hitherto experienced trouble in managing this fine variety. F. W. Miles, *Herts County Council.*

ASSISTING HARDY FRUIT TREES.

Fruit trees which carried heavy crops of fruit last season should receive some assistance in their efforts to produce good crops during 1920. I am not in favour of applying heavy top dressings of farmyard manure at this season of the year to fruit trees on heavy, wet land, but on light land such a dressing may prove beneficial. A manurial dressing over the root-area may be applied to most fruit trees that have set a good crop of fruit during early summer, but trees that failed to crop last year should not receive a strong nitrogenous manure, for, as is well known to growers, an excess of nitrogen in the soil favours the development of leaf growth at the expense of fruiting.

Presuming the roots of the trees were not dressed with basic slag in the autumn, which I consider is the best time to apply this manure, it may be applied now at the rate of four to five ounces per square yard. It should be scattered evenly over the surface within a circle of four to five feet from the base of the tree, or to the extent of the spread of the branches. Afterwards apply some fruit manurial compound containing bone-meal, and lightly fork it in. Dry wood-ash saved from the garden fire may be spread evenly over the surface and will act as a fertiliser. A slight dressing of old hotbed manure containing leaves will prevent the ground from drying out rapidly, and where the soil is deficient in lime this substance may be added in the form of mortar rubble or lime that has been allowed to slack. T. Pateman.

PEAR WINTER PEACH.

It will be remembered that an illustration of a small tree of this variety, bearing a good crop of fruits, was given in the issue for November 1, 1919, p. 229, and in the accompanying text Mr. Raschen stated that the variety appeared among a batch of seedling Pears of unknown parentage obtained from abroad. The seedling promises to prove an acquisition as a late variety and a rival to the well-known Winter Nelis, judging by fruits sent us by Mr. Raschen. They are of small size, very pyriform in shape, and have a deep, russety skin. The flavour is excellent and has a pronounced aroma.

FOREIGN CORRESPONDENCE.

REGISTRATION OF NEW VARIETIES.

As I read the article by Mr. Bliss in your issue of November 29, it seemed far from the interests of an American breeder, but in his later notes in the December 20 issue, I find much to comment on. Here in America, at least, the suggestion of plant patents seems impossible, and with the close contact of horticultural interests in the two countries, action in only one would be an insufficient protection. The matter of registration of new varieties is important, not only for the breeder, but for the amateur, who deserves to receive authoritative guidance in the maze of named varieties. There is no difficulty (for the English grower) in acquiring new plants, but it is only the conscientious breeder or introducer who offers such as are real improvements, and even he is open to error, so that control and regulation are desirable, to put it mildly. There should be a central authority with at least sufficient prestige to warn prospective purchasers, even though it possessed publicity alone as a measure of enforcement. The possibilities of actual publicity and what it might accomplish, I do not know, but recommendations of deserving firms, breeders or varieties are possible, and the undeserving might be listed for the benefit of members. The strength of such action, of course, depends upon the influence of the society in question; it gives a member the opportunity to act wisely. Would not such a proceeding be well within the scope of any society organised for the interests of any one genus of flower? I hope that this question will come up at the first meeting of the Iris Society in New York. Our plans attempt to make it of as much benefit to a member in California or London as in New York itself.

Another phase of the subject is the question of merit; in this respect there is often dissatisfaction with the present methods in making awards. I noted it in the comment on a National Rose Garden (p. 300), and that is but one instance. Fundamentally the trouble seems to be that the highest awards are given to plants as they are exhibited, not as normally grown; or at times by incompetent judges.

If it were the custom to give only the lower awards at exhibitions and reserve the higher for those in garden tests, much of the difficulty would be overcome. Or, the honorary awards might be withheld and awards of value might be substituted to continue the interest in the production of new varieties. As it is, we find that many count as valueless the awards of certain societies.

These are merely palliative measures, the fact remains that the breeder is after all dependent on himself alone; I see no other way out, and the following suggestions are of a similar character.

Messrs. R. Wallace and Co. do much (I give credit where credit is due) in bracketing the breeder's name after the name of the variety, and this custom is slowly spreading among other specialists of the Iris, but they have all been handicapped by lack of information as to the origin of many varieties. As with other flowers, a society may secure this information, and the custom will become more general. The establishment of a standard form of description and its use may well form a basis for registration through which a breeder can be informed of similarity to other varieties. This entails a full description, wherein the descriptive terms are clearly defined, and the placing thereof on record with a central body. As to discarding absolute varieties, the symposium method seems adapted.

I also agree with Mr. Bliss that parentage should be put on record, though it need not be published for a period of years. Its publication will assist other breeders; in Iris, at least, the originator has a long start, of anyone who wishes to follow in his footsteps. In my work it is the untried field that allures: I delight in the uncertainty, the pleasure of anticipation, and I have such faith in the infinite possibilities of any but the most simple crosses that competition is but an added pleasure. *Grace Sturivant, Wellesley Farms, Mass., U.S.A.*

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Peaches and Nectarines.—Fruits on trees in the earliest Peach and Nectarine houses are swelling freely, and the trees may be syringed twice on bright days with tepid, soft water, and once only early on cold, cloudy days. The work of disbudding should be carried out according to the vigour or weakness of the trees. Young shoots may be removed from vigorous trees with a liberal hand, but not to such an extent as would cause a check to the tree; on the contrary, weakly trees should be encouraged to make new growth, also those newly planted, and any that have been severely root-pruned. In disbudding practically all fruits and shoots on the underside of the old growths may be rubbed off, and triple and double fruits reduced to one pointing in an upward direction. Mildly fumigate the trees on alternate nights if greenfly is detected; do this following a mild afternoon when the foliage is dry. A temperature of 60° is suitable at this stage, and it may be increased to 65° at night as the trees advance in growth. High temperatures should be guarded against unless extra warmth is necessary to obtain ripe fruits at some special date. Examine the borders carefully, and moisten them whenever necessary, using water warmed to 60° to 70° for those inside the house.

Succession Houses.—Trees that were started at the beginning of the year and later should be kept well supplied with atmospheric moisture, not so much by direct syringing as by damping the walls, paths and other bare places. Syringing must be according to the weather; a light spraying once or twice daily is beneficial on bright days, but to keep the trees constantly moist is harmful. As the trees approach the flowering stage greenfly must be guarded against, fumigating the house moderately on one or two occasions. If aphides are allowed to spread at this stage they will possibly ruin the crop, and also check the growth of the trees. It is not advisable to water the trees while they are in bloom. This should be done just before the flowers open, and again as soon as the fruits are well set. Partially disbud the trees at short intervals until the work is completed. A temperature of 48° to 50° at night and 60° to 65° by day, with a little warmth in the pipes will ensure strong perfect blooms, and the fruits will set freely. Ventilate the house carefully, and to further ensure a good set a soft brush should be passed over the flowers at mid-day when they are dry. A brisk temperature and buoyant atmosphere may be produced by a little warmth in the pipes and plenty of fresh air. The trees in late houses should be allowed to start into growth naturally. See that the borders are in a sufficiently moist state, and the temperature does not rise too high.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Canker.—On heavy, wet land certain varieties of Apples are inclined to canker. The soil is not the sole reason of the trouble, but is caused by a fungus which enters the tree through a wound in the bark. One of the best ways to treat canker is to thoroughly cleanse the wound with a sharp knife, and then apply with a brush a mixture of tar and clay. The clay should be made into a thick paste and the tar added in about equal parts.

Standard Apples and Pears.—Orchard trees that have been neglected should be attended to, and the principal work necessary will be the removal of superfluous shoots. Take out dead and decaying branches and weak growths to open

up the centres of the trees, so that the sun and air enter freely. Scrape the trunks where they are covered with lichen growths, and spray all the trees with winter wash when the weather permits. There are several excellent proprietary winter washes, and where only small numbers of trees need attention it would be well to obtain the spray ready-made from a sundriesman. If basic slag was not applied to orchard trees in the autumn, use it now, at the rate of 8 cwt. per acre. Kainit is a valuable potash fertiliser, and should also be applied during the winter.

Standard Trees in Grass.—Recently planted trees should be kept clear of grass for several years after planting, or in all probability they will become stunted and fail to grow satisfactorily. An area of five to six feet in diameter should be kept clear of grass and weeds where young trees are planted. Young trees should be moderately pruned for several years to obtain shapely specimens. Trees needing support should be given new stakes and made secure to them. Old hose-pipe is valuable material to place around the stem of the tree to prevent the bark from chafing against the stake.

Arrears in Planting.—Any planting that has been delayed should be completed at the earliest opportunity. The open weather of last month was very favourable for this work. Where a heap of soil was prepared and kept covered to ward off rains, as previously advised, it may be used for planting fruit trees at almost any time.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Cauliflowers and Cabbages.—Early varieties of Cauliflower, such as Snowball and First-crop, that will mature at the end of May or in June—also summer Cabbages of early varieties—should now be sown. Brussels Sprouts, Leeks and Celery should also be sown in sufficient quantities to meet the requirements of the establishment before the plants from the maincrop sowings become available, or to provide specimens for the early autumn shows. Seed of the above-named vegetables should be sown in boxes of sifted soil not over rich in quality. Place the seed-boxes in a house having a temperature of 65° to ensure the seeds germinating evenly. Immediately the seedlings appear, remove the boxes to a house where the temperature is only 50° and place them in a light position. Air should be given, but do not allow a direct draught from the ventilators to reach the tender plants. Endeavour to ensure steady and continuous growth in the seedlings and do not attempt to force them unduly, as a check in the early stages of growth will result in partial, if not entire, failure.

French Beans.—A sowing of these Beans should be made in 7-inch pots. They require good soil, such as rich loam mixed with leaf-mould and manure from a spent Mushroom bed. Place drainage material in the pots and three-parts fill them with soil. Arrange seven seeds in each pot, and press them an inch deep into the soil. When the seedlings have grown three inches high, top-dress the roots by filling the pots with more of the compost. The plants will require supports, and bushy twigs about 18 inches in height may be arranged around the pot. Water the roots sparingly until they have filled the pots, and, as the plants are very liable to attacks of red spider, syringe the foliage on frequent occasions. Successional sowings should be made at intervals of a fortnight. French Beans always provide an acceptable dish, and the growing of the plant presents no great difficulty, provided a house or pit having a temperature of 65° is available.

Mustard and Cress.—To maintain continuous supplies of Mustard and Cress, seed should be sown in heat at frequent intervals. Use shallow boxes containing a layer of pure loam, one inch deep, that has been passed through a fine sieve. Press the soil level and water it before sowing the seeds on the surface. Cover the box with a sheet of glass and exclude the light until the seeds have germinated.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Pelargonium and Calceolaria.—The batch of zonal-leaved Pelargoniums intended for winter flowering should now be propagated, and the regal and show varieties intended for summer flowering potted on as required. The same applies to Calceolaria of the florists' type, also the shrubby species and varieties. The Calceolarias should be grown in very cool conditions. These plants, in common with show Pelargoniums, are very subject to attacks of green fly, and the house should be fumigated at regular intervals. Fumigations should be light when no aphid is present. "White fly" is a much more serious pest, and during recent years has increased to an alarming extent. Before the flies become too active every attempt should be made to keep them in check by practising regular fumigations. So far, there seems to be no effective cure for "snowy" fly; many experiments with spray fluids have failed to find one that will penetrate the waxy secretion that protects the eggs. The best preventive I know is fumigating with hydrocyanic acid gas, and even when this is done they can only be kept in check.

Ardisia crenata.—This plant, which has glossy, green leaves and bright red fruit, is very useful for conservatory and house decoration, the fruit remaining fresh on the plants for close on twelve months, and it is usual for the plants to be in full fruit and flower at the same time. Although this Ardisia may be propagated by means of cuttings, plants raised from seeds are usually the best. Cuttings will root readily now if inserted in a warm propagating case, and seed should also be sown at this date. The seeds have a hard coat and should be soaked for twelve hours in tepid water before they are sown. During the season of active growth this plant enjoys a moist atmosphere and a temperature of 55° to 60°, but when the fruits are set and beginning to colour it does best in a cool greenhouse. It is a slow-growing plant, and is not at its maximum beauty until the third year; thus, to maintain a succession of good plants, a batch should be raised every year.

Rivina humilis.—This is another useful berried subject for conservatory decoration, producing long racemes of bright scarlet fruits. Seeds may be sown now. This plant is best treated as an annual, but may be propagated by means of cuttings.

Clerodendron fallax.—If specimens are required for the greenhouse during August and September, seeds of this plant should be sown in a warm house. If grown as a winter-flowering subject for the stove the sowing may be deferred until next month. In the London area it is very uncertain as a winter-flowering subject, owing to fogs causing the flower buds to drop. Where stock plants have been kept it may be propagated by cuttings.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Imported Orchids.—Advertisements have already appeared in the gardening papers announcing the importation of Orchids from abroad, and a few notes on freshly imported plants may be useful. Dendrobiums, including the beautiful D. Wardianum; Vanda coerulea and Oncidium are often imported about this date, and doubtless many growers will seize the opportunity for replenishing their collections. Directly the newly-imported plants are received they should be examined carefully for insect pests and all the decayed parts removed. Such subjects as Cattleya, Odontoglossum, Oncidium and Dendrobium may be potted forthwith in receptacles just large enough to accommodate them. Shallow pots or pans are the best receptacles, and they should be one-fourth filled with drainage material. The plants should then be placed in position, and more broken crocks arranged round the base of the pseudo-bulbs. The remaining space may be filled with

a mixture of fibrous peat and Sphagnum-moss, or more small potsherds. If the latter method is adopted, a portion of the drainage should be taken out directly the roots become active and replaced with a layer of compost pressed firmly around the base in order to hold the plant in position. Certain Orchids, such as *Pendrobium*, require a few small stakes for support to hold the plants firm in the soil. When the work of repotting is completed, place the plants in their respective divisions, either on the stage or suspended from the roof rafters. Very little root moisture will be needed for some weeks after potting, but sufficient moisture must be given to prevent the pseudo-bulbs from shrivelling to any great extent. Spraying the pseudo-bulbs and compost whenever the weather is bright usually suffices during the first few weeks after the plants are imported. *Vanda*, *Angraecum*, and *Renanthera lmschootiana* should be treated in the same way. If these Orchids are received direct from their native habitats, it is a good plan to suspend them in a downward position for a week or so and dip them in tepid rain water twice or thrice weekly until they show signs of recovery, when they may be potted. All imported Orchids should be accustomed to the light gradually after they are unpacked; excessive fire heat must be guarded against, and water afforded in small quantities until they are well established.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager LADY NUNBURNHOLME, Warter Priory, Yorkshire.

The Dry Wall.—Many strong plants growing in the dry wall need curtailing at this season sufficiently to prevent less vigorous subjects from being crowded out. *Aubrietia*, *Arabis* and *Cerastium tomentosum* require drastic curtailment to obviate their monopoly of the wall space. These plants often make considerable growth in the winter during a short spell of mild weather. Where the apex of the wall is planted—to gain height—with shrubby *Veronica*, *Rosemary*, *Lavender* and *Crane's-bill*, a top-dressing composed of loam, leaf-mould and bone meal may be applied.

The Water Garden.—Simplicity is the keynote of successful water-gardening, and on no account should a large number of individual species be grouped in close proximity. No two streams or lakes are identical, and each one must be treated to suit its own peculiarities. Lakes are a fine feature of the landscape and generally need planting sparingly. *Senecio clivorum*, *S. Wilsonii* and *Caltha palustris* placed in low stations, the last running to the water's edge, are useful water-side plants, whilst *Gunnera* and *Heracleum* should be used for more outstanding positions. A drift of *Lythrum* may skirt the water's margin, whilst weeping *Salix* and *Betula* may be planted collectively or otherwise and left unpruned. Golden Elders planted on a high bank with Scotch Firs as a background beyond give a picturesque effect. To retain its rich colour the Elder should be hard pruned each March. *Nymphaeas* should be planted according to the vigour of the individual variety and depth of water.

Streams.—The depth, width and flow of streams are guides to successful planting. *Myosotis palustris*, *Mimulus luteus* and *Menyanthes trifoliata* are suited at the edge of shallows, in which they pleasingly encroach; whilst *Iris laevis*, *Primula japonica*, *P. Bulleyana* and varieties of *Spiraea* should be planted in moist, but slightly more inland positions. *Caltha palustris* at the water's edge with *Berberis stenophylla* overhanging from a high ledge above make a pretty feature, as does also an outcrop, from afar, of *Tamarisk hispida aestivalis* with a forward drift of *Hypericum calycinum* on undulating ground. The Goat's Beard and Pampas Grass are suitable plants for associating with Bamboos. Trees, shrubs and hardy herbaceous species may be planted in the stations already prepared, as advised in a previous calendar. The planting of *Nymphaea* and *Calla aethiopica* is best deferred until the end of May.

TREES AND SHRUBS.

EVERGREEN HEDGES.

In the practical and timely article on the above subject by Mr. Molyneux (see page 13) I was much surprised to find no mention of the Evergreen Oak (*Quercus ilex*). Curiously, also, it is not mentioned in the note from Mr. Yates on page 44. But that this plant will make an excellent evergreen hedge is fairly well known, while the accompanying illustration (Fig. 30) will convey a good idea of its neat and effective appearance. The hedge illustrated is about 12 feet high, and as a public right of way was made by the side of it, the bottom growths on the roadside, for about 5 feet high had to be cut back to allow wood paling to be erected. Such a procedure did not detract from the attractiveness of the hedge on the garden side, and, of course, would only have to be resorted to on special occasions.

Another first-class evergreen subject not mentioned by either of these writers, for a high hedge, is the Evergreen Thorn—*Crataegus Pyra-*



FIG. 30.—HEDGE OF EVERGREEN OAK. (Photograph by C. Turner.)

cantha. It provides a hedge, too, of double beauty; the May-like blossoms appear in spring and the red berries in autumn, but to secure this dual attraction the man with the shears must allow the Thorn a little more freedom of growth than is usual. Two other subjects suitable for dwarf hedges, not mentioned, are *Berberis aquifolium*, the foliage of which turns to a reddish bronze in autumn, and *Butcher's broom*, *Ruscus aculeatus*.

The *Berberis* will prove a delightful feature when covered with its handsome fruits, indeed, the common *Barberry* is amongst the finest of the genus for beauty of berry. The *Butcher's Broom* will also frequently develop its pretty red fruits in the centres of the cladodes.

Apart from their appearance it is usually conceded that flat-topped hedges offer a lodging for heavy falls of snow. Certain gardeners hold the view that evergreen hedges should be sloped from the centre of the top, i.e., span-roofed form, so as to allow rain the better to percolate through the dense leafage. However practical these points may be, I admit flat-topped hedges look well, but I should not like to see all hedges so trimmed, as with certain surroundings the appearance would be too stiff. C. Turner, *Amphill Park Gardens*.

DAPHNE MEZEREUM.

With the advent of February the earliest blossoms of this delightful shrub rapidly unfold, especially during such a mild winter as we are having this year. The value of this *Daphne*, from an ornamental standpoint, is enhanced by the fact that in the purplish-red colour of its blossoms it stands out markedly from most winter flowering shrubs, in which yellow so greatly predominates. Added to this desirable feature is the delicious fragrance of the blossoms. The plant is by no means invariably met with in a flourishing condition, but is, as a rule, seen at its best in a fairly cool, moist soil. Apart from the beauty of its blossoms the bright red berries are very conspicuous in autumn. The plant is naturally of an upright habit of growth, and will in time reach a height of 3 to 5 feet and as much through. It is then really charming when in bloom.

When raised in quantity from seeds there is often a certain amount of variation in the progeny. A deep coloured form is sometimes

met with under the name of *D. Mezereum rubrum* or *atro-rubrum*. This, which in all probability originated as a seedling, is in the best form very fine, but all bearing this name are not of equal merit. The white variety (*alba*), the berries of which are bright yellow when ripe, affords a pleasing change from the coloured kind. W. T.

DESFONTAINEA SPINOSA.

WHEN in bloom, there is no danger of confounding this *Desfontainea* with any other shrub, though out of flower it might well, by the uninitiated, be mistaken for a *Holly*. It forms a sturdy growing bush clothed with spiny leaves, and is evergreen. The flowers, which are borne during the latter part of the summer, and frequently well on into the autumn, are particularly striking in appearance. They are tubular in shape, drooping, and about a couple of inches in length. In their bright yellow and scarlet colouring they almost suggest some of the *Blandfordias*, and as borne on an outdoor shrub they stand out unique. This *Desfontainea* is a native of the Chilean Andes, and, unfortunately, it is hardy only in what may be regarded as the more favoured parts of the country. W.

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HYBRID BEARDED IRISES.

IN *The Gardeners' Chronicle* of July 31 and August 7, 1915 (pp. 59 et seq.), I gave an account of some of the results of the crossing of Iris—especially with regard to certain types, plicata and red pallida. Since then I have flowered about two thousand more seedlings from many crosses, which may throw an additional light on some of the problems of Iris breeding and suggest further possibilities. The conclusions here drawn from the results of crossings carried out in the ordinary course of a plant-breeder's work make no claim to scientific accuracy, and are only more or less probable in proportion to the number of analogous cases that may be compared. But since full records have been kept both of the crosses and of the resulting seedlings, they are not mere impressions, and where the conclusions are consistently in one direction throughout many independent crossings, I have found they do indicate broadly the genetic constitution not only of the general types, but often of the individual varieties, and can be relied on in practical breeding work.

It is now generally agreed that, leaving out the later introductions such as Amas, Trojana and others, all the older varieties of June-flowering, bearded Irises may be referred to the two main species, pallida and variegata, or to combinations in some degree between them. On this view the plicata and red-pallida types are held to be colour varieties of pallida. In the article referred to I gave some reasons for suggesting that these two types might be due to some other species crossed in long ago, and I still have an open mind upon that point. But with regard to the other three sections of amœna, neglecta and squalens, having now completed the flowering of several large series of seedlings, it is perhaps possible to give more precision to their origin and their relationship to the two species pallida and variegata. From the results of crosses of amœna and variegata it seems clear that amœna is simply a colour variety of variegata in fact, a white-ground variegata—since no squalens or neglecta forms appear from such crosses, and that there is no pallida in a pure amœna, though possibly there might be in an amœna

derived from a cross of amœna × neglecta. The white of the standards and the ground of the falls of amœna is apparently due either to a single inhibiting factor for yellow or else to the absence of the factor or factors for yellow which are present in variegata. The similarity of the form of the flower, and especially of the standards of amœna and variegata, is confirmatory of this conclusion, and the beards are alike. With regard to the neglecta and squalens types the case is not so clear, because in the varieties which are grouped under these two broad sections there are many which contain plicata and red-pallida latent, or recessive, or more or less disguised. Eliminating all such, so far as I know them, it appears equally clear that the relationship between neglecta and squalens is the same as between amœna and variegata. That is, neglectas are squalens in which there is no yellow, due, as before, either to an inhibiting factor or to the absence of a factor for yellow. It is, furthermore, remarkable that this change in the ground colour from yellow to white is always accompanied by a change in the overlying colour of the falls from red-brown to purple or blue-violet. This change is, of course, seen more clearly in variegatas and amœnas than in squalens and neglectas, where it is influenced by the addition of pallida colour. Whether these two changes of colour are due to two distinct factors, or only to one (in which case it would be a factor acting on both standards and falls), is worth considering in connection with an attempt, the results of which I give later, to transfer the fall colour to the standards.

Pallida × variegata give both neglecta and squalens—in many crosses in about equal numbers—but no amœnas. For example, Dusky Mail (a brownish-red squalens) and Azure (a deep violet-blue neglecta) both came from the same pod of seed from a cross of pallida Leonidas × variegata Maori King. Amœna forms come from amœna crosses, or crosses of neglecta × variegata, probably also from some neglecta or squalens crosses, but I have not had any yet. From the neglecta × variegata crosses it occurs only rarely—four out of sixty-six being the proportion in the largest series I have had.

Thus, looking at things broadly, the genetic constitution of these types seems fairly clear, but the plicata type remains (to me, at any rate) an unsolved problem. Since 1914 I have carried the plicata type through one or two generations further, and flowered several hundred plicata seedlings from various crossings. But the results, though very interesting in many directions, afford no conclusive evidence for either supposition as to its origin. The typical beard, which is very different from either the pallida or the variegata beard, and which is clearly recognisable even in squalens-plicata crosses, is carried, practically intact, through generations of transition seedlings, in which it has disappeared with the other (colour) characters of plicata, reappearing again unaltered in the following generation in all the seedlings of the plicata (colour) type. In more than 100 seedlings from one cross, all of which were plicatas, all had the typical plicata beard. Yet four out of the six parents in the ancestry (so far as known) of this cross were not plicatas. This being the most extended series of plicata crossings I have made, the actual pedigree is, perhaps, worth giving.

Mme. Chereau × Cordelia gave C. 7b (2) (a neglecta of Monsignor type—a sister seedling of Sweet Lavender and Du Guesclin; there were no plicata forms from this cross). Assaurez × Queen of May gave E. 205 (a) (a red pallida near Assaurez, but

paler—a sister seedling of Margaret Moor—the rest of the seedlings being similar).

C.7b (2) × E. 205 (a) gave G. 141 (7) (a dark purple-margined plicata, quite free of cockling—the remaining seedlings being only one other plicata and sixteen red neglectas or pallida-neglecta forms). Mme Chereau × Jacquinianna gave Hilda (a blue-violet margined plicata nearly free of cockling). Hilda × G. 141 (7) gave R. 161. (104 seedlings, all plicatas).

Another feature so often seen in the older plicatas, i.e., crumpled standards and cockling of the tips of the falls, might well have resulted from the introduction of a species having flowers more or less incompatible in size and form with pallida. For I have often had similar results (crumpled, puckered, and twisted segments) from crosses of varieties where the flowers differ considerably in size, especially if there is also dissimilarity of form. The rhizomes of plicata are very variable, much more so, as far as my small garden experience goes, than among pallidas.

On the contrary, the leaves and habit and membranous spathe valves are typically pallida. But though the spathe-valve character is a strong one, I should attach less importance to these features than to the fact, which the latest results now fully establish, that the plicata type is a recessive character. Plicata forms crossed with plicata forms, including squalens-plicata forms give plicata forms and nothing else. When crossed with pallida or variegata (or any other varieties not carrying plicata) the plicata type disappears entirely, though these heterozygous plicata forms can generally be recognised by an expert. And when crossed with certain neglectas and squalens carrying plicata, the expected mendelian ratio of one-half plicata forms is obtained in the seedlings. This, I admit, strongly favours the view that the plicata type has arisen as a mutation from pallida by the dropping out of a single factor or set of linked factors. Nevertheless, it is not wholly incompatible with the other view. A. J. Bliss.

(To be concluded.)

ORCHID NOTES AND GLEANINGS.

ORCHIS PRAETERMISSA VAR.
PULCHELLA DRUCE.

IN the Report of the Botanical Society of the British Isles for the year 1913, p. 340, I described at some length the Marsh Orchid, which is distinct from *O. incarnata*, under the name of *O. praetermissa*. Since that time the plant has been observed by many of our best field botanists who, with very few exceptions, have come to the conclusion that it is a distinct species which is easily recognised, and has a range of variation of its own. It is widely distributed in Britain and is often very abundant in the marshes of Cornwall, Devon, Dorset, Hants, Sussex, Kent, Essex, Middlesex, Wilts, Somerset, Gloucester, Berks, Oxon, Northants, Carmarthen, Glamorgan, Pembroke, Hereford, Worcester, Warwick, Stafford, Carnarvon, Anglesey, etc. It frequently grows with aggregate *O. maculata* and then freely hybridises with it. It also occurs with true *O. incarnata*, with which it also crosses. The type has unspotted leaves, which are usually erect and narrowed upwards. The hybrids usually reproduce the spotted leaves of *O. maculata* and have paler flowers than the dull purple of *O. praetermissa*, and often have the labellum more deeply cut.

In Scotland there is another Marsh Orchid which is also widely distributed in the marshes of Forfar, Perth, and all the northern counties extending also into northern England, which has brighter colours than the southern *O. praetermissa*, the labellum is smaller and often lightly angled on the lateral margin: it has the

same unspotted leaves as the type and like that hybridises with *O. maculata*; for this I suggest the varietal name of *Pulchella*. I have previously used the name *Pulchella* to designate a form of a Marsh Orchid which occurs in S. Hants and Dorset, which is rather nearer *O. incarnata* than the northern form, just alluded to (see Rep. Bot. Soc., 168, 1917). Further study may result in removing this southern form from *O. incarnata* to *O. praetermissa*, and I hope to clear this up during the coming season. I should be glad to name any specimens which may be sent me. *G. Claridge Druce, Yardley Lodge, Oxford.*

ODONTOGLOSSUM TRIOMPHE DE BRUGES.

A FLOWER of this intensely dark, but brightly-coloured, new hybrid, obtained by following up their *O. Black Prince* (*Lambeanum* × *Rolfeae*) and crossing it with *O. Vuylstekei* (*harvegtense* × *Wilckeanum*) is sent by the raisers, Messrs. Sanders, St. Albans. The large and well-proportioned flower bears evidence of the *O. Wilckeanum*, passed on through *O. Vuylstekei*, and its influence in many cases, as in this, converts the colouring of the flower from superficial to body colour. The segments are deep vinous crimson, as dark on the reverse side as on the face. There are slight white markings on the bases and margins of the petals and lip, while the small yellow crest is obscured by the prevailing dark colour of the flower. The colour is purple also.

CATLEYA AMETHYSTOGLOSSA.

A CHEERFUL incident in the after-the-war importation of rare species of Orchids is the introduction by Messrs. Sanders, St. Albans, of a successful collection of *Cattleya amethystoglossa*, which, although frequently imported in small quantity since Mr. Warner received a First-Class Certificate for it at the Royal Horticultural Society's meeting on March 4, 1862, has never been plentiful in gardens. Its spikes of 10 to 20 pretty, blush or rose flowers, variously marked with mauve, and their extreme durability, always render the plant specially attractive. Several good crosses with it have been effected, and it is probable that if the influence of this good species is brought to bear on some of the modern, highly developed hybrids still better results may be obtained.

C. amethystoglossa is a native of Bahia, S. America, and has been also named *C. guttata* Prinzii. It is, however, a well-defined species.

NEW OR NOTEWORTHY PLANTS.

BERBERIS ORTHOBOTRYS.

THE beautiful new Berberry, of which fruiting branches are illustrated in Fig. 31, was shown by the Hon. Vicary Gibbs at the meeting of the Royal Horticultural Society on October 21, when the Floral Committee gave the plant an Award of Merit. The berries are produced in profusion; they are of an elongated-oval shape and coloured rich crimson red.

During recent years plant collectors in China have enriched our gardens with a large number of species of *Berberis*, including many that are evergreen or sub-evergreen.

These attractive shrubs are suited alike both for large and small gardens, and many of them adapt themselves splendidly either for grouping in shrubberies or as isolated specimens on grass.

In winter, besides the attractive berries, many of these species have brightly coloured bark of the young wood making the plants objects of conspicuous beauty. Especially noticeable in this respect are *B. viridescens*, *B. diaphana*, and *B. diotyphylla albicaulis*.

B. Sargentiana, one of the evergreen section, is regarded as one of the finest plants sent home from China by Mr. Wilson. Other charming evergreen species are *B. Gagnepainii*, *B. Julianae*, (a Chinese form of *B. Wallichiana*, though quite distinct) *B. levis* and *B. candidula*.

Fortunately these charming plants succeed admirably in almost any soil and any locality. In the gardens at Aldenham there are upwards of 150 species and varieties.

THE FATE OF HORTICULTURE IN RUSSIA.

MANY who are interested in horticulture in England must have wondered more than once what has become of the Russian botanists and horticultural tourists under the Bolshevik regime. What, for instance, has become of Mdm. Olga Fedtschenko, whose knowledge of the plants of Turkistan was probably unique, or of her son, Boris, who was in charge of the St. Petersburg Herbarium, for which a magnificent new building had just been completed before the com-

when his son Albert was able to introduce into cultivation many good plants which he discovered in Turkistan. The firm of Regel and Kesselring had kept an invaluable collection of notes on these and other plants that they have, from time to time, had in cultivation; but this collection, together with Regel's Library, though removed for safety to the Swiss Legation, has been entirely destroyed, together with all the buildings in which the firm conducted its business. The Bolsheviks have even torn up and burnt for fuel the balks of timber of which the roadways were constructed in Kesselring's nursery ground, together with all the trees and



FIG. 31.—BERBERIS ORTHOBOTRYS.

menement of the war? We wondered what had become of those botanists of Tiflis who were working at the flora of the Caucasus, a region which seems to be so rich in interesting plants. An article by M. Correvon, in the January number of the *Revue Horticole*, tells us that he has at last been able to obtain some information as to the fate of Russian botanists and horticulturalists, because M. Kesselring, of the well-known firm of Regel and Kesselring, of Trograd, has escaped from Russia and arrived safely in Switzerland. Dr. Regel was Director of the Pstrograd Botanic Garden in the latter half of the nineteenth century, at a time

shrubs that were growing there. An even more tragic fate seems to have overtaken Julia Mlokosowitch, whose Christian name is recorded in *Primula Juliae*, which she found in the Caucasus, and whose surname will always remain attached to *Paeonia Mlokosowitchii*, which her father discovered in the Lagodeschu region (it is from this region *Gentiana lagodeschiana* was obtained) of the province of Tiflis. She has apparently been murdered by the Bolsheviks and her sister has been driven mad. M. Fomin and M. Medwedew, the well-known botanists of Tiflis, appear to have simply disappeared and nothing is known of their fate. *W. R. Dykes.*

APHIDES AND FROST.

MANY readers of *The Gardeners' Chronicle* will remember the many excellent articles on fruit growing by the late Mr. Bear (*Southern Grower*). In the issue for November 6, 1915, p. 238, he suggested a form of co-operative research and experiment in regard to aphides. This was a great stimulus to me, as I had been working intermittently in this particular field of research for a very long time, and I am quite sure, so far as this country is concerned, there is a very wide field unexplored, or at any rate the survey has been anything but accurate, not because British entomologists are incapable of the work, but in the past they have been very meagrely assisted by the Government. The field and the garden are the proper places in which to study the problems of plant pests and diseases, and to work out the means by which crops can best be protected and to learn the true habits of insect friends and foes alike.

Aphides are amongst the most tedious pests to follow. The following remarks have been prepared from carefully tabulated notes of observations carried out for several seasons in succession. It has been suggested in past issues of this journal that aphides are very sensitive to cold and that a few degrees of frost will kill them. It was to prove whether this opinion is correct that I undertook research in this particular direction.

Writing of the Apple Aphis in *Gard. Chron.*, December 11, 1915, p. 357, *Southern Grower* asked, "Is there any reason to hope that the frost killed a large proportion of the oviparous aphides?" and remarked, "Mr. Theobald states that they begin to deposit eggs early in November, continuing up to about December 7." Mr. Bear further stated that the first frost was 7 degrees on the night of November 14, and that vast numbers of eggs had been deposited before that date. Otherwise it may be supposed that a frost of even such moderate severity would kill every aphid exposed to it, and that it may be taken for granted no aphides could withstand the frost of 9 degrees that occurred on the night of November 26.

No doubt there are many people, including gardeners, who suppose that frost kills not only aphides, but many other insect pests of the garden. I give the following result of my investigations, undertaken in order to reach a definite conclusion on the subject.

BLACKBERRY APHIS.

(See Fig. 32.)

One of my deepest impressions regarding the cold resistance of aphides was in February, 1916. I was then watching aphides that were hatching from the eggs on the wild Blackberry and, as cited in my article in *Gard. Chron.*, December 9, 1916, p. 275, found larva hatched on February 12, and that on the 14th of that month 12° of frost in the screen was followed by rain. I thought such weather was good evidence of the endurance of young aphides. Between February 12 and April 1, I paid 29 visits to some that I had labelled for the purpose, and during that period snow fell on 19 days and finished with a blizzard on March 27, 28. It was the worst weather that I remember. The total snow reduced to water for the above period was 3.55 inches, and frosts occurred on 32 days, including 10 degrees on March 28. Of twenty-one specimens of aphides I had under observation, eleven died and ten survived from February 17 to April 1 and onwards. On April 14 some of these began to produce young. It was very interesting to note that the above specimens had their beaks fixed in a particular spot and never moved for the whole period above stated.

ROSE APHIS—SIPHONOPHORA ROSARUM.

(See Fig. 33.)

During the late summer and autumn of 1916 I was watching the aphides on Rose bushes. At the beginning of October it occurred to me that I would follow some of them to find out if they were as hardy as those on the Blackberry. The winter 1916-1917 will be remembered, by gardeners especially, as one of the most severe and prolonged on record. At Redditch there were 127 frosts between October 19, 1916 and April

16, 1917 inclusive, distributed as follows:—1916, October 3, November 12, December 27; 1917, January 28, February 21, March 25, April 13. The most frost occurred on the following dates:—October 21, 3 degrees; November 16 and 30, 5 degrees; December 6, 13 degrees; January 27, 29, 31, 9 degrees; February 4, 19 degrees; February 5, 20 degrees; February 6, 17 degrees; February 7, 21 degrees; March 8, 15 degrees; April 1, 9 degrees. Snow fell on 31 days during the above period. In October snow fell on one day (reduced to water, 0.28 inch), in December on four days (water, 1.15 inch), January nine days (1.55 inch), February two days (0.11 inch), March seven days (1.45 inch), and April eight days (0.87 inch). The amount of rain and snow combined reduced to water was:—October 3.15 inch, November 2.22 inch, December 2.63 inch, January 2.15 inch, February 0.99, March 2.63 inch, April 1.56 inch. I give the above figures in order to show the weather conditions prevailing at the time of my observations. To watch the effect of these conditions I paid almost daily visits from the beginning of October to April 22. On November 6 winged and wingless females were producing young very rapidly in times of frost, cold winds and driving rain; some shoots were covered with them. I found one male on November 4. Many aphides were being destroyed at this time by four species of flies of the ichneumon type. On November 16 there were 5 degrees of frost, with a strong, keen

over it. This seemed to have the desired effect. I selected a shoot that was convenient for my purpose, on which there were six wingless females. I nailed a box without the lid and two ends to a stake which was driven into the ground to the level of the shoot, so that the six aphides just came inside the box. On the top of the box I placed a piece of glass, which allowed the light to enter and protected the insects from snow. The lower end and front of the box were thus open, which made it convenient for me to see the insects on my daily visits, and also it kept them at the same temperature as the screen in which I had my thermometer. On March 7th only two of the six remained alive, four having died. On March 25th another died. The buds were now beginning to develop, and on the latter date the last of the insects moved to a developing bud. I noticed after this how fast this aphid grew and this went on until April 21st, when I lost sight of the last of my Rose aphides. I was expecting this last specimen would reproduce its species within a short time. I am of opinion it was destroyed by a bird or some other enemy, and not by the weather.

ROSE APHIS—SIPHONOPHORA ROSARUM.

This species differs considerably from the preceding one. The insect is much smaller, and the winged forms are, generally speaking, not very agile. They are very dark in colour, with dark and light bands across the body, and numbers have deformed wings. The wingless ones are somewhat light green in colour, whilst the body is short and covered with short, spine-like protuberances. I find that this species is more numerous indoors than in the open. At the end of a cool vinery here is a Gloire de Dijon Rose, which is generally infested with *Siphonophora rosarum* in the early part of January. In 1919 the insects were very numerous, and I decided to test this species for frost endurance, but I wanted the insects to have a supply of food. I therefore took off several infested shoots and, in order to keep them from shrivelling, I stuck the basal ends in pieces of Potato, around which I wrapped paper to keep the Potato from freezing. I then hung them up alongside the thermometers from January 10th to 14th, inclusive. On the night of the 10th 21 degrees of frost was registered, on the 11th 21 degrees, on the 12th 16 degrees, on the 13th 12 degrees, and on the 14th 5 degrees. This amount of cold I thought would be a sufficient test and, as the aphides were mostly alive, I took them back to the vinery, where they were soon feeding again.

APPLE LEAF CURL APHIS.

Aphis sorbi (the Apple leaf-curl Aphis) is one of the aphides that is supposed to be killed by a few degrees of frost. I have been waiting for four seasons for suitable weather to test the effect of frost on this species. During the early part of 1919 very few of these aphides were to be found, but at the end of September there were numbers of winged females, which produced numerous broods of wingless, oviparous ones. Winged males appeared later, and by October 16th I found them copulating. At the end of the month most of the oviparous females had left the leaves. I found them distributed along the under sides of the shoots, right down to the grease bands, and sheltering in rough places in the bark. I find, as soon as the leaves lose their green colour, and the weather is suitable for laying, the insects migrate to the shoots, and there wait until their eggs are developed. The females remain on the undersides of the shoots, with their beaks fixed into them when it is cold, but in mild weather they move about for egg-laying. During the egg-laying period the creatures are somewhat difficult to find, as their colour becomes much like that of the bark. There were 14 degrees of frost, followed by snow, and, as the snow was on the upper side of the shoot, it did not affect the aphides. Another frost was followed by rain, and the water hung on the under sides of the shoots, and in that way many aphides were drowned before they could move their position, but those that were in places not affected sur-



FIG. 32.—BLACKBERRY APHIS (APHIS SORBAE).

wind—one of the coldest days I remember for the time of year. These conditions lasted for three days. I noticed many Rose leaves had become shrivelled; also that many of the aphides on the shrivelled leaves had died, whilst those on the leaves not shrivelled were active. I came to the conclusion that it was want of food rather than the cold that was the cause of death, and this conjecture proved to be correct. Up to November 25 the insects were still producing young on the unshrivelled shoots. For several days after the above date the aphides were covered with hoar frost. There were similar weather conditions in December, 1916, and the aphides still lived on the leaf stalks that were not shrivelled. On January 8, 1917, a blizzard of wind, rain and snow prevailed. Wrens were very busy hunting for the aphides, and spiders were still crouched on the undersides of the leaves waiting their turn to devour the pests. On January 25 there was frost with strong, cold wind again. The unfavourable weather seemed to stop the flow of sap, and thus the aphides' food was cut off. The aphides on the leaf stalks succumbed first, those on the tip of the shoots next, whilst those just below the tips remained alive. It occurred to me that if I could restore and preserve the flow of sap I might keep the insects alive. I therefore selected a plant I thought would be suitable. The ground around this bush was frozen hard at the time, but I thawed it with hot water and placed a thick layer of dried Bracken Fern

vived. I found them egg-laying from November 10th to 27th—one I timed was 27 hours laying one egg. No doubt this long time was caused by low vitality due to cold and wet. The last living female I found on December 3rd. This I photographed with an egg laid by another specimen. During the month of November we had 20 frosts: the most severe were on the 11th (14 degrees), 15th (14 degrees), and 29th (10 degrees). There were also four days on which snow fell; the total amount of rain and snow for the month as water was 1.24 inch.

BEAN APHIS (Aphis fabae).

I found numerous wingless females of the above aphis on *Euonymus europaeus* (the Spindle Tree) last autumn. These winged females produced wingless oviparous ones, and these latter started egg-laying about October 18th and continued laying eggs until December 1st. This species resisted all the frosts, rain, etc., during November. The last I found on December 3rd.

WOOLLY APHIS (Schizoneura lanigera).

This species, although deprived by the rigours of the weather, to a great extent, of their woolly covering, passed through the winter 1916-1917, and the winters since, and are in much evidence to date, December 26th, 1919. They are very plentiful in this district.

I think the above remarks show that cold and frost do not affect the life of aphides to the extent that might be supposed. Reliable evidence can only be obtained by careful, systematic and prolonged observation. I may say, in conclusion, that aphides are not the most easy of pests to follow, neither are they the only ones that resist cold. *J. G. Blakey, Broms-grove Road, Redditch.*

VEGETABLES.

PARSNIPS.

For the first time during my experience here this crop was, last season, a complete success owing to its absolute freedom from "rust," which had before always more or less damaged the roots. As the conditions with regard to soil management have not varied to any great extent, the success must, I think, be put down to ideal conditions of growth due to the unusually dry season, resulting in a crop of roots of perfect shape, size and quality.

Few vegetable crops repay better for deep cultivation than the Parsnip, and its value was clearly shown in this instance, as two seasons ago the soil was trenched deeply and cultivated as thoroughly as possible. The ground in which last year's crop was grown was dug deeply, and afterwards left as rough as possible until seed sowing time, which was rather later than usual owing to a late spring due to the weather and other unavoidable causes, resulting in an arrears of work.

The usual dressing of lime and wood ash was applied, the ground broken to a fine tilth and made ready for sowing the seed in drills at eighteen inches apart. A calm day is necessary for this operation. I always sow a few Parsnip seeds in clumps, dropping three or four at intervals of eight or nine inches as near as can be gauged along the drills.

If new seed is obtained from a reliable source three or four seeds at a station are sufficient; more will only result in a thick batch of seedlings and increase the labour and difficulty of thinning.

Before closing the drills, a thin scattering of Radish seed is dropped in them. This serves a dual purpose, as it marks the position of the drills at an early date and enables the ground to be hoed quickly, thus resulting in the early destruction of weeds. Where the marketing of surplus produce is done this catch crop need not be wasted, as might be the case where the demand for Radishes is only limited. The system has much to recommend it, however, and a few drills so treated with various crops would assist in producing occasional supplies and economise space.

After the Radishes have been pulled and the

Parsnips thinned, which is best done, if possible, during dull or showery weather, hoeing between the lines to loosen the soil again will be beneficial and, as often as possible afterwards, repeat the hoeing, as it is undoubtedly a great aid to growth by conserving the moisture in the soil as well as eradicating weeds. When the Parsnip foliage begins to meet, hoeing should be discontinued, as the foliage of the crop will smother any but the most pernicious of weeds, such as Thistles, which may be carefully hand pulled, and further there will be no risk of injury to the crowns of the swelling roots. *E. Beckett, Fota.*

ARTICHOKES.

The flower heads of Globe Artichokes are greatly esteemed in some establishments and they provide a welcome addition to the list of vegetables in summer. The plants require a considerable amount of space, but they are not difficult to cultivate provided they receive generous treatment in regard to soil and feeding when the roots are active in spring and summer.

It is possible to secure fine young plants in

period of growth—that is, during April, May, and June. This attention, combined with regular hoeings, will materially assist the plants to produce a number of heads of tender quality. The crop from these plants is usually obtained from the end of May to the end of July. The heads should be cut when green and tender, and before the flowers expand, unless seed is required. It is almost impossible to grow Globe Artichokes well in poor, shallow soil, or beneath the shade of trees, for the roots of the latter are sure to encroach upon those of the vegetable.

As the old stems go out of bearing they should be cut down close to the ground, to encourage the development of young growths. The plants are by no means hardy, and need protection in winter. In some districts, earthing up on each side of the plants is practised, care being taken that the soil does not lodge in the centres. On the top of the soil is placed light litter or bracken to protect the plants in very severe weather. In a general way, a light covering of the material mentioned is all that is needed. Old plants are seldom profitable after their fifth season.



FIG. 33.—ROSE APHIS (SIPHONOPHORA ROSAE).

about twelve months from seeds, but this is far a slower method than raising plants from offshoots, which can be taken from established plants during March and the early part of April. Seeds may be sown in February or March in gentle warmth, and the young plants transferred to 3-in. pots ready for planting in their permanent quarters when the weather is favourable and they have become sufficiently strong.

Healthy offshoots may be obtained from vigorous, established plants by the simple process of division. Chosen portions furnished with healthy roots. The offsets should be planted 3 feet apart in rows 4 feet asunder. They may require shading for a few days after planting, and, unless the weather is showery, should be watered to assist them to become established. Hoeing the soil is of great benefit to the plants and, if done on frequent occasions, will help to keep the roots moist by conserving the soil moisture. Plants thus raised in spring will frequently produce good heads, which will be available for use in September and October.

Established plants should be kept clear of weeds during the growing season, given liquid manure occasionally and mulched with manure to retain moisture in the soil. If this cannot be done, apply nitrate of soda, one ounce to the square yard, about three times during the

The Jerusalem Artichoke is not cultivated in every garden. The crop is generally relegated to an out of the way corner in large establishments, but rarely in that of the amateur or the cottager. It is regarded as unfit for the table unless prepared by the hands of a professional cook, but those who have ventured to try it as a common winter vegetable have been more than satisfied with its excellence and usefulness. The plant produces tubers almost as large as Potatoes. It is not subject to diseases, bears heavily in soil where the Potato would fail, is never injured by frost in spring, nor does it require protection in winter.

The tubers of the Jerusalem Artichoke may be left in the ground in winter and dug as required, but by this time they should be lifted and replanted. Clear all the roots from the soil, select a number of the best shaped specimens for subsequent planting, and store the others under ashes. Spread a quantity of manure on the surface of the ground intended for the fresh crop, and as digging proceeds, plant a row of roots at every three feet. Keep the sets one foot apart, and place them three inches below the surface. The stems are stout and hardy, are not easily injured by wind, and attain a height of from seven to ten feet, forming a serviceable screen or shelter. *James A. Paice.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Hosts of the Mistletoe (see pp. 9, 20, 44, 56, 69).—Professor Somerville's enquiry is probably limited to British-grown Mistletoe but it may interest him to know that in February, 1914, I found a single plant of this parasite growing on an Elm on the golf links at Saint Jean-de-Luz, in south-western France. It is exceedingly abundant on old Hawthorns at that place. The Elm was leafless: I intended to return there to identify the species, but the war stopped that. Mistletoe is not now indigenous to Scotland, whatever it may have been before the natural forest was cleared away; but it grows freely when sown on a suitable host. About thirty years ago I set a lot of berries upon young growths of Apple, Laburnum, Linden and Hawthorn. Those set on Laburnum and Linden did not germinate; but several on other trees have produced large clumps three and four feet in diameter, which bear plenty of berries. The seeds set on two double-flowering red Hawthorns have behaved in a very peculiar way. They germinated at the same time as those on the Apple trees; but instead of throwing out two or three strong stems, one has put forth fourteen little shoots, the other eight, none more than an inch high, and each bearing two leaves. The presence of these dwarf growths has caused a large swelling in the branch, indicative of considerable internal disturbance. *Herbert Maxwell, Monreith.*

Snowy Fly (see p. 44).—To keep this pest in check will require more trouble than even in the case of red spider or mealy bug. As near as I can remember I first saw the snowy fly about ten to fifteen years ago. It was then looked upon much as aphids, and a fumigation of tobacco or the newer XI All compound were sufficient to destroy the pest on its appearance in the spring, but now, whether the present race is harder or more persistent, it is in evidence all the year round. After fumigation two-thirds of the insects survive, as directly the fumes arise down they come in clouds to the freer atmosphere on the floor of the house, only to wend their way up again when danger is past. I usually well sprinkle the floor with a strong insecticide, which destroys those that come in contact with it. Not only do Tomato plants suffer severely from the pest, French Beans, Fuchsia, Heliotrope, Coleus, Poinsettia, and many other soft-wooded plants are attacked in due season. Cyaniding is a poor remedy considering its danger and the many houses affected by the fly to be constantly fumed. The difficulty in dealing with the flies is that when a plant infested is moved for treatment to another house they fly off and settle elsewhere. Quassia extract will kill the pest where the under side of the foliage can be reached with a syringe. So far as my knowledge goes there is no remedy on the market that will effectually deal with snowy fly, and it needs combating energetically if we would rid our crops of it. Many years ago Elder foliage crushed and placed on the floor of the greenhouse, and the latter closed, killed green and black aphids, but its strength could not be gauged, and where overdone the plants were affected. It is well known that various strong-scented plants act as a deterrent to flies and other insects in dwelling rooms, but I am not aware whether it would be any use against the snowy fly. *Geo. Dyke, The Hermitage Gardens, Holmes Chapel.*

Epiphyllum truncatum.—On page 48 of the *Gard. Chron.* for January 31 appeared an interesting article on Epiphyllums. I can well remember when these plants were most useful as well as valuable winter-flowering subjects. In the early eighties, when I was an apprentice in a plant nursery on the south coast, we used to grow a fine batch and in fine variety. We had all those mentioned by your correspondent and many others. *E. t. Ruckerianum*, if I remember rightly, was very fine. The *Pereskia* stock was generally used, but grafting was also done on *Cereus speciosissimus*, and charming little pyramids were produced on it. Plants grown in that form, or as standards, always

found a ready sale in those days. Now-a-days Epiphyllums are usually grown from cuttings, but, unless used as basket plants, these cannot compare with well-balanced plants on a *Pereskia* stock. I may also mention that we used to grow *Franciscea* and *Pentas*; the former was known and grown for its delicious perfume, and *F. uniflora* was fine, in small pots, for table decoration and delightfully fragrant. *F. confertiflora* was also good. *Pentas carnea* and *P. rosea* were also grown for winter blooming. *R. H. Legg, Melksham, Wiltshire.*

Begonia Gloire de Lorraine.—Much has been advanced in praise of this beautiful and floriferous *Begonia*, and too much cannot be said of its beauty and usefulness in the hands of those who know how to grow it successfully. In Mrs. Bischoffsheim's fine gardens at Stanmore (gr. Mr. Taylor) about 400 specimens of the Rothschild variety, each from 2ft. to 2ft 6in. across, mostly pyramids, but some having globular heads of densely-packed pink flowers, have been, and will continue in great beauty for a considerable time, filling one house and decorating the corridors adjoining. All the plants are from cuttings struck last April and grown in an intermediate house until they are in bloom. In suspended baskets this *Begonia* is equally beautiful. Plants of the scarlet *Euphorbia jacquiniæflora*, *E. pulcherrima* and other decorative winter-flowering plants are making a bright display. As with the *Begonias*, Mr. Taylor strikes these annually, and his plants are always vigorous and clean. One house has the centre stage filled with white *Coelogyne cristata*, with *Calanthes* on the side staging, and in other houses *Vanda coerulea*, many *Cymbidiums*, *Cypripediums* and other hybrids and species are blooming profusely. *J. O'B.*

The Rainfall.—As one of the five thousand and more observers in the United Kingdom who quietly record the amount of rain that falls day by day I am greatly interested in weather records. There does not appear at first sight anything of special value to be obtained from the knowledge, and yet, by ascertaining the amount of rainfall, the gardener has data which may be of considerable service to him. The British Rainfall Organisation was inaugurated over fifty years ago in North London, and has become such an important factor that it has recently been taken over by the Meteorological Office, and is under Government control. As early as the year 1859 the late Mr. G. J. Symons began to collect records of rainfall, and three years later he brought out a pamphlet entitled *British Rainfall*, which included records from about 500 observers. The copy of the last year, which has just been issued, extends to upwards of 300 pages and records the work of more than 5,000 observers. The method of measuring rainfall is very simple. The essential parts of a gauge are a funnel to receive the rain; the usual size of the rim is five inches. Below is a receiving vessel to hold the water that falls. A glass measure, graduated into fifty parts, each division representing one-hundredth part of an inch, is provided, the graduated part corresponding with the diameter of the funnel. The object sought is to find the depth to which all the rain-water that falls would stand on a perfectly level surface, if none ran off, and none soaked in the soil or evaporated. Some idea of the weight of rain falling on the land may be realised by remembering that if an inch of rain fall over an acre the quantity of rain weighs a little over 100 tons, and measures 22,624 gallons. The amount of rain is unevenly distributed in point of time, but when a whole year is considered, it is remarkable to find that the average quantity varies very little indeed. Since April of the past year, for example, the rainfall was exceptionally low until the latter part of November, after which the average for the year was maintained. Intending observers should note that a rain gauge should be placed on an open site, with no building or tree near. I have arranged a kind of box, partially in the soil and projecting some twelve inches above, to contain the gauge—the funnel is thus always level. Any reader who seeks further information should communicate with Mr. Carle Salter, 62, Camden Square, London, N.W.1. *J. C. Wright.*

SOCIETIES.

CHAMBER OF HORTICULTURE.

The first general meeting of the Chamber of Horticulture, held on the 5th inst., in the Council Room of the Royal Agricultural Society, Bedford Square, was of historical as well as general horticultural interest. Mr. George Monro, Jnr., presided and was supported by a very representative body of the Trade, numbering altogether about 56 persons. As stated in our leading article on page 47 (*Gard. Chron.*, January 31), the Chamber of Horticulture carried out work of exceptional value to the horticultural industry during the past year. Previous to its legal constitution the work of the Chamber was carried on by an organising Committee composed of influential members of the horticultural trade. According to the articles of the Chamber it was necessary to hold a general meeting in the beginning of February, therefore the meeting under notice was the first statutory one.

The election of Officers and Council is by vote on ballot papers circulated to the members, consequently an interesting part of the proceedings was the declaration of the poll showing the constitution of the Council for the ensuing year. Mr. W. G. Lobjoit proposed that the election of Mr. George Monro, Jnr., as the first President of the Chamber, be approved by the meeting. He said that the name of Monro stood very high in the horticultural world, and it was a name the Chairman had not only kept untarnished, but had added lustre to. His was the original idea which led to the institution of the Chamber. It was a very ambitious idea to bring together a congeries of interests, which had looked upon each other with suspicion and distrust, for the purpose of mutual help and co-operation. His idea was to create a community of interests, and to this difficult task he had given time without stint and wonderful business skill, and it was little short of marvellous that so much had been achieved in so short a time. It was not too much to say that probably no other man could have accomplished so much or placed the Chamber of Horticulture on such a sure foundation. Mr. W. H. Page seconded the motion, which was carried unanimously. Mr. A. E. Moore was appointed Treasurer of the Chamber, on the motion of Messrs. C. Symmonds and G. H. Barr, and Mr. W. G. Lobjoit was unanimously elected Vice-President on the motion of Mr. F. Ridley, and Mr. W. P. Thompson, Messrs. E. H. Cobley and Co. were appointed Hon. Auditors.

Mr. Monro gave an account of the work done by the Organising Committee and pointed out that the apparent delay in getting the Chamber legally constituted was due to Somerset House and not to the Committee. At the inaugural meeting held at Caxton Hall, the aims and objects of the Chamber were put forward and the scheme had the approval of the President of the Board of Agriculture, of Dr. Keeble, and other Government officials. The great aim of the Chamber was to include every sectional horticultural interest, to act as a clearing house of ideas and to bring the whole weight of the industry to bear upon any particular subject where the efforts of a sectional interest alone would have very little weight. He pointed out that the Chamber was working in entire harmony with the R.H.S., and in conjunction with that body held a conference on Fruit Growing at the Chelsea Show in 1919. A crying need was for statistics with regard to the trade, and it would be necessary to obtain these if the Chamber was to carry out its programme and benefit the industry as a whole. Some time ago the Board of Trade asked for definite information and the Chamber sent out 12,000 forms, each containing three or four questions, but not more than 4 per cent. of the forms were returned. This was a disappointing result, and as many growers apparently thought the information asked might prove valuable to their competitors he desired to say that such returns would be kept in strictest confidence and only the collective results would be used in connection with any request made by the Board of Agriculture or the Board of Trade. The Board of Agriculture had already approached the Chamber with reference to statistics of the

horticultural industry, and this itself was evidence of the high opinion in which the Government already holds the Chamber. It had been said that the Chamber started with a very ambitious programme, but the present programme was twice as large as the original one. It included the consideration of the transport questions, research work, building construction, seeds, insecticides, and manures. The Government had already adopted the scheme for a standardisation of materials as presented by the Committee of the Insecticide section of the Chamber, and he understood that the scheme would soon become law. The Chamber was frequently in communication with a large number of Government departments and its advice and help were being sought by these departments on various subjects. A Parliamentary Committee would be formed in due course and he hoped that in time the horticultural industry might be represented in Parliament by its own member. The Chamber was also in association with all European Chambers of Horticulture and had taken part in the resuscitation of the International Horticultural Commercial Association. With regard to the American Imports Restriction Order the Chamber had not yet been able to secure any relief for British traders, but it was now in communication with the Federal Horticultural Board of U.S.A., and it was hoped that a joint commission would be appointed shortly to reconsider the whole matter. In connection with labour matters and wages, he desired to thank Mr. R. Robins for the splendid work that he had done on behalf of the trade, and he also voiced the thanks of the Chamber to Dr. Keeble for all that he had done for the Horticultural industry while at the head of the Food Production Department, and at the same time to express the regret felt by the horticultural world at his recent resignation from the Board of Agriculture, where it had been fondly hoped he would occupy a commanding position as the head of a distinct Horticultural section of the Board. Mr. Monro pointed out that the Chamber had no fewer than 27 committees, all regularly employed in the interests of horticulture. There were fourteen affiliated societies and 112 private members. The income for the past year was £2,605, and the whole of the expenses of organisation and the management of the Chamber to date had been met. A statistical clerk had recently been appointed and also an assistant secretary to help Mr. R. Wynne, whose strenuous work on behalf of the Chamber merited the thanks of all concerned. Mr. Monro spoke for about an hour and was very heartily applauded when he resumed his seat. Mr. Wynne, the Secretary, then declared the result of the balloting for the Chairman and Vice-Chairman of Committees as follows:—

Seeds (growers and wholesalers)—Mr. J. E. N. Sherwood and Mr. J. Harrison, Jr.; Seeds (retailers)—Mr. C. W. Carter-Page and Mr. Leonard Sutton; Bulbs (growers and wholesalers)—Mr. Alfred White and Mr. Geo. Shawyer; Bulbs (retailers)—Mr. Peter Barr; Fruit and Vegetables (growers)—Mr. W. G. Lohjoit and Mr. R. R. Robins; Fruit and Vegetables (wholesalers)—Mr. B. J. Monro; Flowers and Plants (growers)—Mr. W. H. Page and Mr. George Shawyer; Flowers and Plants (retailers)—Mr. R. H. Page; Trees and Shrubs—Mr. Stuart H. Low; Insecticides—Mr. J. H. May and Mr. W. D. Woodrow; Manures—Mr. W. H. Thomson; Horticultural Buildings and Heating—Mr. H. O. Larsen; Horticultural Sundries—Mr. A. T. Barnes and Mr. H. F. Hannibal; Finance—the President; Propaganda, Press and Statistical—Mr. J. Rochford and Mr. W. P. Seabrook; Technical—Mr. R. Seymour Cobby and Mr. P. A. Cragg; Library and Reception—Mr. Charles H. Curtis and Mr. Frank R. Ridley.

It should be stated here that according to the articles of the Chamber the members of the Committee receiving the highest number of votes become Chairman and Vice-Chairman respectively, and by virtue of such office they become members of the Council.

A very hearty vote of thanks was accorded the R.A.S. for kindly placing its rooms at the disposal of the Chamber. Mr. W. Cuthbertson, tendered thanks to the Organising Committee for the splendid work it had accomplished, and

pointed out several matters which he thought the Chamber might very well take into consideration. He hoped that in future the members would criticise the work of the Chamber because he considered constructive criticism was excellent. This motion was seconded by Mr. Lemmons and carried unanimously, as also was the vote of thanks to the President, for presiding, moved by Messrs. Toogood and Brunton.

ROYAL HORTICULTURAL.

FEBRUARY 10.—The meeting held on this occasion was well attended and the exhibition was bright, extensive and quite spring-like. Early hardy flowers were freely shown and there were excellent displays of Orchids, Carnations, Azaleas and Violets. It was interesting—having regard to our observation in connection with the previous meeting—to record that the groups of Orchids were arranged on this occasion in the body of the hall, instead of being crowded in one of the annexes.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), G. Reathe, Wm. H. Morder, Chas. E. Shea, C. R. Fielder, John Heal, Sydney Morris, W. H. Page, W. R. Dykes, H. R. Darlington, W. P. Thomson, W. G. Baker, E. H. Jenkins, Chas. E. Pearson, J. Dickson, Arthur Turner, J. F. McLeod, J. W. Barr, J. W. Blakey, Jas. Hudson, H. Cowley, W. J. Bean, W. B. Cranfield, John Green, W. Howe, E. F. Hazelton, and George Paul.

AWARD OF MERIT.

Galanthus nivalis Imperati.—A beautiful large-flowering Snowdrop, with green markings. The flowers shown were considered to represent the true variety Imperati. Shown by the Rev. W. WILKS, The Wilderness, Croydon.

GROUPS.

MESSRS. WM. CUTHBUSH AND SON set up a small but pretty exhibit of early hardy flowers, including Forsythia sprays, Hepaticas, Iris Danfordiae, Iris histrioides, Saxifraga Kestonia, S. Burseriana and Hellebores. This firm also showed a few perpetual Carnations (Bronze Flora Medal).—Mr. REG. PRICHARD was also an exhibitor of choice early Alpines, notably Saxifraga Griesbachii, S. Boydii, S. Borisii, Daphne Blagayana and Gentiana acaulis.

A little Alpine garden, backed by a grouping of dwarf shrubs suitable for the rock garden, was arranged by Messrs. WHITELEGGE AND CO., and was much admired. The small colonies of Iris eburnea, I. reticulata, I. lutea, Alpine Violets, coloured Primroses, and Saxifragas, were charming, while the pygmy Junipers attracted a great deal of attention (Silver Grenfell Medal).—Messrs. J. CHEAL AND SONS showed pale-blue Primroses, Primulas of the denticulata group, Heaths and Saxifragas.

Mr. J. J. KETTLE contributed a large, beautiful and fragrant group of his new Violet, Mrs. David Lloyd George, some gathered from the open and others from under glass (Bronze Banksian Medal).—The Misses ALLEN-BROWN staged a collection of Violets from Ilenfield, including both double and single varieties and the white Comte de Brazza.

Mr. C. ENGELMANN put up a bright group of perpetual Carnations (Silver Banksian Medal), and Messrs. ALLWOOD BROS. were large exhibitors of these flowers. The latter firm showed flowers of high quality, notably of the varieties Mary Allwood, Wivelsfield Claret, Salmon Enchantress, Enchantress Suprême and Jessie Allwood (Silver Flora Medal).—A very spring-like display was the one made by Mr. G. W. MILLER, who grouped Daffodils, Hellebores, Daphne Mezereum, Primroses in various colours, Snowdrops and double Daisies (Bronze Flora Medal).

Messrs. BARR AND SONS had a group chiefly composed of Saxifragas in pots, choice Junes and Crocuses, and a fine lot of Narcissus Queen of Spain (Bronze Flora Medal).—Messrs. R. TRICKER AND SONS' group of Alpines was very bright, and included Saxifraga Boydii alba, S. Cherry Trees, S. Ferdinandii Coburgii, S. Griesbachii, S. Irvingii, S. lilacina and S.

Paulinae, together with Daphnes and Iris reticulata (Silver Banksian Medal).

Mr. G. REUTHE showed a great variety of plants, a few of these being Ribes laurifolius, with pendulous spikes of greenish flowers; Hellebores, Adonis amurensis, hardy Cyclamen, Saxifragas, Rhododendron argenteum, R. barbatum, and R. Hookeri (Bronze Flora Medal).—Messrs. S. LOW AND CO. contributed a collection of perpetual flowering Carnations, including some of the newer varieties (Bronze Flora Medal).—Mr. G. W. W. BLATHWAYT sent flowers cut from the open at The Cottage, Porlock Weir, Porlock, Somerset.—Some delightful flowers of Iris Rosenbachiana were shown by Mr. W. R. DYKES, Godahming, and a Cultural Commendation was awarded.

Mr. L. R. RUSSELL showed Azaleas in capital style and even better flowered than at the previous meeting. A few Tulips, Hyacinths and Cyclamen were used in the foreground in association with an edging of Ferns (Silver Flora Medal).—A very bright exhibit, arranged by Messrs. H. B. MAY AND SONS, consisted of finely flowered Cyclamen, Hydrangeas, Columnea magnifica, Ferns and Palms (Silver Banksian Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Gurney Wilson, Arthur Dye, W. Bolton, C. J. Lucas, W. H. White, R. A. Rolfe, R. G. Thwaites, A. McBean, Frederick J. Hanbury, J. Charlesworth, J. Cypher, J. E. Shill, H. G. Alexander, Fred K. Sander, S. W. Flory, Chas. H. Curtis and R. Brooman-White.

Awards.

FIRST-CLASS CERTIFICATES.

Cypripedium Memoria F. M. Ogilvie (Curtmannii × Pyramus), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. One of the finest Cypripediums of its class, the dorsal sepal, which is white with a pale green base and heavy maroon blotching, showing C. Pyramus at its best, while the extraordinarily broad petals, pale yellow with blackish spotting, are derived from C. Beckmannii.

Odontonia Pittiae (Miltonia Bleuana Pitt's variety × Odm. Harryanum magnificum).—From Messrs. CHARLESWORTH, Haywards Heath. A most remarkable combination, resulting in one of the most distinct and attractive of modern hybrids. The flower, which recalls some of the blue-tinted Zygopetalums, is a fine shape, closely veined and tinged with dark violet colour, the base of the lip having yellowish lines.

AWARDS OF MERIT.

Odontoglossum crispum-Solon (crispum × Solon), from H. T. PITT, Esq., Rosslyn, Stamford Hill. A beautiful flower with heavy claret blotching on the inner parts of the segments, the ground colour being white.

Odontoglossum Dorothy Aikle (parentage unrecorded), from Messrs. CHARLESWORTH. A large and finely-formed flower, densely spotted with light claret colour.

CULTURAL COMMENDATIONS.

To Mr. FARNES, Orchid grower to Pantia Ralli, Esq., for a finely-flowered plant of *Cymbidium Gottianum*; to Mr. GILLET, gardener to Col. Stephenson Clarke, C.B., for a finely-grown plant of *Lycaste Balthae*, with nine claret-red flowers of excellent quality; to Messrs. J. and A. McBEAN, Cooksbridge, for a finely-flowered plant of the scarlet *Odontioda Bradshawiae Olympus*.

MEDAL GROUPS.

Silver-gilt Flora Medal.—To Messrs. J. and A. McBEAN, Cooksbridge, for a very fine group of Cattleyas, Laelio-Cattleyas and *Odontoglossums*, with hybrid *Cymbidiums* at the back. Specially noteworthy were *Laelio-Cattleya Beatrice* var. *Illustrions* (a perfect flower of fine colour), *Sophro-Laelio-Cattleya Isabella Perfection* (large for a *Sophronitis* cross and of good colour), the pure white *Cattleya Cowaniae alba*, and the heavily-spotted *Odontoglossum crispum Madge*; to Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, for an extensive group, principally

of hybrids, and including some interesting Sophronitis crosses.

Silver Flora Medal.—To H. T. PITT, Esq., Rosslyn, Stamford Hill, for a group embracing most of the hybrids in flower at this season and some interesting species, among which were good *Odm. cirrhosum*, various *Masdevallias*, and *Lycastes*.

Silver Banksian Medal.—To Col. CARY-BATTEN, Abbott's Leigh, nr. Bristol, for a good group of hybrid *Cypripediums*, including the distinct *C. Col. Cary-Batten* (*Lathamianum* × *Mrs. Cary-Batten*); to Messrs. SANDLERS, St. Albans, for an attractive group of hybrids and species. *Cattleya Empress Frederick*, Sanders' variety, with pure white sepals and petals, was the best of its class; to Messrs. FLORY AND BLACK, Slough, for a very good selection of hybrid *Orchids*; to Messrs. J. CYPHER AND SONS, Cheltenham, for a very good group of specially well grown *Cypripediums*, set up with scarlet *Sophronitis*, *Odontiodas* and other pretty hybrids.

OTHER EXHIBITS.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed new seedling *Odontoglossums* of great merit, and including *Odm. Robin Hood* (*Mars* × *illustriissimum*), of perfect form and bright claret-red colour; *Odm. Violetta* (*Doris* × *Armstrongiae*), rosy violet and of good form; and *Odm. Model* (*Aglaon* × *promerens*), a large white, heavily-blotched flower.

Dr. MIGUEL LACROZE, Bryndir, Roehampton (Orchid grower, Mr. Taylor), showed *Laelio-Cattleya Linda* var. *Roehampton* (*C. Dowiana aurea* × *L. C. Arachne*), for one of which crosses he has already received an award. The finely-formed flower was rosy-salmon, with rich violet crimson lip.

RICHARD G. THWAITES, Esq., Streatham, showed an interesting selection of *Odontiodas* and *Odontoglossums*.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles (in the chair), H. E. Hawker, H. V. Warrender, W. R. Dykes, John W. Jones, W. B. Cranfield, G. W. Churcher, Joseph Jacob, F. Herbert Chapman, W. Poupert, E. Reuthe, Reginald Corv, P. R. Barr, Miss E. Willmott and Mr. C. H. Curtis (Hon. Sec.).

This Committee held its first meeting of the season, but there were neither flowers nor groups to be judged. A recommendation was forwarded to the Council urging that Mr. J. K. Ramshotton be invited to lecture on "Further Investigations in the *Daftodil Disease*," during the evening of April 15.

Fruit and Vegetable Committee.

PRESENT: Messrs. C. G. A. Nix (chairman), A. H. Pearson, J. Cheal, Owen Thomas, W. Crump, H. S. Rivers, W. E. Humphreys, W. Poupert, E. A. Buryard, H. Markham, S. B. Dicks, G. F. Tinley, F. Jordau, W. H. Divers, J. S. Kelly, W. Bates, E. Beckett, J. G. Weston, P. C. M. Veitch, and Rev. W. Wilks.

Mr. F. JORDAN, Ford Manor Gardens, Lingfield, Surrey, exhibited large, solid, well-ripened bulbs of Autumn Giant Onion, raised from seed sown on August 12, 1918.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver Knightian Medal for an exhibit of vegetables arranged in the best exhibition style and constituting one of the most interesting features of the show. The forced heads of Chichey were of outstanding quality.

Mr. GARDENER, Ruseley Lodge, Claygate, was awarded a Silver Banksian Medal for a collection of Apples, most of them gathered from very old trees. The fruits of *Dumelow's Seedling* (Wellington) were exceptionally bright in colour, and others of interest were *Mannington Pearmain*, *Claygate Pearmain*, *Royal Russett*, *Lane's Prince Albert* and *Emperor Alexander*.

A pleasing exhibit of fruit as imported from Cape Colony was shown by the UNION OF SOUTH AFRICA TRADE COMMISSIONERS, 90, Cannon Street, London, for which a Silver-Gilt Banksian Medal was awarded. The exhibit included Peaches, Nectarines, Plums and Pears, and the quality was favourably commented on by the Committee.

Annual General Meeting.

The president, Lord Lambourne, presided and was supported by Sir Harry Veitch, Sir John T. D. Llewelyn, Sir Albert Rollitt, Sir J. Nix, Mr. C. Nix, Mr. C. Hanbury, Mr. H. B. May, Mr. E. A. Bowles, Mr. J. Hudson, Mr. W. A. Binley, and Mr. W. R. Dykes. The attendance was excellent and those present included Mr. H. J. Elwes, Mr. R. K. Bulley, Mr. W. Cuthbertson, Mr. C. Jefferies, Mr. F. J. Chittenden, Rev. J. Jacob, Mr. Birtner, Mr. W. Crump, Mr. Owen Thomas and Mr. W. J. Bean. The president submitted the annual report, of which the following are extracts:—

EXTRACTS FROM THE REPORT OF THE COUNCIL FOR 1919.

The year 1919 is chiefly memorable for the reopening of our own Hall after its occupation by the War Office for the Australian Imperial Force during the years of war.

The Hall and premises will require very considerable renovation and repair after the long occupation by the military, but the Council intend, for various practical reasons, to defer this until the August holidays, omitting one fortnightly meeting (August 10th) for that purpose. The Standing Committees will meet on August 10th on the first floor for committee work only. There will be no Meeting in the Hall itself.

THE PRESIDENT'S CHAIR.

It was with no little regret that the Council heard in the early spring that the President, Field Marshal Lord Grenfell, G.C.B., G.C.M.G., wished to lay down the reins of office. The Society owes a great debt of gratitude to Lord Grenfell for all he did for it at a period when he was already overburdened with pressing military duties. The Council, as a mark of their appreciation, have caused a new medal to be struck in his honour, which will be known as the "Grenfell Medal," and will be awarded at, and after, the first meeting in January to exhibits of all kinds, and will rank in value between the Flora and the Banksian Medals.

THE NEW PRESIDENT.

The Council had not one moment's hesitation in asking the Rt. Hon. the Lord Lambourne, P.C., C.V.O., Lord Lieutenant of Essex, to accept the Presidency. His universal popularity, and his well-known devotion to all public duties, added to his position as a horticulturist make him an ideal President of whom the Fellows of the Society may be justly proud.

RESIGNATIONS AND NEW APPOINTMENTS.

A resignation which every horticulturist throughout the world will regret very deeply is that of Sir Harry J. Veitch, Kt., V.M.H., who most kindly took over the burden of the Treasurer's office during the absence of Mr. Chas. Nix on war duties. Sir Harry feels compelled to withdraw, not from the stress of business, but from increasing years. The President and Council have asked Sir Harry to allow them to nominate him as one of the Vice-Presidents.

Another noticeable event is the resignation of the Rev. W. Wilks, who has been Secretary of the Society since the Annual Meeting in February, 1888, and the nomination of Mr. W. R. Dykes, M.A., Oxon., Lect. Paris, as his successor. Mr. Dykes has for several years been one of the masters of the Charterhouse School. The Council believe that in Mr. Dykes the Fellows will find a very able successor to Mr. Wilks, who will efficiently carry on the work of the Society under the direction of the Council. The Council are glad to say that they will still continue to have the assistance of Mr. Wilks, who has consented to be nominated for one of the vacancies on the Council.

Another resignation which the Council had to accept with regret was that of Dr. Frederik Keeble, F.R.S., C.R.E., Director of Wisley Gardens. The Council feel themselves happy in being able to retain the services of Dr. Keeble on the Wisley and other Committees.

CONJOINT BOARD OF SCIENTIFIC SOCIETIES.

Capt. Arthur Hill, M.A.—a Member of the Council—has been appointed to represent the Society on the Conjoint Board of Scientific Societies in the place of Dr. Keeble, F.R.S., resigned. This Society is doing a very useful work in the direction of co-ordinating the energies of the various Scientific Societies of this country.

WAR RELIEF FUND.

Substantial progress has been made with the Society's War Relief Fund. The total amount received exceeds £40,000 made up of contributions from all parts of the Empire.

Considerable supplies of seeds and garden requisites have already been sent to Belgium and Rumania, whilst 23,000 packages of Onion and Cabbage seeds suitable for autumn sowing were recently distributed in the devastated districts of France. Arrangements are now being made for the distribution of large quantities of fruit trees, seeds, and tools during the present winter and spring, the Committee being in communication with the Relief Committees of the Allied Countries.

CHRISTMAS SHOW.

It was with some hesitation that the Council entered the Chelsea Show in its programme for the year. The decision having to be made so soon after the signing of the Armistice, it was far from certain in those early days what success it would be likely to meet with, and how far possibilities of tenting and labour,

and indeed of exhibits also, would permit of the Show being held. But never in the experience of any Member of the Council can a Meeting be remembered which left behind it such a sense of solid success. Not only was the tenting to be had, but exhibitors responded magnificently with exhibits. The weather was perfect, the attendance was large, and the Show paid its way.

EXTRA FRUIT MEETINGS.

The Council have arranged to devote considerable space to Fruit exhibits on March 9th and August 24th, 1920. In March specimens of late-keeping Apples and Pears are invited, and on August 24th Plums and early varieties of Apples and Pears.

A new Division (Division VI), has been added to the great Autumn Fruit Meeting on October 5th, in order to encourage the smaller Amateur growers to exhibit. The rules will be found in the "Book of Arrangements" under date October 5th, page 61.

CARDIFF SHOW.

It is nearly 35 years since an attempt was made by the Society to hold a Meeting in the provinces. The last effort at Liverpool was so great a financial loss that the Council have always feared to reintroduce a Provincial Meeting, so that the Society's educational exhibition work has been confined to London as a centre combined with the sending of deputations to provincial societies. Responding, however, to an invitation from the Lord Mayor of Cardiff, repeated by the Cardiff and County Horticultural Society, it has been decided to hold a great meeting in that City on July 6, 7 and 8. Fellows' tickets will, of course, admit.

PRITZEL.

The typing on cards of all the references in the original Pritzel and also in the Kew Supplement was finished in May, the total number of cards being about 200,000. Several voluminous works which had purposely been excluded from the Kew Supplement (e.g., Engler and Prantl, *Pflanzenfamilien*, and the *Pflanzenreich*) have also been gone through for the inclusion of the figures contained in them, with the result that many thousand more references have been added. Concurrently with this work the cards have been sorted according to the periodicals or books to which they refer: this was finished in September.

In order to make the new Index as complete as possible, the Kew Library has been systematically searched for omissions in the original Index and casual oversights of a later date, about 700 titles of books or periodicals being noted down for inclusion. As many of these titles cover several volumes, the number of additional references to the Index will be enormous, far greater, indeed, than was originally anticipated.

It was also found necessary to collate the list comprising all the original and additional publications so far extracted, or earmarked for extraction, with the catalogue of the Natural History section of the British Museum, so that gaps in the Kew Library might be discovered and filled. This very laborious work has also been brought to its conclusion.

Up to the present time £1,200 has been subscribed, £900 of which has already been spent in the preparation of the manuscript. The further printing and publication of the completed volume or volumes will require little less than another £2,500, so that it need hardly be added that more funds for the purpose are urgently needed if we are even to hope to begin printing next year.

DEPUTATIONS.

A deputation from the Society, consisting of the President, the Rt. Hon. Lord Lambourne, C.V.O., Mr. F. J. Chittenden, F.L.S., V.M.H., Mr. James Hudson, V.M.H., Mr. H. B. May, V.M.H., and the Rev. W. Wilks, M.A., V.M.H., visited the Birmingham Show on July 18th.

An invitation from the York Gala has been accepted for a Deputation to visit the York Show on June 16th, 17th and 18th, 1920.

WISEY.

The past year has seen the gradual return of members of the Wisley staff from the War, and with it the resumption of some of those activities which have been almost in abeyance during a great part of the war period. The new Laboratory is not yet fully staffed, owing mainly to the natural hesitation of the Council to pledge the future financial position of the Society. The filling of the various vacancies on the staff has been a matter of the greatest concern to the Council and the Garden Committee, who are most anxious to see this department in full working order; but they are also equally desirous of making no further advances than the existing income of the Society warrants, in order that when new posts are filled, or new appointments made, there may be no compulsory withdrawal. The recent great advance in the standard of wages and in the cost of goods of all kinds have naturally led to a great increase in the cost of the Garden beyond the pre-war standard, and have rendered more necessary than ever an adequate endowment of Wisley so that the work carried on there, important and valuable as it already is, may not be hampered by lack of funds.

An exceptional opportunity, which the Council seized, occurred during the year of securing a sufficient area of land for the development of the experimental work at Wisley. It was evident that more land would be required in the immediate future for experiment in such pressing matters as substitutes for the rapidly diminishing supplies of stable manure, and also for the extension of the fruit experiment work. The land purchased adjoins the Garden, being separated from it only by a road. Most of it is at present let to farmers, but as the leases fall in it can be used to extend the Society's work.

TRIALS AND GARDEN WORK.

The floral trials, which have been in abeyance during the war, will be at once resumed. The vegetable trials have lately been largely increased and have attracted much attention.

FOREST EXPEDITION.

Mr. George Forrest's plant and seed collecting expedition into Western China, in which the Society cooperates, has produced a quantity of seeds far greater than was ever expected even from this well-known collector. Very large numbers of plants have been raised and are growing on from the seeds collected in 1917 and 1918. Some of these have already been distributed among the Fellows, and others will be available in 1920 and the following years.

EXPERIMENTAL WORK.

The return of Lieut. A. N. Rawes from Germany after the Armistice enabled considerable progress to be made with the orchard-pollination experiments which have been in progress for some time, and it is hoped to publish a further report upon certain aspects of them shortly. Experiments on the summer pruning of Apples are being continued: Dr. Darbishire is continuing his research upon the comparative composition of different varieties of Potatoes, etc.; Capt. Page, who took up his duties as head of the Chemistry Department in June, has commenced experimental work upon the important question of green-manuring; Mr. G. F. Wilson has obtained some promising results in his experiments upon the Onion fly, which will be continued; experiments designed to ascertain the causes of the different yield-capacity of Potatoes are being continued; the crosses of Rubi made three or four years ago have given no very satisfactory results, partly on account of their developing a certain amount of tenderness on the one hand and of partial sterility on the other, but several of the results of crosses made by Dr. J. Wilson of St. Andrews University are being grown on, as also are Dr. Keeble's seedling vines.

SILVER-LEAF DISEASE

Mr. J. Butner has carried out at Wisley a number of inoculation experiments with silver-leaf disease during the year, and the Council appointed a Committee to consider what steps could be taken to battle with this pest.

GIFTS

A scholarship, tenable at the Society's Gardens for two years, has been most kindly founded by Sir James Knott, Bart. Its value is £30 a year, and it will be given biennially to men not exceeding twenty-two years of age who have secured a first class in the Society's General Examination in Horticulture.

The Society is greatly indebted to Sir Francis Burdett, Bart., for a magnificent Silver Challenge Cup which the Council propose to award to the best exhibit of *Gladiolus* made during the year.

The Council acknowledge with many thanks a valuable engraving of Sir Joseph Hooker in the midst of Himalayan surroundings, kindly presented by Mr. Gerald W. E. Loder.

The Council have also to thank Messrs. Bunyard, of Maidstone, for a Silver Cup to be awarded to the best newly-raised Apple.

DR. BENDLE AND THE SOCIETY'S MEETINGS

The Society is advancing with the general advance of the world in this time of after-war reconstruction, and among other developments the Council have an earnest desire to give greater importance and emphasis to the lectures delivered at the Society's fortnightly meetings. Now that the meetings are again held in our own Hall at Vincent Square, and the lecture room is again available, it is hoped that Fellows will attend the lectures more regularly and in greater numbers. An interesting feature introduced into the calendar for 1920 is the delivery of conversational lectures by the Society's recently appointed Botanical Professor, Dr. A. B. Rendle, F.R.S., F.L.S., V.M.H., who will draw the attention of the Fellows present to any special points of interest in the plants and flowers to be found in the Meeting of the day. This is a revival of an old custom.

LIBRARY.

The Library has been kept up-to-date, but the year has been marked by a peculiar dearth of new Horticultural books and of good old ones coming on to the market. The additions, therefore, have of necessity been somewhat scanty.

OBITUARY.

Each year the Council have to record the loss through death of some who have been the closest friends of the Society for a long number of years past. During the past year Sir Frank Crisp, Bart., V.M.H., whose gardens at Friar Park, Henley, were so famous throughout the country, if not throughout the world, was taken from us; Mr. George Bunyard, V.M.H., who has been one of the great pioneers of fruit growing, and for many years a devoted Member of the Council, and Mr. Thomas Smith of Newry, V.M.H., also passed away. Amongst others—Sir Thomas Dyke Acland, Bart., M. Maurice de Vilmorin, M. Philippe de Vilmorin, F. du Cape Godman, Sir Walpole Greenwell, Bart., Viscountess Halifax, Lady Macleay, Miss F. S. Musgrave, E. Rochford, Lord Ravensworth, Lady Tate, Sir C. E. Tritton, The Countess of Beborough, Herr Van Waveren, Jesse Willard, T. W. Turner, Archdeacon Sinclair, Herr Van Tubergen, William Goldring, and R. H. Curtis who was always so kind in preparing our Wisley Weather Chart records.

V.M.H.

It is always a great regret to the Council to hear of the death of any holders of the Victoria Medal of Honour. To fill the vacancies caused by the above-mentioned deaths they have appointed Mr. J. W.

McHattie Superintendent of the Edinburgh Parks and Gardens; Mr. Edward White, the well-known British Landscape Gardener, and Hon. Sec. of the International Horticultural Exhibition 1912, and Mr. S. T. Wright, who for the past 24 years has been Superintendent of the Society's Gardens and Shows.

LAWRENCE MEDAL.

The Lawrence Medal for the year has been awarded to Mr. John A. Nix for two superb educational exhibits of ironies showing how much can be done without heated glass-houses.

NUMERICAL POSITION.

The following table shows the Society's position with regard to numerical strength during the past year:—

New Fellows	1,770
Deaths and Resignations ..	464
Numerical Increase .. .	1,306
Total on December 31st, 1918	12,914
Total on December 31st, 1919	14,220

By Order of the Council,

W. WILKS,
Secretary.

Royal Horticultural Society,
Vincent Square, Westminster, S.W.
January 1st, 1920.

POST-SCRIPTUM.

The Conference on Saxifages which had been decided upon before the outbreak of the war and which had on that account to be postponed will now be revived and will be held in May, 1922.

In moving the adoption of the report, Lord Lambourne congratulated the members on the Society's return to its own hall and on the excellent progress made in the work of the Society during a period of great difficulty. On behalf of the Council and members he tendered hearty thanks to Lord Grenfell, whom he had succeeded as president, and also to Sir Harry Veitch, who was retiring from the Council and whose whole life had been devoted to the service of Horticulture. He expressed the regret of every one connected with the Society in Sir Harry's retirement and said that all would wish Sir Harry and Lady Veitch a very happy and unclouded evening at the close of a long and strenuous life. Lord Lambourne then spoke of the retirement of the Rev. W. Wilks, and very highly eulogised the services he had rendered the Society during the 32 years he had been its secretary. He was glad to say, however, that the reverend gentleman had accepted a seat on the Council, and therefore his long experience would still be available. Lord Lambourne referred to the Society's food production campaign, and stated that at the commencement of the war it organised a body of 2,000 gardeners to visit different parts of the country, and these experts gave excellent advice on what to grow and how to grow it.

The President also referred to the revision of "Pritzel," which was now nearing completion, and expressed the hope that Fellows would contribute towards the cost of its publication. He stated that the Society had raised £1,200 and that £2,500 was still needed.

In seconding the adoption of the report, Mr. Nix, the treasurer, stated that the past year had been a very good one from a financial point of view. The income had not only been maintained, but had been increased, owing to the large addition of new Fellows. Looking forward however, he pointed out that the Council was desirous of filling certain new posts at Wisley, and particularly wished to appoint a mycologist and to develop scientific experimental work on part of the land recently purchased, but as this would mean additional expenditure, there was still a great need for a large increase in the number of Fellows.

Mr. J. H. Elwes offered a few criticisms and expressed the hope that part, at least, of the 150 acres of new land purchased by the Council at Wisley was of suitable quality, and not of the hungry character of so much of the land in the Society's gardens. He considered that before embarking on a purchase of so much land the Council should have obtained the approval, or otherwise, of the Fellows. Referring to the revision of "Pritzel," he expressed his gratification at the progress already made, and said that the Society should publish the revised work as quickly as possible and not wait for the Fellows to subscribe the further £2,500 needed.

Mr. Oates requested the Council to realise some of its securities, if necessary, to enable the publication of the new "Pritzel" to be carried out immediately, and pointed out that there would be an income derivable from the sale of the publication. Mr. R. K. Bulley spoke at some length on the desirability of creating a large garden on a mountain side for the purpose of cultivating the many beautiful temperate plants more recently introduced from China, and referred to work of this character which he believed was being carried out in the United States. The Rev. J. Jacob suggested that there should be special meetings for special flowers, and that on these occasions the Floral Committee should co-opt a small sub-committee of experts in these particular subjects.

The Rev. W. Wilks pointed out that the Floral Committee was so constituted that it was able to deal with any class of plants or flowers brought before it at any time throughout the year, and he also stated that in regard to a very large alpine garden on a mountain side the cost of formation and upkeep would be very considerable, and the Society had not, as in the case of America, the Government Treasury behind it.

The report and accounts were then adopted unanimously, and as no other nominations had been received the President declared the following officers and members duly elected: President, Lord Lambourne; Treasurer, Mr. C. G. A. Nix; Secretary, Mr. W. R. Dykes; Members of Council, Lord Balfour of Burleigh, Mr. W. Cuthbertson, Mr. James Hudson, Sir Albert K. Rollitt and the Rev. W. Wilks.

The President then presented the Victoria Medal of Honour in Horticulture to Mr. J. W. McHattie, Mr. Edward White and Mr. S. T. Wright; the Lawrence Medal to Mr. John Nix, and the Veitch Memorial Medal (on behalf of the Veitch Memorial Trustees) to the Rev. W. Wilks and to Mr. Wm. Crump.

The meeting concluded with a vote of thanks to the President.

ROYAL GARDENERS' ORPHAN FUND.

FEBRUARY 4.—The annual general meeting of the Royal Gardeners' Orphan Fund was held on the foregoing date at "Simpson's," 100, Strand. The Treasurer, Mr. Edward Sherwood, occupied the chair and there were present Sir Harry J. Veitch, Messrs. T. Bates, W. Thomson, W. Poupard, B. Wynne, J. F. McLeod, J. W. Moorman, G. Reynolds, C. H. Curtis, D. Inganells, T. W. Sanders, G. F. Tinley, H. Cox, J. Pierce, W. Camm, J. Gregory, W. Cutbu'n, H. Cowley, R. B. Leech, A. C. Bartlett and H. J. May.

The Secretary, Mr. Brian Wynne, read the notice convening the meeting and the minutes of the previous annual meeting. The Chairman then introduced the report of the Committee for 1919, and the balance sheet. The following are the principal items referred to in the report.

EXTRACTS FROM THE REPORT OF THE EXECUTIVE COMMITTEE.

The Committee, in presenting the thirty-second annual report, much regrets to record the fact that for the first time since the fund was established it has had to resort to the reserve fund to enable it to discharge its obligations to its bankers, and efficiently carry on the work during what has proved to be a lean year. Again, as during the years of war, the fund has severely felt the loss of the generous contributions which flowed into its coffers from the annual festivals usually held in the month of May, and which have had perforce to remain in abeyance since 1914. The Committee had hoped—and indeed made every effort to revive the festival in May last, but found difficulties in the way which it was unable to surmount, and until towards the end of the year when financial help came in more freely, the Committee experienced a very anxious time. It found itself up against an overdraft at the bank amounting to £1,450, and believing it to be sound policy to pay that off and put the current accounts in better credit, the sum of £2,000 was realised by the sale of £3,453 14s. 2d. of Three per Cent. London and County Consolidated stock.

Apart from the loss above referred to, the accounts for the year are of a reassuring character, inasmuch as they show slightly increased totals in the case of subscriptions and donations, and also in respect of the proceeds resulting from a special appeal for assistance. On the other side of the account it will be seen that a larger sum was disbursed in weekly allowances and grants in aid made to the children.

At the commencement of the year the number of children in receipt of the full benefits of the fund was 117, and eleven candidates were added to the list at the annual meeting, all of whom had been assisted by special grants during the time they were awaiting election. The number so elected in February last was the smallest for some years past. During the year several nominations of candidates—children of gardeners who had given their lives to their King and country during the Great War—were received, but could not be entertained by the Committee owing to their being entitled to allowances from the Ministry of Pensions, and therefore very properly not subjects for charitable relief. From the last of twenty-two candidates, which will be submitted on February 4th, the Committee recommends the election of eighteen.

The Committee greatly regrets to announce the retirement from among them of Mr. H. B. May, who has been a member of the governing body for some 25 years, and who during that period has always shown a keen personal interest in everything pertaining to the fund. For the past 20 years he has occupied the position of chairman of Committee, a post which he always filled most conscientiously, and his colleagues who had the pleasure of his presence at their deliberations will consequently feel his resignation with regret.

The members of the Committee who retire by rotation are—Mr. G. H. Barr, Mr. G. H. Cutburt, Mr. W. Howe, Mr. G. E. Messer, Mr. W. Poupart, Mr. T. W. Sanders, and Mr. W. P. Thomson, all of whom offer themselves for re-election. Mr. C. R. King, having retired from the Committee—much to the regret of his colleagues—the Committee has very much pleasure in nominating Mr. J. M. Bridgford, a director of Messrs. Watkins and Simpson, Ltd., for election to the vacant seat; and to fill the vacancy created by the lamented death of Mr. John McKerchar, the Committee will gladly welcome the re-election of Mr. H. J. Jones, a former very active member.

The Committee has been very fortunate in securing Mr. Robert Anderson, C.A., to fill the position of auditor vacated by Mr. Bilney.

The Chairman moved the adoption of the report and balance sheet and offered a few remarks on the former. He stated that the best thanks were due to their late Chairman, Mr. H. B. May, on his retirement from the Executive Committee. His whole heart was in the interests of the fund and he had done much valuable work for the orphans. It was a matter for regret that he was retiring owing to ill health. Mr. C. H. Curtis seconded the adoption of the report and balance sheet, and it was carried unanimously.

Mr. Poupart, as one who had been associated with Mr. May during the time of his association with the Fund stated that he voiced the regret of the whole Committee at losing him.

On the proposition of the Chairman, seconded by Mr. T. W. Sanders, Rule 13 was amended to give the orphans in other parts of Great Britain the same benefits as those of Scottish parents.

The election of officers was next proceeded with. Mr. E. Sherwood was reappointed Treasurer with acclamation. He thanked the meeting for re-electing him and stated that he would always do his utmost on behalf of the Fund.

The retiring members of the Committee were re-elected and Messrs. J. M. Bridgford and H. J. Jones appointed to fill vacancies caused by the retirement of Mr. C. R. King and the death of Mr. John McKerchar.

Mr. P. R. Barr and Mr. R. Anderson were elected auditors, and Mr. B. Wynne reappointed Secretary.

At this stage of the proceedings, scrutineers were appointed for the purpose of counting the ballot, and the meeting stood adjourned shortly before 5 o'clock. Mr. Ingamells read the names of the successful candidates as follows:

	Votes.
Pettit, Ernest Arthur	369
Turner, George Ronald	233
Salter, Nancy	227
Walmsey, Catherine	193
Day, Catherine Francis	170
Cook, Edward James	163
White, Margaret Louise R.	160
Walmsey, Marjorey	152
Richardson, Isabel M.	148
Keir, Peter Durham	147
Smith, John Thomas	129
Edwards, Ena Elizabeth	112
Richardson, Jessie B.	106
Dingwall, Elsie T.	91
Pettit, Leslie George	83
Cook, Jean Alice	74
Dingwall, John George C.	74
Botley, Nina Mary	61

The members of the Committee and a few friends met again in the evening at dinner when Mr. E. Sherwood presided.

MARKETS.

COVENT GARDEN, February 10th.

Vegetables: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Asparagus, English, 50's	12 0-14 0	Mustard and Cress, per doz. punnets	1 6-2 0
— 100's	35 0-50 0	Mushrooms, per lb.	2 6-3 0
Middiesex	12 0-15 0	Onions, per cwt.	14 0-16 0
Beans Guernsey, per lb.	6 0-10 0	Parsley, per doz. bunches	2 3-3 6
—Worthing	10 0—	Parsnips, per bag	8 0-10 0
Beets, per bag	9 0-10 0	Potatoes, per cwt.	14 6-16 0
Cabbage, per doz.	1 6-2 0	—Guernsey, per lb.	1 9-2 0
Carrots, per bag	5 0-6 6	Radishes, per doz.	2 0-4 0
Cauliflower, per doz.	2 0-5 0	Rhubarb Forced, per doz.	1 6-2 0
Celery, per fan, (12 heads)	3 6-4 6	Seakale, per punnet	2 0-2 6
Chicory, —English, per lb.	0 3-0 6	Spanish Onions, 4 tier	17 0-18 0
—Belgian	0 6-0 8	5 tier	20 0-23 0
Cucumbers, each	4 0-5 6	Spring Onions, per doz. bunches	3 0-4 0
Garlic, per lb.	1 9-2 0	Sprouts, per bag 28 lb.	3 0-4 0
Endive, per doz.	2 0-4 0	Tomatoes, Teneriffe, Best, per bundle	25 0-30 0
French Lettuce, per doz.	2 0-2 6	Furnips, per bag	5 0-8 0
—Batavia, per doz.	3 0-3 6	Watercress, per doz. bun.	10 0-12 0
Herbs, per doz. bun.	4 0-6 0		

REMARKS.—Business in most sections remains satisfactory. The demand for English cooking Apples continues active, and in view of lessening quantities available, a hardening in price is likely. In view of the excellence of the last shipment of Cape Fruit, there has been a distinct firmness in demand. The next and largest shipment is due at mid-week, and it is anticipated that prices will be slightly easier. More abundant supplies of Canary Tomatoes, with heavier shipments due this week, promise a further drop in price. Household Grapes show a slight advance in price owing to the relative scarcity which is usual at this period. British Columbian Apples are in firm request. The last shipment, which is now available, is in excellent condition, and prices remain quite firm. Consignments of Californian Winter Nelis Pears have sold freely. Barrel Apples from Nova Scotia are somewhat affected by frost, but some good Golden Russets are meeting a ready demand. Pineapples are due at the end of week, and the Orange trade is easier. English forced Asparagus has hardened in price, mainly owing to exceptional demand. Guernsey and Worthing forced Beans remain scarce and dear. Forced Potatoes are more plentiful and Mushrooms also are more abundant. Cauliflowers from Cornwall, Guernsey, and France are very reasonable in price. All green vegetables are in good supply. The Potato trade is still difficult, and prices have an upward tendency.

Out Flowers, &c.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Azalea white, per doz. bun.	5 0-6 0	Cyprripediums, per doz.	0 0-6 0
Camellias per doz. blooms, best	2 6-3 0	Petargonium, double scarlet, per doz. bun.	12 0-15 0
American var.	3 6-6 0	Richardia (Arums), per doz. blus.	8 0-9 0
Chrysanthemums, —White per doz. blooms	4 0-10 0	Roman Hyacinth, per doz. spike	1 3-1 9
—Pink	4 0-8 0	Roses, per doz. blooms	12 0-18 0
—Spray White, per doz. bun.	36 0-54 0	Ophelia	12 0-18 0
—Coloured	30 0-48 0	Richmond	12 0-18 0
Daffodils, Single, per doz. bun.	15 0-18 0	Snowdrops, per doz. bun.	2 0-3 0
—Emperor	15 0-18 0	Tulips, White, per doz. bun.	24 0-36 0
—Empress	15 0-18 0	Coloured var.	36 0-48 0
—Golden Spur	12 0-15 0	Violets Single, large per doz.	8 0-10 0
—Henry Irving	12 0-15 0	—Ordinary	5 0-6 0
—Princes	12 0-15 0	French Flowers—	
—Sir Watkin	12 0-15 0	Anemones, Pink, per doz. bun.	3 0-4 0
—Double Van Zool	12 0-15 0	—Lilac white, per doz. spray	6 0-7 0
Fresh, White, per doz. bun.	4 0-6 0	—Marguerites yellow, per doz. bun.	4 0-5 0
Heather, white, per doz. bun.	10 0-12 0	—Mimosa, per pad	8 0-10 6
Lilium longitiorum, per bunch	20 0—	—Narcissus, Paper, White per pad	12 0-16 0
Lilium speciosum, album per bunch	5 0—	—Ranunculus, Carmine, per doz. bun.	10 0-12 0
—rubrum per bun	4 0-5 0	—Scarlet	10 0-12 0
Lily of the Valley, per bunch	2 0-3 6	—Violets, Parma, per bun.	6 0-8 0
Narcissus, Soleil d'Or, per doz. bun	6 0-9 0	—Roses, per doz. blooms	12 0-16 0
Grand Primo, per doz. bun.	4 0-6 0	Ulrich Brunner, 6 0-8 0	
Pheasant Eye, per doz. bun.	8 0-10 0	Ulrich Ruschki, 4 0-8 0	
Orchids per doz.: —Cattleyas	24 0-30 0	Saturno, per doz.	1 6-2 0

REMARKS.—The feature of the market last week, was the arrival of the new crop of Roses from home growers, consisting of the new and a few blooms of Ophelia, the former being most plentiful, and the blooms in fine condition. Larger supplies of Daffodils, single and double, also Narcissus ornatus, are being received from home growers, and prices are declining. Tulips are increasing in quantity, and consist of some very fine blooms, both single and double varieties. Lilium longiflorum is again advancing in price owing to a very short supply. Arums (Richardias) remain sufficient for the demand, and there is an abundant supply of Roman Hyacinths, Snowdrops and Violets. Larger supplies are arriving from Guernsey and Scilly, and these consist of white and yellow Narcissus, Violets, Arums, and Smilax. Flowers from the South of France are arriving daily.

ANSWERS TO CORRESPONDENTS.

BEGONIA RUST: D. H. The rusty appearance on the under sides of the leaves of Begonia Gloire de Lorraine is due to the presence of a mite. Dip the plants in a solution of nicotine, or, while the leaves are moist, dust them freely with tobacco powder.

BLACK HAMBURG GRAPES WITH THICK SKIN: A. S. It is not usual for Black Hamburg Grapes to have thick skinned berries. Your description leads us to think you may have Wilmot's or the Dutch form of Black Hamburg, which grows to a larger size than the ordinary type, and has a thicker skin. The Dutch form grows and crops freely, but the Grapes are not equal in flavour to those of the ordinary variety. The thick skinned form is now seldom seen; it is easily distinguished by the conspicuously hammered appearance of its berries. If this is not the solution of the difficulty, there is another possible one. We have known phosphates and also lime added to the soil to improve the skin of the berry when it was either too thin or too soft. During the last few years there has been a difficulty in obtaining potash, and artificial manures have lacked this material. Manufacturers have presumably been obliged to make up their manures either with a greater bulk of one of the usual ingredients (it may be superphosphate), or by adding something else. As you appear to have depended on concentrated fertilisers alone, you may have supplied an excess of superphosphate which, in the presence of a sufficiency of lime, might produce the result complained of. Certain growers, knowing their soil to be deficient in potash, have used a smaller quantity of artificial manure and supplemented this with wood ash or charred vegetable refuse. This we advise you to do so long as the shortage continues. However good an artificial manure may be, it is always advisable to apply a little organic material to decompose and form humus.

BROWN ROT IN APPLES: W. T. A. The trees are suffering from an attack of brown rot canker, a disease which is very troublesome in some districts and affects certain varieties of Apples more than others. All dead wood and cankerous growth should be cut out, and immediately before the flower buds open the tree should be well sprayed with Bordeaux mixture. In the case of a very bad attack a second spraying should be given directly the bloom is set, using either Bordeaux mixture or lime-sulphur wash, the latter being considered the better remedy for trees of Cox's Orange Pippin.

CLUB ROOT IN BRASSICAS: A. The only certain means of eradicating Club-Root disease from land that has become badly infected, is by a free use of lime, especially fresh gas lime, and by keeping the land free from all Brassica crops for some time to come.

CINARARIAS: T. B. The appearance of the leaves suggests that the Cinararias have been exposed to a very low temperature, or subjected to excessive fumigation.

EMPLOYMENT IN PUBLIC PARKS: W. J. B. Application for employment in the London County Council's Parks should be made to the Chief Officer of the Parks Department, County Hall, Spring Gardens, S.W.1, or to the Superintendents of the various parks. The names of the various parks with their area and Superintendents are listed in the Horticultural Directory and Year Book for 1920, price 1s. 10d., which can be supplied by our publishing department.

LICENCE FOR UNDER GARDENERS: G. J. A licence is required for an under-gardener, as well as for a head gardener.

RABBITS EATING TREE STEMS: C. A. C. In the Gard. Chron. of January 31, page 55, you will find an article dealing with methods of preventing damage to fruit trees by hares and rabbits.

Communications Received.—F. N.—H. S.—G. D.—G. R.—L. M. A.—G. A.—A. P.—E. R.—O. W. G.—A. B. W.

THE

Gardeners' Chronicle

No. 1730—SATURDAY, FEB. 21, 1920.

CONTENTS.

Acacia pycnantha .. 86	Obituary .. 97
Allotments, model .. 94	Kennedy, James .. 97
Apples, home-grown, low prices for, .. 95	Lange, John .. 97
Apples, for market .. 94	Orchid notes and gleanings—
Asperula .. 91	Byndir, Orchids at .. 89
Belgium's gratitude to British horticulturists .. 86	Potastis tragans .. 91
Birds and fruit buds .. 95	Phosphate rock .. 86
Bourneville, new Superintendent of .. 86	Plants, new or noteworthy—
Parks, at .. 86	Picea Glehnii .. 89
Carrotion stem rot .. 95	Potato crop, importance of the .. 96
Chrysanthemum, the .. 87	Potato culture .. 95
Croydon Chrysanthemum show .. 85	Potatoes, mosaic disease of .. 85
Edinburgh allotments .. 85	Societies—
Erythraea Centaurium .. 96	Horticultural Club .. 97
Flora of Macquarie Island, the .. 85	Limeau .. 97
Fruit garden, the market .. 92	Reading and District Gardeners .. 97
Fruit, homegrown .. 92	United Hort. Ben. and Prov. .. 97
Fruit register—	Yorkshire Professional Gardeners .. 97
Apple, Radford Beauty .. 93	Tomatos, White Fly on .. 96
Apple, Tythby's .. 93	Trade note .. 97
" Gardeners' Chronicle," seventy-five years ago .. 86	Trees and shrubs—
Gardeners' education and training .. 95	Azara integrifolia .. 89
Gardeners' wages where surplus produce is sold .. 96	Jasminum nudiflorum .. 89
Gladiolus, "Foremarks" challenge cup for, .. 85	Vegetable cultivation in Macedonia .. 94
Irises, hybrid bearded .. 88	Veitch, Sir Harry J. .. 85
Legacies of an untoward season .. 95	Vine borders, inside .. 95
	Week's work, the .. 90, 91
	Winter Moth and grease banding .. 95
	Wye College, fruit conference at .. 85

ILLUSTRATIONS.

Acacia pycnantha .. 87
Apple Tythby's seedling .. 93
Felstead, Mr. W., portrait of .. 86
Iris unguicularis .. 88
Potastis tragans .. 91
Picea Glehnii .. 89
Winter Moth .. 95

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.47°.

ACTUAL TEMPERATURE.—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, February 18, 1920, 10 a.m.: Bar. 29.98; temp. 48°. Weather—Dense Fog.

The Flora of Macquarie Island.

Recent investigations by Mr. T. F. Cheeseman, of the Flora of Macquarie Island, published in the Scientific Reports of the Australasian Antarctic Expedition and reviewed in *Nature* (October 2, 1919), confirm the belief that in relatively recent (Early Tertiary) times the land surface of the sub-antarctic regions was vastly greater than it is to-day. As is pointed out in the review, Macquarie Island, an almost continuous mountain range, about 21 miles long and 4 wide, wind-swept by westerly gales, a place of short summers and low temperatures, lies about 600 miles south-west of New Zealand. Fuegia lies 4,600 miles east of it, and between them is nothing but the sea. To the westward is Kerguelen Island, about 3,250 miles away.

In his *Flora Antarctica*, Hooker enumerates seven species of flowering plants and one Fern as occurring on Macquarie Island. Mr. Cheeseman, basing his account on the collections of Mr. A. Hamilton, amplifies the list to thirty flowering plants and four Ferns.

The composition of this flora is remarkable. Three species—all grasses—are endemic; of the remainder, eighteen species occur also in New Zealand, and of these eleven do not occur elsewhere. Fifteen of the thirty-four species of flowering plants and Ferns are also found in Fuegia or South Georgia (east of the island 5,800 miles) or in the Kerguelen Islands. The relations of the flora of Macquarie Island with that of New Zealand on the one hand, and with that of

Fuegia, South Georgia and Kerguelen on the other, require for their explanation belief in a wide extension in past time of sub-antarctic land, and it is suggested that in Early Tertiary times the existing sub-Antarctic islands were part of a greater New Zealand and that Antarctica also extended far more north than now, so far indeed as to render possible the passage of animals and plants from one land to the other. Similarly, it is to be assumed that at one time there was connection between Antarctica and South America sufficiently close to admit of an exchange of floras. Other evidence also suggests that in those days Antarctica was a less inhospitable land than now, that it was less bound with ice and snow, and possessed—at all events along its shores—a numerous flora. On these hypotheses the present existence of South American species in the flora of New Zealand and *vice versa* are explained, Antarctica serving as a high road for migration.

The subsequent glacial epoch brought about the extinction of many species, leaving in the Macquarie Island the grasses which constitute its endemic flora, but in South Georgia sweeping away all traces of the original flora. When that epoch gave place to a milder one, the only sources whence new plants might reach the Macquarie Island were Fuegia and the New Zealand area.

Mosaic Disease of Potatoes.

Of all the diseases to which plants are susceptible those known as mosaic diseases, and characterised by a mottled leaf surface and relative barrenness, are the most remarkable. The very thorough investigation of mosaic disease of Tobacco has demonstrated that although no causal organism can be detected, nevertheless the disease is infectious, and may be transmitted by inoculation. Recent researches* show that this is also true in the case of mosaic disease of Potatoes, a malady which appears to be widely distributed in the United States. The disease induces, as already mentioned, a mottled appearance in the foliage, and may also give rise to a stunted and curled condition, and in that case the malformed plants are known as "curly dwarfs."

The external manifestation of the disease varies, however, according to the region in which the diseased tubers are planted—a fact manifestly of great economic importance, for the essential effect of the disease (reduced yield) remains—although the external symptoms are not evident. It has now been shown that the tubers of diseased plants carry the disease, with the result that it appears in the next year's crop, and it has also been shown that mosaic disease may be transmitted to a healthy plant by using it as a graft or scion in conjunction with a diseased Potato plant. It may also be transmitted by inoculation. Perhaps the most important fact demonstrated by these researches is the active and real part played by aphides in carrying the infection from diseased to healthy plants, a fact which was previously known with respect to other mosaic diseases of Tobacco and Spinach. In the latter case the disease is known as Spinach blight, and is transmitted by the Pink and Green Potato Aphid and by the Spinach Aphid. In view not only of this fact, but also of the direct damage done by aphides to the Potato crop, American growers are now generally obliged to introduce into

* Investigations on the Mosaic Disease of the Irish Potato by Shultz, Folsom, Hildebrandt and Hawkins. *Journal of Agric. Research*, xvii, 6, Washington.

their routine of spraying methods designed to control aphid attack, and from the prevalence during last season of aphid attack on Potatoes in this country it looks as though British growers will be obliged to adopt like precautions.

The only effective method at present known of combating mosaic disease is to discard all visibly infected plants before aphides become abundant. The estimated loss of crop due to mosaic disease of Potatoes is 1½ American bushels for every 1 per cent. of disease present in the crop.

Honour for Sir Harry J. Veitch.—The King of the Belgians has bestowed upon Sir Harry Veitch, the Hon. Treasurer of the Royal Horticultural Society's War Relief Fund, the cross of Officier de l'Ordre de la Couronne in recognition of the valuable services he has rendered to Belgium in connection with the War Horticultural Relief Fund.

Fruit Conference at Wye College.—A Fruit Conference will be held at the South Eastern Agricultural College, Wye, Kent, on March 23, at which papers of scientific interest in fruit growing will be read.

Flowers in Season.—Major A. C. T. Woodward obligingly sends from his gardens at Arley Castle, Bewdley, flowering sprays of the new *Prunus cyclamina*, Koehne, a native of Western Hupoh, found by Mr. E. H. Wilson in woodlands at an altitude of 1,000 m. to 1,300 m., in the Changyang Hsien district. The tree at Arley Castle expanded its first flowers at the end of January, and in a few days was a mass of blossom. The flowers are small, and coloured pale pink; they are developed on small spurs and from buds on young shoots, in both cases in clusters.

Revival of the Croydon Chrysanthemum Show.—At a recent meeting of the committee of the Croydon Chrysanthemum Society, it was decided to revive local interest in the Chrysanthemum by holding an exhibition on pre-war lines in the coming autumn. Mr. Oxtoby being unable to again undertake the duties of secretary, which he so ably carried out in the past, Mr. Aley was elected to the office; his address is: The Firs, Highbarrow Road, Addiscombe, Croydon.

The "Foremarke" Challenge Cup for Gladiolus.—At the Royal Horticultural Society's meeting on the 10th inst., the "Foremarke" Challenge Cup was exhibited. Presented originally to the National Gladiolus Society by Major Sir Francis Burdett, Bart., it has now been transferred by him to the Royal Horticultural Society. The Society is offering it at its fortnightly meeting on September 7 next, for twenty spikes of named Gladioli, in not fewer than ten varieties and not more than two spikes of any one variety. The Cup, which was made by the Goldsmiths' and Silversmiths' Company, is a beautiful reproduction of the famous "Burleigh" Cup, the original of which is in St. John's College, Cambridge. The period of the Cup is late Stuart, date 1684.

Tennis on Kew Green.—At the recent meeting of the Richmond Town Council, which body looks after the interests of Kew, it was decided to apply to the Ministry of Agriculture for permission to turn the portion of Kew Green now used as allotments into tennis courts. This is the enclosure opposite the Main Gates of the Royal Botanic Gardens, which for some time has been let as vegetable plots. The soil is poor, due, no doubt, to the insecurity of tenure, which did not encourage the use of manure, therefore no great success has attended the labours of the allotment holders. Cricket in the summer and hockey during the winter have long been played on the larger area of Kew Green.

Edinburgh Allotments.—Considerable anxiety prevails among very many Edinburgh allotment holders regarding tenure. The Corporation secured a number of the allotments on a lease of five years, and this expires at the end of 1921. In July, 1919, the Town Council decided that the allotments in the public parks should be vacated at the end of five years from

their original provision, therefore about 54 acres should be restored to the parks in 1921. About 18½ acres, granted by the Commissioners of H.M. Works in the King's Park, have also to be given up at the end of 1921. Unless other arrangements are made, the tenancy of about 27 acres may end this season, about 50 acres at the conclusion of the 1921 season, and the 72 acres in the Corporation and Crown Parks will be taken from the allotment holders at the same time. It has been suggested that the Corporation should, with the assistance of the allotment holders, endeavour to secure other suitable land, and the Allotments Committee has resolved to do this.

Town Planning at Merton and Morden.—It has been decided by the Merton and Morden District Council (Surrey) to allot twenty-one acres of the land recently secured in connection with the Whatley Estate, as a recreation ground, the remainder to be used for houses and other similar purposes. The value of the twenty-one acres is £3,100, and it is reported that Mr. Joseph Hood, a prominent resident of Morden, has most generously offered to present this portion and also to contribute an additional £1,900, making £5,000 in all, which is the estimated cost of laying out the ground for recreation purposes. As many readers are aware, Merton already possesses the beautiful park given by the late Mr. John Innes, adjoining the invaluable John Innes Horticultural Institution. This park, though not large, is so skilfully laid out that its apparent size is very great; it contains most delightful old garden walls and beautiful flower borders containing a great variety of hardy plants.

Acacia pycnantha.—In addition to *Acacia dealbata*, *A. Baileyana* and *A. longifolia*, the handsome and very heavily-scented sprays of *A. pycnantha* are being sent from the South of France to Covent Garden Flower Market. An illustration of a small side-spray, taken from a large branch which arrived last week, packed in the usual way in a wicker "pad," is reproduced in Fig. 34. The fluffy golden flower heads are larger than those of the other species mentioned, and are so heavy that they cause the sprays to bend down after a branch has been placed in water a few days. The fragrance is strong, and when several large vases of flowers are placed in a dwelling-room it may prove overpowering. The foliage of *A. pycnantha*—also known as *A. petiolaris*—is sickle shaped, tough, and bears a strong resemblance to that of certain Eucalypti. Each phyllode has a prominent central nerve and about three quarters of an inch from its base there is a large gland; the latter is very conspicuous and a marked feature of the species. *A. pycnantha* is of economic value as the wood is tough and close grained, and it carries one of the richest tanning barks in the world; further, the possibility of extracting a perfume from the flowers was foreseen long ago and the species considered "worthy of culture as perfume plants."

Belgium's Gratitude to British Horticulturists.—The Belgian Chamber of Horticulture, as representing the gardening community of our gallant Ally, has presented an address to the Royal Horticultural Society offering thanks for "the lavish gifts so generously poured out for the benefit of the horticultural industries of Belgium," through the R.H.S. War Horticultural Relief Fund. The address was in the form of a most sumptuously-bound volume, with embossed and decorated leather binding, an unique example of the book-binder's art, and was presented to the Council of the R.H.S. on Tuesday last by M. Albert de Smet, the delegate appointed by the Chamber. It was a happy incident that there was also present M. Lucien Levavasseur, of Angers, for his country also has been assisted by the Fund, and both Belgium and France were thus represented. Lord Lambourne, President of the Royal Horticultural Society, who received the address, thanked M. de Smet for the most charming souvenir, and expressed the lively pleasure it gave him to receive it on behalf of the Society and British horticulturists generally. He stated that we in this country were most anxious to help to ameliorate the unhappy condition of the countries which had suffered most in the war, and he rejoiced that

we were able to do so, for he was sure that it would strengthen the bonds of union which already existed between the three nations. It was a bond of affection, a bond of tribulation, and a bond of suffering. We shall, said Lord Lambourne, continue friends and fellow workers in horticulture, which has not only a scientific but a humanising influence on the world. M. Albert de Smet stated that he brought the deepest sentiments of Belgian gratitude to the Royal Horticultural Society, and he asked them to accept the address and retain it as a lasting souvenir from his countrymen. M. Lucien Levavasseur also expressed his gratitude for what the British people had done for horticulturists in the ruined areas of France, and for the kind words which had fallen from the lips of Lord Lambourne.

New Superintendent of the Bournemouth Parks.—At a special meeting of the Bournemouth Parks Committee, held recently, Mr. Walter Felstead was appointed Superintendent of the Bournemouth Parks and Pleasure Grounds, in succession to Mr. W. Cobb. Mr. Felstead has a wide practical experience of the management of public parks, as after seven years' training in the Leicester Abbey Nur-



MR. WALTER FELSTEAD, THE NEW SUPERINTENDENT OF BOURNEMOUTH PUBLIC PARKS.

series he entered the service of the Leicester Corporation and was subsequently chief assistant to the late Mr. Joseph Burton, in the Leicester Parks' Department. His next appointment was Superintendent of the Wolverhampton Parks, a post he occupied for seven years and resigned to take up the duties of Superintendent of Parks and Allotments under the Corporation of the city of Norwich. Here he remained for one year and then became Superintendent of Parks and Cemeteries under the Corporation of Dudley, a post he now leaves to go to Bournemouth. Mr. Felstead is widely known in Midland horticultural circles, and for four years he was Hon. Secretary to the Leicester and Leicestershire Chrysanthemum and Fruit Society.

Supplies of Phosphate Rock.—For all practical purposes the United Kingdom relies for its supplies of phosphatic rock for the making of mineral super-phosphate, upon the United States and North Africa. In obtaining the necessary quantities from the United States the British importers require no assistance from the Ministry of Agriculture other than occasional support in obtaining the shipping they require. But with North Africa the case is different. In Tunis and Algeria, under the control of the French Government, there are some of the most extensive deposits in the world. Difficulties in obtaining labour and coal considerably reduced the production of rock in 1919, and though better things are hoped for in 1920, this prospect is offset by an increased demand both from France herself

and from the remaining European countries. One and all stand in urgent need of adequate supplies of super-phosphate to replenish their impoverished soils, and North Africa is the most convenient, if not the only practicable source of supply at the present time. In order to insure that her own requirements should be met and that the surplus should be fairly distributed among her neighbours, France has found it necessary to retain control of the allocation of the output between the different nations. A representative of the Ministry visited Paris last September to explain the requirements of this country to the French authorities, and the immediate result of his visit was the licensing of an additional 30,000 tons of rock for export to this country in 1919. There was also a conditional promise to give due consideration to our needs in 1920. In December, the Ministry was officially informed that if the output of the North African mines reached the anticipated level, which depends largely on the provision of adequate supplies of coal, 275,000 tons would be licensed for export to the United Kingdom in 1920. Some delay occurred, owing to an additional requirement by the French authorities that contracts should be officially endorsed by the Governments of the importing countries before they would grant the necessary export licences against the provisional allocation. This made it impossible to ship phosphate rock at the beginning of January; so to save delay the Ministry again sent a representative to Paris to enter into direct negotiations with the authorities there. With the valuable assistance of the British Embassy he was able to settle the whole matter, no obstacles being placed in his way by the French Government, which readily consented to the method by which he proposed to meet their requirements. The contracts were endorsed on the spot and an assurance given that if the production exceeded the estimate, the quantity to be licensed for this country would be increased. Our supplies of North African phosphate rock for 1920 are therefore unlikely to be less than in 1919, provided the necessary transport facilities are available.

Galanthus nivalis Atkins' Variety.—This fine Snowdrop was shown by the Rev. W. Wilks, at the meeting of the Royal Horticultural, on the 10th inst., under the name of *Galanthus nivalis Imperati*, and received the Award of Merit from the Floral Committee. The plant has subsequently been recognised as being Atkins' variety of *nivalis*.

"The Gardeners' Chronicle" Seventy-Five Years Ago.—*Repeal of the Duty on Glass.*—We believe that the free trade in fruit has produced very serious losses to the English gardeners. We also believe that the repeal of the glass duties will be much more than a compensation for them. That the new state of things will produce a most important alteration in the condition of our gardeners we entertain no doubt. Glass will be very cheap, and very durable; for what does it now signify to the maker whether his commodity weighs an ounce to the square foot or half a pound? Flint and soda are cheap enough to enable him to combine strength with superfluity, and that is what the consumer wants as much as actual cheapness. Many a man would build a greenhouse, even at the present cost, if it were not for the heavy charge of repairing it. Every one who has a Peach tree trained against a wall, or a Vine on the front of his house, may force them now. A few moveable sashes, however roughly put together, may be inclined in front of such trees, and Nature will do the rest. We shall have no more occasion for vitreous cloth, and all those imperfect expedients to which the exorbitance of glass has driven us; and we now may reasonably hope to see every cottager with his hand glass and "one light box."—*Gard. Chron.*, February 22, 1845.

Publications Received.—*Vegetable Garden Insects*, Manual of, Cris Richard Crosby, and Mortimer Demaresey Leonard, Macmillan & Co., Ltd., New York, 12s. 6d. *Birds of the British Isles and their Eggs*, A pocket guide with descriptive text by T. A. Coward. [With over 300 coloured illustrations, F. Warne and Co., Ltd., 12s. 6d.]

FLORISTS' FLOWERS.

THE CHRYSANTHEMUM.

In a short article in *Le Chrysanthème*, my old friend, N. Ph. Rivoire, Secretary of the French Chrysanthemum Society, takes my mind back to the far off days when I first began to interest myself in the popular autumn flower.

At various stages in its history the Chrysanthemum has had periods of rise and decline in popularity. Shortly after the retirement and subsequent death of John Salter there was a marked diminution in the enthusiasm for the flower, so apparent that in the columns of one of your contemporaries a pessimistic writer enquired "Has the Chrysanthemum had its day?"

Whatever may have been the answer to that enquiry—and it was justified at the time—the flower was to have another day, the chief reason being the wide appreciation for the Japanese section, and its popularity with the public on account of its marvellous variation in size, form, and colour.

I came into the arena, so to speak, in 1880-81, just as the renewed interest in the flower was beginning. The "fever," popularly so called by the numerous and increasing body of Chrysanthemum growers and admirers, went on for at least a quarter of a century, reaching its highest point in the days of the Royal Aquarium shows. The causes of this remarkable development of enthusiasm were chiefly the splendid central site of the exhibitions and the wonderful and continuous surprises year after year provided by the raisers of novelties. Minor causes there were no doubt, but the two mentioned were in my opinion the chief.

Perhaps when the effects of the war are entirely obliterated we may arrive at something like a renewal of the old conditions. If we do, it will have to be the result of some very exceptional circumstance or combination of circumstances.

It is within the recollection of many old members of the N.C.S. that, when the Horticultural Hall was first built, it was considered by them far too small to hold the N.C.S. autumn show. At that time the Chrysanthemum Show was open for three days—to-day it is held in conjunction with a fortnightly meeting of the R.H.S., and is open for four hours to the public, viz., from 1 p.m. to 5 p.m. on one afternoon only.

In the olden time no fewer than 10,000 people have visited the Aquarium Show on one day, if not wholly to see Chrysanthemums, at least to see them and other attractions. I wonder what the total number of visitors to the N.C.S. Chrysanthemum Show was this year, or last year, or even the year before? And yet some will try to persuade us that the Chrysanthemum is as popular as ever. In what way? If a four-hours' show once a year is not proof to the contrary, to say nothing of many provincial shows that were once famous for the number of exhibitors and visitors and large amounts of gate money, silver cups and challenge vases and other pecuniary attractions, what can be said when we look to the financial support accorded to the N.C.S. to-day and, say, ten years ago. In the accounts for 1909, we find a total on the receipt side of £736 6s. 10., while in the accounts for the past year the amount is £204 12s. 6d. Assuredly the Chrysanthemum as a show flower is under a cloud to-day.

And so it was before the war—and M. Rivoire's lament only deals with a part of the cause. Forty years ago there were initiated by various cultivators a series of new departures and surprises in connection with the flower. Almost every year or two some remarkable new development took place to maintain our interest and raise our expectations. Now^{what} that is all gone.

I will ask the old Chrysanthemum grower to remember the names of the novelty producers in the 'eighties—Delaux, Lacroix, Marrouch, De Reydellet, Boucharlat, Audignier, etc.

What wonderful progress they made and what extraordinary surprises were in store for us, and

then Calvat came suddenly on the scene and for ten years or so swept all the old popular show flowers off the boards with his marvellous creations. First of all the Japanese flowers introduced by Fortune and seedlings from them eclipsed the incurved varieties so long held up as the criterion of the perfect flower—then a break in the form of the Japanese Anemone, then the hairy type of which Mrs. Alpheus Hardy was the precursor and so on—always something new, novel and startling—not forgetting the introduction of

Chrysanthemum and the extension of its culture, there is to-day not a single raiser of seedlings in France. In America, where once there was considerable activity in this phase of floriculture, almost the same thing can be said—I exclude, of course, Mr. Elmer D. Smith, who is almost alone in his good work.

The names of recent raisers of seedlings referred to by M. Rivoire, although of some repute in France, were never widely known here, and I doubt if any trader ever imported



FIG. 34.—WACIA PYCNANTHA, AS SOLD IN COVENT GARDEN MARKET. (See p. 86.)

Delaux's remarkable series of early flowering Japanese varieties.

By way of another surprise turn in the tide the Australian Puckett presently appeared on the scene and to all these men and their products the Chrysanthemum grower, both amateur and professional, is indebted for the opportunities of pushing his favourite flower to the front and making it what it was—and what it may be again some day if the requisite impulse can be given it.

What does M. Rivoire deplore in his country? It is that at the present moment in spite of the very important part played by the French raisers in the improvement of the

seedlings from them since Calvat died. He says M. Chantrier is ill and has not been able to continue his seedling raising. M. Rémy, who took over Calvat's stock, has been obliged through ill health to give up cultivating the plants, M. Herand has ceased growing, and M. Martin is dead, although his widow intends to continue the work. I venture to say that even if this had not been the case, the cultivation of the Chrysanthemum in this country would not have been in any way improved. To revive interest in it as a show flower demands a condition of affairs such as existed in the 'eighties and early 'nineties of the last century. Till then we must wait and work patiently. C. Harman Payne.

HYBRID BEARDED IRISES.

(Concluded from p. 76.)

APART from its origin, some of the later results of the development of the plicata type are of much interest. The breadth of the colour margins, which may consist of spots, or veins, or a suffusion, or a combination of all three, varies considerably from flowers whose standards have only a small central speckled patch of white to others where the margin is as narrow and defined as in a high-class picotee Carnation, and in some it is reduced even to a wire edge, indicating, perhaps, two or more cumulative factors. The margins of the falls are always less developed than those of the standards, are much more generally spotted, and are always of a deeper colour, especially at the hafts.

Ultimately, I feel sure a pure white will be obtained which, in all other respects, habit and size and form of flower, will be a plicata. Furthermore, the margin colour, both in depth and tone, can be modified by the colour of the varieties with which a plicata is crossed, when the type reappears in the second generation. Thus, the F_2 seedlings of a plicata crossed with a blue-toned pallida or neglecta will have mostly blue-toned margins, and those from a plicata crossed with red pallida or red squalens will have red-toned or squalens-coloured margins. These F_2 squalens-plicata forms are especially interesting, displaying in the spots and veinings and in the suffusing style branches all the blended shade of colour of the squalens, softened and rendered more delicate by the influence of plicata. Mercedes is an example, but does no more than barely suggest the possibilities of this type. And though it requires two generations (7 or 8 years) to produce any particular desired combination they are so beautiful as to be well worth the long waiting for. There are, however, many squalens carrying plicata already in existence, and these, if rightly mated, will give squalens-plicata forms in one generation.

On the contrary, just as the colour of the margins can be modified independently, so also the ground colour can be changed without any alteration of the type (marginal coloured flowers), and it is, therefore, possible to obtain a yellow ground plicata. Such, in fact, are already in existence both here and in America (Miss Sturtevant's Fantasy and Onnoris are good examples), but the yellow ground of all these is very pale and weak—paler than flavescens—often hardly more than cream, and the colour of the margins is usually lilac and reddish violet. A plicata with a full golden-yellow ground, as in the standards of a variegata is, however, certainly obtainable, and the colour of the margins should be a bright crimson, since an analogous variety has been raised with pure yellow standards and crimson-veined falls with the size and form of flower and habit of a pallida, and nearly approaching its height. Shekinah, a self pale yellow of pallida type, raised by Miss Sturtevant in America, is also in the same direction. This golden-yellow ground plicata, however, apparently cannot be raised in two generations like a squalens-plicata, but will need (unless there are the necessary intermediate varieties already in existence) a similar three-generation series of crosses such as produced the yellow-standard semi-pallida above mentioned, substituting, appropriately, plicata parents for pallidas.

I have made no direct crosses of red pallidas for some years now, having given up all hope of obtaining the crimson Iris in that direction. The Ed. Michel type—richer

and a little redder toned perhaps, but probably accompanied by a loss in size and form—is all that seems possible from red pallida direct. The same may be said of red squalens, though I have raised a few more seedlings of these. They have warmer and redder tones, but tend always to be more bicolour. In this quest, however, of the crimson Iris, some experimental crosses were made which, though total failures horticulturally speaking, are of interest from a genetic point of view. If the colour of the falls in some varieties such as Jacquiniara or Dr. Bernice could be transferred to the standards, the crimson Iris would be practically obtained. This has always seemed to be an impossibility, for the standards and falls of an Iris appear to be controlled, both in form and in colour, by independent sets of linked factors.

Professor Morgan, however, in his experi-

them together. Most of the seedlings from these crosses were quite normal, but in some the colour of the falls had gone over into the standards to a greater or lesser degree. In all these cases, however, those parts of the standards in which the fall colour was displayed were also changed in form and function into falls. And these modified portions (sometimes amounting to one-half or three-quarters of a segment, sometimes only to a mere strip) varied in extent in each of the three standards of a flower, and in every flower on a stem, so that the flowers, though striking at a distance from the brightness of the colour, were quite impossible, being a mere jumble of malformed segments more like a parti-coloured Paecony than an Iris. Of course, it would be possible in time to obtain a regular Clematis type flower with this colour, but such would not satisfy me as an attainment of a crimson



FIG. 35.—IRIS UNGUICULARIS.

ments with the *Drosophila*, succeeded eventually in producing a type in which characters, which had, hitherto, been invariably linked together, were separated and redistributed, and this would correspond in Iris to a transfer of one or more of the linked characters in the falls to the standards, or *vice versa*. He explains these results by what is called "crossing-over," conceiving that two of the chromosomes, in the stirring up period between two divisions of the nucleus, came to lie across one another, fused in their middle portions, and then divided longitudinally, with the result that factors at one end of chromosome A would be transferred to chromosome B, and *vice versa*. It seemed, therefore, worth while to try and obtain similar results with Iris. I looked out for suitable seedlings showing an apparent indication of an incipient tendency to "crossing-over," and choosing some where flakes of the fall colour appeared more or less irregularly in the standards, crossed

Iris. If it were possible to obtain four generations a year and work with thousands, as in Professor Morgan's experiments, it might be worth continuing the attempt. But as Irises, on the contrary, take four years to each generation, and one is lucky to get an average of six seeds in a pod, life is too short, unless some influence can be found to excite and stimulate the tendency to "crossing-over," or separation of linked characters. *A. J. Bliss*.

IRIS UNGUICULARIS.

IRIS unguicularis, better known to most gardeners by its synonym of *stylosa*, is the most valuable of winter flowering Irises. Although a native of Algeria, it is perfectly hardy. It succeeds best in warm, dry, sheltered spots where it is not exposed to keen winter winds. The bright lilac-coloured flowers have pretty keels of yellow and are streaked with lilac on a white ground at the throat. There is also a white form.

TREES AND SHRUBS.

JASMINUM NUDIFLORUM.

WHEN *Jasminum primulinum* was introduced it was regarded as a formidable rival to the well-known and justly popular *Jasminum nudiflorum*. Time has, however, proved that the older species more than holds its own, for the newcomer is too tender for general cultivation out-of-doors, and, furthermore, the blossoms do not expand in the depth of winter as do those of the well-named "Winter Jasmine." True, *Jasminum primulinum* can be grown in a very satisfactory manner in pots, placed out-side during the summer, and flowered under glass in the spring. The great advantage of *Jasminum nudiflorum* is that it is perfectly hardy, and will succeed where the conditions are decidedly unfavourable to plant life, such as in the smoke-laden districts of London. In many of the suburbs the beautiful golden blossoms serve to brighten up the otherwise sombre surroundings in January and February and transform an ugly black fence into an object of beauty. Not only may it be grown by itself on a fence, wall, or arbour, but combined with the bright berries of the Fire Thorn (*Pyracantha coccinea*), still known in many gardens as *Crataegus Pyracantha*, the beauty of each is enhanced by association with the other.

Many have observed that the yellow blossoms have appeared richer and clearer in tone than usual this season, which may be due to the exceptionally mild winter. However true that may be, the plant has generally flowered exceptionally finely this season and is at the present time one of the most conspicuous objects in many gardens.

Being so thoroughly hardy *Jasminum nudiflorum* may be grown in the open, as it forms a very handsome specimen if the main shoots are secured to a stout, erect stake and the minor branches allowed to dispose themselves at will. In this way a pretty fountain-like effect is produced. Even if the flowers are injured by frost the buds are so numerous that a few mild days suffice to insure a good show of colour. Sprays, too, cut from the outside will expand their blossoms in a very satisfactory manner indoors if placed in water. Another way in which the Winter Jasmine is very attractive is when grown in pots in a sunny spot during the summer, and put under glass in the winter when the earliest blossoms are on the point of expanding. No fire heat is necessary. *J. nudiflorum* roots readily in July from cuttings of the half-ripened shoots put into pots of sandy soil and placed in a frame kept close and shaded. W. T.

AZARA INTEGRIFOLIA.

AZARA INTEGRIFOLIA is, so far as I know, the earliest of the family to flower, and from the middle of January to the following month it produces a wealth of blossom at a time when shrubs in flower are particularly scarce and correspondingly precious.

Borne in clusters, the tiny blossoms of which the numerous anthers form conspicuous objects, are of a rich golden yellow, and though individually small, make a pleasing combination with the evergreen foliage.

As with the better known *A. microphylla*, the blossoms are borne beneath the foliage, but *A. integrifolia* has much larger flowers and they are more conspicuous. Though slightly fragrant, the blooms lack the pleasing perfume of *A. microphylla*.

The specimen at Fota is a well proportioned bush about nine or ten feet high, and, at the present time, with its flattened branches laden with flowers, is the chief feature of the pleasurable grounds.

The plant is, I imagine, only suited to favoured localities, but where a chance of its success exists, it is worthy of inclusion, and has proved absolutely hardy here, excepting, of course, that the flowers have their beauty marred by frost at times, which falls to the lot of the majority of early flowering shrubs, and for that reason, such early flowering plants are best screened from the direct rays of the morning sun. E. B., Fota.

NEW OR NOTEWORTHY PLANTS.

PICEA GLEHNII, MASTERS.

THIS Spruce was originally named and described by Dr. Masters in *Gard. Chron.*, March 6, 1880, page 300, Fig. 54. It was first discovered in 1861, in Saghalien, by Glehn, who, with F. Schmidt, had been sent to that island by the Russian Geographical Society. In 1877 the species was found in Yezo by Maries, who sent seeds to Messrs. J. Veitch and Sons, Chelsea. *Picea Glehnii* is still one of the rarest of Japanese Spruces in cultivation, and until we received the photograph reproduced in Fig. 36 from Sir Edmund Loder, Leonardslee, we had not heard of its having produced cones in this country. According to Mr. E. H. Wilson, this *Picea* forms a fine, lofty tree in Japan. He gives its maximum height as upwards of 130 feet and its girth as 12 to 16 feet. It is, as may be seen on reference to the illustration, one of the shortest-leaved of Spruces, the leaves measuring from one-third to half an inch in length; they are pointed, densely packed on the reddish pubescent young shoots, and rhombic in section, with one or two lines of stomata on



FIG. 36.—PICEA GLEHNII, SHOWING A SHOOT WITH CONE, PRODUCED BY A TREE IN SIR EDMUND LODER'S GARDENS AT LEONARDSLEE, SUSSEX.

each of the four faces. The terminal bud resembles those of the American species, *P. nigra* and *P. rubra*, in the basal scales being long and awl-shaped. The cone is cylindrical, 1½ to 3 inches long, violet-coloured when young, with the margins of the scales reddish; when ripe they become brown. The cone-scales are thin, rounded, and finely toothed at the margin.

Mr. Wilson has two fine illustrations of this tree in his *Conifers and Taxads of Japan*. As growing wild it forms a handsome columnar trunk clothed with loose flakes of bark. He states that it is well established in the Arnold Arboretum, where it is a slender tree 20 feet high, growing more satisfactorily there than any other Japanese Spruce.

Probably the seeds of this species of *Picea*, sent to England by Maries in 1877 did not produce plants, for Messrs. J. Veitch and Sons do not claim its introduction in *Hortus Veitchii*. It has, however, been long enough in cultivation for us to be doubtful of its value in our climate. We do not know how large Sir Edmund Loder's tree is, but Messrs. Elves and Henry do not seem to have found any but small trees in the many collections they visited.

ORCHID NOTES AND GLEANINGS.

BRYNDIR ORCHIDS.

In the *Gard. Chron.* of October 27, 1917, page 168, was given an account of the block of Orchid houses, designed by Dr. Miguel Lacroze and erected in his gardens at Bryndir, Roehampton, and also of the rich collection of hybrids contained in them. The following remarks are supplementary to that account.

The internal arrangement of the houses with regard to staging and other particulars specially contribute to the well-being of the plants, and some of the points being novel a reference to them will be useful. The floor is of the natural earth, and in each house provision is made for storing rain-water. A stage-like screen of corrugated iron is placed between the hot-water pipes and the staging to equalise the distribution of the heat and to provide a moisture-giving surface. Above that is a close staging surfaced with "breeze" to be kept moist and give off humidity by evaporation. This stage, in each house, may be used for accommodating the mature plants. Above the close staging an open woodwork stage is placed, and this may be removed if required or

adjusted in height to suit the size of the plants occupying the house.

In the seedling houses and others containing only small plants, the open staging is raised well up towards the glass of the roof, and in other houses it is proportionately elevated. The middle walks are of open woodwork, and these also are adjustable, and may be raised to follow the height of the staging on which the plants are placed, and so admit of their being tended in a much more efficient manner than would be the case if the trellis walks were kept on a permanent level and short steps or inverted flower-pots used to stand on when watering or inspecting the plants in the manner common in some gardens. The relatively adjustable open woodwork upper staging and trellis floor make it possible to use any of the houses for either very small or full-grown plants as desired. The houses are fitted with electric light, and no provision is made for suspending plants, as Dr. Lacroze considers that if the plants are properly raised to the required height by staging, suspending a selection is unnecessary. Many rare occupants of the Odontoglossum House are showing flower spikes.

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens, Kew.

Begonia and Gloxinia.—Seedlings of these plants and similar subjects raised from seed sown early last month require pricking off. It is not necessary, in the first instance, to single out such tiny subjects as seedling Begonias; small tufts of several plants may be transferred to the fresh soil; then, in a few weeks' time, they may readily be separated. In times of labour scarcity such small matters are important.

Epacris.—As the plants of the early-flowering forms of *Epacris* pass out of flower they should be pruned hard and be thinned of some of the weaker shoots. *Epacris* at this stage require a higher temperature than *Ericas*; they will grow well in a moist atmosphere and a temperature of 45° to 50°. If the plants are sprayed over several times daily they will soon break into fresh growth, and when the new shoots are about an inch long, such plants as require it should be repotted. The soil for potting should consist of good, fibrous peat with sufficient sand to render the compost porous. Pot firmly and use care in this operation, as the plants resent disturbance at the roots. Recently potted plants should be grown in the warm house recommended above, but as growth develops and the season advances admit air to obtain cooler conditions. This treatment should be continued until towards the end of July, when the plants should be stood out-of-doors. *Epacris* of the *longiflora* (*miniata*) type are late in flowering and should not be pruned hard; some of the long growths should be partially shortened and the long shoots trained to supports. When plants of this class were more popular, large, balloon-trained specimens of this species were common in gardens. *Epacris* are propagated by means of cuttings in the same way as *Ericas*. For cuttings, select the short, twiggy shoots that are produced when the plants start into growth. Taken at that stage they root more readily than when allowed to become hard in a cooler atmosphere.

Alocasia.—Before these plants are too advanced in growth they should be turned out of their receptacles and repotted in fibrous peat, pulled into lumps, fibry loam, charcoal and sand. The plants are surface rooters, therefore plenty of drainage material should be used. Plants with single crowns growing in moderate-sized pots are best suited for decorative purposes. Most of the species when strong and in good health produce small, bulb-like offsets, which may be detached and placed in small pots for the purpose of increasing the stock.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq., Castleford, Chepstow.

Masdevallia.—If these Orchids were not repotted in September, the present is a suitable time to do the work. Such strong growing kinds as *M. Veitchiana grandiflora*, *M. ignea*, *M. coccinea* and its numerous varieties; also hybrids, require ample root space, and a liberal compost. Ordinary flower pots are the most suitable receptacles, and they should be filled one-fourth of their depth with material for drainage. Small plants may be repotted with very little disturbance to the roots, but specimens that have become leafless in the centres should be broken up, and have most of the leafless rhizomes cut away. Remove the dead roots, and either pot each piece separately, or arrange several together to make one compact specimen. If the latter course is adopted, care should be taken to place some of the growing points towards the centre of the pot; this will obviate a leafless appearance for at least a year or two. Nothing is better for use as compost than

good peat, with a sprinkling of chopped Sphagnum-moss and crushed crocks. In repotting, make the soil fairly firm, and arrange the base of the plant just below the rim of the pot or pan to allow room for copious waterings during the growing period. The dwarf *Masdevallias* are perhaps the most curious and interesting; they embrace *M. Arminii*, *M. Estradae*, *M. gemmata*, *M. Peristeria*, *M. Ehippium*, *M. tovarensis*, *M. attenuata*, and *M. tridactylites*. The members of this section are best grown in small pans. Where stage room is scarce the plants may be suspended about eighteen inches from the roof-rafters. If a stiff wire is stretched the whole length of the house, and made fast to the rafter, the position will offer an ideal place for many small growing Orchids, but care must be taken to prevent them becoming excessively dry at the root during hot, dry weather. These small-growing *Masdevallias* should be grown in receptacles containing ample drainage material, and a very little compost around the roots will suffice. Another section of *Masdevallias* includes *M. bella*, *M. Chester-toui*, *M. radiosa*, and *M. Vespertilio*, all of which should be cultivated in teak wood baskets, without any broken potsherds for drainage, the flower spikes being usually produced in a downward direction, often through the sides of the baskets. For this reason the plants should be suspended. During the winter they should be grown in the intermediate house. Where a house or division is not set apart especially for *Masdevallias* they will succeed equally as well in the warmer end of the cool house. These Orchids have no pseudo-bulbs, therefore they need great care in watering, especially after being disturbed at the roots, as excess of moisture at the base before the roots are re-established will often cause loss of foliage, but once the new roots reach the edge of the pot, a more liberal supply of moisture may be afforded. During hot, dry weather, light sprayings overhead are beneficial. Shade the plants from strong sunlight, and ventilate the house on all favourable occasions. In mild weather the bottom ventilators may remain open throughout the night. The winter treatment of *Masdevallias* consists in keeping the soil just moist, and the atmosphere not heavily charged with moisture, particularly if the temperature falls below 50°. Thrips are occasionally troublesome, but if the house is vaporised once every three weeks, this pest will be held in check.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Welvoe Castle, near Cardiff.

Cabbage.—The bed of spring Cabbages should be given attention as soon as the weather is favourable. Make good failures in the rows with seedlings from the seed bed and give the soil a dressing of nitrate of soda or sulphate of ammonia at the rate of ½ ounce to each square yard, taking care not to allow these caustic fertilisers to fall on the foliage. Stir the soil with the Dutch hoe afterwards to work the artificials below the surface.

Onions.—Seedling Onions raised from seed sown early in the present year are developing their third leaf and require potting singly into 3-inch pots or pricking off into boxes. A box 24 inches × 14 inches × 4 inches will accommodate 60 plants. Use similar soil to that advised for sowing the seed. Choose only the strongest plants, as weak seedlings never develop into large Onions. Insert the roots half an inch below the surface of the soil to maintain the plant in an upright position. Important cultural details to observe at this stage are never to allow the soil to approach dryness and to give frequent fine sprayings on fine days. Winter Onions of the *Leviathan* type that were raised from seed sown last autumn, should be transplanted in rows 15 inches apart, allowing a distance of 9 inches between the plants in the rows. In the case of these Onions it is advisable to use the smaller plants, as being less likely to develop inflorescences than those which are stronger. Only plant sufficient of these Onions to meet the requirements of the establishment until the spring sown crop is available, as these white Onions do not keep well.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

The Grape Room.—There are many complaints of late of Grapes keeping badly this season; a mild, damp winter is not favourable to the keeping of Grapes. Possibly many of the bunches were grown in unheated houses, and were not thoroughly ripened or so well thinned as they might have been. Examine each bunch carefully at short intervals, and carefully remove all decaying berries. Keep to bottles filled with water, but guard against spilling moisture on the floor. A temperature ranging from 40° to 45° is suitable for the Grape room provided it can be kept dry. If fire-heat is needed, early morning is the best time to warm the pipes, but beyond the need for keeping the place dry the less heat used the better.

Cucumbers.—The earliest spring-sown plants should be growing freely. Pinch out the points of the shoots when they have reached the top of the trellis, and stop the laterals at each joint. As the plants continue to grow they will need more moisture and light and rich top-dressings over the roots whenever they appear on the surface; subsequent top-dressings are preferable to placing the plants direct in a large quantity of soil. Materials for the making of a hot-bed should be got in readiness out-of-doors. Use equal parts of litter and leaves, throwing them in a light, conical heap and turning the heap two or three times before making up the beds. In the meantime have the pits cleansed and the frames painted, if necessary. The temperature should range from 70° to 75°, and the bottom-heat should be from 80° to 85°. Sow fresh seeds in small pots to have young plants in readiness according to requirements.

Strawberries.—Larger batches of Strawberry plants may be introduced to a warm house as the days lengthen and the sun increases in power. Attend to the thinning of the berries at an early stage, and support the trusses, if necessary, to prevent them from being injured, and splashed with manure water. At this stage it may be necessary, on bright, sunny days with drying winds, to examine the plants twice daily to see if they require water. Once the roots are allowed to become dry the plants seldom recover from the check. Give them liquid manure and other stimulants two or three times weekly during the time the plants are swelling their fruits. Manure water should not be used when the fruits commence to show colour.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nods, Cadicote, Welwyn, Hertfordshire.

Peach Trees on Walls.—The new shoots of recently planted, fan-trained Peach trees should be cut back to about eight or ten eyes. It is advisable to lift young trees that have been planted about two years, especially if they are inclined to grow too freely. This will check them making strong growths and bring them into a bearing condition. Where trees require lifting, no time should be lost in carrying out this work, for trees lifted and replanted now will take no harm. Care should be taken not to plant too deeply; the stock may be well above the soil.

Red Spider.—Trees that were affected with red spider last season should be detached from the wall and well washed with an insecticide. I have found a mixture of soft soap and sulphur a good remedy for this pest. Mix six ounces of soft soap with one pound of sulphur, and add one gallon of soft water. Apply the specific by means of a brush, keeping it well stirred, or the sulphur will remain at the bottom. This mixture should be sprayed freely on the walls of the house.

The Protection of Fruit Blossom from Frost.—There is a diversity of opinion as to the necessity for protecting fruit blossom from frost, and one must be guided in this respect by past experience in the particular garden. Locality has to be considered. I have found it necessary

in mild winters, such as this one, to use protection, but, on the contrary, when the season of flowering has been a late one, I have not given any protection. Owing to the recent mild weather the buds of the earlier flowering fruit trees, such as Apricots, Peaches, and Nectarines, are already developing, and, as it is likely that severe frosts may occur later, it will be wise to have the protective material in readiness. Whatever material is used for protection it need not be employed until the flowers are about to expand, indeed, up to that stage, it would be much better if the trees are left fully exposed. Heavy, permanent coverings should not be employed as these would tend to make the blossoms and growth tender and more susceptible to injury by cold winds and frost. One of the most convenient methods is to hang a double thickness of fish netting over the trees. The net should be made secure, either by means of pegs or fastening it to poles to prevent it from damaging the blossom. The net will ward off severe frost and still allow the sun and air to reach the trees. Where only a few trees have to be protected it is advisable to remove the protective material in fine, open weather.

ASPERULA.

COMPARATIVELY few of the *Asperulas* or *Woodruffs* are cultivated in gardens, and of the species known to botanists only a small number is in cultivation. The greater number of species are rock-garden plants, although some are adapted for planting in the hardy-flower border or wild garden. *Asperula odorata*, the common *Woodruff*, may be taken as an example of those suitable for the wild garden, responding readily to the conditions of such places, and thriving in ordinary loam; though not absolutely necessary, a shaded or half-shaded position is preferable. The others, which are generally possessed of a dwarf, tufted habit and are of smaller stature, are suitable for planting in crevices of rocks, flat, rocky places, or the moraine, where most of them will thrive in the usual soil used for other rock plants.

A brief mention may be made of the best-known species, in alphabetical order, with the exception, in the conclusion, of a few merely named which may well be omitted from the garden.

One of the choicest is *Asperula arcadiensis*, which is probably not in cultivation in this country, its place being taken by *A. suberosa* or *Athoa*, sometimes supplied as *A. arcadiensis*. The true species is an exquisite plant. It sends up stems three or four inches tall, clothed with small, greyish leaves and waxy, rose-pink flowers in heads of six to eight or nine. In this country the plant needs a sheet of glass overhead all through the winter. It should receive as much sunshine as possible, and grows best in soil consisting of loam, leaf-mould, and peat with plenty of grit.

Asperula cynanchica is a native of Europe and Asia Minor, and can hardly be called a choice subject in its ordinary form; the spreading stems are too poor to set off to advantage the heads of trumpet-like pink flowers. It likes a hot bank, which is not only loved by, but essential for the variety *Jordanii*, which is only about four inches high and has rose-tipped pink flowers. The blossoms are larger and more numerous than those of the type. The variety *Jordanii* forms a charming subject for a prominent place on a dry bank, or in the moraine.

Asperula hexaphylla might form a subject for a discussion as to which is the true plant, inasmuch as the one often grown as *A. hexaphylla* and which answers to the botanical description in other respects, has white flowers, while a leading authority speaks of it as having "pearly-pink starry trumpets." The plant I received many years ago from a good source had white flowers, and I have since had it from other quarters, each time with white flowers. It is a good border or wild-garden plant, grows a foot or more high, and gives numerous white flowers which are almost as useful for cut blooms

as *Gypsophila*. The "pearly-pink" plant is said to grow six inches high. Ordinary soil is suitable for the white-flowered one.

Asperula birta is a choice rock or moraine plant that gives comparatively little trouble and is most beautiful. It makes a close tuft of green leaves and has stems only some three inches or so high, with lovely little flowers of rose colour. The plant is an excellent subject for the moraine, or a level or nearly level spot in the rock garden, where it may have room to send out its little runners underground to enable it to form a lovely carpet. It is sometimes supplied as *A. nitida*, another tufted species with pink flowers but looser in its growth.

Asperula odorata is the common native *Woodruff*, so well known as only to be mentioned here. The plant appears delightful among grass and is appreciated by many because of its fragrance.

Asperula orientalis, of the *Index Kewensis*, is an annual which is much too little known, as, when in good condition, the heads of blue

PETASITES FRAGRANS.

PETASITES fragrans, the Sweet-Smelling *Coltsfoot* (see Fig. 37), is an old garden favourite, for it was introduced by Messrs. Leo and Kennedy, of Hammersmith, so far back as 1806, from south-western Europe, and was for long grown as *Tussilago fragrans*, by which name the plant is still known to many. Notwithstanding the warm region of which it is a native, the plant is perfectly hardy and is one of the few outdoor subjects that bloom during the depth of winter. Since December to the present time we have admired a clump of this lowly herb under the north side of a dwarf wall and we have before us specimens gathered from the garden in question. The flower heads have no great claims to beauty, for the colour is somewhat dull lavender or heliotrope, hence the popular name of *Winter Heliotrope*, by which it is known in some parts. The flowers are generally dioecious, males on some, females on others, and the exquisite fragrance serves to attract insects to ensure pollination. It is very rare, however,

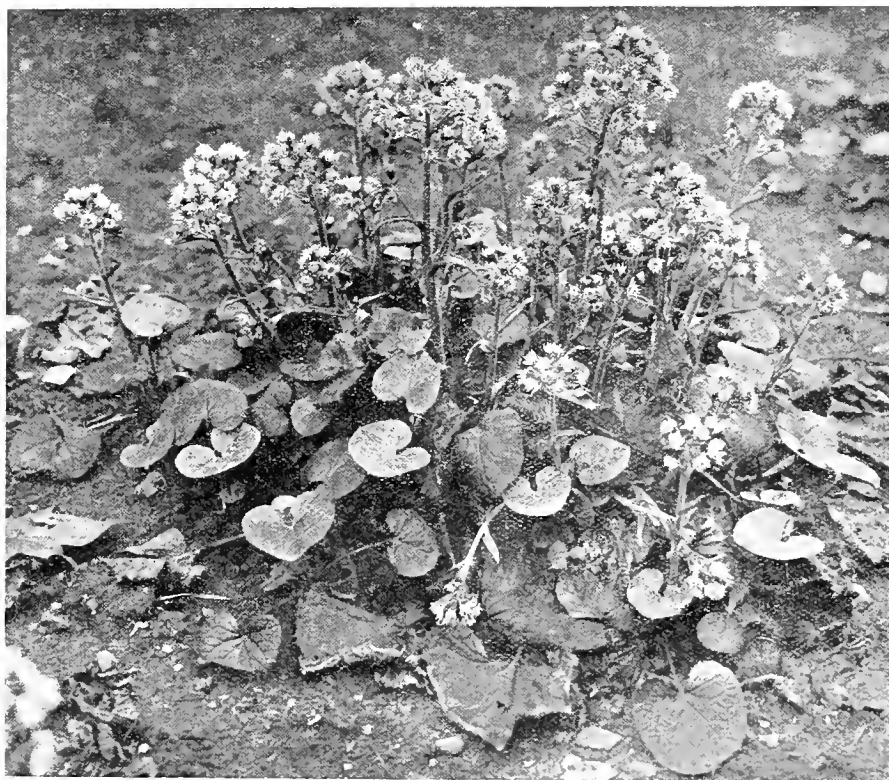


FIG. 37.—*PETASITES FRAGRANS*; THE SWEET-SMELLING COLTSFOOT. [Photograph by E. J. Wallis]

flowers are pretty on rockwork or in the border. This species is a hardy annual and responds to the ordinary treatment afforded to these accommodating plants. It is synonymous with *A. azurea*, the one given in the *Kew Handlist*.

Asperula suberosa or *Athoa* is probably the best known among the true alpine *Woodruffs*. It is a lovely little plant for the rock garden or moraine, and gives a delightful cushion of soft grey, decked with fascinating little flowers of a most exquisite warm pink. One might without exaggeration apply almost every flattering adjective to this *Woodruff*. The plant is not difficult to cultivate, and a sunny place with plenty of grit in the soil suits it perfectly.

Of others of the race it is hardly necessary to enter into detail, as they are either inferior or not obtainable. Among these are the yellow *A. Boissieri*, the pink *A. Gussonii*, the pink *A. pendula*, *A. pontica* and *A. pulvinaris*, and the whitish *Dyers' Woodruff*, *A. tinctoria*.

Propagation of the *Asperulas* may be effected by seeds, division, or cuttings. The alpine species are benefited by top-dressings of light soil applied in autumn and spring. *S. Arnott*.

that the plant forms seeds in this country, a fact which may be due to the absence of the particular insect that visits the flowers in their natural habitat. Like its congener, the *Coltsfoot* of the wayside—*Tussilago* (*Petasites*) *Farfara*, the Sweet *Coltsfoot* grows best in damp, heavy soils and will succeed in partial shade, so that it is a good subject for planting in a neglected spot on a north border. In situations suited to it, *Petasites fragrans* spreads with such freedom by means of its underground shoots as to encroach on lawns, and is apt to become a nuisance in the more ordered parts; in the garden referred to the plants have grown under and through the dwarf fence enclosing it and is flowering close up to the brickwork on the public footpath. There is nothing more pleasing than a vase of these flowers in the dwelling-room, for they pervade the air with their fragrance. The leaves are now appearing and they are generally reniform in shape, although they afford all sorts of transitions up to the narrow scale-leaves which subtend the flowers. There is closely allied white species known as *albus*, but it is rather smaller growing and is not as highly scented.

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THE MARKET FRUIT GARDEN.

UP to the time of writing the winter has been remarkably mild. During January there was only one really cold day, when the ground remained hard with frost. It was a month of wild, changeable weather, very high winds being experienced from the 11th to the 15th inclusive. The rainfall was very heavy, the total for the month being 3.83 inches, which fell on twenty days. This is much above the average, though fortunately drier than January of last year, when 5.28 inches were recorded. There is plenty of time yet for a cold spell, and it would no doubt do good service by checking the too forward development of vegetation.

WINTER INJURY TO FRUIT TREES.

I suppose we never have winters hard enough in this country to cause serious injury to orchard trees. Here in the South I have seen damage done in only one winter, when the bark of numbers of Apple trees were split by frost from top to bottom of the stems. This is caused by a sudden fall in temperature, and is most likely to occur in a sunny position and with strong-growing trees. Possibly northern gardeners could tell of other forms of injury from frost. Some of our overseas competitors have much more to contend with in this respect. A bulletin issued by the Ontario Department of Agriculture mentions nine distinct forms of winter injury which have been noticed in that country. These are described as follow:—(1) Root-killing; (2) killing of bark at the crown or collar; (3) bark-splitting (without killing); (4) bark-killing on trunk and branches; (5) sunscald; (6) bark-killing in crotches of main limbs; (7) killing bark of branches; (8) killing of fruit buds and spurs; (9) black-heart. Sunscald is a type of damage caused by repeated freezing and thawing in sunny positions. The other forms of injury are sufficiently described by their names. Most of them are said to be worst on strong-growing trees.

In this country orchard trees suffer more from excessive wet in winter than from cold. If there is a water-logged spot in a plantation, the trees there never thrive. In some cases the

roots die back until the trees lose their hold on the soil and are easily pushed or blown over. Apples trees with their roots in wet soil are also very liable to canker. The importance of draining land that is to be planted with fruit trees can hardly be over-estimated. The inspection and repair of drains should also be an annual task, as they frequently become blocked with roots, particularly where Black Currants are grown and where the drains pass through hedges or shelter belts.

STORED APPLES.

Considering the mild weather, Apples have kept well this winter. Up to the end of January, however, they certainly had not paid for storing, since they were selling at prices no higher than those ruling when they were put away for storing in October and November. Indeed, the prices for these late fruits were not really so good. I marketed a few sound fruits of Lane's Prince Albert in January, and they realised 7s. per bushel, which is the same price I made for slightly-damaged fruit picked out as unfit for storing in October. So far, then, storage has been done at a loss this winter, as it involves a lot of work and a certain amount of wastage. There is, however, nothing very unusual in the situation. Storing seldom pays unless the fruit can be kept until February, when imported Apples become scarcer. It is doubtful, though, whether they will rise much this year, because the sugar shortage tells so much against the sale of culinary varieties. I congratulate myself on not having kept a large quantity of Apples. It is pleasant to have some put away to bring in a return during the early months of the year; otherwise the fruit-grower does nothing but pay out for about seven months out of the twelve.

APPLE BAUMANN'S REINETTE.

To a considerable extent I agree with C. T. Amphill (p. 316) as to the merits of this Apple for market culture. In colour, freedom of cropping and habit of growth it is all that can be desired; and fruits are still in excellent condition at the time of writing. I cannot, however, agree as to its good flavour. With me it is very poor in this respect. This variety is evidently being grown to an increasing extent for sale, as it has appeared regularly in lists of market prices this winter; but unfortunately, many growers spoil its chance of gaining favour with the public by selling as early as November, when it has no flavour at all. In January it was quoted at 4s. to 5s. 6d. per half-bushel in London, which shows that it is not very highly appreciated so far.

WINTER SPRAYING.

Since the opening of the year there has been no weather suitable for winter spraying, but the work will be done now on the first opportunity. The wash to be used is composed of the following ingredients:—Copper sulphate, 4 lbs.; caustic soda, 8 to 10 lbs.; water, 40 gallons. Both chemicals should be of 98 per cent. purity, and in powder form to facilitate solution. It is very important to dissolve the copper sulphate first, and then add the caustic soda; otherwise the fungicidal properties of the former will be destroyed. The larger amount of caustic soda is required only where there is American blight to contend with.

This wash was tried on a small scale last winter with satisfaction, though the season being so free from fungous diseases, did not give it a chance to show its value as a fungicide. The caustic soda certainly cleans the trees perfectly and does a good deal towards clearing them of American blight, if used forcibly and copiously. The addition of copper sulphate makes the wash

a fungicide. Opinions differ as to whether this is an advantage in a winter wash, but, as it does not add much to the expense, it is just as well to give it the benefit of the doubt. Personally I think that a winter fungicide does help to keep the trees free of certain diseases, though I have no actual proof to offer. Many growers are firmly convinced of the value of lime-sulphur wash in this respect. Lime-sulphur has commonly been the winter wash used by me, but neglect of winter spraying during the years of war has left the trees so heavily coated with moss that something more drastic is needed for a change. Moreover, lime-sulphur, which used to be the cheapest of washes, has now become very dear.

STUNTED TREES.

Last summer's drought was very unfortunate for a new orchard of Apple trees planted in the previous winter. Most of the trees made very little headway, and some of them did little more than form fruit buds. In pruning them recently it was found necessary to cut them back very hard to find suitable wood buds, some of them to mere stumps. It is hoped that this severe treatment, together with a generous dressing of farmyard manure, will give the trees a start. This is probably a case in which it would have been better to delay the first pruning till a year after planting, a plan which is becoming increasingly popular with market growers. *Market Grower.*

LOW PRICES FOR HOME-GROWN FRUIT.

ATTENTION is drawn in *Gard. Chron.*, January 31, p. 47, to the conclusions arrived at in a report by the Ministry of Agriculture on the unsatisfactory prices realised for British-grown fruit, and the poor returns are attributed to neglect in the grading and packing of the fruit. Whilst admitting this to be the most essential factor, there are others equally important which can be best dealt with under separate headings. 1. Planting the best market sorts. Old neglected trees, frequently of second rate varieties, should be grubbed up and the ground planted afresh with young trees, limiting the number of varieties grown. 2. Adequate pruning and thinning of the trees. Without this very necessary work abundant crops of first-grade fruits cannot be expected. 3. Careful picking, and adequate storage accommodation. Damage to the trees and bruising of the fruit result from careless work in this respect, and, if suitable storage is lacking, the later sorts cannot be placed on the market to the best advantage. 4. Marketing the produce. When very large quantities are grown, it is not always possible to dispose of the crop in a town within easy reach of the orchards, but when this can be done the fruit is, or should be, delivered in better condition than after two railway journeys, and loading and unloading in the wholesale market. Both grower and shopkeeper benefit in not having to pay railway rates and salesmen's commission. An alternative to this is to have numerous small provincial distributing centres, instead of a few, as at present, in big cities.

Our orchards are not very extensive, but it will explain the subject a little more in detail if it is stated that we have an arrangement with a high-class fruiterer, and a greengrocer in a town near by. Bi-weekly deliveries are usual throughout the season, the former taking generally the best quality fruit. The greengrocer refuses to deal in foreign Apples so long as good quality English fruits are available. Prices throughout have been very satisfactory. The best paying sorts we grow are Cox's Orange Pippin, Ribston Pippin, King of the Pippins, Worcester Pearmain, Blenheim Pippin, Barnack Beauty, Lord Grosvenor, Ecklinville Seedling, Stirling Castle, Lord Derby, Bismarck, Lane's Prince Albert, Bramley's Seedling, Newton Wonder and Dumelow's Seedling (Wellington). *O. S.*

PACKING AND GRADING APPLES FOR MARKET.

THE conclusions arrived at in the paragraph on p. 47, on the causes of low prices for home-grown Apples, are fully borne out by my experience here during the past season. Prices in the Dublin market have shown a most marked disparity between graded and well-packed fruit and that forwarded in a loosely-packed state and ungraded. The superiority of the 40 lbs. case, or bushel box, over the ordinary salesman's empties has also been amply demonstrated.

The majority of the Apples forwarded to Dublin from this district are packed in Spanish Grape kegs supplied by the market salesmen. These are filled to the brim and are covered with a sheet of paper, over which a straw rope is coiled round and round from the outer rim of the keg to the centre, thus forming a lid which is kept in position by cords crossed over the top. These kegs hold from 4 to 5 stones weight of Apples, and are thus of one-half the capacity of the American barrel, which is also largely used here. Both these packages possess the merit of being easily and quickly filled—a consideration when many tons of fruit have to be dealt with. I find, however, that the extra time and trouble which the use of the bushel box entails is fully repaid by the enhanced price commanded. In one or two instances where, for experiment, I have sent practically the same quality of fruit to the same day's market, in both kegs and boxes, that in the boxes fetched nearly double the price of that in kegs.

The boxes we use are home-made, from home-grown timber, cut into the correct size at the estate saw-mill, and the boxes are made by the staff on wet days. They are, in theory, of course, non-returnable, but in practice here they are either returned by the salesmen, or other boxes or credit for their value given instead, so that there is no loss on them.

The boxes are lined with paper, a thin layer of hay being placed in the bottom and also immediately under the lid, which is nailed down. The small cushion of hay at bottom and top holds the fruit in position without the bruising consequent on the "bulge" of the over-filled box, as seen in the majority of imported samples. In this connection it must be remembered that Apples grown and ripened in summer and drier countries are of a drier and firmer texture than those produced in these islands, and especially in our damp Irish climate. The former are therefore less liable to bruise badly, or to rot as a consequence of bruising. But apart from giving the bulge to the boxes, we pack the Apples as tightly as they can be wedged in without bruising them.

Apples packed in the manner described above have been sent to various parts of England and Scotland, and have invariably elicited expressions of satisfaction and surprise at their perfect condition on arrival.

With regard to grading, we commence to do this at picking time, when the pickers are instructed to send only sound, clean and well-formed fruit to the fruit-room, and to throw all pecked, spotted, or malformed Apples under the trees. These latter are not wasted, but, together with all windfalls, are gathered into sacks once a week during the picking season and are divided again into two qualities, the better of which goes to the pulping factory for jam, and the other to the cider mill. There is thus no waste of fruit, time or space in storing inferior produce.

In conclusion, experience suggests that the chief reason for the low prices complained of in regard to home-grown Apples, as compared with imported, arises from the fact that the flooding of the market with inferior produce in seasons of plenty has given the home fruit a bad name, and that only by following the most approved methods of grading and packing, and by consigning "windfalls" and "scrumps" to their proper destination, viz., the pulping factory, can this reputation be redeemed. When this happens, the superiority of the home-grown "Cox" or "Blenheim" over the flavourless varieties imported from abroad may be trusted to do the rest. *T. B. Tomalin, Bessborough Gardens, Co. Kilkenny.*

FRUIT REGISTER.

APPLE TYTHBY'S SEEDLING.

THE handsome new Apple illustrated in Fig. 38, named Tythby's Seedling, was one of three seedling sorts submitted to the R.H.S. Fruit and Vegetable Committee for Award by Messrs. Chivers, at the meeting of the Society on November 18, 1919. In accordance with the rules governing the granting of awards to new Apples, Pears, and similar fruits submitted at R.H.S. meetings, the tree has first to be inspected as to the habit of growth, freedom of cropping and

described in *Gard. Chron.*, December 15, 1919, Fig. 143, and Histon Favourite, a variety largely grown in the Histon district for market.

APPLE RADFORD BEAUTY.

APPLE Radford Beauty is one of our best late dessert varieties, as you will be able to judge from the specimens I send herewith. The tree is vigorous, grows well, is free from canker, hardy, and in most years bears a good crop that requires to be thinned. The fruits are of medium size, bright-coloured, and good shape, thick, and the fruit will keep well into April. Dr. Hogg, in his *Fruit Manual*,

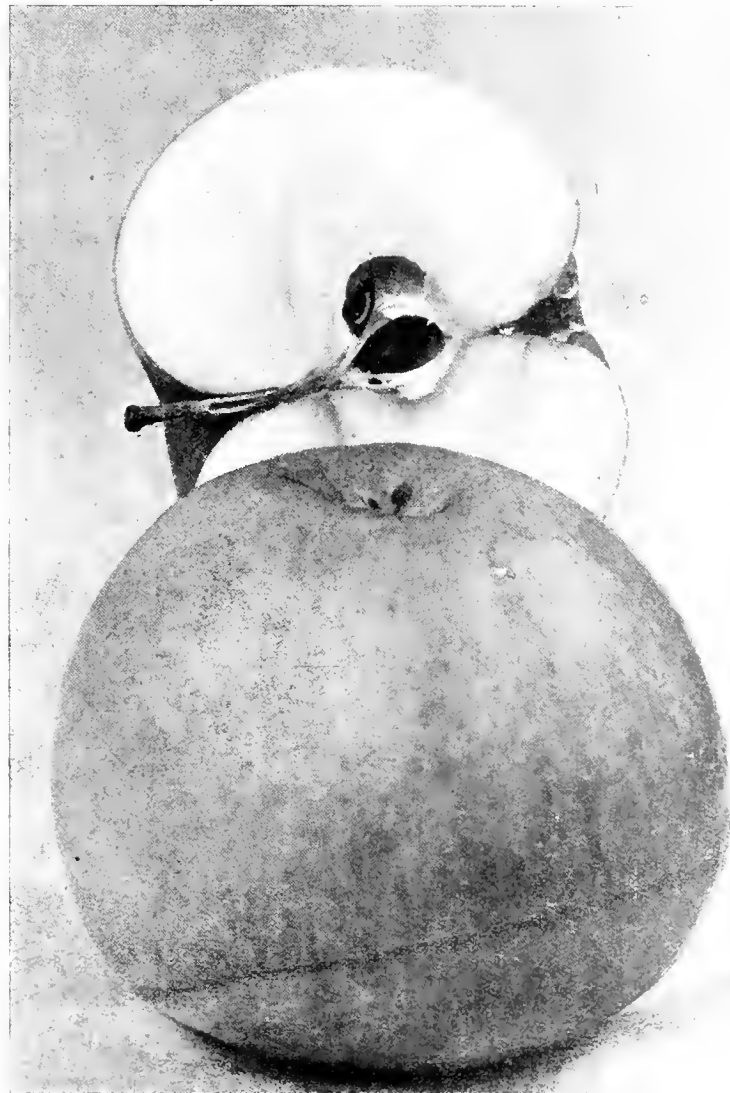


FIG. 38.—APPLE TYTHBY'S SEEDLING.

general healthy appearance, before an award is granted, unless these particulars are forthcoming from a reliable source at the time. In these circumstances the variety was not granted an award, but the Committee was so impressed with the value of this new variety, and especially as a market sort, a provisional Award of Merit was conferred and, doubtless, the full award will be made after the tree has been inspected this coming season. In our notes made at the time of exhibiting, we find the fruit described as "large, very handsome in appearance, regular in outline; eye closed and set in a regular, shallow basin; stalk 1/2 inch long; colour warm yellow flushed with crimson; flesh of good flavour."

It is noteworthy that all the three seedling Apples submitted on the occasion by Messrs. Chivers, possessed high merit, the others being Histon Cropper, which was illustrated and

describes the fruits as of medium size, dark red, streaked with bright crimson on the sunny side, greenish yellow on the shaded side, stalk deeply set, flesh crisp, juicy, sweet and of good flavour. He considered it to be a Nottinghamshire Apple, with no record of parentage or date of introduction. *A. B. Wadds, Englishfield Gardens, Reading.*

[The specimens received from Mr. A. B. Wadds were of excellent dessert size and of handsome appearance. A bright crimson flush spreads over two-thirds of the surface, with streaks of a deeper shade. The fruits were in splendid condition, firm and without the slightest sign of shrivelling, whilst the flesh was crisp and juicy and the flavour first-rate for the time of year. If trees of this Apple will grow and crop freely in most districts, the variety is certainly worthy of extended cultivation.—EBS.]

MODEL ALLOTMENTS.

WITH a view to giving some lead to the authorities responsible for horticultural education in England and Wales, the Horticultural Division of the Ministry of Agriculture and Fisheries has drawn up a comprehensive scheme of fruit and vegetable demonstration plots which might be carried into effect at Agricultural institutes and colleges, schools, county experimental stations or allotment areas with such modifications as may be necessary in different soils and climatic conditions.

So far, numerous horticultural and education authorities have made an enterprising and promising start, and it is hoped that eventually every responsible authority will take up the work, as closely in line with the scheme as the special requirements and industries of their districts will allow. By these means there will be some hope of getting information which is comparable all over the country with regard to varieties of fruit and vegetables cultivatable under the scope of commercial and domestic horticulture. Although the demand for allotments has to some extent died down the importance of the movement from a hygienic and economic point of view is still pressing, and there are well defined indications that the movement has come to stay. The Ministry of Agriculture is most sympathetic towards the movement. It is also anxious that education authorities should expand allotment areas and assist allotment holders to obtain the best expert advice to enable them to raise the standard and variety of crops. Ocular demonstration by means of model allotments and experimental plots are recommended. When the *Allied Press*, headed by the *Daily Mail*, approached the Ministry for advice it was suggested that a model allotment might be shown in connection with the famous Ideal Homes Exhibition, now in progress at Olympia. The Horticultural Division thought an allotment should be shown in the condition in which it should appear at the present time (February) with regard to soil working, manuring and cropping. Those responsible for the management, after obtaining a complete copy of the model allotment scheme, approached Messrs. Sutton and Sons, Reading. This firm, with their usual enterprise and enthusiasm to help forward any scheme of horticultural education, went one better than anything which had been suggested and offered to produce the whole allotment cropped, as it might be expected to appear in June. Although only five weeks were available from the date of this promise "The Ideal Vegetable Garden," as it has been styled, became an accomplished fact.

The entire allotment is surrounded by a low brick wall with a narrow strip of grass raised during the five weeks. All the crops, fresh and growing, include Potatoes, earthed up; Leeks and Celery, in trenches; early Peas, approaching the blooming period; Runner Beans, starting to climb; Onions, Beets, Carrots, Parsnips, Turnips, Marrow and Shallots, all several inches high, while certain crops are ready for gathering, such as Rhubarb, Spring Cabbage and Lettuce.

The allotment is divided into three distinct sections and the cropping is arranged so that one section is available every season for deep cultivation and green manuring. A large plan is posted up alongside the plot and a three-year rotation is indicated, while successional and winter cropping is shown, as well as summer and autumn cropping, where the district will admit of such crops maturing.

The catalogue of the Ideal Home Exhibition contains a plan and information on the original breaking up of allotment ground as well as notes on green manuring. Mustard being recommended for August sowing and Rye as a winter crop to be sown in September and dug into the soil at the end of March. In this way the supply of organic matter may be replaced in the absence of the littery material contained in ordinary manure. It would appear that the only safety for the allotment holder who is dealing with new soil short of humus is to adopt a system of

green cropping for the purpose of digging it into the soil. The necessity of lime is also emphasised and an average dressing at the rate of 12 lbs. to 14 lbs. per rod is recommended when the land is first broken up unless there is a sufficiency of this substance in the soil.

In close proximity to the model allotment is another educational exhibit consisting of fruit trees and fruit bushes, pruned and unpruned. Many amateurs are ignorant of the proper system of pruning a maiden bush Apple tree at the time of planting and during the succeeding years of its growth. Bush Apple trees on the Paradise stock are shown as they usually appear when purchased from the nursery and during second, third and fourth years of their growth. In each case the pruned and unpruned specimen is shown. In addition to this information the novice is shown a neglected bush Apple tree nine years of age, while along side with a similar tree, renovated by judicious thinning out of the branches and pruning of the laterals so as to bring it into a profitable fruit-bearing condition.

Small fruits are represented by two-year-old Gooseberry, Black and Red Currant bushes, illustrating the method of cutting down after planting. A neglected Gooseberry and Black Currant bush are also shown, with a similar bush pruned systematically. Modern types of cordon Gooseberries and Red Currants are also shown, pruned and unpruned. The formation of a half standard is also shown by a one-year-old pruned and unpruned specimen. The trees and bushes are labelled in bold type so that even "he who runs may read," and they cannot fail to be a source of enlightenment to cottagers and villa gardeners who have little knowledge of the art of pruning. *G. P. B.*

VEGETABLE CULTIVATION IN MACEDONIA.

WHILST in Macedonia with the Army I was for three years in charge of the 28th Divisional Farm at Paprat. Owing to military exigencies, the district chosen was not ideal for crops in Macedonia. The village of Paprat is situated high upon the range of hills south of the Struma Plain, and the unevenness of the land made the task of cultivation a very hard one. The district is split with myriads of ravines, some considerably steep and treacherous of solid rock, whilst others slope gradually and are studded with Oak and tangled undergrowth. It is a wild and desolate place in winter but wonderful in spring with a rich and gay profusion of flowers and shrubs, some worthy of cultivation in English gardens. The scenery itself is all that could be desired.

It is remarkable how trees and shrubs in such rocky surroundings gain sufficient moisture to withstand the severe drought of summer, whilst practically everything on the lower slopes and plains are baked brown and burns towards the autumn, when only blackened stumps are left to tell the tale. As might be expected in such a locality, the soil is very shallow and of poor quality, the sub-soil being of gravel. In general the soil is light and sandy and only in a few instances is ground of a heavier medium and of greater depth met with. The average depth is about two feet upon the ridge of hills, whilst along the wide valleys six feet or more is accessible for root crops and on this latter ground water is easily obtained during the hot summer. The methods of cultivation adopted generally by the natives are practically identical with those of Biblical times. The primitive plough drawn by oxen is still in existence and this only breaks the surface of the soil to a sufficient depth for sowing. Thus the land is of a semi-virgin nature.

Although greatly in need of animal manures, the ground is rich in minerals. The greater part of the surface is composed of a silvery substance (mica) which is responsible for binding the soil after heavy rains. As is common in all tropical climates the rainfall at times is tremendous. Even with an ordinary rainfall in Macedonia the earth dries rapidly and forms a very hard crust, which is detrimental to crops.

The total absence of lime is a serious defect. By careful cultivation, it would take a few years to bring the soil to a high state of fertility, but the prospects are, nevertheless, great.

During the period I was employed in cultivating the land, the prospect of enriching it was very remote, owing to lack of transport. Natural manure was plentiful, but in so difficult a country, where transport was impossible on account of the absence of roads, an exceptional opportunity to enrich the ground was lost.

CLIMATIC CONDITIONS.

Climatic conditions in Macedonia are of great concern to the cultivator, and the weather experienced during the seasons of 1917 and 1918, were contrary to each other.

The weather in the early months of 1917 was very severe and cold, followed by torrential rains so familiar to this climate. Valuable time was lost by these adverse conditions and the crops were late, with the result that many had a hard struggle to withstand the hot summer months without dew or rain. In a few cases the crops failed entirely, but the larger proportion recovered later in the year and resulted in fair yields. The vitality of the plants was remarkable in such conditions. Broad Beans, Onions and Turnips failed, but Beet, Carrots and French Beans gave splendid returns.

Weather conditions during the early months of 1918 were quite the reverse, and were favourable for agricultural work. The soil was in a friable and perfect condition for the sowing of early crops. At the end of March, however, heavy snowstorms and frosts prevailed until mid-April, and at one time three feet of snow lay on the ground and was very slow in disappearing. This caused us great concern and anxiety for the young crops, but besides a fairly bad check, little or no damage was done. Parsnips and Onions showed signs of injury, but not such as to need replanting.

Comparing these two seasons, 1918 was the more favourable to vegetables, especially during the early months. The drought also commenced earlier by six weeks, and was of longer duration.

This was felt more by the crops in open fields, as water could not be obtained. The only crop to fail was Beans of all varieties.

Thus, successful cultivation in this country is more dependant on suitable climatic conditions probably more than any other country. Weather conditions are peculiar to study and sudden changes occur without warning. Thunderstorms have actually hovered overhead and passed off without a single drop of rain. This may be due to the high hills diverting the electrified currents of air.

IRRIGATION.

The greatest need of vegetables in Macedonia is moisture throughout the summer, and irrigation by natural means or otherwise is necessary. It is essential to such crops as Brassicas, Marrows, Melons and all types of Beans. The amount of land to be watered entirely depends upon the water-supply, as it must be constant and plentiful. The average well or fountain in the Paprat district was sufficient for three acres to be watered once a week. Where power is used to raise the water, any part of the country may be irrigated, but in this case the water-supply would be insufficient. Thus only a small area can be successfully irrigated.

Given an ordinary spring rainfall, irrigation is not necessary until the end of May, or even a little later, but when once started watering must be continued regularly. By means of natural irrigation all vegetables grown in the British Isles may be grown equally as successfully in Macedonia.

The method of cultivation adopted was ridging the land in the usual way and planting the crops midway on the sides facing north and allowing a free passage of water along the furrows. Water must not be allowed to stand in the furrows for more than a few hours, as mosquitos would breed in it, and this pest is responsible for the spread of that dreaded sickness, malaria. *W. S. White, Bronhendre Gardens, Carnarvon.*

(To be concluded.)

LEGACIES OF AN UNTOWARD SEASON.

ONE of the most marked effects of the past season was the failure of mid-season and late varieties of decorative Chrysanthemums, excepting such as were grown in pots and had all their needs supplied. I have already stated that Roi des Blancs did splendidly with me, but the plants of this variety were kept well watered and well fed. As one cannot water everything in such a dry summer as that of 1919, the bulk of the other varieties had to take their chance. Those of the "Masse" family and other earlies, having formed their buds before they experienced the effects of the drought, did fairly well, but those which came later, although they made good, sturdy growth and appeared satisfactory, were a great disappointment. Flower buds developed, but they evidently did not become properly matured, and they were later in expanding than usual. Then came the early frost which induced the grower, instead of leaving them out as usual until the first or second week in October, to house the plants earlier, and although they were well soaked and retained good balls of earth they were never satisfactory. A portion of that valued old variety, Source d'Or, which generally flowers well in this district, outside, instead of showing its beautiful fiery, orange-bronze shades, produced only dirty, nondescript colours. This applied to lifted plants as well as to those which remained outside, and were sheltered. Almirante was not much better, and did not show its usual lively colouring. Some singles, amongst which was Dorothy, a gem amongst pink sorts, refused to open their flowers.

I have noticed before, that when plants of certain varieties are lifted before the buds reach a certain stage of development, the latter go blind, hence I always prefer leaving them in the ground for as long as it is safe. Had I left these there I might have applied the house-room to a better purpose. I do not grow late varieties, but judging from the prices flowers realised, I am inclined to think these did not fare any better. These experiences teach us that in a season like the past, it is of no use attempting to grow these plants unless we can supply them with water.

When the trouble of drought was over, there remained greater to come. The early frost reached the inside of fruit houses and, excepting where there was more than the usual amount of fire heat maintained, the frost killed the leaves before they had finished their work. Vine leaves especially were so affected that they clung to the stems, and were only removed at pruning time. Growth which had not been kept well pinched back to the original eight or nine primary leaves suffered the most. I noticed in some cases that, although the Grapes remained fairly plump, the berry stems shrivelled, and many of the berries fell off.

I remember the same thing happening in the great Conservatory at Chiswick, during the early sixties, and the crop the following year was not up to the usual standard. I think it would be advisable to allow vines which have suffered in this way to start into growth naturally and very gradually.

In a less degree a similar thing has happened in some unheated Peach houses, and the mild weather we have lately experienced adds to the mischief, for the bloom buds are swelling fast and I am afraid many of them are not fully developed.

Outdoor trained fruit trees, too, which were pruned late in the summer, are not in a satisfactory condition, and the present mild weather does not lead us to expect such a harvest of fruit as we had last year.

Fruit trees of all kinds are in a very forward condition and in some the flower buds are on the point of bursting. This will necessitate protecting the blossoms should frost occur when they are expanded.

The lesson emphasises the desirability of early stopping and continual prevention of all extension of growth on restricted trees after mid-summer. But even this will not counteract the effects of April weather in January and February. Wm. Taylor.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Birds and Fruit Buds.—It has been stated that damage to fruit buds by birds is often done in February; here it is done in November. The birds (sparrows) do not wait until cold weather but strip the Currant bushes as soon as the buds swell up, which they do in November. F. Boyes, Beverley, Yorkshire.

Low Prices for Home Grown Apples.—I consider the slow sale and low prices for English Apples is not due to the imperfect grading of the fruits but to the lack of sugar. The small allowance of 6 oz. each person is insufficient to permit any to be used for baked Apples and few persons can eat Apple pie without sugar. Not only did the rationing of sugar stop the sale of Apples, but most soft fruits such as Damsons. My orders for these were all cancelled, with the result that the fruits were allowed to hang on the trees until the birds ate them. So much for fruit production! F. Boyes, Beverley.

Winter Moth and Grease Banding.—Market Grower (p. 28) mentions the fact that very few specimens of the Winter Moth have been caught on grease-bands this winter, although nine acres have been protected in this way. Here we experienced a very bad attack of Caterpillar last spring and, fearing a repetition this season, I had all the orchard trees grease-banded early in October. On one band, selected at random, I counted 51 females of the Winter Moth (*Cheimatobia brumata*).

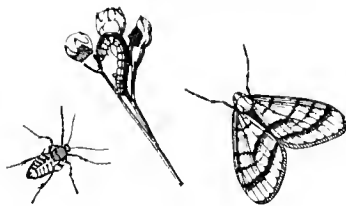


FIG. 39.—WINTER MOTH (*CHEMATOBIA BRUMATA*).

All the bands are covered with males of the same species. In this orchard the ground between the rows of trees was cropped with Potatoes last season, but owing to shortage of labour for hoeing, the rows in which the trees stand, about eight feet wide, became overgrown with weeds after the spring ploughing, and remained so all summer. In two adjacent orchards, in which I was able to keep the whole of the ground hoed and cultivated, there is scarcely a Winter Moth to be seen on the bands. This experience provides an additional argument in favour of cultivation *versus* grass for land under fruit trees, as there is no doubt that hundreds of chrysalides are turned up by the operation of hoeing, and are devoured by birds, whilst doubtless hundreds more are scratched or pecked up by these feathered friends, where the ground is kept clean and sufficiently loose for them to operate. T. E. S., Bessborough.

Carnation Stem Rot.—In regard to the collapse of Carnations by what is called Stem Rot, referred to in the *Gard. Chron.*, January 24, p. 36, I may state that from careful observation, extending over many years in this country, I consider that deep potting, with the soil too high up the base of the stem, and deep planting, especially in some soils, are the main causes of the collapse of the plants. Whether it be Carnations or forest or pleasure ground trees, as indicated by Mr. A. D. Webster in the same issue (p. 37), the result of covering up the stem ends in the same way, although strong-growing subjects resist the treatment longer than the more frail plants. Careless top-dressing with artificial manure, un-mixed with a proportion of potting soil, and allowed to surround the stem of the plant, is another cause of decay in Carnations and other florists' flowers. Being kept too warm and moist in winter predisposes the plants to harm from errors in potting, watering and feeding, whereas when grown cool until active

growth commences they resist disease. James O'Brien.

—With reference to the report of the American trials (see *Gard. Chron.*, p. 36) connected with Stem rot in Carnations, I should like to point out that however much the temperature suggested may suit American cultivation, 62° is quite a wrong temperature in winter for this country; indeed, it is wrong by 10° or 12°, as would soon be discovered by anyone attempting to grow the plants under such conditions. Stem rot is generally brought about by the simple mistake of planting or potting too deeply, and warm, moist conditions would, in my opinion, only tend to increase it. Laurence J. Cook, Bush Hill Park.

The Gardener's Education and Training (see page 42).—I was very interested in reading the timely remarks of Mr. Martin on the gardener's education and training. I think all gardeners will agree with me that the wages now paid in the majority of gardens are much too low. Mr. Martin mentions the need of a knowledge of botany and English grammar; but how often do we come in contact with young gardeners who have not the slightest knowledge of botany and no idea of sitting for the Royal Horticultural Society's examination? It is true that in many parts of the country young men cannot get in touch with night schools. If employers would offer better wages, the gardening profession would be raised to a higher level of efficiency, young men would give greater satisfaction to head gardeners, and employers would reap the benefits. Unless something is done in this direction in the near future, gardeners cannot be expected to possess the efficiency of those of the past. J. Harrison.

—I wish to congratulate Mr. B. W. Martin on his fine article entitled "The Gardener's Education and Training," which appeared in your issue dated Jan. 24 (see p. 42), and would strongly appeal to the powers that be to make scientific gardening sufficiently attractive to ambitious young men. The lack of education, technically, is appalling in the gardening world. The societies affiliated to the R.H.S. should reconstruct themselves and assist young gardeners in the persuasion of technical education. A practical gardener is not he who can use a spade and scuffle only, but he who has both practical and technical knowledge. *Young Gardener, Stockport.*

Inside Vine Borders.—In your issue of February 15th, 1917 (p. 113), in answer to *Cicestrian*, I advocated narrow, shallow inside borders for Grapes ripening at all seasons. With twenty-three years more practice I would still advise raised, narrow, shallow inside borders; the bottom of the border level with the doorstep or ground level, 2 feet 6 inches deep, with 6 inches of drainage material to carry off the water and keep the soil well aerated; a width of 5 feet is ample for many years. The first-prize "Muscat of Alexandria" Grapes at Shrewsbury, in 1889, were produced on vines 14 years old which were growing in an inside border 4½ feet wide and 2 feet 4 inches deep. Grapes from these vines also won the second prize in 1896 at the same place. At the next Shrewsbury show the winning Grapes, "Muscat of Alexandria," were cut from young vines 17 months old (from eyes or buds) grown on an inside border 3 feet wide and 1 foot 9 inches of soil, with 6 inches of drainage, but I have no further record of those remarkable vines. It is now generally recognised that large, deep, outside borders are a costly mistake; and that good exhibition Grapes can be produced over a longer period from warm, inside borders with the roots under control. *John Bates, Meaford Gardens, Stone.*

Spade versus Plough for Potato Culture.—A few years ago, when visiting the King's Acre Nurseries at Hereford, I saw a piece of ground being cultivated for the planting of fruit trees, and a subsoil plough was used to ensure deeper cultivation. This was being drawn by certainly three, perhaps four, horses and was turning in a green crop; the plough appeared to be doing excellent work. It has occurred to me that where the ground is suitably deep for the use of such

an implement, it offers a means of cultivating larger areas with the minimum of expense; and if the same laws apply to farming as they do to gardening, the value of deep cultivation would more than repay itself, especially in a dry season such as last, and, once completed, would manifest itself for several successive years. I merely relate this for what it is worth, and possibly someone can give further particulars. *E. B., Fota.*

—In reply to my critics I may state that my remarks were not aimed at the cultivator who can produce 20 tons of Potatoes to the acre. Such cannot be very plentiful if we are to credit the official return of 5.7 tons per acre for the past year, and 6.6 tons for 1918. To produce this low average, if the 20 tons per acre is reckoned in, there must be much land which yields less than 5 tons. Therefore, the man who cannot produce a better crop than this, even on the poorest of land, ought not to be allowed to play at cultivating. Our duty is to get as much out of the land entrusted to us, as possible. I do not advise growing for the good of the community at a personal loss, but the difference between 5 tons and 20 is so great that manual labour, dear as it is, could probably be paid for out of the difference. But when your correspondent *E.*, who I know is a good cultivator, speaks of trenching land 3 feet deep, that is out of the question, and the value of such trenching is much over-rated. One can never be repaid for such work in these times of costly labour. There is plenty of land which has never been moved more than one spit deep, which produces the maximum crop year after year, but one must have the top spit well cultivated. Surely there ought to be no difficulty in inventing a revolving grubber, worked by steam power, which will move the soil to a depth of 10 or 12 inches, if such an implement is not already in existence. There are many other field crops besides Potatoes which might be doubled, if we could give up merely scratching the surface and plastering it at the same time. *Wm. Taylor.*

Erythraea Centaurium (see p. 13).—The beautiful photograph of *Erythraea Centaurium* reproduced in Fig 6, *Gard. Chron.*, January 10, can scarcely represent, I think, our native British plant even in its most luxuriant state. I should like to ask if it is not rather the variety or subspecies *E. grandiflora* Biv., a native of the Mediterranean region, Portugal, Spain, Italy, Sicily and Algeria. I well recollect seeing the plant in great beauty at Quillan (Department of Aude) in August, 1903. This plant certainly needs better knowing by rock-garden enthusiasts. Another species of *Erythraea* mentioned by Mr. Irving in the same note, the handsome Azorean *E. Massonii* Sweet (better known under the names of *E. scilloides* Chaub., *E. diffusa* Woods, and *E. Portensis* Hoffm. and Link) is not confined to those distant islands; it grows in Northern France, Spain, and Portugal, and has recently been detected as a wild plant in Pembroke-shire (*Journ. Bot.*, 1918, 321). It is listed occasionally in nurserymen's catalogues, but is not grown so widely as its beauty deserves. *C. E. Salmon, Reigate.*

White Fly on Tomatos.—I have Professor Lefroy's kind permission to send you the following note for the benefit of Mr. Beckett and others whose crops may suffer from attacks of Snowy Fly. Professor Lefroy states:—"In 1919 I introduced White Fly, hoping to get them on to my Tomato plants so that I could examine them, but failed. On looking for the reason I found the flies had all taken possession of some dwarf French Beans which were growing in the greenhouse. The remedy is simple; grow dwarf French Beans in pots among the Tomatos, and when the Beans are infested, carry them away and burn them." *David Moyes, The Gardens, Osterley Park, Isleworth.*

Importance of the Potato Crop.—By some inadvertence your report of the paper read to the Farmers' Club on the 2nd instant on "The Importance of the Potato Crop," on p. 72, states that this paper was read by myself; the paper was prepared and read by my nephew, Mr. Martin H. F. Sutton, J.P., F.L.S., a member of the Advisory Committee on Potatoes,

and late chairman of the Farmers' Club. It may be interesting to your readers to know that the first illustration of a Potato attacked by the Wart Disease was in a paper which I prepared for the *Journal of the Royal Agricultural Society*, which was published in Volume IX., in 1898, but at that time the disease had not been identified as *Synchytrium endobioticum*, and it was supposed to be due to another form of disease then becoming prevalent, viz., "American Rust," or "Curl." *Arthur W. Sutton.*

GARDENERS' WAGES WHERE SURPLUS PRODUCE IS SOLD.

ON Jan. 22, the King's Bench Division decided a point, arising under the Corn Production Act, 1917, which is of very great interest to horticulturists. An information had been laid, on behalf of the Agricultural Wages Board set up under that Act, against Lady Fairfax-Lucy, of Charlecote Park, Warwickshire, for failing to pay a workman, alleged to be employed as "a workman in agriculture," at a rate not less than the minimum wage fixed under that Act. The justices dismissed the information on the ground that the gardens in question were not market gardens within the meaning of the Act of 1917, but stated a case for the decision of the King's Bench Division. Their decision is now reported under the name of *Eickerdike v. Fairfax-Lucy*.

Lady Fairfax-Lucy is the owner and occupier of Charlecote Park estate, and the fruit and vegetable gardens and orchards attached to the house cover some four acres. Lady Fairfax-Lucy and her family were supplied with produce from the gardens, and the surplus produce was sold. On the average, about 50 per cent of the whole produce grown was sold, and the amount realised on the sales during the year 1919 was some £60.

In these circumstances, a man named James Beal was employed, among others, as a workman in the gardens. He was paid less than the minimum rate of wages, which was payable to workmen in agriculture, under the Orders of the Agricultural Wages Board, made in pursuance of the powers given by the Act of 1917. If the gardens in question were market gardens within the meaning of the Act, an offence had been committed, so the question was simply whether these gardens were "market gardens."

THE PRESENT LAW.

In order to appreciate the position clearly, it is necessary to set out the material parts of the Act. Section 4, sub-section 1, is in these words: "Any person who employs a workman in agriculture shall pay wages to the workman at a rate not less than the minimum rate as fixed under this Act and applicable to the case, and if he fails to do so, shall be liable on summary conviction in respect of each offence to a fine not exceeding twenty pounds, and to a fine not exceeding one pound for each day on which the offence is continued after conviction therefor."

Then follows a saving clause in the case of persons who did not know and could not reasonably have known the minimum rate to be paid, a provision empowering the court to order payment of any sum due to the workman, and a clause to prevent any "contracting out" of the benefit of the Act.

In section 17, sub-section 1 (a), this definition is given. "The expression 'agriculture' includes the use of land . . . for market gardens or nursery grounds, and the expression 'agricultural' shall be construed accordingly."

A workman, and the word includes boys, women and girls, who is employed in a "market garden" is thus clearly within the Act, and must be paid the proper minimum wage accordingly. But there is a further step necessary. What is a "market garden?" There is a difficulty here, for the Corn Production Act does not contain any definition of this term. On this point, the King's Bench Division held that the definition contained in section 48 of the Agricultural Holdings Act, 1908, could be resorted to, for, though it is not always allowable to

use a definition of a term in one Act to explain another Act with a wholly different purpose, yet in this case, as the Lord Chief Justice said, the definition in the Agricultural Holdings Act best expresses the meaning of the Corn Production Act. That definition runs: "A market garden" is "a holding cultivated wholly or mainly for the purpose of the trade or business of market gardening." This definition rather suggests the famous definition—Sidney Smith's, I believe—of an archdeacon as "a person who exercises archidiaconal functions," but a little reflection shows that it does carry the matter a stage further.

The test now becomes the joint test, whether (1) "a trade or business" is being carried on, and (2) whether the holding is being carried on "wholly or mainly for the purpose of this trade or business."

As to whether "a trade or business" was being carried on by Lady Fairfax-Lucy, the court relied on the case of *re Wallis*, ex parte Sully (1885, 14 Q.B.D. 950). It is true that there the question was whether a bankrupt was carrying on "a trade or business" within the meaning of the well-known "order and disposition," section 44 of the Bankruptcy Act, 1885. But the court considered that the case was in point. There a city man, who occupied a large residential property, a country mansion with grounds, at a rent of £600 a year, fancied himself as a gardener, farmer and stock-breeder. In the main he carried on the place for his own pleasure, but he certainly sold the surplus produce, after supplying his household, at a profit. It was held that he was not carrying on "a trade or business" within the meaning of the Bankruptcy Act of 1885. But the court there considered that if he had abandoned his primary intention, and had carried on his operations, with a view to profit, as a means of livelihood, he would have been carrying on "a trade or business."

A SOUND DECISION ON LEGAL GROUNDS.

Applying these tests here, it is impossible to resist the inference that the judgment in the present case was right. It could hardly be maintained that Lady Fairfax-Lucy was looking to the sale of her surplus produce for a livelihood. In these hard times it would have been a thin living for her. In fact, it can hardly be suggested that she was carrying on a trade or business at all. The decision seems to be clearly right.

A CASE FOR THE CHAMBER OF HORTICULTURE.

But though, in the present state of the law, a decision such as this is not open to objection, that is no argument against altering the law. This seems to be a suitable case for the Chamber of Horticulture to take up. The reasons are pretty clear. The object of the Corn Production Act was to stimulate the production of food at home, and at the same time to secure fair conditions of employment. If a private person sells £60 worth of garden produce in a year, that is effective competition with those whose trade is to supply that food. If several people, in the same conditions, in the same locality, do the very same thing, the result might be to supply a large part of the local demand for garden produce at rates of wages, with which the local market gardeners could not compete. That is unfair for the market gardener, and unfair to the employees of his competitors. There seems no good ground for withholding the benefits of the Act from all those employed in gardens.

After all, the purpose is the production of food. And, though such food may not be wholly for outside sale, yet, in so far as it relieves the demand for outside supplies, the purposes of the Act are being carried out. It would be no bad thing in the interests of everyone engaged in horticulture if the Chamber pressed for some amendment to this Act. That could quite well take the form of extending the act to workmen employed in horticulture as well as agriculture, and defining these terms as including the production of all forms of plant life—microscopic plant life is not hinted at here—and that whether for profit or pleasure or for any purpose whatever. Naturally, the exact words proposed would need careful consideration. The service of the garden might just as well be put on one single footing, once and for all. *C. A. J. Bonner.*

SOCIETIES.

HORTICULTURAL CLUB.

FEBRUARY 10.—The annual general meeting of the Horticultural Club was held on the above date in the Lecture Room of the Royal Horticultural Hall, Vincent Square, Westminster. The President, Lord Lambourne, C.V.O., presided over a small meeting. After the minutes of the previous annual meeting had been read and confirmed, the Hon. Secretary, Mr. G. F. Tinley, read the report of the Executive Committee for 1919, of which the following are extracts.

EXTRACTS FROM THE ANNUAL REPORT OF THE COMMITTEE.

In presenting the annual report for the year 1919, the Committee have pleasure in stating that, notwithstanding the continued difficulties owing to the abnormal times, the membership of the Club remains practically the same as in 1918. New headquarters have been secured at the Royal Horticultural Hall, and there will be opportunities provided for having the monthly dinners and lectures in the lecture room attached. The Committee has also arranged for members to obtain luncheons and teas at the fortnightly meetings of the Royal Horticultural Society.

The death of our beloved President, Sir Frank Crisp, Bart., on April 29th, 1919, has been a severe blow; he will always be remembered for the keen interest he took in the Club, for his genial and kindly personality and his unbounded hospitality.

The Committee is happy to announce that the Rt. Hon. Lord Lambourne, C.V.O., has consented to fill the vacant office of President in Sir Frank's place.

On Friday, July 25th the members visited the R.H.S. Gardens at Wisley, on the occasion of the annual outing. The thanks of the Club are especially due to the Director of Wisley, Mr. F. J. Chittenden, for the facilities he placed at their disposal in viewing the more interesting features and for arranging tea in the laboratory.

The accounts have been duly audited and passed, and there is a satisfactory balance.

The adoption of the report and balance sheet was moved by the Chairman, without comment, and carried unanimously. The Secretary announced that dinners and lectures had been arranged in February, March, April and May. On February 24 Mr. Jean Bintner, Ingénieur Horticole, Luxembourg, would deliver a lecture illustrated by lantern slides and specimens, on "Silver Leaf Disease." He also referred to the provision for luncheons on the days of the R.H.S. meetings, and stated that the one held that day had been a success.

The meeting next proceeded with the election of officers. Lord Lambourne was re-appointed president; Sir John T. D. Llewellyn, Bart., hon. vice-president; and Sir Harry J. Veitch and Mr. C. Shea were elected vice-presidents; Sir Harry J. Veitch was re-elected vice-chairman and treasurer; and Mr. G. F. Tinley, hon. secretary. The auditors and trustees were also re-appointed. The committee was re-elected *en bloc* with the exception of Mr. G. Monro, Esq., who resigned, and Mr. G. Monro, Junr., was elected in his father's stead.

LINNEAN.

At the meeting held on February 5, a paper entitled "On the Existence of Two Fundamentally Different Types of Characters in Organisms" was read by Dr. R. Ruggles Gates, F.L.S.

Dr. Gates pointed out that the experimentalist point of view regarding evolution resulting from the work in mutation and Mendelism, is frankly antagonistic to the views of palaeontologists, anatomists, and others who deal with orthogenesis and the inheritance of acquired characters. His object was to show that while these two factors bear entirely different relations to evolutionary changes, both are necessary to account for evolution as it has taken place.

The conclusion is reached that higher organisms exhibit two contrasted types of characters, which differ fundamentally (1) in their manner of origin; (2) in their relation to the structure of the organism; (3) in their relation to such phenomena as recapitulation, adaptation and inheritance; (4) in their relation to geographic distribution.

To the first category belong cell-characters, which arise as mutations, are represented in every cell of the individual, and are usually inherited as distinct entities. Since they are borne in the nuclei, it is proposed to call them karyo-

genetic characters. To the second category belong organismal characters, which arise gradually through impact of the environment or through orthogenetic changes, may modify only localised portions of the life-cycle, and may not be incorporated in the germ-plasm from the first. They may imply an increase or, in the gametophytes of plants, a shortening in length of the life-cycle.

The development of organismal characters is to be explained in connection with the principle of recapitulation. Embryonic recapitulation has arisen in connection with the adaptation of the organism to a new set of conditions, and implies the inheritance of acquired characters. Orthogenetic recapitulation, as in the juvenile plumage of birds, implies a change which is germinal in origin but added terminally to the life-cycle.

The antithetic alternation of generations in plants, implying the gradual development of the sporophyte by its intercalation between two gametophyte generations, is the same process as the development of orthogenetic recapitulatory characters. The homologous alternation in certain Algae has probably arisen through a sudden change which is essentially mutational.

The cell theory of mutations leads to the concept of the species cell. But there are definite limitations to the cell theory of organic structure, as pointed out by Sedgwick, Whitman, and others. The facts of recapitulation also limit the cell theory, for recapitulatory characters arise as lengthenings or shortenings of the life-cycle, and not through chromatic alterations present in every nucleus.

The usual objections to the biogenetic law are based on (1) dissimilarities in related eggs and embryos; (2) the fact that specific characters often appear very early in the ontogeny. Both these situations are to be expected if mutations occur in organisms which show recapitulation. This affords a definite basis for contrasting (a) karyogenic, nuclear, or mutational characters with (b) organismal, recapitulatory, or orthogenetic characters.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the R.H.S. Hall, on Monday, February 9, Mr. Chas. H. Curtis presiding. Four new members were elected. One member was allowed to withdraw double amount of interest, viz., £4 2s. 4d. Two members over the age of 70 years withdrew from their deposit accounts sums amounting to £5 18s. 10d., and one lapsed member withdrew £43 16s. 2d. The death certificate of one deceased member was received and the sum of £1 4s. 6d. was passed for payment to his nominee. The sick pay for the month on the ordinary side amounted to £74 11s. 5d., and on the State Section to £42 18s. 2d., and maternity benefits to £15 10s. The committee is recommending to the annual meeting a scheme for increased sickness and funeral benefits.

The annual general meeting will be held in the Royal Horticultural Hall on Monday, March 8, at 7.45 p.m.

READING AND DISTRICT GARDENERS.

At the fortnightly meeting held in the Abbey Hall on the 9th inst., Mr. E. Townsend presided over an excellent attendance of members and several members from the Newbury Gardeners' Society. The subject for discussion was "Problems and Values of Propagation," and was introduced by Mr. E. H. Jenkins, of Sorbiton. He dealt with heel-cuttings, the only suitable ones from hollow-stemmed plants such as Delphinium, Pyrethrum, Lathyrus and Lychnis; root-cuttings for plants such as Gaillardia, Perennial Poppies, Phlox, Pelargonium and Anchusa; and leaf propagation, giving as example, Begonia Gloire de Lorraine.

Mr. C. J. HOWLETT, Earley Rise, was granted an Award of Merit for a collection of Apples, the fruits being of good colour and in sound condition.

YORKSHIRE PROFESSIONAL GARDENERS

A WELL attended meeting of professional gardeners representative of all parts of Yorkshire, was held in Leeds on the 7th inst., to inaugurate

a society for the improvement of the wages and conditions of gardeners. A strong committee, with officials, was appointed, and the first meeting of the new association will take place shortly.

The Association is entirely non-political and is formed with the object of taking some common form of action, which will safeguard the special interests of professional gardeners, and also provide a means of promoting friendly relations between them and their employers. By such means it is hoped that such matters as wages may be discussed, as in these times when remuneration is so low and necessities are so dear many gardeners find it very difficult to make both ends meet. The Secretary is Mr. F. Capp, Nostell Priory Gardens, Wakefield.

CHESTER PAXTON.

THE last of a series of interesting lectures arranged by the Chester Paxton Society in the interests of allotment holders and others, was given in the Freemasons' Hall, Hunter Street, on the 14th inst. Mr. R. T. Wickham, chairman of the City Council Allotment and Small Holdings Committee, presided. The lecturer was Mr. N. E. Barnes, and his subject, "The Cultivation of Apples, Pears and Plums." Mr. Barnes stated that the industry of fruit growing in this country languished until, in the '80's, the Royal Horticultural Society, impressed by the enormous number of Apples imported into the country, re-awakened interest in fruit growing. Britain could produce hardly fruit as fine as that of any other country in the world, and there was abundant evidence of a growing demand for British fruit. Mr. Barnes' remarks were illustrated by lantern slides and specimen trees, chiefly of Apples.

OBITUARY.

Mr. James Kennedy.—We have to record the death of Mr. James Kennedy, retired nurseryman and seedsman, Dumfries, which took place on the evening of the 12th inst. Mr. Kennedy had been suffering from gangrene for several years and amputation of part of one of his legs had been found necessary some time ago, but he died suddenly when apparently in fair health otherwise. Mr. Kennedy was the eldest son of Mr. James Kennedy, nurseryman, Greobrae, Dumfries, where the family had carried on business for several generations. He entered his father's business and took it over about 48 years ago, retiring about five years since. Mr. Kennedy is survived by his widow, five sons and a daughter; two of his sons are engaged in rubber plantations in Penang.

John Lange.—We regret to learn of the painfully sudden death of Mr. J. Lange on February 1, at The Grotto, Hanworth Road, Hampton, Middlesex. He had a sudden seizure as he was about to go upstairs early in the afternoon and expired almost immediately. The late Mr. Lange was 66 years of age and had resided in Hampton for over 50 years, during which time he specialised in the cultivation of Carnations, which he exhibited successfully both at home and abroad.

TRADE NOTE.

MESSRS. WILLIAM WOOD AND SON, Ltd., are leaving their premises at North British Wharf, Wood Green, London, N., and in future their address will be Beechwood Works, Taplow, Buckinghamshire. The firm occupies a very prominent position among horticultural sundriesmen. The business was established in 1850, incorporated in 1859, and has been conducted at Wood Green for over fifty years. Some time ago, during the war, a fire destroyed a large part of the Wood Green premises; this, together with the growing volume of trade, compelled the firm to seek a site whereon to erect premises of an up-to-date character, and where space would permit of expansion. A large area of land was purchased at Taplow, and the firm's new catalogue contains illustrations which show that the site has been well chosen and the buildings designed on modern lines, giving ample facilities for conducting an ever-increasing business.

MARKETS.

COVENT GARDEN, February 17th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Ens.

Fruit : Average Wholesale Prices.

Table listing fruit prices including Apples (English), Pippins, Cox's Orange, Bramley's Seedling, Grapes Alicante, Gros Colmar, Valencia, Lemons, Oranges, Murcia, Nuts, Grapes, Apples (Nova Scotian), Bananas, etc.

Vegetables : Average Wholesale Prices.

Table listing vegetable prices including Asparagus, Beans, Cabbages, Carrots, Cauliflowers, Celery, Chicory, Cucumbers, Garlic, Endive, French Lettuce, Herbs, Mint, Mustard and Cress, Mushrooms, Onions, Parsley, Parsnips, Potatoes, Radishes, Rhubarb, Seakale, Spanish Onions, Tomatoes, Turnips, Watercress.

REMARKS.—A general briskness has favourably affected most sections of the fruit market, and business during the week has been active. Cape Fruit continues the leading feature of the trade. The later shipment arrived in fine condition, and sold at comparatively reasonable prices. Quantities to arrive this week will be rather restricted, mainly due to a lack of shipping accommodation. The last shipment of Peaches, Nectarines, Pears, Plums and Grapes, was received in excellent condition. The trade in home-grown Apples has a rather better tone, in view of decreasing quantities of best fruits available. English Grapes are in lesser supply, and their prices, as a shade firmer. British Columbian Apples are a firm trade at prices which show little variation to those of last week. A light shipment of Pines is to hand, and the fruits are meeting a ready demand. Canary Tomatoes are in rather shorter supply, and their prices are well maintained. English forced Asparagus is in better supply, but remains prohibitive in price. Forced Beans from Warrington and Guernsey are rather more abundant. The supplies of forced Potatoes are still inadequate for the demand, and the tubers remain high in value. Cauliflowers from Guernsey, Cornwall, and France are plentiful, but best heads are in firm request. All green vegetables are cheap, the open weather causing supplies to be very plentiful. Prices for Potatoes are still on the increase, and best tubers are scarce.

Plants in Pots, Etc. : Average Wholesale Prices.

Table listing prices for plants in pots such as Aralia Sieboldii, Asparagus plumosus, Begonia Gloire de Lorraine, Azaleas, Oxyanthemum, Cinerarias, Cyclamen, Erica melanthera, Marguerites, Palms, Kentia, Roman Hyacinths, etc.

Ferns and Palms : Average Wholesale Prices.

Table listing prices for ferns and palms including Adiantum, Nephrolepis, Pteris, Asplenium, and Oxyrtomum.

REMARKS.—This department is now better supplied both with foliage and flowering plants. The latter consist of Azaleas, Ericas, Boronias, Marguerites, Genistas, Cyclamens, Cinerarias, Daffodils, large white and coloured Hyacinths, and Tulips on bulbs. All Ferns are improving in quality. Palms are a very limited supply.

Out Flowers, &c. : Average Wholesale Prices.

Table listing prices for out flowers including Azalea white, Camellias, Carnations, Chrysanthemums, Daffodils, Freesia, Heather, Lilium longiflorum, Lilium speciosum, Lily of the Valley, Narcissus, Grand Primo, Pheasant Eye, Orchids, etc.

REMARKS.—With the increased supplies of flowers from home growers, and also from the Channel Islands, prices have been on the decline throughout the past week. Large consignments of Daffodils and yellow and white Narcissus have arrived from Guernsey and Scilly, and the West of England. Large consignments of these flowers also continue to arrive from the South of France. Double white Stock, which is taking the place of paper white Narcissus (now almost finished), is arriving in excellent condition. Red Roses and mauve Spanish Irises are the most attractive line from home growers. Lilium longiflorum remains high in price, and supplies during the past week were insufficient for the demand. Richardias (Arums) are well supplied, and are offered in fine condition at reduced prices; this also applies to Lily-of-the-Valley, Camellias, and Tulips, both single and double, of which a good selection is offered. Small consignments of Sweet Peas have been offered during the past week; there are also abundant supplies of Freesias, Snowdrops, Violets, white Lilacs, and Forget-me-nots. Primroses are on sale.

THE WEATHER.

THE WEATHER FOR JANUARY

January was a month of variable weather, bright and cold during the opening days, mild for the greater part of the month, with rain and occasional falls of snow. Distributed over 18 days the total yield of rain was 2.62 inches, the 24th being the wettest day with a fall of 0.44 inch. Of sunshine we had a record of 62.4 hours, being an average of 2.0 hours per day and a percentage of 26.4. With a mean of 29.56 inches the barometer varied from a highest of 30.66 inches on the 5th to a lowest of 28.57 on the 3rd. The mean temperature was 36.55, with a mean maximum of 42.0 and a mean minimum of 31.5. On the 17th the highest maximum of 54° was recorded, and the lowest minimum of 24° on the 3rd, while the lowest maximum of 34° and the highest minimum of 44° were for the 1st and 17th respectively. The mean range was 11° and the absolute range 32°. On 18 nights the temperature fell below 32°. On the grass the mean minimum was 27°, with a lowest of 20° on the 3rd; there were 23 nights of ground frost. At 1 foot deep the soil temperature fell from 33° to 31°, rose to 36° and then fell to 34°. Snow fell on 5 days and was lying on the ground at the hour of observation on 7 days. There was a thunderstorm on the 27th. The prevailing winds were westerly, with gales on the 7th, 16th and 21st. James Malloch, Director of Studies, Training College Gardens, Kirkton-of-Mains, nr. Dundee.

ANSWERS TO CORRESPONDENTS.

CHEMICAL FERTILISERS FOR AZALEAS : H. G.

We do not advise the use of the chemicals mentioned for Azaleas, and lime certainly is harmful to them. The safest fertiliser for Azaleas is diluted liquid manure, made from cow-dung or sheep droppings, and weak soot water. A little sulphate of ammonia, 1/4 oz., in three gallons of water, will encourage growth if given once a week during the growing season. Guano is also a suitable manure, if used at the rate of 1/2 oz. to three gallons of water.

CULTIVATION OF FLOWERS FOR MARKET : A. M. D.

Commercial Gardening, is, so far as we are aware, the only book which deals with the cultivation of hardy flowers for commercial purposes. It is in four volumes and deals with other horticultural matters from a commercial point of view. This work is out of print, but you would probably be able to obtain a copy from some secondhand bookseller; try Messrs. J. Wheldon and Co., 38, Great Queen Street, London.

LOSSES AMONG YOUNG CARNATIONS : E. L.

In the absence of plants and cuttings, we cannot determine the cause of your losses. Try sterilising the soil and sand, by heat. It is possible that some fly may have laid its eggs in the Carnations and the grubs were in the cuttings when you put them in. The Carnation Maggot is the larva of a small black fly (Hylemia nigrescens), the female of which lays its eggs, in early spring, at the base of the leaves; the maggots feed on the epidermis of the leaves, and finally work their way into a main growth. There are other less common pests, any one of which may be the cause of the trouble.

NAMES OF FRUITS : R. H. Newton Wonder.

Pears Durham. Catillac.—E. L. 1, Baummann's Winter Reinette; 2, Hanwell Souring; 3, Benoni.—E. S. 1, Scarlet Nonpareil; 2, Castle Major.—Constant Reader. Round Winter Nonsuch; Pear, Zépherin Grégoire.—J. B. M. Nec Plus Meuris.—E. J. P. 1, Brabant Bellefleur; 2, Smart's Prince Arthur; 3, Sam Young; 4, Calville St. Sauveur; 5, Winter Hawthornden; 6, Small's Admirable; 7, Gooseberry Pippin (Ronald's).—Dr. D. 1, Ashmead's Kernel; 2, Ashmead's Kernel Improved; 3, Lady Henniker; 4, Léon Leclerc de Laval; 5, Bellissime d'Hiver; 6, Braddick's Nonpareil.—Miss B. Apple Cullen.—F. R. 1, Hanwell Souring; 2, Beauty of Kent.—H. S. Orange Goff.—A. A. Brabant Bellefleur.—J. E. 1, Beauty of Kent; 2, Annie Elizabeth; 3, decayed; 4, Flower of Harts; 5, Bess Pool; 6, Reinette du Caux; 7, Lodzomere Nonpareil; 8 and 9, Anne Elizabeth; 10, Court-Pendü-Plat.—H. S. 1, Gravenstein; 2, Northern Spy; 3, decayed; 4, Beauty of Kent; 5, Golden Harvey; 6, Franklin's Golden Pippin; 7, Barnack Beauty; 8, King of the Pippins.—D. M. Whiting Pippin.—F. S. W. 1, Blenheim Pippin; 2, New Bess Pool; 3, Fullwood; 4, decayed.

NATIONAL DIPLOMA IN HORTICULTURE : G. L. S.

The examination for the National Diploma in Horticulture is conducted by the Royal Horticultural Society. Full particulars together with form of entry may be obtained from the Secretary, R.H.S., Vincent Square, Westminster. A stamped addressed envelope should be sent with the application. The Society also holds an examination in horticulture for school-teachers.

UNFRUITFUL PEAR TREE : W. S. L.

It is evident from your description that the Pear tree makes excessive growth. To check this tendency and to induce fruitfulness, root pruning is necessary, but as the season is now somewhat advanced, only one half of the roots should be dealt with, leaving the other half to be pruned next autumn as soon as the leaves have changed colour.

Communications Received.—R. I. L.—T. S.—F. J.—E. H. J.—A. H. L.—S. O.—W. F.—E. P.—T. J. V.—E. M. P.—N. C.—R. G.—W. F.—F. M.—J. H.—W. H. Y.—W. T.—A. H. S.—C. H. M.—S. A.—W. C.

THE
Gardeners' Chronicle

No. 1731.—SATURDAY, FEB. 28, 1920.

CONTENTS.

Almond, flowering of the .. 100	Orchid notes and gleanings— Cymbidiums, hybrid .. 103
Alpine garden, the .. 100	Cypripedium Memoria F. M. Ogilvie .. 103
Ranunculus hyssanus .. 101	Plant distribution .. 99
Roseoea cantiloides .. 101	Plant hygiene .. 108
Ourisia coccinea .. 101	Potatoes, the popularity and deterioration of .. 108
Apiary, the .. 106	Precocious Spring .. 99
Apple Ellison's Orange .. 108	Recreation ground for East Molesey .. 100
Areas, the drainage of small .. 106	Royal Gardeners' Orphan Fund .. 100
Berberis orthobotrys .. 108	Royal Horticultural Society's War Relief Fund .. 106
British Rose-growers' success in America .. 100	Scottish Horticultural Association, new president of the .. 100
Claygate flower show .. 100	Societies— British Carnation .. 100
Covent Garden Market .. 100	Royal Horticultural .. 109
Farrer's, Mr. Reginald, second exploration in Asia .. 104	Summer time in 1920 .. 100
"Gardeners' Chronicle" Seventy-five years ago .. 100	Trade notes .. 110
Jam, sugar for .. 100	Trees and shrubs .. 101
Hardy fruit culture .. 106	Vegetable cultivation in Macdonia .. 105
Hedges, evergreen .. 108	Vegetables— Cauliflowers .. 103
Kew, notes from .. 104	Lettuces .. 103
"La Linnea" .. 101	WEEK'S work, the .. 102-103
Lilium giganteum .. 103	
Malope .. 103	
MIM, variegated .. 107	
Mildew, hosts for the .. 108	
Nursery notes— Reading Primulas .. 107	
Obituary— Cocker, Alexander M. .. 110	
Doison, W. H. .. 110	
Sutherland, William .. 110	

ILLUSTRATIONS.

Burton, Miss M., portrait of .. 100
Camp at Sabiya Kaw, the .. 104
Cypripedium Memoria F. M. Ogilvie .. 103
Lonicera Standishii lanceifolia .. 101
Malope graadiflora, a border group of .. 105
Primulas, group of in a conservatory at Reading .. 107

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.95°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, February 25, 1920, 10 a.m.: Bar. 30; temp. 48°. Weather—Foggy.

Plant Distribution.

In the present dearth of new general ideas on the causes which have led to the distribution of plants over the surface of the earth, any attempt, however bold and unconventional, is welcome. Such an attempt has recently been made* by Mr. Guppy, who, with Dr. Willis represents the survivors of that once numerous band of plant geographers who were prepared to explain the origin of things in terms of evolution, and of whom many saw in Natural Selection the key to plant distribution. The difficulty in the way of the successful application of Natural Selection to account for the origin of genera and families has, of course, long been recognised and never met. Natural Selection may be an effective agent in preserving the utilities, but it can have no direct effect on the preservation of useless characters. Yet the characters which distinguish the larger groups of plants from one another cannot be regarded as having any survival value whatsoever. Thus the dilemma is reached that those characters which survive and characterise, say, the natural families of plants, are those which are not fitted to survive. They confer, by their peculiarity and distinction from other corresponding characters distinguishing other families, no manifest advantage on the plants which possess them. The family characters may be likened not to the useful, adaptive appliances of an ideal home, but to a form of architecture, and as no one would claim a better weather-worthiness for a Gothic than for a Palladian type of house, so no one

* "Plant Distribution from the Standpoint of an Idealist." *Journ. of Linnean Society*, XLIV., 209, July 31, 1919

not out to prove a thesis would claim for the architecture of one family of plants any advantage in the struggle for life over that possessed by any other family. Of course, it might be argued that the outward and visible form of a given plant—a leguminous plant for example—is the sign of an inward, physiological and leguminous grace, and that it is this that has carried the legume so successfully down the ages and so far over the surface of the globe.

But even on this view there is no very evident sign of evolution in the family architecture, and hence Mr. Guppy is inclined to assume that the family characteristics of plants were laid down in a remote and more placid age than the present, and before Natural Selection came on the scene. In that dark, backward and abyss of geologic time, conditions were uniform, water plentiful, sunshine more mitigated and recurring more quickly owing to the shorter day of a more rapidly spinning earth. In these halcyon days plants, as it were, crystallised out in family forms. Mr. Guppy sees a parallel with this behaviour in that of the Podostemaceae of the present day. This family of plants, as Dr. Willis has pointed out, lives under remarkably uniform conditions in the waters of tropical streams. Yet in spite of the uniformity of their surroundings and in the absence of the menace of "get on, or get out," with which Natural Selection is said to threaten living things, they also "crystallise out" in all sorts of forms, none of which appears to fit them any better to their environment. They mutate not in response to the peril of extinction, but in response to a primordial habit which still survives in them.

In similar way, in the placid uniformity of far off time, the forms of family architectures were assumed not as a result of compulsion from without, but as an expression of innate activity.

Mr. Guppy finds support for his views from a comparative survey of the present distribution of families, genera and species of flowering plants in the east and west land masses of the world. In the case of families the distribution in large measure is, as it were, regardless of the existing cleavage of the earth's surface into two great land areas diverging from the North. Thus, of the 272 families recognised in Engler's system of classification, 192 (70.5 per cent.) occur in both eastern and western hemispheres. Were community of families most marked in the north, where the land masses approach nearest to one another, it might be explained on the familiar lines of origin in a common centre and subsequent "migration." But it is not so. Of the 120 families restricted to tropical and sub-tropical latitudes, 73 (61 per cent.) occur in both eastern and western worlds.

Of extra tropical families—exclusive of those confined to the southern hemisphere—there are 36, of which 23 (64 per cent.) are common to the old and new world.

Thus, there is no gathering of the clans—no aggregation in northern latitudes—of families common to east and west. This is well illustrated in the terrestrial sub-families of the Araceae. Of the seven sub-families all are common to the eastern and western worlds, and yet four are exclusively tropical, two tropical and temperate, and only one is restricted to northern latitudes.

The species stand in marked contrast with the families in that they do gather in the north. Thus, of the 304 known western American flowering plants, 320 (87 per cent.) occur in arctic and temperate Asia, and of the 379 species

in the arctic east America, 239 (63 per cent.) are also native of arctic Europe.

From north to south the community of species diminishes rapidly, until in the tropics it becomes very rare indeed. With respect to their community of distribution, in the old and new worlds genera stand midway between families and species. Thus, whereas 69 per cent. of the exclusively or mainly tropical families are common to the eastern and western worlds, the proportion in the case of tropical genera is only 23.

Hence, in spite of the extremely long period during which east and west have been separated, the primitive family types have remained with the family architecture unchanged. Wherefore Mr. Guppy concludes that the types from which the families sprung were world wide, and that each type underwent successive differentiation into tribes, genera and species and not, as has often been supposed, that a species increased and became diversified, and formed genera which, undergoing similar diversification, formed tribes which constituted the family.

Mr. Guppy sees in the facts of distribution as exhibited by families, tribes, genera and species, an illustration of the aphorism "other times, other manners." In the remote past—the family age—when the innate creative impulse was alive in plants and conditions were uniform throughout the world, the family characters arose, and each family ranged the world. Later, when climatic regions began to be defined, the impulse to differentiation, although weakening, was strong enough to create from one family its tribes and later its genera. Later yet, the world became marked by distinct and widely different climates, and gave the opportunity for the waning powers of change which the plant possessed to express themselves in the formation of species. Thus, the increasing differentiation of climate which characterised the more recent periods of the world's history is reflected in the increased and adaptive differentiation of plants.

Precocious Spring.—It is probable that the learned in weather lore can recall seasons more premature than the present, but to those less weather-wise the present season must appear unique. Since how many years was it possible to gather Bluebells in mid-February, or to see at that time the green of the Larch? For several weeks past the Pear blossom has shown in the opened buds and Daffodils have refused to wait for the winds of March. On dry walls in the south Aubrietias have burst into full bloom, and only in those gardens the soil of which is cold with much water has the sunshine of February failed to force the plants into premature leaf and bloom. The most curious fact—if fact it be—is the pallor of the Almond blossom already fully opened. So far, although Almonds are to be seen in full bloom, none has—within the observation of the writer of this note—been able to assume its full tone of pink, but all have had to content themselves with a bloom of almost ghostly whiteness. It would be interesting to know whether this is actually and generally the case. If so, it would appear as though the brightness and duration of the sunshine, albeit sufficient to cause the full blooming of the flowers, is not enough to enable the petals to make the pigment with which in normal later seasons they are adorned. The Bluebells, also, of which bunches were sent more than a week ago, were of a rare paleness, the flower stalks almost blanched, and the flowers only tinged with blue. The oft-repeated observation that full colours generally come later in the season than the yellows would seem to have some measure of explanation in these observations; flowers which have taken the habit of blooming in the early spring have allowed their machinery for pigment

making to fall into disuse, yet it was shown long ago that certain kinds of flowers produce their full complement of pigment even when they are made to bloom in the dark. Hence it may be that the leaves and stems of plants count for something in the making of flower pigments. It is all too probable that the pessimists are right who see in the present precocious blooming of trees and shrubs a warning of a bad year in orchard and garden. Those, for example, who pruned their Roses early will probably have cause to regret it, and the Pear and Plum blossom will make them easy victims, in their forwardness, to the frosts which are almost bound to come. Yet even so, the present spell of fine weather will help the farmer and, though he may lose in some directions, there are others in which he will stand to gain. It is not easy, however, to extract a like comfort for the fruit grower, although the drying of the land will enable him to get on with the operation of spraying. It will indeed be a grim irony if, after a bounteous season when prices rule low, and when for various reasons the grower finds it difficult to dispose of his crop, there should follow one in which supplies are scarce and popular ignorance puts the grower who asks a corresponding price among the profiteers!

The Royal Gardeners' Orphan Fund.—The Viscountess Astor, M.P., has consented to preside at the Victory Festival Dinner of this gardening charity, which has been arranged to take place on May 19, in Princes' Galleries, Piccadilly, W. It is hoped the friends and supporters of the fund will make an effort to be present at the dinner. The secretary, Mr. B. Wynne, 19, Bedford Chambers, Covent Garden, London W.C., will be glad to hear from gentlemen desirous of acting as stewards on this interesting occasion.

Legacy to a Gardener.—The late Sir Charles Edward Heley Chadwyck Healey, Bart., K.C.B., K.C., of New Place, Luccombe, Porlock, Somerset, and of Wyphurst, Cranleigh, Surrey, bequeathed the sum of £200 to his gardener at New Place.

Claygate Flower Show.—At a special general meeting of the Claygate Horticultural Society it was resolved to hold a show on July 23, and, in addition to the usual classes, to have others for poultry and rabbits. An alteration of the rules was made making subscribers of 1s. members of the Society, this subscription entitling them to admission to the shows and lectures arranged by the Society and to exhibit in any class, for which they are eligible, without extra charge.

British Carnation Society.—We are asked to state that at the exhibition of the British Carnation Society, to be held in the Royal Horticultural Hall on March 10, the Society undertakes to stage, in competitive classes, the exhibits of members who live at a distance and are unable to attend. Those who wish to take advantage of this undertaking should communicate with Mr. Laurence J. Cook, hon. treasurer, 49, Ickburgh Road, Clapton, E.5.

Work on Hardy Fruit Culture.—A new work, entitled *Practical Hardy Fruit Culture*, by Mr. Richard Staward, gardener to Lord Desborough, Panshanger, Hertfordshire, has been published by the Swarthmore Press.

Flowering of the Almond.—For a long number of years the date of the first flowering of an Almond on Wandsworth Common was recorded in these pages by the late Mr. R. Hooper Pearson. Mr. H. Featherstone writes to inform us that the tree expanded its first flowers this year on February 13, as compared with March 14 last season.

Recreation Ground for East Molesey.—Application is to be made to the Ministry of Health for sanction to purchase eleven acres of land near St. George's Bridge by the River Mole, for the purposes of providing a recreation ground and permanent allotments for East Molesey. It is felt that this is a unique opportunity and one that may not occur again for obtaining a needed open space, so that if sanction is obtained and the Molesey District Council is unable to make the purchase privately, powers have been given for compulsory purchase. The land is said to

be of excellent quality and eminently suited for allotments.

British Rose Grower's Success in America.—Two important successes with Roses raised by him at Twyford have been achieved by Mr. Elisha J. Hicks, in the Rose trials held during 1919, at the National Rose Test Garden, Portland, U.S.A. Mrs. Dunlop Best gained a special Gold Medal, after securing 91 points out of a possible 100, while his Climbing Lady Hillingdon, with 88.33 points, was granted the only Gold Medal given to a yellow climbing variety. Climbing Lady Hillingdon, according to the report, gained full points for colour, bloom, foliage and stem, but lost a little from the standpoint of novelty, in other words, had it been a novelty of the moment, instead of three years old, it would have occupied a much higher position.

New President of the Scottish Horticultural Association.—In electing Miss Mary B. Burton as its president, the Scottish Horticultural Association sets an innovation in the conduct of horticultural societies, for it marks the first occasion on which a lady member has been elected by any similar society to such a position. Miss Burton, whose portrait is reproduced below, is one of the pioneer lady gardeners in Scotland,



MISS MARY B. BURTON, PRESIDENT OF THE SCOTTISH HORTICULTURAL ASSOCIATION.

and at present occupies the post of gardener at the New Loughton Hall Institution, Palton, where she has been for more than 20 years. The new president commenced her gardening career at Liberton, in the garden of her aunt, the late Miss Burton, who was the first lady member of the Edinburgh School Board. Miss Burton's first appointment was with Professor Geddes at Lasswade, but she only remained at Lasswade a short time before being appointed gardener at New Loughton Hall. Miss Burton has gained many prizes at local shows. In Messrs. Dobbie's Potato Competition, a few years ago, for which some eight hundred growers entered, she won the third prize. Besides being a good practical gardener, Miss Burton is a student of botany, chemistry, geology, and other sciences pertaining to her profession, and was recently elected a Life Fellow of the Royal Horticultural Society.

Proposal to Increase Minimum Rates of Wages for Agricultural Workers.—At a special meeting of the Agricultural Wages Board, Sir Ailwyn Fellowes presiding, held at 80, Pall Mall, S.W.1, on the 20th inst., the question of increasing the present minimum rates of wages for agricultural workers was considered. After prolonged discussion it was decided to refer for the consideration of the District Wages Committees, in the

first instance, a draft proposal to increase the minimum rates of wages at present in force for all male workers of 21 years of age and over throughout England and Wales to 42s., with a minimum increase of 4s. The effect of this would be, in areas where the minimum, is now 36s. 6d., 37s., 37s. 6d. or 38s., to raise it to 42s., and in areas where it is now higher than 38s., to raise it by 4s. in each case. A further meeting of the Board will be held on Friday, March 5, for the purpose of considering the reports from the District Wages Committees.

Help for Gardening Charitable Funds.—By means of public dramatic performances, held in December last, the Altrincham and District Gardeners' Mutual Improvement Society realised the sum of £102 5s. 7d. for garden charities. This amount has been disbursed as follows:—Gardeners' Royal Benevolent Institution, £42; Royal Gardeners' Orphan Fund, £30; Altrincham local fund for the assistance of orphans and cases of immediate need, £30 5s. 7d. Apart from the war years, when it was not possible to undertake performances of this character, this old-established society has organised entertainments for the benefit of gardening charities over a long number of years, with excellent results to the funds concerned. What can be done in one district should be possible elsewhere, and the Altrincham example is one that may be commended to similar societies in other districts. We congratulate the members of the Altrincham society on the splendid results they have achieved.

Summer Time in 1920.—On Tuesday, the 24th inst., the Home Secretary announced in the House of Commons that summer time would commence on March 28 and end on September 27, this year.

Sugar for Jam-making.—Persons who wish to obtain sugar for the domestic preserving of fruit must notify the retailer with whom they are registered for sugar between March 2 and 11, and furnish the following particulars:—(1) Name and address; (2) number of persons in the household registered for sugar; (3) the quantity of sugar required for preserving:—(a) summer fruit; (b) autumn fruit; (4) if the application is wholly or in part for sugar for preserving fruit grown by the applicant, the quantity of (a) summer and (b) autumn fruit expected to be available from the applicant's garden. The applicant must pledge himself neither to use the sugar for any other purpose than the preserving of fruit, nor to sell it to any third party. "Summer fruit" means any fruits normally ready for preserving before the end of July, and "autumn fruit" any fruits ready for preserving after July 31. Marrows may be included in the definition of "autumn fruit." Only a limited supply of sugar will be available; much less than in 1919.

Condemnation of Covent Garden Market.—We understand that in the interim report of the Committee appointed by the Food Controller to inquire into the adequacy and efficiency of the wholesale food markets of London, Covent Garden and Billingsgate are condemned as only worthy of mediæval London, and lacking in proper management and organisation.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*South London Floricultural Society.*—Pursuant to notice, the adjourned annual meeting was held on Tuesday, the 6th inst., James Coppock, Esq., in the chair. About 50 members were present. The main object of the meeting was to receive from the sub-committee a new code of laws, which were unanimously adopted, and it was ordered that the new rules should be sent to each member. The chairman announced that the committee had appointed five exhibitions for the present season:—The first to take place on Wednesday, the 23rd April at the Horns Tavern, Kennington, and that Mr. Briant had liberally given the free use of his rooms for that occasion: the second, third, fourth, and fifth to be held at the Royal Surrey Zoological Gardens, on May 21, June 25, July 23, and September 17. Mr. Tyler, proprietor of the Gardens, has offered the Society £40 for each show to be held there, making together £160. *Gard. Chron., March 1, 1845.*

"LA LINNEA," THE ALPINE GARDEN AT BOURG-ST.-PIERRE, SWITZERLAND.

ONE of the hottest days in August, 1919, found me at Orsova, the end of the funicular railway, and a six hours' ride in a pony trap brought me to the village of Bourg-St.-Pierre. A blazing sun and a road so steep that never once was the pony able to trot, clouds of dust and at the end an inn! And such an inn! Pitch dark inside, and one stumbled up stone steps to find a salon with a bed in it! And never a window opened since Napoleon had visited it. Still, Napoleon had once lunched there, and one's grumbling was met with this remark on every occasion.

However, the landlady was a good old soul, who produced butter and cheese for my supper, neither of which was to be obtained in any of the large hotels below.

A few steps, and I was at the famous garden, presented by M. Corrévon to Geneva, together with a sum of 30,000 francs, collected by him, with which to endow it (for neither of which, it may be said, has he ever received one word of thanks).

Blessed are those who expect nothing. Alas! I had expected much, but the drought of many weeks had dried up everything to an unparalleled extent. Even Acacias had succumbed and were dead.

Steep and winding walks, with huge rocks on one side, brought me at last to the top, where is a well-equipped laboratory, and the chalet wherein Professor Chodet lives. He was busy dissecting *Colchicum* bulbs, investigating a cross between *C. montanum* and another, but he smilingly came out to show such treasures as were in flower.

First I must refer to a magnificent plant of *Valeriana pyrenaica* three feet high, and the same through, with large, globular heads of white flowers, an ornament to any herbaceous border, sometimes wrongly named *cordifolia* and not resembling *Valeriana officinalis* in any way. Next in interest came the Gentians, *G. Parryi*, *G. tibetica*, *G. septemfida*, all fully out, *Parryi* being exceptionally lovely with blooms that do not close in dull weather and very like those of *G. Farreri*.

Eriogonum umbellatum, with heads of bright yellow of a rather fluffy character, was also in great beauty. *Silene quadrifida* (blue) is specially marked in my note-book as worthy of much admiration, together with *Silene "Elizabeth,"* quite different in character and of a bright red.

Alchemilla alpina, *Doronicum austriacum*, *Senecio abrontanifolius*, *Sedum Rhodiola*, and *Dryas lanata* were all interesting. On the way down *Dianthus alpestris* was covering the stones and a big bed of seedlings of the yellow *Aconite* was attractive. *Saxifraga carriculata* was looking as happy in a very dried-up bed, with *Campanula Scheuchzeri* as neighbour, as it does in the clay of Carr Manor in Yorkshire. I only wish I had seen the garden with its 2,500 varieties of Alpines in the flowering season. The *Valeriana* seemed so desirable a plant that I secured one at Floraire (and so far it seems very happy in Berkshire), and I also bought the Gentians from M. Corrévon and one or two other treasures. Which is a better plan than digging them up in full flower in the mountains and endeavouring to carry them alive to England! even when carried in sponge bags attached to the waist, as was done by one enthusiastic lady, who has attributed her rheumatic knees ever since to this heroic effort to evade the authorities. *Alice Martineau.*

TREES AND SHRUBS.

THE AKEBIA IN S.W. SCOTLAND.

I HAVE met with *Akebia quinata* in one or two southern Scotland gardens, but it is not much favoured, notwithstanding that the twining growths with their palmate leaves and the scarlet-purple or brownish-purple flowers are very attractive. *A. lobata*, which I have had sent me from the Midlands of England, when in fruit, where it was hardy on a wall, has not come under my notice in south-west Scotland, although it is just

probable that it may have found its way into some gardens without my having observed or heard of it. There is no reason why it should not do well in the milder districts. *S. Arnott.*

LONICERA STANDISHII LANCIFOLIA.

THE narrow-leaved variety of *L. Standishii*, named *laucifolia*, illustrated in Fig. 40, is one of the best garden plants collected by Mr. E. H. Wilson, in 1907, in the province of Western Hupeh. The famous old collector, Robert Fortune, discovered the type just over a half century previous.

The photograph from which the illustration was reproduced was taken on February 9, at



FIG. 40.—*LONICERA STANDISHII LANCIFOLIA.*

Aldenham House Gardens, where the plants are growing happily, entirely unaffected by the cold, damp soil, or the winter's frosts. A few days prior to the taking of the photograph there were 11 degrees of frost at Aldenham, but the flowers and buds were unharmed, and the latter are giving forth their lovely fragrance as though such happenings never occur. This Honeysuckle is thus hardy, and, owing to its flowering so early in the year, is worthy of inclusion in all collections of hardy shrubs. The flowers, which appear on the stems, usually in two pairs at intervals of about two inches, are creamy white in colour, sweetly fragrant, and are followed later by small, interesting, heart-shaped red berries, which ripen at the end of May or June, and add to the beauty of the plant. *Edwin Beckett, F.M.H., Aldenham House Gardens, Elstree.*

THE ALPINE GARDEN.

RANUNCULUS NYSSANUS.

In *Ranunculus nysanus* we have a Buttercup, or Crowfoot, which, although it has been introduced for a few years, has not found its way into many gardens. The yellow Crowfoots are not specially favoured, but there are among them a few plants which merit less neglect than they receive at present. *R. nysanus* is one of these. It grows from six to eighteen or more inches high, has leaves somewhat resembling those of some of the old florists' *Ranunculi*, but more hairy, and has good-sized yellow flowers. It is hardy, and lives and thrives well in a light soil, though better in a stiffer one of heavy loam. Its defect is a tendency to spread at the roots, which marks a goodly number of its congeners, but this trouble may be kept in bounds by periodical lifting (every three years or so) and replanting, or by confining the roots by means of stones or an earthenware ring about six inches deep. It is, however, a good plant for the rock garden or the front of the border, although its spreading habit makes it less suitable for the latter. The flowers appear in June.

ROSCOEIA CAUTLIOIDES.

It was with singular pleasure that I first saw a plant of *Roscoeia cautlioides* at Chelsea when it was first exhibited by its introducers, Messrs. Bees, of Liverpool. But behind the pleasure lay the lurking fear that this new plant might prove as uncertain as its predecessor of the genus, *Roscoeia purpurea*, which has done well in some places but has refused to flourish in the majority of gardens. In *R. cautlioides*, however, we seem to have secured a representative of the race which is not only beautiful in its form and colour, but also easy to cultivate in gardens. It is a delightful plant, with foliage resembling in form that of a *Gladiolus* or *Iris*, and with a stem about a foot high, carrying several flowers with an open fall and a narrow hood of a soft and delightful yellow, charming in every respect.

I have seen this *Roscoeia* in several northern gardens, and in all of them it has proved hardy when planted about six inches deep in a compost of loam and leaf-soil with a little sand. *R. cautlioides* flowers in June and July but there is now a valuable variety, named *August Beauty*, which opens later and is as good, if not better, in its colouring. The still newer *R. humeana* I have not tested, and can say little about it except that it exists, and should be a great boon to the garden if as hardy as the yellow species.

OURISIA COCCINEA.

It was pleasant to read the note on this plant from such an experienced and able cultivator of hardy flowers as Mr. E. H. Jenkins in the *Gard. Chron.*, of February 7. I am glad to see that his experience makes him more optimistic of the flowering possibilities of *Ourisia coccinea* than I have been. My principal object in writing the note to which he refers was to warn intending cultivators that the *Ourisia* is not such a reliable subject as many would suggest. I have seen the plant growing under many different conditions in various parts of the three kingdoms and have had much correspondence regarding it, so that I fear I cannot modify my views by saying that any special treatment will ensure success. It succeeds in some gardens under what appear to be precisely the same conditions in which it fails to flower in others. Even in the same garden it has curious ways of flowering in one part and not in another, where the soil, etc., appear quite the same. It is a delightful subject when it does well, and some of the finest examples I have ever seen have been planted in deep, rather peaty soil, far away from rock. As an eminent writer has said lately, it succeeds or fails under the most diverse conditions. Where it succeeds, it is a delight; where it fails to flower (not the same thing as failing to grow, for it will form carpets without giving much flower) it is a sad disappointment indeed. It would be interesting to have the experiences of other hardy plant lovers in the flowering of this interesting species. *S. Arnott.*

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOL, Gardener to W. R. LESTER, Esq.,
Castleford, Cheshire.

Miltonia vexillaria and its numerous varieties and hybrids are developing slowly, and should receive every encouragement to make strong, healthy growth. The plants should be grown in a light position in the intermediate house, and, if the stage is some distance from the roof glass, placed on inverted flower pots. They will require more water than hitherto and a watch must be kept for thrips. Occasionally the leaves become sticky and adhere to each other; when this occurs it will be necessary to release them by means of the handle of a budding knife.

Odontoglossum citrosimum.—This Mexican *Odontoglossum* should still be kept on the dry side, for if water be given freely at this season the plant usually fails to flower. When the flower spikes commence to develop from the new growth more water may be given. The scapes will make rapid progress, and the pseudo-bulbs will regain their former plumpness. A light, airy position near the roof glass of the Cattleya house should be chosen for *O. citrosimum* and its variety *roseum*.

Aerides.—Most of these Orchids require the same treatment as *Vanda*, but some of the smaller-growing species such as *A. maculosum*, *A. Lobbii*, *A. crispum*, and *A. odoratum*, may be grown in pans or teak wood baskets suspended from the roof rafters. *A. Vandarum*, and *A. japonicum*, should be placed at the warmer end of the cool house. *A. Vandarum* should, on account of its somewhat rambling habit, be arranged on a piece of bark covered on one side with peat and *Sphagnum*-moss.

Rhynchostylis.—This genus is represented in gardens by *R. retusa*, which may be grown either on the stage or suspended near the roof glass. All the *Aerides* and their allies, with the few exceptions enumerated above, need a warm, moist atmosphere during their period of activity, and the plants should be sprayed overhead in hot, dry weather.

Angraecum.—The genus *Angraecum* includes a few noble Orchids such as *A. eburneum*, *A. Eichlerianum*, *A. Ellisii*, and the pretty little *A. citratum*. The small-growing species thrive in pans, and the larger kinds may be treated in exactly the same manner as *Vandas*. The Japanese *A. falcatum* requires the conditions of a cool house.

PLANTS UNDER GLASS.

By JOHN COITTS, Foreman, Royal Botanic Gardens,
Kew.

Anthurium.—*Anthuriums* require much the same sort of compost as *Alocasias*, but it should be of a more open character. Fibrous peat and loam should be pulled into lumps, and have some of the finer particles removed. To this add *Sphagnum*-moss, charcoal, sand and broken potsherds. The pots or pans should be well drained; spread out the roots carefully and work the fresh compost well in between them, keeping the crown of the plants above the rim of the pot, so that when finished the compost is in the shape of a mound several inches above the rim. Surface the soil with fresh *Sphagnum*-moss, or, better still, with what is known as "bum" moss, a short, green moss with a velvet-like pile. *Anthuriums* should be grown in a house having a close, moist atmosphere, and a temperature of 60° to 70°. The plants should be well syringed until they make fresh roots, when they may be given copious supplies of water.

Lathyrus pubescens.—This beautiful greenhouse climber is a native of Chili, and is more or less hardy on warm walls in the south and west; even in districts where it succeeds out-

doors it is worth the shelter of a cold greenhouse, for the pale violet-coloured, fragrant flowers are very useful as cut blooms. This *Lathyrus* is best planted out in a bed in a small house, training the growths thinly on wires just under the roof glass; it succeeds admirably in a Carnation house. At the best it is not a long lived plant, and a few specimens should be raised from seed every year, the present being a suitable time to sow the seeds, which will germinate readily in an ordinary greenhouse. *Lathyrus splendens*, a native of California, requires similar treatment to the above.

General Remarks.—Continue to introduce bulbs and other forcing subjects into a house having a suitable temperature for forcing. All plants used for this purpose will, as the season advances, flower more readily and in lower temperatures than hitherto. Some, such as *Wistarias*, will not submit to forcing in heat, for in much warmth they invariably drop their flower buds. Grown slowly in a temperature of about 50°, they will flower perfectly. Successional batches of tuberous-rooted *Begonias*, *Gloxinias*, *Richardia Elliottiana*, and similar subjects should be started. Attend to the pricking off of seedlings raised from seed sown last month. If damping-off occurs in a seed pan, nothing but the prompt transference of the remaining seedlings to fresh compost and a drier atmosphere will save them. Make it a rule, at this period, to examine the stock of seeds in the seed drawers once a week, as one is apt to overlook some subject intended to be grown. Attend to the potting of *Palms*, keeping such as are used for decorative purposes in as small pots as possible. Have ready stocks of potting material under cover, for the repotting of stove plants when they need this attention.

THE KITCHEN GARDEN.

By H. WEBBER, Gardener to Mrs. JENNER, Weaver
Castle, near Cardiff.

Parsnips.—This crop should be sown on ground that has been deeply dug and manured for a previous crop. Make shallow drills 15 inches apart and place a few seeds in positions 9 inches apart in the rows. Should the land be heavy or the roots needed for exhibition, grow the plants on special stations prepared as follows:—With an iron bar, make a deep hole having a diameter across the top of three inches. Fill the hole one-third of its depth with pure sand and the remainder with a compost consisting of two parts old potting-soil and one part burnt refuse from the bonfire, with sufficient sand added to provide a light texture. Pass the mixture through a quarter-inch sieve and fill the holes with it. Next push a straight Ash stick that has been tapered from 1½ inch at the top to a fine point, into the hole and then refill it with more of the soil. Make a slight depression with the hand and place a few seeds at each station, covering them to a depth of half an inch. Use boards in doing this work to prevent unduly consolidating the ground. No difficulty will be experienced in lifting these roots if, at this time, a slight hollow is made around them and filled with water. They can be pulled up with ease a short time after this has been done.

Peas.—Early Peas of the round-seeded varieties may be sown on a warm border. Mark the position of the rows, and take out a shallow trench with a shovel, placing the soil by the sides. Afterwards rake the bottom level, and there should be a space 10 inches wide on which the seeds may be sown evenly and covered with fine soil to a depth of two inches. One quart of seed is sufficient to sow a row 40 yards long. To protect the seeds from mice and other vermin either soak them in paraffin or coat them with red-lead just previous to sowing them. To do this latter place the seeds in a tin, slightly damp them, sprinkle a small quantity of red-lead over them, and shake them vigorously.

Marrows.—Early Vegetable Marrows are always appreciated. The plants are very tender and should be grown in a heated pit or on a mild hot-bed. A few seeds of a small variety should be sown in a warm house. Place them singly in 4-inch pots and grow the seedlings in a house having a temperature of 55°.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Figs.—If the temperature of the Fig house, as given in a previous calendar, has been maintained the foliage should be fully developed and the young fruit swelling freely. It is a common practice to allow the more fertile trees to mature all the fruits they produce, but the method is to be condemned. Judicious thinning of the fruits should be done before they come into flower. By this treatment, *Brown Turkey*, one of the most prolific and best Figs for forcing, will ripen two crops of good fruits in the one year. From the time of the setting of the fruit to its attainment to full size the roots should be fed with diluted liquid manure and other stimulants. Succession houses should be closed according to requirements, and the trees should receive the same attention in watering, thinning, and regulating the growths as was recommended for the earlier ones.

Plums and Cherries.—When the fruits of the earliest trees are well set raise the temperature 5°, with liberal ventilation and the free use of the syringe on all available occasions. Later trees in flower or approaching that stage should be kept growing steadily in a temperature not below 45° to 50° at night. It is fatal to good results with these fruits to hasten their development until they have set their fruits. Fumigate the house just before the flowers open and again after the fruits are set, and at all times maintain a sharp watch for green or black fly. Admit air freely on all favourable occasions, but guard against draughts.

Pears and Apples.—Pears give excellent returns for liberal treatment, although many complain that the fruits are difficult to set under glass. The trees should not be coddled in any way while in bloom. The syringe should not be used too freely, at the same time a dry, parched atmosphere must be guarded against as this would weaken the flowers and cause the fruit to drop later. Apples set more freely than Pears. Cherries, Plums, Pears, and Apples should all be grown in a moderate temperature with plenty of air during the flowering periods. To further ensure a good set of fruits the trusses of bloom should be thinned where they are crowded and a soft brush passed over the flowers daily at noon.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Nede, Godicote, Welwyn, Hertfordshire.

Bush Fruit.—In districts where bullfinches are numerous it is not always advisable to prune *Red and White Currants* before the spring. The *Red and White Currants* bear fruit on wood two to three years old and not on that produced the previous season. In pruning the *Red and White* kinds shorten the shoots to three or four buds with the exception of those required for extension and shoots needed to replace unfruitful growth and branches, which need to be shortened accordingly. The cut should be made at a bud pointing in the direction growth is required.

Black Currants.—As the *Black Currant* fruits on the shoots of the preceding year all that is necessary in pruning is to remove old wood that has fruited and retain as many of the young growth as possible without crowding them. It is advisable to remove by hand-picking all big buds infested with mite before they expand.

Pruning Peach Trees.—Take out old branches that are bare of young wood and train in as much of the previous year's growth as is required to furnish the space. Examine the old ties and unfasten any that appear so tight as to injure the bark.

Fig Trees on Walls.—It is necessary, in some parts of the country, to protect Fig trees from severe frost in winter. Where heavy coverings have been used for this purpose they may be gradually removed in spring, for it is harmful to the plants if the whole of the winter covering is left in position until danger of frost is over,

and then removed all at once. During this month it is always well to be prepared for sudden changes of weather. Fig trees that have made an excessive amount of new growth should be checked at the roots. Cut a deep trench three to four feet from the wall, and sever the stronger roots, also those that have grown down in the sub-soil with a sharp knife. Fill in the trench with chalk and soil of a poor nature, ramming the materials as hard as possible. The Fig does not need a rich soil or one enriched with manure, but when the trees are carrying heavy crops of fruit, a concentrated fertiliser may be given the roots.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Embellishing the Orchard.—Much prominence has been given during recent years to the value of orchard fruits grown on commercial lines, but the beauty and utility of naturally grown trees in private establishments are less recognised. The planting of orchards may be done now, and where the orchard allows of two or more grass pathways meandering amongst the trees, it will offer a pleasant and agreeable retreat. The boundary fence, usually composed of Quick and Holly, may be embellished with Quince, Bullace, Medlar and Cherry, with an occasional Honeysuckle or Clematis. A colony of Walnuts beyond the fence will afford protection from strong winds and add stateliness to the scheme. Tulipa Gesneriana lutea and the variety William Copeland may be planted in close proximity to Quince trees, whilst the ground beneath may be carpeted with Scilla and Anemone. Narcissi, Primroses, Violets, Arabis, Auriculas and Cerastium are other useful subjects for planting in orchards and, given a fairly open position, Poppy and Marigold will provide a fine setting to Apple trees in September. A few hardy Ferns planted promiscuously also provide a pleasing feature, as also does Dicentra spectabilis. The orchard will be made more picturesque by allowing light climbers to run up the more open trees and hang naturally from the boughs. Suitable subjects for this purpose are:—Clematis viticella alba, C. flammula, Honeysuckle, Winter Jasmine and Roses. I advocate the planting of old, well-tried varieties of Apples and Pears—on the free stock—suitable to the district. Orchards planted in the manner described above have a distinctive charm and are in keeping with old English masonry. Bulbs that have been forced should not be thrown away, but planted in the orchard or shrubbery.

Dahlia.—Where it is desired to increase the stock of Dahlias, the old roots should be placed in warmth to encourage the production of sucker growths for use as cuttings. An excessive amount of fire-heat will cause long-jointed, hollow growths to develop, and these are useless for the purpose. Insert the cuttings in a light compost in 2-inch pots and provide fairly moist atmospheric conditions. When rooted, transfer the plants to 5-inch pots filled with a compost consisting of loam, decayed horse manure, and charcoal, and grow them in a cool house.

Erica.—Hardy Heaths may be planted at the present time, and to be effective and appear natural they should be arranged in broad, irregular masses. When used in connection with rock gardens they may be planted in drifts or colonies. As isolated plants they never look happy. It is sometimes desirable to make plantations on fairly level, open stretches, and where this is done effective use may be made of silver sand by forming a few broad pathways with this material to link up the uniform drifts. Stepping-stones may also be employed to advantage and the spaces between them planted with varieties of Thyme. If the soil is heavy it should be mixed with loose peat, partly decayed leaves and coarse river sand. The majority of Ericas are partial to peat, but, by careful selection, a useful and varied collection may, provided lime be absent, be grown in ordinary soil. The early blooming Erica carnea will thrive in soil containing lime. Dwarf varieties are easily increased by pulling them to pieces and replanting forthwith. Tall varieties should be planted closely together.

ORCHID NOTES AND GLEANINGS.

HYBRID CYMBIDIUMS.

Mr. W. E. Walker, gardener to G. Hamilton Smith, Esq., Leigh Woods, Bristol, sends a selection of flowers of Cymbidiums showing great variety. Four forms of the favourite C. Alexandri are represented by one wholly pure white, another white with deep rose markings on the lip, the third reddish rose with darker markings, and the fourth sulphur yellow with red band on the lip. C. Castor aureum is a large yellow-tinted form, C. Schlegelii a magnificent form with large lip heavily spotted with claret colour. C. Gottianum, C. Corona and C. Sybil were also sent in extra good forms.

LILIUM GIGANTEUM AT ABERUCHILL CASTLE, PERTSHIRE.

ONE of the features of the old garden at Aberuchill Castle, Perthshire, is Liliium giganteum, which is grown in considerable numbers, many of the plants being raised from seeds. The Giant Lily does well in this wild garden by the side of a stream flowing from the hills and pursuing a picturesque course over the rocks before reaching the wild garden. The plants at Aberuchill are usually of good stature and seem to flourish in the climate and soil in this lovely spot, near Comrie. The stems attain to a height of 8 feet to 10 feet and strong plants develop as many as twenty flowers. A.

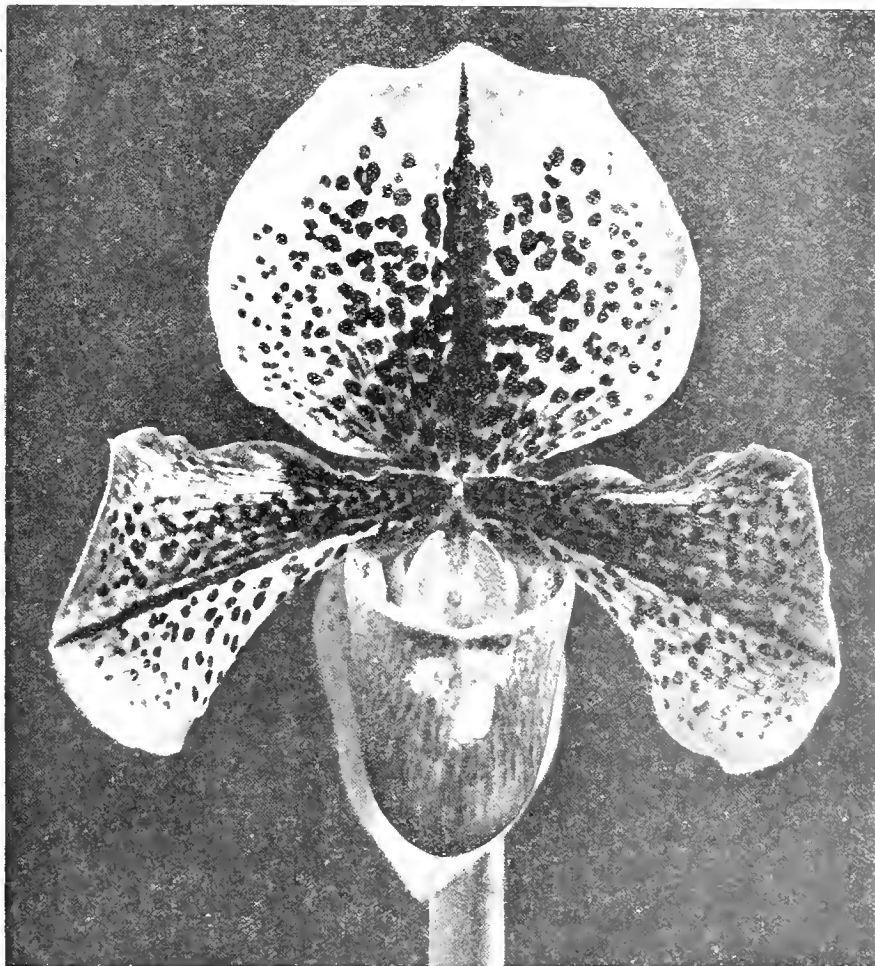


FIG. 41.—CYPRIPEDIUM MEMORIA F. M. OGILVIE.

CYPRIPEDIUM MEMORIA F. M. OGILVIE.

Our illustration (Fig. 41) represents the fine cross between C. Pyramus (Hera Euryades × Mrs. Wm. Mostyn) and C. Curtmanni (Beekmanni × Mons de Curte), for which Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, obtained a first-class certificate when it was shown under the above name at the Royal Horticultural Society on Tuesday, the 10th inst. In every respect it is a fine production and highly interesting as, although indicating marked improvement on the parents, it shows how tenaciously such typical forms as C. Beekmanni and C. Hera Euryades transmit their best features in all combinations.

The dorsal sepal is pure white with a small pale-green base from which spreads heavy, maroon, blotched lines, which change to mauve towards the margin. The rest of the flower is pale yellow, blotched with blackish chocolate colour, the surface of the lip being tinged with a lighter chocolate shade.

VEGETABLES.

CAULIFLOWERS AND LETTUCES.

SEEDLING Cauliflowers and Lettuces raised from seed sown early in January require transplanting singly. Early Cauliflowers are more satisfactory when grown singly in 4-inch pots, thereby obviating a check when they are planted out, and a check is often the cause of the plants "buttoning." They should be grown in a house or pit having a temperature of 50°. As soon as the roots are established in the new soil they should never suffer from want of water, for lack of attention in this respect is frequently the cause of mildew appearing on the plants.

Seedlings of any subject should always be placed in a light position immediately they are well through the soil, to prevent them becoming drawn, and this is especially necessary in the case of young Cauliflowers and Lettuces. *Practical.*

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

15.—IN CAMP.

THE upper Valley of Sabiya Kaw winds abruptly southward again, between high, granite masses and aretes, leaving behind it, on the left, the stark ascent to the pass that goes down into China. Though the ridges are all bare and high-alpine, the trough of the valley, even here, is still filled with Bamboo. I wish I had skill of Bamboos and could determine the species here, but even my own, at home, I probably should not be able to recognise in the unrestrained rampageousness of the wilds, with the exception of incomparable *A. nitida*. But *A. nitida* itself has a rival here, in a very graceful, plump, Bamboo, that occupies the more open places of the upper rain forest and lower alpine forest, between 9,000 feet and 10,500 feet elevation. This again, between 10,500 feet and 11,000 feet, is replaced by a much larger species, no less graceful, but of tropical magnificence, with young shoots like shell-cases, and culms that are cut in half for water conduits. This appears to grow in clumps, whereas its lowlier predecessor seems to run all about, and covers the ground. So does its higher successor, for the third Bamboo sheets all the alps, from eleven to twelve thousand feet, in a dense and disappointing uniformity of verdure. It grows man-high, and has as much native grace as the others; but my enthusiasm for it is tempered by long and painful experience of its intricate and sopping labyrinths. And how many true species these three descriptions may cover, I cannot tell for certain. Three, perhaps; two, I think probably; but they seem to pass into each other by such intermediate and indeterminate gradations that it is not possible for anyone not an expert to pronounce upon them.

Gradually the coolies hewed a passage up through the Bamboo forest, slashing away the trunks with their native cutlasses in just such a way that the remaining six-inch stumps, sliced away at a razor-sharp angle, are most nicely calculated to go straight through one's stocking or one's leg. But the upper level of the Sabiya Kaw Valley flows along very pleasantly, almost flat, with small ascents at intervals, down which the stream comes leaping in cataracts. For the

vale is threaded with little rills, meandering, dark and brown and clear, quite tranquilly beneath the shade of the ancient Spruces in their lowest, flattest lap, where their banks are heavy with rose-coloured and fiery-orange Rhododendrons. High on one side towers the ridge of the pass; and, even more imposing, immediately overhead on the other, impends a gigantic precipice, bluff over bluff of naked rock, with microscopic-looking fur-trimming of Bamboo between each. And down the face of this, on days of deluge, the rain-borne torrents fall in swaying veils of mist and foam-dust, like a whole succession of Staubbachs.

As one insensibly mounts the valley, the streams diminish in number, till at last there is only one main torrent, brawling and dashing among boulders that make much easier going than the tangled arcades of the Bamboo. The banks are thick with Rhododendron, yellow, orange, rosy and crimson in their seasons. The spires of an aculeate Poppy are ripening seed along the shores, and the pink and mauve Garlies run riot in the long grass of the islets, amid the luxuriance of that Currant-crimson Polygoum I first saw on Hpawshi Bum, but which here expands to its full lush stature of 15-18 inches, with compound strobiloid tails



FIG. 42.—THE CAMP AT SABIYA KAW.

of rich colour, that in fruit deflex stiltily and turn of a stale-blood tone, and dimmer, more elongated outline. Judging from its complete lack of rotundity, I might conclude this to be *P. sphaerostachyon*, were it not so very much handsomer than any form I have yet seen or grown of that preposterously expensive rarity. Anyhow, it makes a goodly staple in the opulent little hay glades that now, at last, with increasing frequency, begin to break the monotony of the Bamboo. These glades, indeed, are a glorious sight in August, thick with the Polygoum and the Alliums, with golden Potentillas, with sky-blue *Corydalis curviflora*, and with a magnificent narcissiflora-Anemone, bold and up-standing, with spraying heads of pure orange-yellow. Among these, always rare and isolated, the crimson hyacinthoid Lily towers occasionally in lonely specimens; while often the dells are filled with jungles of a tall and very elegant citron-coloured *Corydalis* of delicious scent; and up the culms of the Bamboos wriggles here and there a *Codonopsis* with foliage as fine and dainty as a *Lycodium's*, and very large bells of pale yellow, flushed and freaked with claret-colour in the most subtle and fascinating effect. But why do all the *Codonopsis*s so rancidly emulate the fox in their stench?

After several stoppages to delight in these

many lovelinesses, we came at last to a clearance obviously predestined, since the beginning of time, for our camp (see Fig. 42). Its floor was carpeted with all the dwarf alpine Rhododendrons that had greeted us on the top of Hpawshi Bum, and its lush stretches were ablaze with the golden Anemone. On its far side a sparse colony of Spruces rose black above the Bamboos, and under these a little rivulet sparkled between mossy boulders down to the main river. In the moss-shone Grass of *Parnassus*, large and white, almost, as *Anemone japonica*, or small and creamy; a big-flowered, snowy *Cerastium*, with dark-purple foliage, nestled in clusters near the water; a tiny *Saxifrage* unfolded freckled white stars (with various golden *Hirculus* members of its cousinship evidently to follow); and down in the silty flats beside the stream there rambled a relation of the *Sorrel's*, possibly *Oxyria*, with most attractive spreading heads of cream-coloured blossom on four-inch stems above the bronzy mat of reniform foliage. And there was also a *Primula* coyly lurking between the boulders, in shaded, mossy corners. But of this I can tell no more than that it is very tiny, very frail, single-crowned, and with one, two, or (very rarely) three blossoms at the top of a thread-fine scape of two or three inches. But all the flowers were gone; and, though the plant locally abounds up on the highest alps above, in cool, mossy places, I was never able to come on any recognisable trace of blossom. In its tininess and habit, it seems to stand near *P. campsantha*; but the bright-green leaves, powderless and very sharply, infrequently toothed, seem to set it apart. Anyhow, with all these treasures abounding close at hand, offering ample work for several days even in the glade itself, small wonder if we hastened to pitch our tents in this favoured spot, with many a calculating, hopeful glance up at the gaunt, hungry-looking pinnacles and ridges of bare lawn and granite, that now aspired round us far overhead, on either side and away round the head of the valley, now just coming into sight. *Reginald Farrer*

NOTES FROM KEW.

PLANTS IN FLOWER IN THE GREENHOUSE IN FEBRUARY.

DURING the week ending February 14, the following plants were flowering freely in No. 4 greenhouse. Not all are usually classed as greenhouse plants, but the temperature of No. 4 house is practically that of a warm greenhouse—about 50° at night—and all the plants are well suited for conservatory decoration. *Begonias* were represented by *B. Gloire de Lorraine* and its derivatives, including the white form known as *Tarnford Hall* var. The plants were growing in hanging baskets and flowering profusely. The American raised variety *Mrs. Petersen* was flowering well in pots; this plant appears, by its bronzy foliage, to have some affinity with *B. Gloire de Sceaux*. It is of compact growth and produces its deep carmine coloured flowers with freedom, the tone contrasting well with the very distinct foliage. Another *Begonia*, *B. manicata*, one of the very best temperate plants in bloom at this season, was also profuse in flowering. The tall, erect inflorescences are of a pale flesh colour. This *Begonia* is easily cultivated.

Blue flowers were represented by *Eranthemum pulchellum*, the plants being well grown specimens in 6-inch and 7-inch pots with plenty of flowers; and *Pycnostachys Dawei*, with beautiful bright blue flowers produced freely in terminal clusters. This plant is about 5 feet in height when in flower and would be valuable for grouping. It is of free growth and has pale green foliage. *Primula malacoides* grouped in a mass was very effective. The *Senecios* were re-

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, and February 7, 1920.

presented by *S. petasites* of somewhat tall growth, and having spikes of a loose habit but quite effective; and *S. grandifolius*, a dwarfier plant, but with terminal heads denser than those of the other. Freely flowered examples of *Pyrus Scheideckeri* nearly 6 feet in height were very pleasing and their blossoming seemed to herald the spring; as a pot plant for forcing, this *Pyrus* is excellent. Two quite distinct *Camellias* planted out in the borders were specially noteworthy; they were *C. japonica grandiflora*, a semi-double form with pure white flowers and golden stamens, and *C. japonica magnoliaeflora* Sanders' variety, with bluish petals and golden stamens. *Strelitzia regina* was in flower; it is a bloom of most singular appearance and the flowering plants are beautiful objects. The grouping of the plants is still carried out *en masse*, a style that is specially to be commended. *Jas. Hudson*.

VEGETABLE CULTIVATION IN MACEDONIA.

(Concluded from p. 94.)

The Potato was a very disappointing crop in Macedonia. The greatest yield was threefold, and this result, considering the labour, etc., expended, gave no profit whatever. Not that the soil was unsuited, for preference was given to this crop, and it also had the advantage of manures. The period of drought sets in at the time moisture is needed for the development of the tubers, and, to judge a field of Potatoes in Macedonia by the haul, a heavy crop might be expected. It was surprising to note the absence of disease amongst Potatoes. Only a few instances of "scab" were discovered, and this disease was, no doubt, conveyed with the seed. This is the only crop which tortoisés will not attack.

Onions and Leeks seem to grow in a rather peculiar manner, but after a little study of these crops, this is quite understood. One single season is insufficient, for the summer months will not allow a continuation of growth. Consequently, when these crops are at a stage to begin development the plants remain dormant and dry off when quite small. With regard to Onions, they should be stored until the following spring, but the Leeks should remain in the ground throughout the winter. Autumn-sown Onions grow well and give an average crop, but, like those sown in spring and continued the following year, they not infrequently run to seed. Both Onions and Leeks are materially helped by irrigation and the bulbs attain to a great size, but must have more than a single season for growth. The Leek is recognised as the most successful crop amongst the natives, and excellent results have been obtained.

Certain kinds of Beans are adaptable to this climate, but the weather conditions provide the determining factor to success. With an average spring and summer the Dwarf Canadian Wonder is the best variety for cultivating in open fields, and gives a heavy return. But if drought occurs early, the crop suffers in consequence. Broad Beans, if sown in the autumn, give fair results, but are attacked badly by fly. Scarlet Runner Beans set very shyly on account of the absence of moisture. The Haricot Bean grows well and yields a heavy crop, and Maize, if sown with the plants, gives the Runners support and also partial shade during the hot months. The Haricot Bean is to be recommended in this climate, as it requires little attention, is easily grown, and always gives a good return.

Peas are worth growing, provided early varieties are planted. The varieties Pilot and Eclipse have proved profitable, also Fillbasket. These early varieties are almost hardy, which is a great asset considering the climate is so changeable in the early part of the year. Even if late frost occurs, such as we experienced in April, 1918, the plants are able to withstand the effects of the cold. As a rule the seasons are genial for this crop, and the return is equal to that in English gardens. Peas ripen very rapidly in Macedonia, and tend to dry off during

May, so that it is useless to attempt to grow late Peas. Black and green aphides are very troublesome to this crop, especially where Cherrie are growing in the near vicinity.

The most successful vegetables grown in Macedonia were Carrots and Beets. The Nantes variety of the former does very well. Sown early in March the plants grew rapidly, and were well established before the time of drought. Carrots yielded better in open fields than in ground which was watered, and this may be due to the partial shade in watered gardens. This crop was not troubled by diseases. The same remarks apply to the Beet, which is a sun-loving plant. This crop gave a heavy yield. The Spinach variety did not grow so well, although the foliage proved a delicacy.

Brassicas were successful in watered gardens; the plants made steady growth and attained to large proportions. In open fields transplanting is out of the question, and the best plan is to sow such kinds as Kohl-rabi, Kale and Broccoli

Pumpkins grew well. These plants are always to be found growing amongst fields of Maize, where the plants obtain the necessary shade. Melons and Cucumbers need more attention and require watering, but the setting of the fruit occasions no trouble. The Cantaloupe Melon grows well, and seems to be happy in the hot climate. Tomatos are always a sure crop in watered ground, and it is possible to grow two crops of this vegetable in one season. The fruit ripens rapidly and needs constant picking, especially if birds are in any way troublesome. *W. S. White, Bronhendre Garden, Carnarvon.*

MALOPE.

THE importance of annual flowers in adding beauty to gardens is well known; but perhaps a special reminder of the value of Malopes may be of use at seed-sowing time. Strong-growing and very showy when well grown, the Malopes



FIG. 43.—A BORDER GROUP OF MALOPE GRANDIFLORA ROSEA AND M. G. ALBA.

thinly in their permanent quarters. The more important Brassicas, if sown in the usual way and grown in watered gardens, thrive without a check. Caterpillars are great pests throughout the whole season. A type of Woolly Aphis also attacks Brassicas, generally at the roots. The only remedy is to burn the infested plants. This pest was found also in Larch trees, which seem to be its breeding-place. A few leather-jackets were noticed, but this pest is not so bad as in England, and is not so troublesome as either the Woolly Aphis or caterpillars.

The Turnip and Swede are both successful crops, and are easy of cultivation. Growth is slow but steady, and good results were obtained from early and autumn sowings. The spring crop needs irrigation towards the end of April to favour steady growth and to develop the roots satisfactorily both in size and quality. Water was only needed for about two or three weeks. For the autumn crop the treatment should be the reverse. The ground being hot and dry, it should be watered to cause the seed to germinate, gradually withholding moisture as the weather changes.

Lettuces and Radishes both grew exceedingly well in watered gardens, where, during the summer, they had partial shade. Marrows and

have an advantage over some other annuals, in that they have attractive leaves and the flowering period continues until the plants are finally crippled by wintry weather. Another great point in their favour is that Malopes do not get "played out" so quickly as do less vigorous annuals before the flower garden season is over.

Although seedlings of these annuals may succeed if transplanted, the best results are obtained by sowing seeds where the plants are to flower. Being of robust habit, the large seeds should be sown thinly, the resulting plants being again thinned so that each may have reasonable development.

The varieties illustrated are *M. grandiflora rosea* and *M. grandiflora alba*, mixed, in a long border. Whole beds or long lengths of borders of these flowers give the most brilliant results, although odd groupings among tall herbaceous subjects are always admired. In addition to the two varieties named, others equally beautiful may be obtained from a packet of mixed seed of a good strain. The type, Malope trifida, is now rarely seen. Those who have gardens in large towns should sow Malopes freely, for this flower does well in town gardens. *M. trifida* is a native of Spain and was introduced in 1808. *C. T., Amphill Park Gardens*

ROYAL HORTICULTURAL SOCIETY'S WAR RELIEF FUND.

For the purpose of assisting horticulturists in Allied countries who suffered so terribly during the war, the Royal Horticultural Society instituted a War Relief Fund in 1915. District committees were formed throughout the country, composed very largely of influential ladies and gentlemen well known in horticultural circles. By these means, with entertainments and Mansion House meetings, the fund was very materially assisted. The total amount received for the relief of horticulturists in devastated districts amounts to about £40,000, and the greater part of this sum is now being expended on seeds, fruit trees, and tools. It must not be forgotten, however, that a considerable amount of relief was given during the early period of the war, but its effect was entirely lost owing to a subsequent German advance over the districts to which relief had been sent. At the moment the work of dispatching seeds and tools is being carried on briskly, and Sir Harry J. Veitch, treasurer of the fund, and Mr. C. Hentschel, the secretary, are extremely busy in this connection at 17, Victoria Street, Westminster. Each tool, each set of fruit trees and every box of seeds is labelled:

"Offert par les Anglais en Gage d' Amitié."

Everything sent from England is being delivered to the office of the British Section of the French Red Cross in London, by whom it is conveyed free of expense to the fund (subject to transport expenses incurred outside their jurisdiction) to the various districts in France where the French Red Cross Society has branches and where every assistance is being given by their staff to ensure distribution to the right people. The French Red Cross centres are at Douai (Nord), St. Quentin (Aisne), Soissons (Aisne), Vouziers (Ardennes), Mourmelon (Marne), and Maignelay (Oise), and to this group 24,000 packets of seeds and 26,000 tools have been, or are being, dispatched. Districts where distribution is taking place through other agencies are:—Ardennes, Soissons (Aisne), Comblains (Marne), and La Bassée (Nord), and to these 140,000 packets of seeds and 11,000 tools have been allotted.

To Belgium and the Yser district £500 worth of seeds have been sent, and paillassons (garden mats) to the value of £5,000 have been distributed and all these have been made in Belgium, consequently relief has been afforded to manufacturers as well as horticulturists.

Through the medium of the Serbian Relief Fund 10,000 packets of seeds and the sum of £1,000 have been distributed on behalf of the War Horticultural Relief Fund, whilst Roumania has benefited to the extent of 10,000 packets of seeds and 10,000 tools.

The total number of packets of seeds dispatched is about 400,000, and practically all the seeds have been purchased in England, though some were obtained in France. The seeds are carefully packed in cardboard boxes. Usually only one box of seeds is sent to a family. The subjects chosen, as a result of conferences with the authorities, are Chicory, Brussels Sprouts, Leek, Cauliflower, Cos Lettuce, Cabbage Lettuce, Celery, Beet, Carrot, Turnip, Radish and Spinach. In certain cases Peas have been added, and in others the boxes contain some dwarf Beans (Haricot Verts).

About 50,000 fruit trees are being distributed and practically all these are being purchased in France in order to ensure the provision of suitable kinds and varieties. The kinds of fruit trees asked for by the horticulturists whose gardens and nurseries have suffered during the war are Apple, Pear, Plum, and Cherry, in the proportion of about 20 Apple trees and 14 Pear trees and one each of Plum and Cherry.

The principal varieties of Apples for which requests have been received are Canadian Pippin, Bonne Femme, Calville Blanc, Calville Rouge Précoce, Calville Blanche d'Hiver, Reimette du Canada, Reimette d'Angleterre, Reimette Grise, Cox's Orange Pippin, and Baumann's Reimette. Of Pears the selection lies chiefly with Williams' Bon Chretien, Doyenne du Comice, Marie

Louise, Charles Ernest, Pitmaston Duchesse, Passe Crassane, Le Lectier, Beurré Hardy, Beurré Bachelier, Louise Bonne of Jersey, Duchesse d'Angoulême, Marguerite Marillat, Doyenné d'Hiver (Easter Beurre), and Soldat Labourer. The principal varieties of Plums desired include Victoria, Kirkés, Reine Claude de Bavay, Prune d'Agen, Monarch, Early Rivers, Cox's Golden Drop, and four varieties of the Mirabelle, a small Plum which is extremely popular in France. The leading varieties of Cherries distributed are Morello, Imperatrice Eugène, Belle Magnifique, Montmorency, Reine Hortense, Royal Hative, Bigarreau Napoleon, Bigarreau de Schreken, Bigarreau Jaboulay, Bigarreau Reverchon, and Bigarreau Pallissier.

The approximate weight of the 48,000 tools sent to the Allies is 55 tons and all were purchased in England. The principal tools are spades, forks, several forms of hoes, cultivators, shovels, saws, rakes, knives and secateurs.

It will be gathered from these few particulars that the fund has given relief to many homes in the countries of our Allies, but it should also be remembered that, large as is the amount of relief given taken as a whole it is small in comparison to the needs, and consequently the amount of assistance which can be rendered will depend entirely upon the generosity of those whose gardens have remained unharmed, whilst those in France, Belgium, Serbia and Roumania have been devastated. C.

THE DRAINAGE OF SMALL AREAS.

NOTICES have appeared in the Press commenting on the activity of the Ministry of Agriculture in setting up Drainage Boards for districts varying in size from about 2,000 acres to 400,000 acres under the powers of Part I. of the Land Drainage Act, 1918, but comparatively little notice has been taken of the possibilities of action under Part II. of the same Act with regard to the drainage of small areas. There are many such areas, too small to justify the establishment of a drainage board, where great benefit to groups of farms or properties would ensue if the various owners could combine for the maintenance of the dykes and drains in which they are all interested. Hitherto, the only way of securing such combination has been to form a drainage board, but apart from the preliminary expenses involved, small drainage boards have been proved (as a general rule) to be uneconomical and unsatisfactory. The Act of 1918 enables the Ministry of Agriculture to establish a drainage committee in each county, and this committee can act as a drainage board for any number of small areas in the county. The County Committee prepares and submits to the Ministry of Agriculture a scheme for the necessary cleansing or improvement of the streams or drains in an area, showing the area involved, the work proposed to be done, the estimated cost, and the apportionment of the cost among the owners concerned. The scheme, when approved by the Ministry, is deposited in draft for a month for public inspection and criticism, during which time objections may be made to it.

When agreement to the scheme has been secured, the County Committee carries out the work, and the Ministry of Agriculture advances the necessary money, which is afterwards recovered from the owners by means of a drainage rate. The subsequent maintenance in good condition of the streams and dykes devolves upon the County Committee, which can levy drainage rates from time to time for that purpose on the lands benefited by the scheme. The preliminary expenses of these schemes are negligible, and the administrative expenses which would necessarily be incurred by any drainage board are avoided altogether. This procedure is not intended to deal with large rivers and areas, but with minor streams and groups of farms or properties. Hitherto the most successful schemes have been those involving an expenditure of about £200 to £500 for the benefit of a few hundred acres. The expenditure under any scheme must not exceed £5,000, or £5 per acre (whichever is least).

THE APIARY.

By CHLORIS.

Care Needed in Bee-keeping.—It must not be assumed that anyone can make profit from bees without expert knowledge. Further, it is essential that the apiarist must possess perseverance and be prepared to devote considerable attention to every detail that makes for success. He must look ahead to see what will be required at each successive stage of the season, which, at the best, is a very short one. What is being done in other districts may not be a success in another, for the simple reason that the nectar-bearing plants are not always the same, or, if the same, the season may be earlier or later, and this makes all the difference in the successful manipulation of bees.

It cannot be too definitely stated that no invariable rule can be laid down for carrying out bee operations. What may have been very successful last year may not prove a success this season. In the same way, when an expert visits an apiary, although he may be very sincere, a highly successful beekeeper, and possess every quality that an expert should possess, his advice may not bring success.

The beginner may be tempted to purchase second-hand hives offered at a low price. These may prove expensive in the end, because they may have housed bees that have died of disease. Further, it is best to have hives of one type only in an apiary, so that all parts are interchangeable.

Those who are drawing up schedules for flower shows where honey and wax will be exhibited should choose judges possessing expert knowledge.

Frames.—Frames should be fitted with foundations before they are needed, for swarms often appear before they are expected, certainly often at very inconvenient times. When frames are fitted up in a hurry the work is generally, perforce, performed in a very inefficient manner. To secure success the foundation should be made quite secure in the top bar, by melting the wax with a hot poker into the sawn cut. To make it perfectly secure it should be wired in so that there shall be no fear of the comb breaking down when it is soft with heat and heavy with brood. The same remarks apply to shallow frames, but in a greater degree, for there is always a danger of these breaking down when they are placed in the extractor.

Sections.—To obtain well-finished sections it is necessary to take great care in fitting them in the hives. The first essential is absolute cleanliness in handling the wood, and to reject all sections that are not perfect, never under any circumstances using those that have had a full course of honey cut out of them. Take 21 sections in the flat and wet the joints with boiling water on both sides. When this plan is adopted there is no danger of the joints breaking when the sections are bent into shape. Having previously cut up the foundation into square sheets that will exactly fill the sections, proceed to fit them in. In passing, I may add that split-top sections are the best, and the thinnest worker base foundation most suitable. Drone base foundation is procurable and is sometimes used, but sections fitted with it never look so pleasing as those fitted with the former foundation. Drone base foundation is best fitted for use in shallow frames, because the honey leaves it better when they are placed in the extractor. In placing the sections in the super fix them tightly, and between each line place metal dividers (not wooden ones for they twist) to keep the faces of the sections true.

In some instances it may be necessary to utilise old foundation, and then a difficulty arises, for it may become brittle, making it difficult to use and not so acceptable to the bees because it is not pliable enough. To make it more pliant, it should be slightly warmed before fixing it in the frames and before placing it in the hives. The heat will cause it to give off an odour that will make it acceptable to the bees. Brood foundation should never be thinner than eight sheets to the pound.

NURSERY NOTES.

THE READING PRIMULAS.

It was with mingled feelings the writer entered Messrs. Sutton and Sons trial grounds on a bright February morning a fortnight ago for the purpose of inspecting the Reading Primulas. Five years had elapsed since the previous visit—years of close association with the utilitarian side of horticulture. Consequently the possibility of being out of harmony with the beautiful, as represented by finely grown plants, carrying flowers of various hues, presented itself, together with a little fear, lest during the period of war the Reading firm might have relaxed its efforts to maintain its fine strains of greenhouse Primulas. But the fear was not warranted, and there is no need to apologise on behalf of the Messrs. Sutton.

Throughout the war all the popular varieties have been kept true to form and colour, some have been improved by selection and new ones evolved in the interval, but during the past five years only small stocks were kept. This year ten houses of splendidly flowered plants, all for seed, show that Messrs. Sutton and Sons have prepared for a future demand equal to that of the past. Mr. Leonard Sutton's interest in these flowers has not abated one jot, and an inspection made under his guidance is a great pleasure. Nor has cultivation suffered, indeed Mr. E. Jones, the present *chef de culture*, brings exceptional skill and enthusiasm to bear upon the records of ripe experience handed on to him by Mr. Macdonald, who has now returned after a long period of service.

Among the many varieties of Chinese Primulas seen, The Duchess queens it as graciously as ever and has given a giant-flowered lavender variety that may add yet another triumph to the Reading list. Pearl, Royal White, Fern-leaved White and the magnificent Giant White make a quartette from which the keenest critic of colour, form and substance may make a selection. Coral Pink, Reading Pink and its Fern-leaved counterpart Rosy Queen, are dainty Primulas, with flowers of delicate colouring. Brilliant King, Reading Scarlet and Crimson King give deeper colouring and are alike attractive under artificial light or winter sunshine.

The blue Primulas are particularly fascinating as they show great progress in the evolution of colour. Time was, and not so long since, when Reading Blue was blue only by courtesy; it was the bluest of florists' Primulas. Now, however, the shade of colour is really good and vastly different from the slaty hue of the variety of similar name a score of years ago. But the last word, to date, in blue Primulas is The Czar. The Giant Primulas are as wonderful as ever, and Giant Pink would probably gain the vote as the finest variety in this section.

The "Blis" (eyeless) varieties, from which the yellow eye has been eliminated, have many admirers, as have the very fine double forms which now include a Double Duchess. In point of popularity, however, these sections must yield pride of place to the Star Primulas. There are about a dozen varieties in this group, and in every case the habit of growth and freedom of flowering are such as appeal to all lovers of graceful plants. For the conservatory and greenhouse, for table decoration, or grown for cut flowers, all the Star Primulas are very useful, and, moreover, they are easily grown. Coral Pink Star, White Star, with dark foliage; Ruby Star, very rich in colour; Light Blue Star, a charming form; and Lord Roberts Star, rich salmon pink, form a good selection when it is not possible to grow all the varieties.

At Messrs. Sutton and Sons trial grounds, Primulas are grown for seed, and every detail of house construction and cultivation is directed to that end. The varieties are grown in large, distinct batches, and every plant is as nearly like its neighbour as plants can be. Gardeners who see or read about these Reading Primulas, grown as indicated, may suggest that what is possible where everything is favourable, is not so easy of achievement with the ordinary conditions and conveniences obtaining in a medium sized private garden. Be that as it may, there are many who do succeed with Primulas where a mixed collec-

tion of plants has to be grown, and as Mr. Townsend, Mr. Leonard Sutton's gardener at Hillside, Reading, is one such, the writer persuaded him to contribute the following notes on his method of cultivation and his suggestions for pleasing combinations of varieties:—

CULTIVATION OF PRIMULAS.

The most important point in the cultivation of Primulas for the purpose of keeping the greenhouse or conservatory bright with flower during the winter and spring months, is to make successional sowings from March to June, and another at the end of July to obtain plants in small pots for indoor decoration. Too often in private gardens is the fatal mistake made of relying on one main sowing during April.

Sow the seeds evenly and thinly. Primula seed, as a rule, germinates irregularly, and especially is this the case with the Giant varieties. The seed pans should be placed in a temperature not lower than 55° at night, and not higher than 65° by day. So soon as seedlings show the first rough leaf, prick them out about 1½ inches apart in shallow boxes, and place them in a close frame for a few days. In about a fortnight transfer the plants to a warm span-roofed frame or house, allowing them plenty of light and air on all suitable occasions; these conditions are essential to secure compact, sturdy growth. When well rooted, shift the plants into small sixty-sized pots, and subsequently into pots of a larger size. The soil should be made firm round the "collar," and

majority of varieties during the time they are making growth, but the plants should be removed to a cooler house directly the blooms appear, in order to develop the finest colouring.

COMBINATIONS OF COLOUR.

The following combinations have proved successful at Hillside:—Double White and The Czar, the white variety throwing into relief the beautiful blue tint of The Czar. Coral Pink and Crimson King intermixed are very beautiful. Coral Pink also blends splendidly with Reading Blue. Reading Blue and The Czar combine well and if only a few plants of the latter are used the grouping is very effective. Reading Blue, Royal White and Pearl, mixed with a few plants of Reading Pink, give a charming effect. Royal White, The Duchess, Coral Pink, Pearl and The Czar, arranged together in a big group are also very attractive.

The Star Primulas lend themselves to decorative effect even better than those of the older type. Star Pink and White Queen, used together, make a very fine group. Coral Pink Star and White Queen, leading up to Pink Star and Duchess Star, give an effective grouping on tiered staging. One very happy association is Primula kewensis and Dark Blue Star; equally good is Ruby Star mixed with P. kewensis. Dark Blue Star and the snow white flowers and dark foliage of Giant White Star, associated with a few plants of the mauve Primula malacoides, provide a combination that never fails to please.



FIG. 44.—GROUP OF PRIMULAS IN THE CONSERVATORY AT HILLSIDE, READING.

potting should be done so that the lowest leaves just rest on the surface of the soil. The compost for the final potting should consist of one-half rich, fibrous loam, pulled to pieces, and the other half a mixture of leaf-mould, dry, sifted cow manure, a little charcoal, wood ash, some coarse silver sand, and a small quantity of soot and bone meal. Throughout the summer a slight shading is necessary during the hottest part of the day, but a thick or continuous shading is injurious rather than beneficial. Liberal supplies of water are required in the summer, and a light sprinkling overhead with tepid, soft water, by means of a fine spray syringe, after a hot drying day will be found to be very refreshing to the plants. At the end of September, the plants should be housed and given a temperature of 50° to 55°, with air admitted night and day. This treatment will be found to be a good check against damping, which is sometimes prevalent among Primulas. If the weather should be wet, increase the fire heat a little so as to provide a genial atmosphere.

Certain varieties, including Reading Blue, The Czar, Coral Pink, Coral Pink Star and Blue Star, require rather warmer treatment than the

VARIEGATED MINTS.

So far as I have been able to determine from observation, there are only two variegated forms of Mint in gardens, and these are so old that their origin is lost in the obscurity of the past. They are *Mentha rotundifolia variegata* and *M. gentilis variegata*. The first is mentioned in Parkinson's *Paradisi in Sole*, 1629, and is one of only three that he thought worth while to bring to the notice of his readers. In Johnson's edition of John Gerard's *Herbal*, this Mint is figured under the name of *Mentastrum niveum anglicum*, or parti-coloured Horse-mint, and the Latin form of the name had previously been used by Lobel. Writing in 1799, Sir James Edward Smith, in discussing the varieties which he placed under *M. gentilis*, referred to "The variegated Mint so common in gardens and about cottages." This serves to show that it was quite common in his day, and his remarks would still hold good. The great age of these Mints gives ample evidence of the vigour and constitution of their vegetative system of reproduction. J. P.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Berberis orthobotrys.—The beautiful *Berberis* illustrated in Fig 51, *Gard. Chron.*, Feb. 14, stands out markedly in the very large collection of species grown at Aldenham. The large size and rich colour of the berries, combined with the large quantity of fruits present on the plant, made it a very prominent feature in the gardens last autumn. The biggest bush of all stood near to a good specimen of *B. vulgaris brachybotrys*, which variety was completely put in the shade by its more brilliant relative. Somewhat similar at first glance to *B. vulgaris brachybotrys*, *B. orthobotrys* has a stronger habit, and makes a very fine and handsome bush; it will undoubtedly become one of the favourites of the *Berberis* family when more widely known. The new species gained an Award of Merit at the meeting of the R.H.S. on October 21, 1919. The rich scarlet of the berries contrasts beautifully with the bronzy-coloured, oval-shaped leaves which are bordered with small, sharp spines. *Edwin Bickett, F.M.H., Aldenham Gardens, Elstree.*

Plant Hygiene.—I have read with interest Mr. Gough's article on "Plant Hygiene," and observe he recommends the larger growers to keep a trained assistant to do nothing else but look after the sanitation of their crops. This man would be held responsible for the mixing and application of spraying materials, with a view to curtailing expenses and seeing that the best results are obtained. It is surprising how few large growers carry out spraying operations in a thorough and systematic manner. Some few years ago the growers pleaded that the labour involved in the weighing and mixing of chemicals made spraying a most costly item on the farm and fruit plantation. Further, they claimed that a difficulty arose in securing a reliable man who could be trusted to properly weigh and mix the chemicals. To-day there is no excuse, for the difficulties met with in the preparation of spraying mixtures are overcome by proprietary mixtures, such, for instance, as the Blighty Spraying Mixture, manufactured by the Mond Nickel Company, which meets the requirements of both small and large growers. I have used this mixture for Potato spraying, side by side with Burgundy Mixture made according to the Board of Agriculture's formula, and found it to be fully as efficacious and much easier to make. I find that it adheres better to the foliage than does the ordinary Burgundy Mixture, and dissolves much more readily. As a winter wash for fruit trees, for spraying Tomatos and Celery, and for use against Onion mildew it is rapidly gaining favour. I recently visited Ireland and found this proprietary mixture extensively used there by the large Potato growers, who find it uniform in character and certain not to damage the foliage. When this and other reliable mixtures can be obtained, so easily mixed and applied, one wonders why our growers do not spray to reduce the loss which Mr. Gough estimates to be in extreme cases as high as 80 to 90 per cent. *John Coombes.*

Snowy Fly (see pp. 44, 80 and 96).—This has been a troublesome pest here for the past two years. It has attacked almost every plant grown, and infested every house with the exception of the vineries and Peach houses. I have constantly fumigated night after night, and sprayed in the early morning following the fumigation, with several insecticides, only to find as the day got warmer insects began to fly about again. I have now found a most effective and safe method for exterminating this pest by means of sodium cyanide, phosphoric acid and water (rain-water for preference) used in an Edwards' cyaniding machine. Quantities: sodium cyanide, $\frac{1}{4}$ oz.; phosphoric acid, $\frac{1}{2}$ oz.; water, 1 oz. to every 1,000 cubic feet. These quantities will not harm the tenderness of plants, such as Cucumbers, Melons, or Tomatos. I have recently cyanided *Heliotrope*, *Poinsettia*, *Cyclamen*, *Schizanthus*, *Chrysanthemums*, and many other plants. The temperature of the house should, if possible, be

lowered to 50°, and all plants kept perfectly dry. The cyanide may be used in greater strength if the house is to be cleared out and all plants thrown away. The greatest care should be taken in cyaniding, as a very poisonous gas is generated. The water should be placed in the vessel first, then the acid. After the machine is in position, put the cyanide in the receptacle on top of the machine. See that all ventilators are closed, and cards hung up inside the doors with the inscription: "Poisonous gas; do not enter." When all is ready, pull the string attached to the receptacle containing the cyanide, and the latter, coming into contact with the water and acid, gives off a poisonous gas. The house should be left closed for an hour. The operation should be repeated about once every week or ten days, until all the eggs are hatched. If it should be necessary to turn the heat on again the same night, throw the doors open first, and then the ventilators, to allow the gas to escape. A good plan is to tie a wet pocket handkerchief over the mouth and nose before entering the house after it has been ventilated. *W. J. Earl, The Gardens, Tranby Croft, Hull.*

Hosts of the Mistletoe (see pp. 9, 20, 44, 56, 69 and 80).—The various notes on this subject which have appeared in your valuable paper lead me to conclude that writers do not understand there are several distinct forms of the Mistletoe (*Viscum album*), and I almost believe that in some instances *Viscum album* is mistaken for *Loranthus europaeus*, which is, however, not included in the British Flora by Bentham and Hooker, but may easily now be in the country. According to a recent publication by "Kosmos," Stuttgart, *Parasites in the Vegetable Kingdom* (*Würger in Pflanzenreich*), there are three kinds of *Viscum*, not botanical sub-varieties, but rather biological ones. Professor II. Schinz, in the *Flora of Switzerland*, 2nd part, describes *Viscum album platyspermum* as occurring on deciduous trees, and *Viscum album eyposphaerispermum* as occurring on Conifers. The German book mentions Professor Heinrich Immsbruck and C. Tuhent, Munich, as stating that the three varieties occur as follows: the first on deciduous trees, the second on Abies, and the third on Pinus, and each restricted to this host plant, so that, when experimenting, it is well to bear in mind to select similar hosts when sowing it. Laurent gives 96 different host plants, such as Poplars, Willows, Birch, Beech, Pines, Apples, Pears, Fir, Walnut, Hazelnut, Sweet Chestnut, Quickthorn, Mountain Ash, Plum, Almond, Cherry, Locust, Lime, Maples, but considers it to be exceedingly rare on Oak. *Viscum album* has also been found growing on itself. The Pine Mistletoe came originally from Italy and other Mediterranean countries, and its progress further north has been observed all along the annual migration routes of birds. *Loranthus europaeus* is generally found on Oaks in south-eastern Europe as far north as Bohemia. However interesting *Viscum album* may be from a botanical point of view, I think it is time steps were taken to classify it as a dangerous parasitical pest, and instead of sowing and distributing it, everybody ought to burn all trees on which it grows. I once had Apples, of a well-known variety, from a tree which was full of Mistletoe, but the fruits were quite inedible. I have seen orchards completely ruined from the same cause. In my own home the parish authorities had to cut down a forest of 60 acres of *Abies pectinata* covered with Mistletoe, the timber only fetching half price, although every tree was 100-120 ft. high. In fact I have never come across a finer lot of trees, although some must have carried a ton of the Mistletoe. No doubt the loss of Mistletoe would rob Christmas of a pleasing feature, but I guess many a kiss has been given or taken without it! *E. Richls, Codsall.*

The Popularity and Deterioration of Potatos.—It is interesting to read, in connection with this much debated question, that witnesses when giving evidence before the Select Committee set up in 1880 to enquire into the Irish Potato crop, were of opinion that the old

Regent variety, which was largely grown in the 'sixties, was still regarded as the best quality Potato for marketing purposes, and in favourable seasons still gave excellent returns, but had degenerated by 1870 to such an extent that its growing was attended by considerable risks. Those growers, who through force of circumstances, could not afford to take these risks, and others always interested in new kinds, became attracted by the new Champion Potato, a variety recently introduced by Mr. Barelay of Ochterleney. At first Champions produced large, coarse tubers of inferior quality but with care and continued cultivation the variety toned down considerably, and yielded nice floury tubers full of flavour and quality, and it soon became the great Potato of Ireland; for the English markets the variety was far from ideal and by 1880, Magnum Bonum, which had recently made its appearance, was taken up because of its superior shape and equal resistancy to disease. The tubers were waxy, and it was not until after the lapse of several years of cultivation that its quality had improved sufficiently for it to displace the Champion and take the leading place, which it so rightly deserved, in the Potato world. Mr. Findlay, too, found that Up-to-Date, on introduction, was of poor quality but underwent the same changes before becoming the great Potato of the day, and probably the finest and most popular Potato ever raised. In later years it became highly susceptible to disease and fell into disrepute and is now rarely grown in this country. The waxy character of King Edward in its early days is within the knowledge of most of us, and it was indeed so marked as to receive the abuse of Potato experts generally, who certainly did not prophesy a future for it. With cultivation and continued propagation for several years changes occurred, the quality improved and it may now be regarded as the popular Potato of the day. King Edward crops satisfactorily, keep sound, is only moderately susceptible to blight, and will rightly hold its place until some newer and better variety appears. It is just possible that one or other of the robust varieties now in existence, but which are regarded as of poor quality may well become the popular variety in a few years time. It appears, therefore, to have been the general experience of these early breeders of Potatos that each variety derived from seed took a few years before its distinctive and characteristic features were permanently established, and that then it was often useless; but that if it were a valuable class of Potato it steadily improved in flavour and quality by the starch contents becoming more floury. Also that this gradual change in quality was accompanied by one in constitution, so that, after a certain time, any comparative immunity from diseases which it originally possessed disappeared and the growing of the variety was attended with risk. These two changes, working simultaneously in the Potato, were responsible for leading the public to discard old and popular kinds, as soon as they became less resistant to disease, for new introductions possessing superior qualifications in some well-chosen direction, and explains why in their respective periods—Regents 1860, Champion 1875, Magnum Bonum 1885, Up-to-Date 1900, Arran Chief 1910, and King Edward 1920, were the popular varieties. *H. F. Taylor, 72, Victoria Street, S.W.*

Apple Ellison's Orange.—I consider this variety to be one of the finest flavoured dessert Apples we have for October use. The fruits are not too large; they have the full Cox's Orange Pippin flavour and colour, and on our soil I consider it far superior to James Grieve. Being almost a new Apple it is not yet popular, but when it is well known, I predict a great future for it, as it is a grand cropper. *J. S. Higgins, Glynnllyn Gardens, Carnarvon.*

Evergreen Hedges.—In reply to Mr. Turner (see page 75), while agreeing that *Quercus Ilex* makes an excellent hedge, I should not recommend the planting of this subject in any garden or pleasure grounds, owing to its habit of casting its leaves, which necessitates constant attention in sweeping and tidying up in its vicinity; a serious matter where labour is scarce. *Wilmot M. Yates.*

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

February 10, 1920.

Present: Messrs. E. A. Bowles (in the chair), J. Fraser, J. Ramsbottom, H. J. Elwes, and F. J. Chittenden (hon. secy.).

Willow Seeds.—Mr. J. Fraser remarked upon the part played by the wind in the distribution of the seeds of the Willow.

Primula juliae × *elator*.—Dr. Rosenheim showed specimens in illustration of the following note: A reciprocal cross was made between *P. juliae* and *P. elator* in spring, 1917. Only the seeds obtained from *P. juliae* as the female parent were fertile. Sixty-eight seeds were sown, of which 26 germinated; of these 20 flowered for the first time in 1919. The foliage in all cases shows the characters of both parents, petiolate and rounded (*P. juliae*), puckered (*P. elator*). The inflorescence was of the *P. juliae* type in ten plants, and of the *P. elator* type in the other ten. While all the plants of the *P. juliae* type had pink flowers, those of the *P. elator* type had yellow inflorescence in six cases and pink in four cases. Seedlings of the F₂ generation are being grown on. The plant shown is one of the early flowering F₁ generation, showing flowers of *P. juliae* character. (Plants in the open have been in flower since December.) The only known crosses of *P. juliae* × *elator* seem to be chance seedlings found at Kew, which have the inflorescence of *P. elator*.

Snowdrop Seedlings.—Mrs. R. C. Backhouse sent flowers of seedling Snowdrops, illustrating the second generation of the cross *G. plicatus* × *G. nivalis*. The flowers were exceedingly fine and presented great variation, some being like fine examples of *G. Elwesi*, and others of the *nivalis* or *plicatus* type, while one approached *G. Melvillei*.

TUESDAY, FEBRUARY 24.—Notwithstanding the heavy fog which enshrouded the London district the day previous and also in the early part of the 24th inst., there was a largely attended meeting at the Royal Horticultural Hall and a fairly large and interesting display of early alpine flowers, Orchids, greenhouse plants, Carnations, Tulips and Rhododendrons.

Neither the Floral Committee, the Narcissus Committee nor the Fruit and Vegetable Committee granted Awards to novelties.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), John Heal, John Green, J. W. Moorman, J. F. McLeod, W. Howe, C. R. Fielder, Arthur Turner, John Dickson, H. J. Jones, Chas. E. Pearson, W. P. Thomson, E. H. Jenkins, W. R. Dykes, J. W. Barr, J. Jennings, W. B. Cranfield, G. W. Leak, E. A. Bowles, S. Morris, R. C. Notcutt, H. Cowley, George Paul, J. T. Bennett Poë, and Jas. Hudson.

Very few plants were submitted for the consideration of the Committee and no Award was made to a novelty.

GROUPS.

About a dozen and a half handsome plants of *Begonia Gloire de Sceaux*, in a setting of variegated Abutilons, with a foreground of Cyclamens, were evidence of the beauty of this *Begonia* and of the cultural skill of Mr. T. PATEMAN, gardener to C. A. Cain, Esq., The Node, Welwyn (Silver-Gilt Banksian Medal).—Messrs. H. B. MAY AND SONS' attractive group of greenhouse plants was composed of Cyclamen, the fragrant *Boronia megastigma*, *Columnnea magnifica*, Genistas, ferns and palms (Silver Banksian Medal).—Mr. L. R. RUSSELL associated freely-flowered Azaleas with forced Lilacs and Wisterias in a large and attractive group (Silver Grenfell Medal).

Messrs. WHITELEGGE AND CO.'s alpine garden was very attractive, and their dwarf shrubs excited a good deal of interest, but a large plant of *Wistaria chinensis* was the crowning feature of the whole display (Silver Banksian Medal).—Mr. G. W. MILLER displayed a gay group of

Tulips, Primroses, Polyanthuses, Hellebores and Muscari (Silver Grenfell Medal).—Messrs. R. TUCKER AND SONS had charming plants of *Saxifraga hibernica*, *S. Sundermannii*, *S. Irvingii*, *S. kewensis*, *S. dalmatica* and *Primula juliae* in their group of Alpines (Silver Banksian Medal).

Messrs. J. WATERER, SONS AND CRISP arranged a charming little Alpine garden, wherein there were pretty colonies of *Iris reticulata*, *Saxifraga*, *L. G. Godseffii*, *S. oppositifolia*, *Myosotis Ruth Fischer*, *Primula denticulata* and *P. Wargrave Gem*, the last a small plant with purplish-rose flowers (Silver Banksian Medal).—Messrs. PIPERS showed a few pans of *Saxifragas* and *Sedums* and some dwarf Alpine shrubs.—Messrs. BLACKMORE AND LANGDON exhibited splendidly-flowered plants of a fine strain of blue Primroses and also a collection of Violets (Bronze Flora Medal).

Mr. J. J. KETTLE's contribution of Violets was a large one and the flowers were as finely-coloured and fragrant as on previous occasions (Silver Banksian Medal).—Messrs. R. GILL AND SON filled a large space with *Rhododendrons* cut in the open in Cornwall; the finer sorts shown were *R. Mrs. H. Shilson*, *R. barbatum*, *R. argenteum*, *R. arboreum roseum*, and *R. Florence Gill*. A little more time spent in arrangement would have improved the exhibit (Silver Flora Medal).

In Mr. G. REUTHE's group of hardy plants we noticed a bright collection of *Rhododendrons* in which *R. argenteum* and *R. barbatum* were conspicuous side by side with *Magnolia Campbellii*, *Prunus Pissardii*, *Saxifragas*, *Adonis* and *Iris reticulata* were included in the group (Silver Banksian Medal).—Forced flowering shrubs, chiefly *Forsythias*, *Prunus triloba* and the fragrant *Viburnum Carlesii* were shown by Messrs. WM. CUTBUSH AND SON, in addition to Alpine plants and Carnations (Silver Banksian Medal).

Golden-flowered branches of *Forsythias* made a bright background for the numerous *Saxifragas*, *Primulas*, hardy Heaths, *Iris Danfordiae*, and *Corydalis cheilanthifolia* shown by Messrs. BOWELL AND SKARRATT, of Cheltenham, who are new exhibitors at Vincent Square (Silver Flora Medal).

Mr. C. ENGELMANN's group of Carnations proved a great attraction, as it consisted chiefly of the bright varieties *Scarlet Carola*, *Saffron Carola*, *Iona*, *Peerless*, *Lady Northoliffe* and *Speckles* (Silver Banksian Medal).—Messrs. ALLWOOD BROTHERS staged their Carnations in fine style and everybody admired their brilliant, bright scarlet seedling, as yet unnamed, of fine form and substance. *Wivelsfield Claret* and *Mary Allwood* were also finely shown (Silver Grenfell Medal).—Messrs. STUART LOW AND CO. contributed a large display of perpetual Carnations and a group of their excellent strain of *Cyclamens*. The best of the Carnations were *Circé*, *Eileem*, *Sunbeam*, *Winter Glow*, *Brilliant* and *Mrs. Fellowes* (Silver Banksian Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (Hon. Sec.), William Bolton, Arthur Dye, R. A. Rolfe, W. H. White, S. W. Flory, W. H. Hatcher, Fred Sander, R. Brooman-White, A. McBean, J. E. Shill, C. J. Lucas, E. R. Ashton, Walter Cobb, T. Armstrong, W. J. Kaye, and J. Charlesworth.

Sir JEREMIAH COLMAN, Bart., called the attention of the Committee to the recent, and well-deserved, Belgian Honour accorded to Sir Harry J. Veitch, and also his election to the Vice-Presidency of the Royal Horticultural Society, a distinction which would not deprive the Orchid Committee of his valued presence on the Committee. The heartiest congratulations of the Committee were expressed.

Awards.

FIRST-CLASS CERTIFICATE.

Milonia Bleuana var. *Princess Elizabeth* (*verillaria* × *Rozlii*), from Monsieur FIRMIN LAMBEAU, Brussels (gr. Mons. E. De Munter). A remarkable hybrid, having the large size and excellent form of the original *M. Bleuana*, but with the violet-purple of *M. Rozlii* developed so as to occupy the greater part of the surface of the petals. The flowers are blush-white; the

lip has a rayed mask of reddish orange colour, and the petals are violet-purple with blush-white margins. A Silver-Gilt Lindley Medal was also awarded the plant.

AWARDS OF MERIT.

Odontoglossum Henry VIII. (*Solon* × *Aylooi*), from W. R. FASEY, Esq., Holly Bush Hill, Snaresbrook. A fine flower of good shape, claret-red in colour, with a few intersecting white lines and thin white margin.

Odontoglossum Conqueror Fasey's Variety (*illustrissimum* × *crispum*), from W. R. FASEY, Esq. (Orchid grower Mr. Seymour). The flowers are white, heavily blotched with dark claret; the lip is also white with claret blotches around the yellow crest.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver-Gilt Flora Medal for a fine group composed of brilliant *Odontodas*, new seedling *Odontoglossums*, in great variety and beauty; *Laelio-Cattleyas* and other hybrids. Among the *Dendrobiums* were several fine forms of this firm's new strain of *D. nobile* var. *Sir G. F. Moore* (*nobilis* × *The Elephant*), representing the highest progress from the famed *D. n. nobilis*. Among species we noted the singular *Bulbophyllum Medusae* and several plants of *Epidendrum polybulbon*.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a fine group (equal to that unfortunately omitted in our report of the last show), in which *Laelio-Cattleyas*, *Cattleyas*, *Brasso-Cattleyas* and brilliant *Odontodas* were well represented. The seedling forms of typical white *Odontoglossum crispum* were perfect in form and substance.

Messrs. J. and A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for a pretty group of splendidly-grown *Odontoglossums*, *Odontodas* and *Laelio-Cattleyas*, all finely flowered.

Messrs. STUART LOW AND CO., Jarvis Brook, Sussex, were awarded a Silver Flora Medal for a group specially remarkable for *Cattleya*, *Laelio-Cattleya* and *Sophranitis* crosses. The last-named included a fine specimen of the yellow *Sophranitia Marriotiana* (*L. flava* × *S. grandiflora*), with twelve flowers. Other unnamed *Sophranitis* crosses were also shown.

Messrs. FLORY AND BLACK, Slough, were awarded a Silver Banksian Medal for a group of handsome *Odontoglossums* and *Odontodas*, the best of which was *Odontoda Auguste*, a very showy hybrid of unrecorded parentage, with large and well-formed flowers of claret colour with a violet shade.

Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill), staged a selection of cut spikes of *Calanthe* Baron Schröder, *Laelio-Cattleya Schröderae*, *Brasso-Cattleya Rutherfordii* *delicata* (*B.-C. Digbyano-Mossiae Alexandrae* × *C. Gaskelliana alba*) and other showy hybrids.

OTHER EXHIBITS.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), sent finely-flowered plants of *Sarcochilus Fitzgeraldii*, *S. Hartmannii* and *Coelogyne gattoneuse* (*speciosa* × *Sanderæ*) which was recommended to the Scientific Committee for a Certificate of Appreciation.

PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes), showed *Odontoglossum eximium* var. *Argiuro*, with flowers heavily blotched with claret-red.

Sir MERVYN E. M. BULLER, Broomhill, Spratton, Northampton (gr. Mr. C. Kench), showed *Cattleya Clotho splendens* (*Enid* × *Trianae*), a fine flower of typical *Cattleya* form, coloured rose with violet-crimson front to the lip.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles (in the chair), G. Reuthe, W. B. Cranfield, John W. Jones, G. Churcher, Peter R. Barr, H. V. Warrander, F. Barchard, Arthur R. Goodwin, F. Herbert Chapman, W. Ponpart, Geo. Monro, Jr., G. W. Leak and Chas. H. Curtis (Hon. Sec.).

GROUPS.

The principal display before the Committee was a handsome group, exhibited by Messrs. R. H. BATH, of Daffodils and Tulips grown in fibre in pans and associated with Crocuses and Fritillaries similarly grown. The Tulips were especially good, notably the varieties Mon. Tresor, Enchantress, King of the Yellows, Vermilion Brilliant and La Grandeur. In addition, Messrs. R. H. BATH showed a group of cut Daffodils, consisting of flowers opened in a cool house. Emperor and The Don, two bicolor Ajax varieties of fine form, were conspicuously good (Silver-Gilt Flora Medal).

Mr. F. HERBERT CHAPMAN showed a few seedling Daffodils and a fine pan of Iris sind-per.—Mr. C. JARDINE exhibited pans of seedling Daffodils to show how he had freed the plants from cutworm infestation by means of a solution of corrosive sublimate (1 part in 3,000 parts of water).

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), W. Pompart, O. Thomas, G. Reynolds, G. F. Tinley, Geo. Kelt, A. Bullock, F. Jordan, E. A. Bunyard, A. W. Metcalfe, H. S. Rivers, P. P. Tuckett, W. E. Humphreys, J. G. Weston, Ed. Beckett, W. H. Divers, and Geo. P. Berry.

Mr. Owen Thomas moved a vote of condolence with Mr. E. HARRISS, a member of the Committee and gardener at Lockinge Park, Wantage, on the death of his wife, daughter of the late Mr. W. Fyfe, for many years also gardener at Lockinge Park.

MESSRS. LAXTON BROS., Bedford, exhibited fruits of their splendid new dessert Apple Laxton's Superb, which received the R.H.S. Award of Merit on August 26, 1919. The Award was confirmed on this occasion by the unanimous vote of the Committee.

Mr. ED. BECKETT exhibited a splendid dish of Apple Grange's Pearmain, an old variety of Pearmain shape, described by Hogg as "a fine, large Apple of first-rate quality as a culinary fruit, and also very good for dessert." The tree from which the fruits were gathered in Aldenham House gardens has never failed to crop during the past 35 years, thus bearing out the remarks by Hogg. "The tree is hardy and an excellent bearer."

A Silver Knightian Medal was awarded to Sir MONTAGUE TURNER, Bedfords, Havering, for thirty-six varieties of Apples. The fruits were good examples for so late in the season, the best varieties, judged by appearance, being Duke of Devonshire, Blenheim Pippin, Dumelow's Seedling (Wellington), Sturmer Pippin, Bismarck, Ribston Pearmain, Cox's Orange Pippin and Scarlet Nonpareil.

Obituary.

W. H. Dobson.—We deeply regret to announce the death of Mr. W. H. Dobson, gardener to H. J. Hope Barton, Esq., Stapleton Park, Pontefract, Yorkshire, which took place on Wednesday, the 11th inst. Mr. Dobson had not been well for some time, and had been confined to his house for several weeks. During his 20 years' service at Stapleton he carried out many improvements and built new vineries. He was a keen gardener and also a clever analytical chemist, and in this latter connection he conducted research work in conjunction with the Horticultural and Agricultural Authorities at Leeds University. Some of his work was quite original. His analyses of soils for farmers and gardeners over a wide area in the North of England were of the utmost value, and in this direction his knowledge was much sought after as his work was thorough. Mr. Dobson was very popular, and his horticultural friends will deeply deplore the death of one with such high abilities at the early age of 49. He was a frequent contributor to the *Gardeners' Chronicle*. He began his career at Shilton Hall, Lincolnshire, under Mr. F. Hill, and had experience in other gardens, including Kelham Hall, Colston Bassett,

and Knotts Green. From Knotts Green he entered the service, as gardener, of J. S. H. Fullerton, Esq., Mablethorp Hall, Yorkshire, and eventually took charge of the gardens at Stapleton Park. He leaves a widow and two sons, to whom we offer deep sympathy. His remains were laid to rest in Darrington Churchyard on the 13th inst.

William Sutherland.—We record with deep regret the death of Mr. William Sutherland, a well-known Scottish gardener, at the residence of his daughter, Hornsbeach Road, Catford, on the 12th inst., aged 87 years. Mr. Sutherland will be remembered as the author of *A Handbook of Hardy Herbaceous Plants*, a valuable work on the cultivation, propagation, and description of hardy herbaceous flowers. In the 'sixties he was employed in the Royal Botanic Gardens, Kew, where he remained for a period of four years, and was foreman of the herbaceous plant department. On his leaving Kew to undertake the duties of gardener at Glenberrie, Founon, Mr. John Smith, the Curator, described him as "an excellent scientific and practical gardener." For a period of seven years he had the management of the Aighnath nurseries of Messrs. P. R. Ker and Sons, Liverpool, and subsequently he was, for seven years, gardener to the Rt. Hon. the Earl of Minto at Minto, Hawick. By this time he had established a reputation as an authority on all classes of hardy plants, trees and shrubs, including Conifers, and he wrote extensively on gardening matters in this journal, meriting the following encomium from the Editor, the late Dr. M. T. Masters: "The confidence we have reposed in you as our representative is the best testimony we can offer as to our opinion of your integrity and ability." Mr. Sutherland established himself as a landscape gardener at Edinburgh, and amongst other work undertaken by him was the laying-out of the Warriston Cemetery.

Alexander Morrison Cocker.—We regret to announce the death of Mr. A. M. Cocker, principal of Messrs. James Cocker and Sons, Springhill, Aberdeen, which took place, after only a week's illness, on Thursday, the 19th inst. Born in 1860 in Aberdeen, he was the youngest son of the late Mr. James Cocker, of Summyside Nursery, Aberdeen, and a grandson of the founder of the firm. From boyhood upwards he was associated with the firm, and with his late brother, William, who died some six or seven years ago, he, after his father's death, capably carried on the business. A man of the highest integrity, Mr. Cocker was possessed of fine business instincts. The death of his brother, with whom he worked most harmoniously, was a severe blow, and then the great war came, with its dislocation of an organisation which had taken generations to build up. The labour problem, when many of his best and most capable men were taken away, added to his burden. But he shouldered it manfully, and ever declared his strong belief in the old Scottish axiom—"Put a stout heart to a stey brae." His short, thick-set figure was familiar at all the leading horticultural exhibitions in this country and on the Continent for over a generation past. The outstanding speciality of the firm was Rose growing, and in this domain he had many triumphs to his credit. Of all his productions, he took a special pride in the beautiful white Rose, Mrs. Andrew Carnegie.

To an interested visitor in his hospitable home at Springhill, nothing gave Mr. Cocker more pleasure than to show the trophies won by his firm. For many years he took an important part in the affairs of the Royal Horticultural Society of Aberdeen, and at the annual shows of that body an outstanding feature was the superb displays both for competition and exhibition, put up by this firm. Much of the success of these displays was due to the fine skill and exquisite taste possessed by Mr. A. M. Cocker. He also for many years took a warm interest in the meetings of the North of Scotland Horticultural Association, his sage advice and wise counsels being great assets in the conduct of its affairs. He leaves a widow, a young son and daughter. The funeral took place on Monday at the family burying ground in St. Peter's Cemetery.

TRADE NOTES.

QUITE recently Mr. John Klinkert invited various members of the horticultural and lay press to visit his nurseries at Richmond to inspect a large importation of clipped Yews and Box lately received from Holland. The patient Dutch topiarist has been fortunate, in that war did not lay a heavy hand on him and that he has been able to practice his gentle art without interruption, whilst most other gardeners laid down their shears and spades to shoulder the rifle; so these specimens are all as exact in outline as ever. All the conventional shapes, in deep green Yew or shining Box, were to be seen and in a great variety of sizes. Topiary is no work for the hustler who wishes to finish his job quickly and get on to the next, and these trained and clipped specimens are somewhat akin to the dwarfed Japanese trees, in that size is no index to age. Five years is said to be the shortest time required to fashion even the simplest form, while the larger and more elaborate specimens may be as long as 90 years in the making—quite a family undertaking, for no one operator could expect to complete it. Considering this, it is not surprising that the more elaborate specimens are valued at £40 to £80 each.

H.R.H. THE PRINCE OF WALES has just placed with Mr. Edward Wiseman, nurseryman, Elgin, N.B., an order for 150,000 forest trees, made up of different sizes of the leading kinds suitable for timber.

ALTHOUGH instituted only a very few years before the outbreak of the war, the Yalding Manufacturing Company has been so successful that already the immediately available space and premises have been utilised, and the directors are seriously considering the possibilities of further extension of their premises. The site of the offices and works was well chosen. It is in the form of a large, irregular triangle; the base is a good main road, while the sides are the River Medway and the S.E. and C. Railway, with Yalding station next door and a siding running into the works. Nothing could be more convenient, and in the arrangement of the buildings full advantage has been made of those fortuitous circumstances. The offices, factory and stores were placed with great forethought, so that all work goes on smoothly and economically. Full use is made of all possible labour-saving devices, and in this respect we were interested in noting the skill of the lads who handled the electrically-driven trollies which are used to move all heavy goods.

The actual manufacture of the various fungicides and insecticides for which the Yalding Company is noted, did not occupy our attention long when we were privileged to visit Yalding. We saw sufficient to realise that, as practised at Yalding, the compounding of fungicides and insecticides is an exact science. Further, all preparations are tested both in the laboratory and in the grounds before being distributed.

The laboratory buildings are extensive, and contain every requisite for the work of the large scientific staff and assistants. One section is of particular interest to practical horticulturists, for there are cultures of fungous diseases and insect pests. Aphides and caterpillars are always ready as subjects for any test. Recognising that these laboratory tests are not entirely conclusive, the management supplement them by the best of all tests, that of application on plants and trees growing under commercial conditions, and these field tests are conducted over considerable areas. The orchard alone is 22 acres in extent. This is situated on the opposite side of the Medway. In the laboratory grounds there are large breadths of all seasonable vegetables and bush fruits, with thirty standards. Grease binding trials are carried out so largely that many trees have four or five bands each, so that the chances of any particularly robust variant reaching its goal are very small. Big-lud in

Black Currants has received especial attention during past years, with the result that it is now established that spraying with Sulfinette when the leaves are unfolding will keep the bushes free from that devastating pest.

The Yalding *Bulletins*, now over 20 in number, have become known to up-to-date growers as being sound and reliable treatises on all manner of garden and orchard enemies, and are sent free on request.

The welfare of their many employees has not been neglected by the company, which has erected a splendid mess-room that in a few minutes can be converted into a concert-room, or made suitable for other forms of indoor recreation.

A REQUEST having been received by the Chamber of Horticulture from the Scandinavian Committee in relation to competition between the two countries in the purchase of bulbs from Dutch growers, the Chamber has convened, in conjunction with the Horticultural Trades' Association and the British Florists' Federation, a conference which will be held on Tuesday, March 9, at 2.30 p.m. The Chamber of Horticulture advises all bulb buyers to refrain from entering into any contracts pending the holding of this conference.

At a sale of part of the property of Sir George Douglas, Bart., at Kelso, recently, the nursery ground occupied by Messrs. Laing and Mather, nurserymen and seedsmen, Kelso, was bought by the firm at the upset price of £2,000.

MARKETS.

COVENT GARDEN, February 24th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Ebs.

Fruit: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Apples (English)		Grapes—	
—King of the Pippins per ½ bus. ...	4 0-6 0	—Almeria per 12 lb. ...	12 0-20 0
—Cox's Orange Pippin per ½ bus. best ...	8 0-11 0	—Lemoons—	
—Blenheim Pippin per bus. ...	8 0-12 0	—Naples 300's	28 0-35 0
—Newton Wonder	6 0-9 6	—Messina 300's	19 0-26 0
—Lane's Prince Albert, per bus. ...	6 0-8 0	300's	18 0-30 0
—Bramley's Seedling per bus. ...	6 0 9 6	Oranges—	
—Brit. Columbia— per case	6 0 9 6	Valencia 360 } 30 0-32 0	
—Newtown Pippin	21 6	Murcia 300 } 30 0-42 0	
—Oregon New Town	20 10	Blood 360 }	
Bananas, singles	25 0-35 0	Nuts—Brazilis (new)	
specials	40 0-—	per cwt. ...	135 0-140 0
Grapes Alicante	5 6-6 0	Chestnuts	36 0-40 0
—Gros Colmar	3 6-4 0	Cob Nuts, per lb. 1 2-1 4	
—Special	5 6-6 0	Walnuts 25 kilo, 45 0-—	
		Pears, Californian	42 0-45 0
		Winter Nelis	2 6-7 6
		Pineapples, each	2 6-7 6

Vegetables: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English.		Mustard and Cress,	
Devon 50's ...	8 0-9 0	per doz. punnets	1 6-2 0
—100's ...	30 0-35 0	Mushrooms, per lb.	2 0-3 0
Middlesex ...	12 0-15 0	Onions, per cwt.	12 0-16 0
Beans Guernsey,		Parsley, per doz.	
per lb. ...	6 0-8 0	bunches	2 0-3 0
—Worthing ...	5 0-7 6	Parsnips, per bag	8 0-10 0
Beets, per bag ...	8 0-10 0	Potatoes, per cwt.	12 6-16 0
Cabbage, per doz.	2 0-4 0	—Guernsey per lb.	1 9-2 0
Carrots, per ½ bag	4 0-4 6	Radishes, per doz.	2 0-4 0
Cauliflower, per doz. ...	2 0-6 0	bunches	2 0-4 0
Celery, per fan, (12 heads)	3 0-4 0	Rhubarb, forced	per doz. ... 1 4-1 9
Chicory, per lb.	0 3-0 6	Seakale per punnet	2 0-2 3
—English, per lb.	0 6-0 8	Spanish Onions	18 0-19 0
—Belgian	1 6-3 6	4 tier ...	23 0-24 0
Cucumbers, each	1 9-2 0	Spring Onions, per doz. bunches	3 0-4 0
Garlic, per lb. ...	2 0-2 6	Sprouts, per bag 28 lb.	2 0-3 0
Greens, per bag ...	2 6-4 6	Tomatos, Teneriffe,	3 0-3 6
Endive, per doz.	4 0-6 0	Best, per bundle	35 0-40 0
French Lettuce per doz.	1 3-1 9	Turriaps, per bag	7 0-8 0
—Batavia, per doz.	3 0-3 6	0-8 0	9-—
Herbs, per doz. bun.	4 0-6 0	Watercress, per doz	0 9-—
Mint, per doz. bun.	6 0-8 0		

REMARKS.—The volume of business is considerable for the time of year. The latest shipment of Cape Fruit to hand is somewhat light, but advices of next arrivals indicate increased quantities. Home-grown culinary Apples in good condition are decreasing in quantity, and the trade generally expects the prices to be firmer. English Grapes are in limited supply, and their prices have an upward tendency. Pines are fairly plentiful, and are being sold at reasonable prices. Bananas are in better demand, and are quoted at higher rates. Consignments of Oranges are shorter, but the prices are not unduly high. British Columbian Apples are nearly finished. Fruits of Newtown Pippin create a good business, being in firm demand. Cucumbers are an increasing quantity, which is reflected in lower quotations. Recent severe gales in the Canaries have seriously affected the second crop of Tomatos, and advices show that future quantities will be extremely light. Forced Beans are available in better supply, and their prices are very much lower. Cauliflowers from France, Cornwall and Guernsey are abundant, but trade is fairly good for supplies from the latter place. Outdoor green vegetables are in better request. Prices for Potatoes are still on the increase, and best tubers are by no means plentiful.

Ferns and Palms: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Adiantum cuneatum 48's	per doz. ... 12 0-15 0	Nephrolepis	
—elegans ...	15 0-18 0	to variety 48's ...	12 0-18 0
Asplenium 48's per doz. ...	12 0-18 0	—32's ...	24 0-36 0
—32's ...	24 0-30 0	Pteris, in variety 48's ...	12 0-21 0
—nidus 48's ...	12 0-15 0	—large 60's ...	5 0-6 0
Cyrtomium 48's	10 0-15 0	—small 60's ...	4 0-4 6
		—16's per tray of	3 6 4 0

Plants in Pots, Etc.: Average Wholesale Prices.

(All 48's per doz. except where otherwise stated.)

s. d. s. d.		s. d. s. d.	
Aralia Sieboldii	10 0-12 0	Cyclamen	24 0-30 0
Asparagus plumosus	12 0-16 0	Erica melanthera,	per doz. ... 30 0-36 0
—Sprengeri	12 0-18 0	Gemistas	24 0-30 0
Apidistra, green	48 0-72 0	Lilium lancifolium	
Azaleas, each	3 0-5 0	rubrum 4's 32's e'ch	3 6-4 6
Caeti per tray	12's 16's	Marguerites—white	18 0-24 0
—12's 16's	6 0-6 0	Palm, Kentia	24 0-36 0
Caerarias, per doz.	16 0-24 0	—50's	16 0-18 0
—Stallata	24 0-30 0	—Cocos	24 0-36 0

REMARKS.—The most attractive subjects in this department are grand plants of *Caeraria* offered by Messrs. Cragg, Harrison and Cragg. Gemistas are also beginning to make a bright show. Other plants well supplied are Azaleas, Ericas, Boronias, Primulas, Hyacinths, and a few *Lilium lancifolium rubrum* in thirty-two-sized pots. Foliage plants are receiving more attention from buyers, and business in them is improving. Messrs. Icton are offering fine plants of *Rhododendrons* in bloom.

Out Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Azalea white, per doz. bun.	5 0-6 0	Pelargonium, double scarlet,	
Camellias per doz.	2 0-2 6	per doz. bun.	12 0-15 0
Carnations per doz. blooms, best	3 6 6 0	Richardia (Arums),	
Chrysanthemums—		per doz. blms.	6 0-9 0
—White per doz. blooms	6 0-10 0	Roman Hyacinth	per doz. spikes 1 3-1 9
—Pink	4 0-8 0	Roses, per doz. blooms	5 0-6 0
—spray White	36 0-54 0	—Opheia	12 0-18 0
Daffodils, Single,		—Richmond	10 0-12 0
per doz. bun.	12 0-15 0	—Sunburst	12 0-18 0
—Empress	12 0-15 0	Soowdrops	
—Golden Spur	6 0-9 0	per doz. bun.	2 0-3 0
—Henry Irving	3 0-4 0	Tulips, White,	
—Princes	4 0-9 0	per doz. bun.	24 0-36 0
—Sir Watkin	10 0-12 0	Coloured var.	30 0-48 0
—Double Yao Zion	6 0-9 0	Violets Single	
Freesia, White	2 0-6 0	large per doz. bun.	6 0-8 0
per doz. bun.	10 0-12 0	—Ordinary	3 0-5 0
Heather, white		French Flowers—	
per doz. bun.	10 0-12 0	—Allium, Star of Bethlehem per pad	18 0-20 0
Lilium longiflorum,		—Anemosa, Pink	per doz. bun. ... 3 0-4 0
per bunch	20 0-—	—Lilac white	per doz. spray 6 0-7 0
Lilium speciosum	5 0-—	—Marguerites yellow	per doz. bun. ... 3 0-4 0
—rubrum per bunch	4 0-5 0	—Mimosa, per pad	8 0-10 0
Lily of the Valley	2 0-2 6	d'Oor, per doz. bun	3 0-6 0
per bunch	3 0-6 0	Orad Primo	per doz. bun. 4 0-6 0
Narcissus, Soleil	2 0-2 6	Pheasant Eye	per doz. bun. 8 0-12 0
d'Oor, per doz. bun	3 0-6 0	Orchids per doz.:	
Orad Primo	per doz. bun. 4 0-6 0	—Cattleyas	24 0-30 0
Pheasant Eye	per doz. bun. 8 0-12 0	—Cypripediums	per doz. ... 4 0-6 0
Parma, per bun	5 0-6 0		

REMARKS.—Daffodils and Tulips are again more prominent, and Roses are becoming more plentiful. The last include the varieties Richmond, Mme. Abel Chateau, Opheia and Sunburst; prices remain firm for the finest blooms. Roman Hyacinths appear to be finishing, but there is a good supply of large white Hyacinths, also Camellias, Lily-of-the-Valley, Freesias, Carnations and Violets. *Lilium longiflorum* is very scarce, and some orders could not be supplied during the past week. *Richardias* (Arums) are hardening in price, owing to a shorter supply. *Chrysanthemums* continue to arrive in small quantities; a few dis-budded blooms of Autocrat, also "bunch" Heston White and Winter Cheer, are still offered. Large supplies of Daffodils and yellow *Narcissus Soleil d'Oor* arrived from Guernsey and Seilly during the past week. The Daffodils were offered at much lower prices than those from home growers, as, owing to the warm weather and the close packing of the blooms, they arrived in an unsatisfactory condition.

CATALOGUES RECEIVED.

- DUNNS, Salisbury—Seeds.
 - D. G. PERRIE, Glasgow—Seeds.
 - KENT & BRIDON, Darlington—Seeds.
 - BLACKMORE & LANGDON, Bath—Seeds.
 - W. SMITH & SON, Aberdeen—Seeds.
 - SAMUEL FINNEY & CO., Newcastle-on-Tyne—Seeds.
 - ROBERT VEITCH & SON, Exeter—Seeds.
 - HUTCHISON & MCCREATH, LTD., Girvan—Seeds.
 - STUART & MAX, Kelso, Scotland—Seeds.
 - WILLIAM WOOD & SON, LTD., Taplow—Seeds.
 - AGOS, LTD., Birmingham—Agos Fertilisers.
- FOREIGN.
- L. FRERD, Paris—Seeds.
 - BUPPE & CO., Philadelphia—Seeds.
 - ZWAN & DE WILDS, LTD., Scheemda, Holland—Seeds (wholesale).
 - E. H. KRUGER & SON, Haarlem, Holland—Seeds.

GARDENING APPOINTMENTS.

- Mr. E. L. Barker**, having been demobilised after three and a half years in the 11th Manchester Regiment, and previously Gardener at Milgate Park, Maidstone, and Penbedw, Mold, has been reappointed Gardener to A. PERCY ECCLES, Esq., Caldy Manor, West Kirby.
- Mr. A. Parsons**, recently General Foreman at Lambton Castle Gardens, as Gardener to the Earl of DERHAM, K.G., Harrison House, Exning, near Newmarket. (Thanks for 2s. 6d. for R.G.O.F. box.—Eds.)
- Mr. G. Sturt**, formerly Gardener to the LADY LAURA HAMPTON, Oakdale, The Holmwood, Dorling, as Gardener to S. GARDNER, Esq., J.P., Oakhurst, Harrow-on-the-Hill.
- Mr. Smith**, as Gardener to the Earl of Lichfield, Shugborough, Stafford.
- Mr. John Dick**, for the past year Landscape Foreman with Mr. MAXWELL M. HART, Glasgow, and for nearly nine years previously Gardener to the MARQUIS OF BREADALBANE, Taymouth Castle Gardens, Kenmore, Perthshire, as Superintendent of the Drumpellier Public Park, under the Town Council of Coatbridge.
- Mr. J. Heath**, for nearly four years Gardener to Sir CHARLES SHAW, Bt., at Wightwick Hall, Wolverhampton, as Gardener to the same gentleman at Craobonne Court, Windsor Forest, Berkshire. (Thanks for 1s. for R.G.O.F. box.—Eds.)
- Mr. N. Sniffeld**, for over three years with His Majesty's Forces, and previously seven years as Gardener at Newton Kyme Hall, Tadcaster, Yorkshire, as Gardener to Major PARSONS, Brandysh Hall, Easingwold, Yorkshire.
- Mr. J. Gilbert Davis**, for the past eleven years' Gardener to Col. A. DRUMBLE, C.M.G., D.S.O., Egginton Hall, Derby, as Gardener to the same gentleman at Kitebrook, Moreton-in-Marsh, Glos. (Thanks for 2s. for R.G.O.F. box.—Eds.)
- Mr. F. L. Thurston**, for the past three years' Gardener-Bailiff to the Earl of Donoughmore, Chelwood Beacon, Uckfield, and previously for eleven years' in a similar capacity at Telham Court, Battle, Sussex, as Gardener-Bailiff to Lord WAVERTREE, Horsley Hall, Gresford, near Wrexham.
- Mr. H. Greening**, recently demobilised, resumes charge of the gardens and grounds at Chelwood Beacon.
- Mr. C. Fletcher**, previous to the war Gardener to C. F. H. LESLIE, Esq., Epombs, Hertford, as Gardener to H. P. Sanderson, Esq., Haynes Park, Bedford. (Thanks for 8s. for R.G.O.F. box.—Eds.)
- Mr. J. Pomfret**, for the past eleven years Gardener to Major T. A. SHEPHERD CROSS, at Chadacre Hall, Bury St. Edmunds, Suffolk, as Gardener to Sir WILLIAM HUBB PARKER, Melford Hall, Long Melford, Suffolk.
- Mr. C. S. D. Roberts**, for 33 years with H.M. Forces, and previously Foreman at Eywood Hall, Tisbury Herefordshire, as Gardener to Capt. H. A. BELLVILLE, Tedstone Court, Bromyard, Worcester.
- Mr. P. Abbott**, for 3 years with H.M. Forces, and previously Gardener for 5 years to Mr. ALFRED POPE, South Court Dorchester, as Gardener to Mrs. BOSWORTH-SMITH, Bingham, Melcombe, Dorchester. (Thanks for 2s. for R.G.O.F. box.—Eds.)
- Mr. F. Leighton**, as Gardener to R. M. SAGAR-MUSGRAVE, Esq., Red Hall, Shadwell, Leeds, Yorkshire.

ANSWERS TO CORRESPONDENTS.

BOOK ON ALPINE PLANTS: *M. E. W.* The only books we know by *H. M.* (Mrs. Stephen) Batson are *A Concise Handbook of Garden Flowers*, sm. 8vo., 206 pp. (Methuen and Co., 36, Essex Street, London, W.C.); and *The Summer Garden of Pleasure*, 8vo., 251 pp. (Methuen and Co.).

CHRYSANTHEMUMS FOR OUTDOOR CULTIVATION: *F. L.* While without a knowledge of your soil and situation we could not name any particular varieties as being the best early-flowering Chrysanthemums for market purposes, we are confident that selections from the following lists will give you sorts which will be found very profitable when grown under proper conditions. *White:* Framfield Early White, a very vigorous, free-flowering variety, producing blooms of good substance that travel well; Holmes' White, one of the dwarfest of the earliest, bearing plenty of good marketable blooms, but, unless "well done," the flower stalks are liable to be a trifle short; and Rio des Blancs is probably the most popular of the early white sorts grown as sprays, but is also good when disbudded, and it is especially free flowering. *Pink:* Betty Spark, a very good general utility variety, as it is successful either disbudded or in sprays; Dorothy Ashley is a pretty shade of pink, which finds favour with lady buyers, and may be grown either way; Normandie, of delicate pink colour, usually develops well either as disbudded blooms or sprays; Pele Rose has a stout, erect habit more fitted for being disbudded than for cultivation as sprays (it bears large, full flowers early in September). Though not a true pink, Perle Chatillonaise is a splendid variety that may be described as cream, heavily tinted with rose. It succeeds especially well on light soils and may be grown either disbudded or for sprays. The above are first-early varieties which commence to flower fairly early in August, but in your generally favoured locality you could also grow some of the second-early varieties, which would be very profitable in nine years out of ten and which would be in season during the last half of September and early October. *White:* Bébé Blanc, a splendid dwarf variety, having stout stems, of bushy habit, best as sprays; Bonquet Blanc, pure white, for disbudding; and Queen of the Earlies, large pure white, for disbudding. *Pink:* Belle Mauve, bright mauve pink, good in either form; Uxbridge Pink, one of the very best, an improved Cranford Pink; and James Bateman, a fine variety grown either way.

DEDUCTION OF GARDENER'S WAGE DURING ILLNESS: *R. R.* We assume you have been employed as a whole-time gardener at weekly wages. In this case your employer was not justified in deducting your pay for the day on which you were absent through illness. He would, however, be entitled to reasonable evidence that you were too ill to attend work.

GARRYA ELLIPTICA: *F. E. B.* *Garrya elliptica* should be pruned in spring after the catkins are over, but pruning should be restricted to the removal of superfluous wood or unbalanced branches. The catkins develop on the ripened growths of the previous year, but are not produced very freely if the plant is pruned too hard. They are most plentiful on old plants that have been allowed to develop naturally.

GRAFTING AN OLD PEAR TREE: *C. R.* If the trees are headed down now the branches should be left 3 inches or 4 inches longer than will be required for grafting. Then, at the time of grafting, this extra piece should be sawn off and a fresh surface exposed. If you wish to make one job of the work, leave the trees as they are until grafting time, and then head them back to the correct length. This plan answers just as well as the other. Pears are usually ready for grafting early in April, or possibly at the end of March in a forward season; Apples about the middle of April.

But the right time can be told only by practical test. When the sap is rising freely, so that the bark lifts easily and cleanly, grafting may be done.

GRAFTING WAX: *W. S.* Obtain Burgundy pitch 1 lb., black pitch 4 oz., resin 2 oz., bees-wax 2 oz. and mutton suet 2 drachmas; melt all together over a clear fire and apply warm. A small oil stove is useful for keeping the wax warm while it is being used.

HERBACEOUS PLANTS FOR CHALKY SOILS: *Ronville Camp.* Most hardy herbaceous plants will succeed in chalky soils; their success or failure depends, in a large measure, on the depth of the soil and the supply of moisture, rather than on the presence of lime. You could select—*Acanthus latifolius*, *A. mollis*, *Achillea Eupatorium*, *A. millefolium* and vars., *A. Ptarmica* var. *The Pearl*, *A. tomentosa*; *Aconitum japonicum*, *A. Wilsonii*, *A. Napellus* and vars.; *Aconitum* are woodland plants and grow best in shady, cool places; *Agrostemma coronaria* and vars.; *Alyssum saxatile* and vars. *flore plena*, and *sulphurea*; *Anchusa italica* and vars. *Dropmore* and *Opal*; *Anemone japonica* and vars.; *Antennaria margaritacea*; *Anthemis tinctoria* and vars. *Kelway* and *E. C. Buxton*; *Arabis alba* and var. *flore plena*; *Asters* (*Michaelmas Daisies*); *Aubrietias* in variety; *Bocconia cordata*; *Bupthalmum cordifolium*, *B. salicifolium*; *Campanula carpatia* and vars.; *C. glomerata* and vars.; *C. speciosa*, *C. lactiflora*, *C. persicifolia* and vars.; *Catananche coerulea* and var. *alba*; *Centaurea glastifolia*, *C. macrocephala*; *C. montana* (blue and white); *Centranthus ruber*, *albus* and *rosens*; *Cerastium Liebersteini* and *C. tomentosum*; *Chrysanthemum maximum* and vars.; *C. uliginosum*; *Clematis Davidiana*, *C. Hendersonii*; *Coreopsis grandiflora*, *C. lanceolata*; *Crambe cordifolia*, *Delphiniums* in variety; *Dianthus*—all the Garden Pinks; *Dictamnus Fraxinella*, *D. F. alba*, *Echinops banaticus*, *E. Ritro*, *E. sphaerocephalus*; *Erigeron speciosus* and the variety *Quakeress*; *Erodium Manescavi*; *Eryngium amethystinum*, *E. Oliverianum*, *E. planum*; *Galega officinalis* and var. *alba*, *G. orientalis*, *G. Hartlandii*; *Genetiana asclepiadea* and var. *alba*; *Geranium armenum*, *G. Endressii*, *G. ibericum*, *G. sanguineum*; *Genum coccineum* var. *Mrs. Bradshaw*; *Gypsophila paniculata* and var. *flore plena*, *G. repens* and *G. Stevenii*; *Hedysarum coronarium*; *Helenium autumnale* and vars. *Riverton Beauty* and *Riverton Gem*; *Helianthus multiflorus*, *H. rigidus* var. *Miss Hellieth*; *Heliopsis scabra* and var. *B. Ladhams*; *Hemerocallis aurantiaca major*, *H. fulva*, *H. flava* and *H. Middendoriana*; *Heuchera sanguinea* and vars.; *Iberis sempervirens* and vars.; *Incarvillea Delavayi*; *Inula ensifolia*, *I. glandulosa*, *I. Royleana*; *Jasione perennis* and *J. montana*; *Kniphofias Saundersi*, *Lachesis*, *John Benary*, *Obelisque* and *Pfitzeri*; *Lathyrus latifolius* and vars. *albus* and *White Pearl*; *Lavender*; *Lupinus polyphyllus* vars.; *Lychnis chalcidonica* (this plant does not endure dry conditions); *Malva moschata* and var. *alba*; *Monarda didyma* (this plant needs moist conditions); *Morina longifolia*; *Mulgedium Bourgaei*; *Nepeta Mussinii*; *Oenothera biennis*; *Papaver orientale*; *Pentstemon barbatus*; *Phlox* in var.; *Physalis Alkekengi* and *P. Franchetii*; *Phytoloma canescens* and *P. orbiculare*; *Polygonum amplexicaule* and var. *oxyphyllum*; *Reseda alba*; *Salvia virgata*; *Scabiosa caucasica*; *Stachys grandiflora*; *Statice Gmelinii*, *S. latifolia*; *Thalictrum aquilegifolium*, *T. angustifolium*, *T. flavum*; *Verbascum Chaixii*, *V. densiflorum*, *V. olympicum*, *V. phlomidoides*; and herbaceous Paonies. A list of shrubby plants suitable for growing in chalky soils was given in the issue for January 17, p. 34.

LIME DRESSING FOR LAWN: *F. B.* The dressing of slaked lime should be applied a few weeks hence, after the surface dressing of rich soil has been washed down to the roots of the grass.

NAMES OF FRUITS: *H. S.* 1, Gravenstein; 2, Northern Spy; 3, Whiting Pippin; 4, Fenouillet Grosse; 5, Wyken Pippin; 6, Golden Pippin; 7, not recognised; 8, Fearn's Pippin.—*Mary*, 1, Cox's Orange Pippin; 2,

Old Nonpareil; 3, decayed; 4, Scarlet Nonpareil.—*G. A.* 1, Wealthy; 2, Broad End; 3, Yorkshire Beauty (syn. Greenup's Pippin). *G. R. N.* 1, Mank's Codling; 2, Stirling Castle; 3, Curl Tail.—*F. V.* 1, Melon Apple; 2, Mabbott's Pearmain; 3, Waltham Abbey Seedling; 4, Harvey's Wiltshire Defiance; 5, Sam Young; 6, Scarlet Nonpareil; 7, Mère de Ménage; 8, Reinette van Mons; 9, Calville St. Sauveur.—*L. M. A.* 1, Cox's Orange Pippin; 2, Old Nonpareil; 3, not recognised; 4, Scarlet Nonpareil.

PINEAPPLE CULTIVATION: *Javensis.* You will find a good general account in an article entitled "The Cultivation of the Pineapple for Fruit and Fibre" in the *Bulletin of the Imperial Institute*, 1916, No. 3 (London, John Murray, 2s. 6d.). The yield will depend to some extent on the number of plants per acre. For canning purposes, small fruits are desired and the plants are accordingly grown closely together; for local use or for export as dessert fruit, larger specimens are required and the plants are encouraged to produce them by wider spacing. For *The South African Fruit Grower*, write Box 3888, Cape Town; the subscription is 5s. per annum. The paper is not on sale in this country.

PROPAGATION OF ACACIA BAILEYANA: *W. M.* *Acacia Baileyana* is best raised from seeds, as, in common with all the pinnate-leaved Acacias, it is slow and uncertain of increase from cuttings.

SHRUBS FOR BORDERS: *Miss B.* You will find *Rhododendrons*, *Azaleas*, *Kalmia latifolia* and *Heaths* do well in the border, as these plants like a moist soil and are not averse to partial shade. Alternatively you could plant flowering shrubs such as *Deutzias*, *Spiraeas* and *Weigelas*, interspersed with clumps of *Iris Kaempferi*, and using a few plants of *Golden Privet*, *Golden Euonymus* and *Acer Negundo variegata* for colour.

SINGLE CHRYSANTHEMUMS: *R. W.* The following single Chrysanthemums should prove suitable for the purpose you mention. Those marked with an asterisk are best for sprays, and the others for disbudded blooms. The latter are much more suitable for centrepieces and large vases, where a good length of stem is a decided advantage; disbudded blooms are not seen at their best in small vases when the stems have to be much reduced:—*Bertha Fairs*, *Bronze Beauty*, *Florrie King*, *Glorious*, **Grace Darling*, **Joan Edwards*, **Manor House Terracotta*, *Mary Morris*, **Mary Richardson*, **Miss Mary Pope*, **Donald*, *Mrs. A. Middleton*, *Mrs. Loo Thomson*, *Mrs. W. Buckingham*, *Phyllis Cooper*, *Portia*, **Red Star*, **Shoreham Old Gold*, *White Beauty*, **Aphrodite* (*Anemone* single), *Ceres*. Decorative varieties:—*Almirante*, *Betty Spark*, *Dorothy Ashley*, *Etoile d'Or*, *Mrs. Marshal Field*, *Perle Chatillonaise*, *Polly*, *Crimson Polly*, *Provence*, and *Roi des Blancs*. The above are suitable for growing in the open and the following for cultivating in pots:—*Caprice du Printemps*, and its bronze, yellow, and white varieties, *Crimson Source d'Or*, *Elsenhaw White*, *Framfield Pink* (late), *Lizzie Adcock*, *Heston White* (late), *Freda Bedford*, *Market Red*, *Miss A. Brooker*, *Money-maker*, *Yellow Money-maker*, *Mrs. W. Roots*, *Phoebe*, *Rosalind* (late), *Tom Page*, and *Uxbridge Pink*. Any ordinary cash book, not too large, and stoutly bound, would be quite suitable for a gardeners' wages book.

SPRAYING WITH COPPERAS: *J. P.* Whether your spraying material containing green vitriol-copperas (sulphate of iron), would injure the Roses or not depends on the quantity used; in any case, it should be easy to protect the plants by covering them with sacking, or similar material.

WITCHES BROOM ON LIME TREES: *C. A. C.* Rarely have we known Lime trees to be affected by any form of the so-called "Witches Broom," though the Lime-Cooper Moth, which, however, does little harm, is usually abundant where the tree is grown in quantity. Cherry and Plum orchards in Kent are in many instances surrounded by shelter belts of the Lime and nowhere will healthier or more fruitful trees be found.

THE
Gardeners' Chronicle
No. 1732.—SATURDAY, MARCH 6, 1920.

CONTENTS.

Adonis amurensis .. 115	Maize, the origin of .. 114
Alpine garden, the—	Mangetout Pea .. 122
Chatsworth, conserva-	Mistletoe, hosts of the .. 122
tory at .. 119	National Horticultural
Alpine meadows of	Society of France .. 122
Burma-Yunnan .. 118	Obituary—
Antwerp exhibition,	Taylor, George Hugo 124
1920 .. 114	Onion fly, the .. 122
Big-land, a remedy for .. 122	Orchid notes and glean-
Chatsworth, conserva-	ings .. 117
tory at .. 119	Potato crop, the future
Cultural memoranda—	of the .. 120
Albans .. 120	Propagation by leaves 121
Cyclamen europaeum,	Richmond Terrace gar-
longevity of .. 122	dens .. 114
Fruit growing .. 113	Seeds, the electrolytic
"Gardeners' Chronicle"	treatment of .. 113
seventy-five years	Societies—
ago .. 114	Horticultural Club .. 123
Geo. Monro Ltd., conc-	Manchester and N. of
ert .. 114	England Orchard .. 124
Hardy flower border—	Reading Gardeners' .. 123
Anemone sylvestris .. 121	Spring flowers at Ham-
Anthericum Liliace-	pton Court .. 113
trum .. 121	Spring flowers .. 119
Niezenbergia rivu-	"Sweet Pea Annual" .. 113
laris .. 121	Surrey, small holdings
Roumeya Coulteri .. 121	in .. 114
Horticulture and the	Trail, Professor, bequest
"State" .. 113	by the late .. 113
Kew, a hostel for .. 114	Trees and shrubs .. 122
"Kew Guild Journal" 114	Ultra-violet light .. 122
Kew Museum of econo-	Week's work, the 116, 117
mic botany .. 113	
Lily, a new Chinese .. 115	

ILLUSTRATIONS.

Anthericum Liliaceum .. 121
Cattleya Rhoda, (coloured supplementary illustration)
Chatsworth, the great conservatory at, .. 119
Claudia Bampieri .. 123
Cyclamen europaeum .. 122
Lily, a new Chinese .. 115
Mitoulia Bleiana var Princess Elizabeth .. 117

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 49.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, March 3, 1920, 10 a.m. Bar. 30.6, temp. 45°. Weather—Foggy.

The electrolytic treatment of seeds* by what is known as the Wolfryu process, consists in steeping seed in a solution of common salt (at the rate of from 4 to 8 ozs. to the gallon of water) in a wooden vessel lined inside with sheet iron, and in passing an electric current through the vessel. After the treatment the seed is dried and sown in the usual manner.

It is claimed that the electrolytic process exercises a markedly beneficial result in the yield of such crops as Wheat and Barley, and it is assumed that the benefit is to be attributed to the effect of the electric current on the seeds.

A careful experimental examination of these claims has been made by Dr. Russell and his colleagues at the instance of the Food Production Department, and an account of that examination has now been published†.

The results of experiments carried out in pots and in the field are, on the whole, adverse to the claims put forward on behalf of the process, but it is evident that it is premature to draw any final conclusion from them.

As Dr. Russell points out, methods of treatment of crops are of three classes: those which always or nearly always give positive results, for example, the application of appropriate artificial manures to field crops; those which sometimes succeed and sometimes fail, and those which always fail.

The method of electrolytic treatment of

seeds does not always give successful results, neither does it always fail to give them. In most of the experiments recorded by Dr. Russell there was no gain as the result of the treatment, but in some there was, and in some there was actual loss. It would, we think, serve no useful purpose at this stage to give further details—which may be found in Dr. Russell's paper—of the actual results; but it may be worth while considering the possible cause of the uncertainty which appears to attach to them. In the first place, as Dr. Russell points out, it is not impossible that some benefit is derived from the soaking and drying, apart altogether from any electrical effect. It is known, for example, that kiln-dried Barley—especially after steeping—germinates more evenly than ordinary Barley. It has been shown also by Professor Stapleton* that drying seed at 100° F. may, in the case of poor or moderate samples of seed, improve its germination. Hence, if for the purpose of the argument a beneficent effect be ascribed to the steeping and drying, and if that effect were slight in the case of samples of good and marked in those of lower germinating capacity, the irregular results of the method might find explanation.

We are of opinion, however, that this simple explanation is unlikely to prove sufficient, and we are inclined to think that it may prove that the variability of the result is due to lack of precision in treatment. It is known that the outer coats of seeds such as Barley are remarkable in the power they possess of allowing many diverse dissolved substances to pass through them. The effect of the electric current on the salt of the solution in which the seeds are steeped is to dissociate it into its constituent ions (Na. Cl.). The rate of absorption of these ions may and probably is not the same, and moreover, one only of them may be the agent (if agent there be) of increasing the vigour of the resulting plant; the other may, for all we know, be harmful. If this be so, it is easy to see that the success of the treatment would depend both on the time during which it was maintained, and on the variety of Barley or other seed under treatment; for without doubt different varieties of Barley will be found to differ in the rate at and to the extent to which they allow substances to pass their outer walls. A pursuit of these considerations leads to the conclusion that judgment should be suspended until the subject has been studied in more detail than has yet been the case.

The Late Professor Trail's Bequest.—*Bulletin No. 21*, of the Aberdeen University Library, just issued, contains the following graceful tribute to the thoughtfulness of the late Professor Trail, Botany Chair, Aberdeen University—and who was also Curator of the University Library—who bequeathed his books and pamphlets, numbering some 2,000, to the Library:—"It is intended that a complete catalogue of the botanical works shall appear as soon as practicable in one or more of the ensuing *Bulletins*. This, it is hoped, will form a memorial of one who during his lifetime did so much for the library, and who, contemplating his own death, remembered its needs and paid it high honour in making it legatee of his own treasured volumes."

Education in Fruit Growing.—The Hampstead Garden Suburb Allotments and Horticultural Association which has a membership in the neighbourhood of 1,000, has obtained a plot of land to be used as a demonstration ground for fruit trees, where the members may, from time to time, see and take part in the various seasonal operations such as planting, spraying, pruning, and training. It will also serve as a trial

ground to test which varieties thrive in the locality.

Horticulture and the State.—The following resolution was unanimously carried at the Annual General Meeting of the National Fruit Growers' Federation held in London on Friday, February 27, on the motion of Mr. W. G. Lobjoit, seconded by Viscount Deerhurst, and a copy ordered to be sent to the Ministry of Agriculture:—"That this General Meeting of the National Fruit Growers' Federation desires to place on record the valuable services to Commercial Horticulture rendered by the Horticultural Division of the Ministry of Agriculture under the leadership of Dr. E. Keeble, and it urges upon the Ministry the importance in the interests of food production, and especially the many small holders now being established about the country, that Dr. Keeble's successor should be a man understanding Commercial Horticulture, and able to direct the energies of the department with knowledge of the needs and the importance of intensive cultivation of the land."

Kew Museum of Economic Botany.—The publication of an official guide to the Forestry Section of the museums of economic botany at Kew adds another volume of these useful and most interesting brochures to the list issued by the gardens. The guide deals with the contents of Museum No. IV., which occupies Cambridge Cottage, formerly the residence of H.R.H. the Duke of Cambridge, and first opened to the public in 1910. The object of this special museum is to direct attention to British forestry and the scope of the objects has been limited to collections of timber, fruits and seeds of trees, dried specimens of a few types of hardy trees and shrubs, photographs of isolated trees, plantations and natural regeneration of trees, the fungous and insect diseases of trees, articles manufactured from British-grown timber, and tools and machinery used in silvicultural and arboricultural operations. The objects are grouped in the museum in their Natural Orders under numbers, and the guide gives a short description of each exhibit under its number. The price of the publication is 2s. net.

Spring Flowers at Hampton Court.—During the mild days of the past week the display of Croci, for which the gardens at Hampton Court Palace have long been famed, has drawn large numbers of people from many parts of London. The greensward in the Lime avenue is thickly studded with glorious yellow and purple blossoms which, when widely opened, make a wonderful display. Snowdrops, Scillas and Chionodoxas are not so numerous, but are present in sufficient quantities to illustrate their great value in the early spring. The work of restoration on the East Front of the Palace has proceeded so well that with the exception of two large beds immediately in front of the Palace, the turfed-over beds are now restored to their pre-war condition. They have been planted with spring flowering subjects, which, in due course will be replaced by the half hardy summer bedding plants that formerly delighted the public. In other directions the recommendations of the Committee appointed last year by the First Commissioner of Works have been carried out. Young Yews have been planted in the gaps made by the loss of the original trees; the garden canal has been cleaned and much needed pruning and thinning has been done in the shrubbery on the far side of the canal. In the Priory Gardens, also, much work has been done and this, with the addition of various flowering shrubs, will make a distinct improvement. Around the Orangery work is still in progress, and it is announced that this building is to be the home of paintings by a famous artist.

Sweet Pea Annual.—We congratulate the National Sweet Pea Society on having been able to issue its "Annual" during the five years of war, and in the same complete and interesting form as before. The issue for 1920 is as well got up and illustrated as the earlier numbers, and contains a plate of Sweet Peas in colours. All this points to the prosperous condition of the Society and a sustained interest in this most beautiful annual flower. The editor, Mr. J. S. Branton, is to be congratulated, for the various

* See *Manual of the Electro-Chemical Treatment of Seeds*, by the late Dr. Morici, 1913.

† Report on the Proposed Electrolytic Treatment of Seeds (Wolfryu Process) Before Growing. G. J. Russell, (Journal of Ministry of Agriculture, XXVI, 10, Jan., 1920)

* *Journal of Board of Agric.*, July, 1919, p. 361

subjects dealt with have been well chosen and cover a wide field on matters pertaining to the Sweet Pea. The cosmopolitan interest in Sweet Peas is indicated by contributions and illustrations from the United States of America, Manitoba, and Dunedin, the last by Mr. George J. Errington, who is shown amongst his plants, which are fourteen feet high. Mr. S. B. Dicks makes an interesting contribution on the history of the Sweet Pea; a few results of cross-breeding are recorded by Mr. J. Stevenson; while sulphuric acid as an aid to germination is referred to by Mr. Weston; notes on the bibliography of the Sweet Pea by Mr. C. Harman Payne conclude a series of interesting and useful articles.

Coloured Plate.—The subject of the coloured supplementary plate accompanying this issue is *Cattleya Rhoda*, Fowler's variety. A description of this handsome Orchid will be found on page 117.

Richmond Terrace Gardens.—A subsidence in the well-known Terrace Gardens on Richmond Hill has given rise to several alarmist reports which have suggested that the gardens are slowly sliding downhill towards the River Thames. This, happily, is far from being the case, though the sinking is sufficient to cause concern to the Richmond Town Council. Some 350 loads of soil and clay have been used to make up the ground on the higher part of the gardens, and boring operations are to be carried out in the hope of ascertaining positively the cause of the subsidence. The generally accepted theory is that it is due to renewed activity of some of the underground springs which are rather numerous in the hillside. It seems that the present trouble is no new thing, for the Borough Librarian, writing to the *Richmond and Twickenham Times*, points out that so far back as 1700 the inhabitants of Richmond were alarmed at subsidences not far from the present site, and that the mischief was caused by the digging of clay for the tile works then carried on. The famous Terrace Gardens owe their origin to the Duke and Duchess of Montague, who came into possession of the Tile Kiln in 1768 and converted it into a pleasure garden which is now a portion of the public Terrace Gardens. Close by, a hundred and more years ago, there was an open well, to which, it is said, large numbers of sick and ailing made long pilgrimages to be healed and made well, but the well has long since become dry, though it is surmised that it may have become diverted and so be the cause of the present trouble.

Small Holdings in Surrey.—At the public inquiry, which was held on February 18 last, with reference to the proposal to compulsorily acquire nearly three hundred acres of land forming part of Eastwick Park, it was stated by Major Harding, on behalf of the Surrey County Council, that the demand in Surrey might be divided into three classes: (1) The largest part was for market garden holdings of about five acres. (2) There was a considerable demand for cottage holdings of about two or three acres. (3) There was a further demand for dairy holdings of about thirty acres. Since January 1, 1917, there had been 600 applicants, and of these 389 had been approved for 3,923 acres. Between January 1 and August 17, 1919, the Committee considered 83 separate properties in the hope of obtaining suitable land for additional applicants. The general policy was to settle the smallholders in blocks of from 500 to 1,000 acres, and the largest block would be that of 1,100 acres at Wallington and Carshalton. It was felt that, if possible, a block of light land should be obtained in the middle of the county, and it was in furtherance of this scheme that it was desired to acquire the ground at Eastwick Park. This would be the nucleus of a block approaching 600 acres in extent, as the Committee expected to purchase the adjoining Home Farm at Fetcham and the Canon Court Farm at Leatherhead. In answer to an inquiry, Major Harding stated that the Smallholdings Committee hoped to settle about 150 men during the present year. On one estate they were erecting 78 new cottages. After hearing the evidence on both sides the Commissioner said he would visit the land and report to the Ministry.

Kew Guild Journal.—The Kew Guild, as the Association of the past and present members of the Kew Gardens staff is termed, continues to grow in numbers, and its annual Journal in interest. The volume for 1920 is the twenty-seventh of the series, and it has the prosperous appearance of those of pre-war times, with many interesting illustrations printed on art paper. As is to be expected, much of the work is devoted to family matters, such as the doings of the clubs connected with the Gardens, the lectures, report of the annual meeting, of the mutual improvement society, the list of the staff and appointments and retirements. But considerable space is occupied by matter of general interest and gardeners everywhere will be interested in the letters from Old Kewites from many parts of the Empire and botanical stations abroad. The account given by Mr. F. Roekens, of the Botanic Gardens, Brussels, where he was cut off from the rest of the world for five years, is a testimony of German "kultur"; even the vegetables grown to support the populace were often requisitioned by the intruders. Mr. Briscoe's account of "Two Years' Sojourn in India," and Mr. F. S. Sillito's narrative from Khartoum, show that Kew men, like those of gardeners generally, were amongst the first to respond to the call of their country, and the War Memorial to be erected in the Temple of Arethusa in the gardens will show that thirty-three members of the garden staff made the supreme sacrifice. The frontispiece of the journal is a portrait of Capt. A. W. Hill, the Assistant-Director of Kew Gardens, who is the Guild President-elect for 1920. In "Notes" we learn that the number of visitors to Kew in 1919 was 1,019,479, an increase of 378,750 over 1918, showing that the people find in gardens and gardening a solace to their troubles and a never-ending source of pleasure.

Geo. Monro, Ltd., Concert.—This concert was held on the 19th ult. at Queen's Hall, Langham Place, W. As there was a very large attendance of horticulturists and their friends, it is hoped that the horticultural charities will materially benefit as a consequence. In the absence of Mr. Geo. Monro, through indisposition, the chair was occupied in turn by his three sons—Mr. E. G. Monro, Mr. Geo. Monro, Jr., and Mr. B. J. Monro. A message of regard and sympathy was forwarded to Mr. Geo. Monro, Sr., in reply to the kindly good wishes sent by him to the meeting. The concert was in every way an excellent one and included several performances by the band of the Coldstream Guards, vocal items by Miss Phyllis Lett, Miss Flora Woodman and Miss Margaret Cooper, and four songs from "The Fringes of the Fleet" by Messrs. H. Barratt, E. Henry, W. Fisher and F. Stewart, as well as selections on the grand organ by Mr. Maurice Vinden. As this was the twenty-first concert of the series, it was in effect a "coming of age" celebration, and advantage was taken of the occasion to make a presentation to Mr. H. Baker, who has been secretary throughout, and has rendered splendid service to the cause of charity in Covent Garden during the whole period of the war. Mr. F. Ridley, Master of the Fruiters' Company, made the presentation on behalf of the salesmen, buyers and growers in Covent Garden Market. The presentation took the form of a case of cutlery, a handsome drawing-room clock, a cheque for one hundred guineas, and a gold bracelet watch for Mrs. H. Baker. Mr. Baker was accorded a most enthusiastic reception, which was evidence of the high esteem in which he is held. He was somewhat surprised, however, when the whole audience rose and, conducted by the band of the Coldstream Guards, told him that he was "a jolly good fellow." We understand that a concert committee has the sum of £76 10s. in hand and that five charities and two hospitals have been assisted from the funds in previous years.

Hostel for the Garden Staff at Kew.—The sum of £3,600, representing part of a total estimate of £7,100, has been allotted by Parliament for the acquisition and adaptation of premises for a hostel for the young gardeners at Kew. Sir Alfred Mond, First Commissioner of Works and Public Buildings, stated that large Government departments had been housed

in the Kew neighbourhood, thus adding to the difficulties of the young gardeners finding housing accommodation. The gardeners were required to commence work at 6 a.m., and some were compelled to reside a distance of twenty miles away from Kew. The hostel is to include a lecture room and laboratory. The Kew landladies and the lasting friendships formed amongst fellow-lodgers remain as some of the more pleasant reminiscences of those who have served the two years of studentship in these national gardens, but the hostel will doubtless provide the same opportunities for close comradeship.

Antwerp Flower Show.—In connection with the Antwerp Exhibition and Olympic Games, to be inaugurated by the King and Queen of the Belgians, a series of international flower shows will be held from May to October this year. A great Floral Hall is being erected in the most beautiful part of the exhibition grounds, and this will be surrounded by gardens typical of various nations. The committee invite the co-operation of British horticulturists, gardeners, flower and seed merchants, market gardeners, arboriculturists, and manufacturers of agricultural and gardening implements. On the committee are horticultural experts of many countries, and the displays will be viewed by countless thousands of visitors from all parts of the world. Full particulars of these international flower shows can be obtained from Mr. John Bellham, 303, High Holborn, London, W.C.1.

The Origin of Maize.—The recently-published researches* by Mr. J. Kuwada into the minute structure of Maize throws light upon the origin of that plant. The author has studied the characteristics of the dividing nucleus both of Maize and of the plants which have already been suggested as the parents of Maize. His observations support the views expressed by Mr. Collins that Maize is a hybrid between the Mexican forage grass Teosinte (*Euchlaena mexicana*) and an unknown species of grass belonging to the *Andropogoneae*. The comparison of the chromosomes of the nucleus of Maize with those of *Euchlaena mexicana* and species of *Andropogon* shows that the chromosomes are of the same number in all, namely ten pairs, and that, whereas the chromosomes of *Euchlaena mexicana* are longer than those of *Andropogon* in Maize they are not all the same length. Each pair in that plant consists generally of a longer and a shorter chromosome. Another fact of great interest is that in some races of Maize the chromosomes number not ten but eleven or twelve. Wherefore it is to be inferred that the great variation exhibited by Maize is not due solely to recombinations of characters present in the original parents, but also to mutations of which the increased number of chromosomes is a sign.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*The Weather.*—I cannot recollect of black frosts ever being of so long continuance as they have been near Inverness this winter. We have not been able to perform digging for these three months past. Shrubs, however, in general have not been injured by them; the frosts came on gradually, and the plants became so hardened as to endure them with impunity. A Laurel hedge, which used to be in former years at this season brown, this year looks beautifully green. Luxuriantly growing solid Celery has, however, been destroyed, and vigorous Cabbage-plants have also suffered more than usual; but Cauliflower plants near walls still look healthy and unharmed. Lettuce and young Parsley have suffered severely, although they commonly survive our winters here when growing on sloping beds facing the sun, in front of a south wall. The frost has also completely destroyed plantations of Broccoli. Hybrid China Roses, growing as standards, have perished, while low bushes of the same sorts are uninjured. Pentstemons and other plants which stand moderately severe winters have been killed. I cannot, however, give a correct estimate of the injury done by the frost until the season is further advanced. *Snow-deep, in Gard. Chron., March 8, 1845.*

A NEW CHINESE LILY.

ALTHOUGH the Chinese flora is comparatively rich in Lilies, and in *L. regale* has given us what seems likely to prove the most satisfactory garden plant of the genus, one cannot say that practical horticulture has benefited to an extent commensurate with the number and importance of the Lilies discovered in China during the past twenty-five years.

Herbaria, on the other hand, have been enriched by a mass of Chinese material in which the recognised groups of the genus *Lilium* are all represented. A good deal of this material has not yet been digested, and though it contains specimens of wild Lilies that, not to put too fine a point on it, are ungainly and unattractive, there is much of extraordinary beauty and interest awaiting the pen of the skilled elucidator.

Critical examination of the section pertaining to *Lilium* in a representative collection of Chinese herbarium specimens, reveals a predominance of the group of *Eulirion*, or true Lilies. This is no more than is to be expected, for the group in question is more in evidence in China than in any other part of the globe known to naturalists, and botanical exploration has made it tolerably clear that these Lilies are fairly well distributed over a considerable part of the Celestial Republic.

Specimens of *Eulirion* are to be found in the collections of nearly every explorer from David to Farrer, and while the conclusion is irresistible that many of these Chinese Lilies are akin, botanists have rightly based several species on the material available and will doubtless segregate others.

For some inscrutable reason the collector's conception of a trumpet Lily seldom seems to go beyond *L. Brownii*, and that is doubtless the reason why, at one time or another, that name has been bestowed on almost every member of the *Eulirion* group discovered in China.

The magnificent Kansu Lily, so well photographed by Mr. Malby (Fig. 45), is the last and by no means the least to have kinship with *Brownii* thrust upon it, but botanically it is no near relation of that unique species, which, so far as we know, has not yet been recorded west of Hongkong.

This Kansu species—not, it may be observed, to be confused with the magnificent trumpet Lily (No. 316) found by Farrer in the same province—seems to be intermediate between *Wilson's* Lily, *L. regale*, and *L. sulphureum*, for long supposed to be confined to Burma, but of late years not infrequently reported from Western China. It has the long leaves and noble head of the latter, as well as the exquisite sunset colouring of the petals and the same grateful fragrance, but is slighter in stature, and one may look in vain for the axillary bulbils which, so far as my observation goes, are a fixed character of *L. sulphureum*, incidentally rendering the propagation of it so simple a matter. The trumpet is longer than in *L. regale* and the edges of the petals are more recurved, while the flowers do not hold themselves up in the semi-erect fashion so noticeable in that Lily, but have an equally attractive droop. The style and stigma are those with which *L. regale* has made us familiar. The long and shapely flower bud, with its rich vinous colouring, is not the least attractive point about this remarkable plant, which like *L. sulphureum* and *L. Sargentiae* seems to need a hot sun for its proper development and is in no sense a Lily of the woods.

The bulb is ovoid, with numerous thick, ovate scales of the dark purple hue so noticeable in many Western Chinese Lilies; the stem has the aerial roots with which all known members of the group are furnished.

As this fine Lily has not been in cultivation for more than a few years and is by no means plentiful enough to justify experiment in cultural treatment, it is too soon to hazard an opinion as to the value of the plant from the horticultural point of view, or to say whether it is likely to stand the rough and tumble of ordinary garden treatment, or the uncertainties of our climate, as well, for instance, as *L. regale* has already proved its ability to do. The fact, however, that the bulb is dormant for an unusually long period—from early October

til January is well nigh spent—during which it may be kept all but bone dry, is possibly an indication that the excessive wet of our average winters may prove the undoing of the plant, just as it has proved the undoing of *L. Sargentiae*, *L. sulphureum*, *L. Wallichianum* and many other noble Lilies which cannot sleep in a damp bed with impunity, though tolerant of an abnormal amount of moisture when the roots of the bulbs are active. Should that prove to be the case, the Kansu Lily is likely to remain in the comparative obscurity of the connoisseur's garden, where the particular needs of the plant can be met by placing the bulbs in very sharply drained positions, on the slope of a bank, or among tree roots, always in full exposure to the sun.

The specimen from which the photograph was taken in the summer of 1915 is probably unique, since, as far as the writer is aware, no other is in cultivation; it came into his hands originally from Prof. Scheudel, through the good offices of Mr. E. H. Wilson. *J. Greig.*

in gardens. The rediscovery of the plant in Forfarshire in 1917 establishes its claim as British. Like those of the rest of the species the flowers are insignificant, but the beauty of the leaves is irresistible, especially the under surface which is densely covered with long, silky white hairs, but so closely adpressed that the whole under face glisters with a satiny sheen. The hairs project beyond the margin, appearing like a silvery lining above. The main distinction of *A. argentea* is that the leaflets are joined at the base for one-third of their length or more. The illustration in *English Botany*, t. 244, intended for *A. alpina*, was drawn from a garden specimen of *A. argentea*, and though subsequently altered, it does not now represent either plant.

The *Index Kewensis* refers *argentea* to *alpina*, but in the *Kew Hand List of Herbaceous Plants* *A. argentea*, Don, is referred to *conjuncta*, whilst *A. argentea*, Lam., is considered to be synonymous with *alpina* *J. F.*

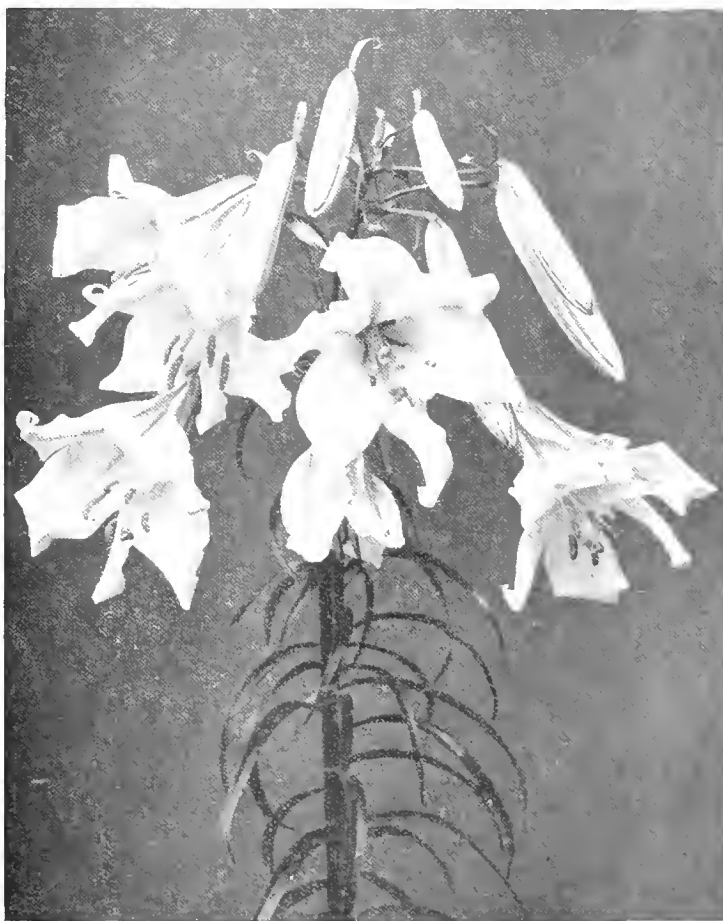


FIG. 45. AN UNNAMED SPECIES OF TRUMPET LILY FROM KANSU; HEIGHT, 4½ FEET.

THE ALPINE GARDEN.

ALCHEMILLA ARGENTEA

Its history the above plant has had a very chequered career. It was discovered by G. Don in the Clova district of Forfarshire prior to 1812, and he named it as above from Trevelyan's *Vegetation of the Feroe Islands*, published in 1837. Five years later it was described by Babington as *A. conjuncta*, who stated that the name *A. argentea* had already been used by Lamarck. Nevertheless the name *A. conjuncta* is used in *Flore Complet de France, Suisse et Belgique*, a work still undergoing publication. The plant is closely allied to *A. alpina*, but is larger and more easy to cultivate in gardens than its near relative. I had it in my care during the seventies of the last century, under the name of *A. conjuncta*, and so far as my observations go that is the most common name

ADONIS AMURENSIS IN WILTOWNSHIRE.

ADONIS AMURENSIS flowers extraordinarily early in Sir Herbert Maxwell's garden at Moureth. I have no information as to its date of flowering this year, but from Sir Herbert's interesting garden note-book I culled the information that it flowered for six years on the following dates: January 8, 15, 8, 4, 25 and 30. Such an early flowering plant is invaluable, and while it does not bloom so early with me in the S.E. of Kirkcudbrightshire and away from the sea, it is one of my earliest flowers of a non-bulbous character. I grow it in partial shade, however, so that retards it a little.

Adonis amurensis is a native of Manchuria and Japan; there are numerous well-marked varieties of the plant in cultivation in the latter country. A double-flowered form is illustrated in *Gard. Chron.*, March 25, 1905, the petals being greatly increased in number at the expense of the stamens. *S. Knott.*

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Lobelia.—Store plants of perennial species of Lobelia, now under glass, may be divided and placed in small pots, using a free compost. They do equally as well if planted in frames and given protection from frost. In warm localities they simply require a little protection to withstand the cold of winter, and where this is provided, the stools should not be divided until April, when they may be planted permanently. Guard against excessive watering during the early stages of growth.

Hybrid Clematis.—March is the best month in which to plant hybrid Clematis. A deep, open loamy soil, rich in humus and not deficient in lime, meets their requirements. Soil of close texture should be made porous by the addition of coarse lime rubble, lumpy charcoal and river sand. A mulching of well-rotted manure should be afforded the roots each autumn, but care should be taken not to injure the bine by a too close application of the manure. Varieties of Clematis *Viticella* and *C. Jackmanii* grow strongly at Warter Priory, and the practice followed is to prune them early in March and not lower than four feet from the base. All varieties which flower on the new wood should, generally, be cut down to within six inches of the ground during November.

General Remarks.—Plant Gladiolus, Ranunculus and newly imported bulbs of Lilium and Hyacinthus candidus. Specimen plants, required for the future embellishment of the portico or terrace, such as Fuchsia, Hydrangea, Myrtle, Aloysia, Magnolia, Agapanthus, and Plumbago capensis, should be examined. Re-tub or top-dress the plants, using rich compost, and arrange them in a light, cool, airy house. I prefer to grow new standards of Heliotrope each year from autumn-struck cuttings, as such plants flower profusely. A temperature of 60° is suitable for the present, but when they have reached the desired height and have made good specimens, cooler conditions are advisable. Encourage standards of Bougainvillea glabra to grow by affording them genial warmth, and transfer Humec elegans to 6-inch pots, using a gritty compost. Place soft-wooded stove plants, such as Fesine and Alternanthera, in a warm plant house to develop shoots that may be used as cuttings. It is not advantageous to keep stock plants of Ageratum, as this subject is readily raised from seed. Dobbie's Perfection is a variety worthy of note. Impatiens Holstii is a useful dwarf flowering plant for sub-tropical bedding, and seeds may now be sown.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNIE, Welford Castle, near Cardiff.

Carrots and Turnips.—A sowing of early varieties of Carrots and Turnips should be made on a warm border, and if light soil is added to raise the border above the surrounding level, this will be an advantage. Sow the seeds in drills 12 inches apart.

Rhubarb.—Where it is intended to plant Rhubarb the work should be done forthwith. Select ground that has been trenched and well manured in advance of planting, and do not plant where Rhubarb has been grown during recent years. Divide the roots and select pieces with one or two crowns, discarding any that show a tendency to flower. Three pieces should be planted in each station, so that they may form large clumps quickly. Plant firmly but not deeply; the crowns should be just visible when planting is finished. Place a light covering of straw material over the crowns to protect them from cold winds. None of the stalks should be pulled from plants in their first year

of planting. The distance apart at which to plant will be governed by the size of the varieties: a space of 3 feet 6 inches is suitable for the dwarfier sorts, and 4 feet 6 inches for the more robust varieties.

Onions.—Onion seeds should be sown on rich ground that has been deeply worked, and, as a long season of growth is necessary, they should be sown as early in March as possible to ensure the ripening of the bulbs early in the autumn. Giant Zittau and Long-keeping are varieties that keep well, and the latter, by reason of its high-built shape, produces very heavy crops. A good dressing of dry ash from the garden bonfire will improve the working of the ground and add to its fertility. This should be well worked into the surface by means of a hoe. Rake the bed free of all rubbish and endeavour to provide two inches of fine tilth. Tread the bed to make the soil firm, and afterwards rake it level. Sow the seeds in shallow drills, made fifteen inches apart, lightly cover the seed and make the soil firm by treading along the drills. Finish the work by lightly raking the bed in the direction the drills were drawn. A useful drill for sowing Onions or any small seeds may be made by making a hole from the inside of an ordinary tin of about 2½ inches in diameter; the hole should be suitable to the size of the seeds to be sown. By shaking the tin just above the drill the seeds in it are distributed evenly and the work accomplished quickly.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Mid season Vineries.—Houses which contain mixed varieties of Grapes should be closed if ripe Grapes are required in July and August. The latest houses of Lady Downe's and Gros Colmar, which require a rather long season of growth, should be closed.

Pines.—It will be necessary to help all Queen Pines which have their fruits in a forward condition of growth by daily attention to the most trifling details. Directly the flowering stage is passed the roots will require frequent supplies of tepid liquid manure, guano and soot water. The weather of March and April being very changeable, fixed day and night temperature cannot be maintained, but the maximum should range from 70° to 85° by day, when sun heat permits of giving a little ventilation. Supply the necessary moisture by damping the paths and lightly syringing the beds in between the pots. Successional plants are also active, and, as the days increase in length, they will require more water at the roots, whilst the amount of atmospheric moisture should be increased in proportion to the quantity of solar heat. Later plants that were transferred recently to larger pots should be grown in close, moist conditions until the roots are established in the soil; growth of roots being of more importance than that of leaves for the present. A little air may be admitted with a rising temperature at 70° gradually increasing the amount of air up to 80°, and closing the house early for a further rise in the afternoon.

Pot Vines.—Pot Vines started into growth before January will need plenty of weak, manure water, and other stimulants at the roots, the strength being increased as growth extends. Keep the laterals pinched, but encourage leaf development, as this will improve the size of the berries. As soon as the latter show signs of colouring, a few laterals should be encouraged to grow, as this improves the colour of the fruit. Pay careful attention to the supply of atmospheric moisture; if red spider appear at this stage, the leaves should be sponged, as the slightest injury to the foliage will check the swelling of the fruit. Remove all superfluous bunches, and thin all free setting varieties as soon as possible. Sudden changes in the temperature at this season make it necessary to bestow extra care and attention to ventilation. A little air should be admitted early in the day, and at night, if conditions are favourable, in order to encourage strong, healthy growth, and to allow an excess of atmospheric moisture to escape.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISGANT, Esq., Castleford, Cheshire.

Coeloglyne cristata.—This is the most popular species of Coeloglyne, with its varieties hololeuca, Trentham, Lemoniana, and maxima. This Orchid may be successfully cultivated in a house used for a miscellaneous collection of plants. The ordinary plant stove is suitable during the plant's season of active growth, and a cooler structure will suffice throughout the season of rest.

Vanda.—The various species belonging to this genus, and particularly those of the *V. tricolor* section, are showing signs of renewed activity, and specimens that have become tall and leggy through the loss of their lower leaves may be repotted. Remove the old soil and drainage, and cut through the stem immediately below a few new roots. These Orchids may be grown in ordinary flower pots with one or two large pieces of crock placed over the drainage holes. Arrange the plant with the basal leaves near to the rim of the receptacle and, if needed, use a small stake to hold it in position. Fill the pot two-thirds its depth with potsherds and pieces of charcoal, and bend the roots round into it, provided this can be done without injuring them. The remaining space should be filled with peat, finely broken crocks, and Sphagnum-moss. A few living heads of the moss should be incorporated with the last layer of soil, not only to give the plant a smart appearance, but to keep the roots cool and moist. Plants that do not need repotting should be top-dressed with fresh, clean Sphagnum-moss and peat, with a few nodules of charcoal interspersed. Such plants will often form roots above the pot, and, with a little attention, they can be guided to the compost and will eventually grow into it. When the repotting or top-dressing is finished, give sufficient water to wet the whole of the soil, and direct watering will not be needed again for several days. Newly-potted plants require but little moisture at their roots for some weeks, but the surface moss should be sprinkled with water whenever it becomes dry. Protect the plants from strong sunlight, and grow them in a warm, humid atmosphere. Remove the flower-spikes from all weak specimens directly they are seen. *V. Kimballiana*, and *V. Amesiana* will succeed in the Cattleya house, while *V. teres*, *V. Hookeriana* and *V. Miss Joaquim* should be grown in a sunny position where it is possible to spray them with tepid rain water two or three times daily throughout their season of active growth. A number of these plants is often arranged in a long box placed at the end of the plant stove or a similar position where they may receive the full benefit of the sun's rays. When growth is completed, discontinue spraying, and keep the plants fairly dry at the base.

THE HARDY FRUIT GARDEN.

By T. PAYEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nod, Codicote, Welwyn, Hertfordshire.

Gooseberries.—If the bushes have not already been pruned, the work should be proceeded with. Thin the heads, shorten the leading growths, and prune the inner growths to three or four eyes to form spurs. After pruning the plants, rake some of the old soil from beneath them and substitute fresh soil and mortar rubble. The roots may afterwards be given a light dressing of short manure, which will serve to keep the soil moist in dry weather. Where birds prove destructive to the buds, spray the trees with Quassia extract, or interwine black cotton amongst the branches. Certain varieties of Gooseberries have a pendulous habit of growth. These should be given supports in the form of stakes placed in the centres of the bushes, tying three or four of the leading growths to them. The planting of fruit trees should be finished by an early date, for planting so late as March may entail extra labour in watering and mulching the trees, especially if the season proves to be a dry one.

Strawberries.—Where space is available a bed of Strawberries should be planted annually on a south border to furnish early berries. The situation should be warm and sheltered from cold winds in the early spring.

The runners should be planted ten inches apart in the rows, which should be about fifteen inches asunder. These special plants will furnish ripe fruits a fortnight earlier than those in the permanent beds, and follow closely those that have only been slightly forced in frames or houses. Before a mulching is spread between the rows of Strawberries clear the ground of every weed. I do not recommend deep digging in the neighbourhood of the plants, but where Strawberries are planted two and a half feet to three feet apart between the rows little harm will be done to the roots by pricking up the soil lightly in the centre of the rows. It is essential to surface-dress the soil close up to the plants with freshly slaked lime to keep sings and other ground insects in check. The mulch should consist of good stable manure, and if it is placed in position now the manurial properties will be washed down amongst the roots, thus greatly assisting the plants when they are making their new growth. The mulch also serves to keep the ground moist in dry weather, and by the time the berries are ripe the straw will be washed clean for them to rest upon.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Camellia.—Plants in pots requiring repotting should be attended to just as they are starting into growth, although some growers contend that this work is best done when Camellias have set their flower buds. Many fine single varieties have been raised in recent years, and these have revived, to a large extent, the interest of growers in the Camellia.

Freesias.—These sweet-scented greenhouse flowers generally prove unsatisfactory in the immediate neighbourhood of London, due to the fact that their season of active growth is winter. When, for weeks at a time, the plant receives little or no sunshine, the new growth becomes so weak that it develops few flowers. If seed is sown now the seedlings should, with suitable treatment, flower by next November. The best results are obtained by sowing the seed directly in the flowering pots—those of five inches diameter being the most suitable. In their younger stages Freesias are best grown in a house having a temperature of 50° to 55° and a close, moist atmosphere. As the season advances admit more air and grow the plants in an ordinary greenhouse or house having a similar temperature. Water the plants with great care until the pots are well filled with roots.

Stock Plants.—During the next two months the propagation of many winter-flowering plants, including *Eranthemum*, *Jacobini chrysostephana*, *J. cocinea*, *Plumbago rosea*, *Salvia splendens*, and its varieties; *Aphelandras*, *Eupatoriums*, various winter-flowering *Begonias*, and many other useful subjects may be undertaken. The ultimate success of many of these subjects depends very largely on the care which the stock plants receive after they have finished flowering. Too often they are pushed under stages or placed in out-of-the-way corners, where they receive but little light and scarcely any attention. It is true that space for these plants is generally hard to find, but it pays to devote a certain amount of space to them in a house or houses, which, so far as possible, should be reserved for this purpose. Another important point is to keep ample stock to have sufficient cuttings at one time for raising a batch of plants. At this season all stock plants should be placed in a light position and be encouraged to make strong, healthy shoots. In the case of subjects that are shy in making good growth, it pays to turn them out of their pots, reduce the balls slightly and repot them in fresh compost.

Gloriosa superba and **G. Rothschildiana.**—These showy-flowered plants should be turned out of their receptacles and repotted into large pots in which they will flower. The work should be done with extra care as the tuberous root-stocks are very brittle. Use a rich compost and give the plants but very little water until growth is active.

ORCHID NOTES AND GLEANINGS.

SOPHRO LAELIO-CATLEYA MARGRAND.

A BRILLIANTLY coloured flower of this line cross between *S.-L.-C. Marathon* (*C. Empress Frederick* × *S.-L. Psyche*) and *Sophronitis grandiflora*, showing the advantage of introducing a species, the colour of which is desired, a second time, is sent by the raisers, Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells. While maintaining the size and form of *S.-L.-C. Marathon*, the dark scarlet of *S. grandiflora* is perpetuated. The front of the lip has a crimson band and the disc is yellow.

CATLEYA RHODA.

THE very handsome *Cattleya* which is the subject of the coloured plate accompanying the present issue of the *Gard. Chron.* is a hybrid

obtained by crossing *C. Hardyana* with *C. Iris*. The raisers were Messrs. Charlesworth and Co., who, in September, 1908, obtained the R.H.S. Award of Merit for this handsome Orchid. Several varietal forms have appeared, notably *C. Rhoda conspicua* (A.M., R.H.S., Messrs. S. Low and Co., Sept. 28, 1909); *C. R. Fairlawn* var. (F.C.C., R.H.S., Mr. H. S. Goodson, Aug. 30, 1910); *C. R. Fowler's* var. (F.C.C., R.H.S., Mr. Gurney Fowler, Oct. 6, 1914); *C. R. illuminata* (F.C.C., R.H.S., Messrs. Charlesworth and Co., Aug. 15, 1911); and *C. R. The Jewel* (F.C.C., R.H.S., Messrs. Charlesworth and Co., Nov. 5, 1912). In shape *C. Rhoda* has much the same character as *C. Hardyana*, with some evidence of the influence of *C. Iris*. The sepals and petals may vary from cream-yellow to deep apricot, according to the variety, while the finely frilled and broad lip is usually ruby red with lighter margin.

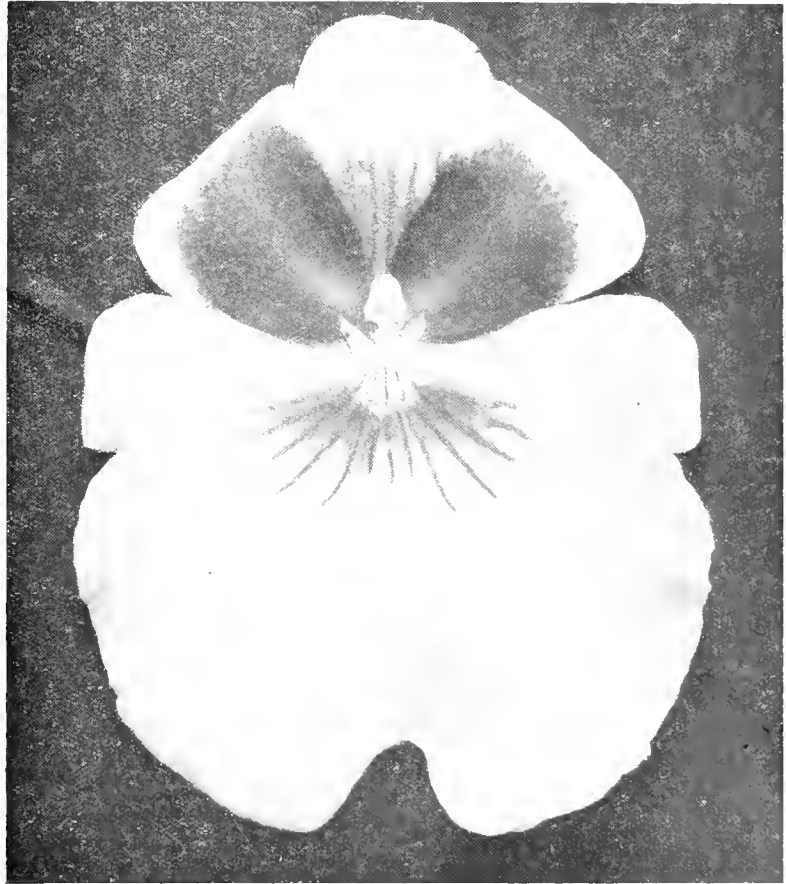


FIG. 46—MILTONTIA BLEBANA VAR. PRINCESS ELIZABETH. R.H.S. FIRST CLASS CERTIFICATE FEBRUARY 10, 1920 (See p. 109.)

NEW HYBRIDS.
(Continued from January 10, p. 15.)

Name.	Parentage.	Exhibitor.
Brasso-Cattleya Enehantriss	B.-C. Digbyana-Mendeli × C. Fabia	S. Gatrix, Esq.
Brasso-Laelia Billingtonii	B.-L. Digbyana × B.-L. Mrs. M. Gatrix	Charlesworth.
Brasso-Laelio Cattleya Tom	B.-L. C. Cookson × B.-L. Mrs. M. Gatrix	Charlesworth.
Cattleya Quebec	Mrs. Percy England × elucensalis alba	Sir J. Colman.
Cymbidium Atlas	Cravenianum × Dore	G. Hamilton Smith, Esq.
Cymbidium Cornerake	Holtordianum × Parisian-Sanderac	Sir Geo. L. Holford
Cymbidium Ostresh	Gottmann × Wigmanianum	Sir Geo. L. Holford
Cymbidium Warbler	Gottmann × Holtordianum	Sir Geo. L. Holford
Cypripedium Alaba	Lueder × Betsy	Sanders.
Cypripedium americanis	aurum × Hitchcousae	Sir Geo. L. Holford
Cypripedium Canis	Ara × Cyclops	Sir Geo. L. Holford
Cypripedium Cebra	Erwin × Thompsonii	H. T. Pitt, Esq.
Cypripedium Claribel	Hera × The Baron	Sanders.
Cypripedium Cyril Lee	Fidel × Idna	Mrs. W. R. Lee.
Cypripedium Marchon	Maudie × Chamberlainianum	W. Bolton, Esq.
Cypripedium Menotti	Carthmann × Pyramus	Sander and Armstrong
Cypripedium Mrs. Alfred C. Harbut	Hera-Euryades × gigas	F. J. Hoadley, Esq.
Cypripedium Malatia	Shogun × Demeter	Sir Geo. L. Holford
Cypripedium Nosta	Lueder × Earl of Eankerville	Sir Geo. L. Holford
Cypripedium Our Prince	Tanny Curle × Golath	S. Gatrix, Esq.
Cypripedium Orva	King George × Gnomie Otway	P. Smith, Esq.

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ALPINE MEADOWS OF BURMA-YUNNAN.

ON the wetter mountain ranges of the far northern Burma-Yunnan frontier (as also no doubt on other ranges where the precipitation is great in summer), a plant association is developed to which the name alpine or mountain meadow may justly be given.

It is not alpine in the sense that it habitually occurs above the tree limit, though it often prevails as high as the normal limit of trees; but the name is convenient, the meaning clear. It differs from lowland meadows, such as we are accustomed to in England, in sundry minor points, but chiefly in the absence, or complete subordination when present, of grasses.

This alpine meadow is characterised by a great growth of tall herbaceous plants, attaining their maximum rather late in the summer—early in August, generally speaking—and lasting into September. Most of these plants spring from perennial rootstocks (Compositae, Umbelliferae) or from bulbs (Liliaceae), for in winter the meadow is always under deep snow, and not a trace of the glorious summer display remains.

It is developed at various altitudes—in the Htawgaw Hills (Salween-Irrawaddy watershed, lat. 26° N.), mostly between 9,000 and 10,000 feet, on the Mekong-Salween watershed (lat. 28° N.), between 12,000 and 14,000 feet, and always seems to occur amongst Bamboo growth, there being apparently a constant struggle in progress between the Bamboo and the meadow plants for supremacy. Often it occupies marshy ground, where, indeed, it reaches its highest development; but it is also found on exposed south-facing slopes. In either case it is always more or less hemmed in by forest, fringed with Bamboo, and cut up by clumps of Bamboo and scattered shrubs.

Other characteristic features of the meadow, beside the great height attained by the plants during a brief vegetative season, are the variety of flowers met with, the regular sequence of glaringly dominant plants throughout the season (so that the meadow appears at first sight to be composed of one species only), methods of flower protection against incessant rain, and methods of seed dispersal.

There is usually no sign of flowers till the beginning of June, when some of the most beautiful species which go to the making of these meadows appear before the heavy rains of July set in. Thus in the Htawgaw Hills and northwards along the China frontier as far as the Wulaw Pass, a lovely *Nomocharis* (*N. pardanthina*), the graceful white *Lilium Wallichianum* and the vinous purple *Meconopsis Wallichii* are all early flowerers. Again, at the Doker-la on the Yunnan-Tibet frontier still further north, one of the first meadow plants to flower is *Meconopsis pseudo-integrifolia*.

Other plants which flower early in the meadows of the N.E. Frontier are: At the Wulaw Pass the most remarkable alpine meadow I have ever seen, lining a maze of streams tumbling amongst

islets of higher ground covered with Fir forest, whence a complex system of elevated mountain ridges radiate in all directions—the splendid violet *Primula Delavayi* of the curious *Omphalogramma* section; and in the marshy meadows south of Hpimaw, *Primula helodoxa* and *P. Beesiana*, both S.W. Yunnan plants.

On a wet June day, when dense masses of cloud come rolling up the mountain side to fall in heavy showers, there is no more beautiful sight than a meadow of pink *Nomocharis* looming through the mists. The N.E. Frontier species, which I take to be *N. pardanthina*, has rose-pink flowers irregularly blotched and speckled inside at the base with deep purple brown, chocolate, and crimson. The large flowers, borne two, three or four on a stem, are nodding, and the whole plant, which is a foot or eighteen inches high, is of extreme grace and delicacy. Sometimes white-flowered specimens, looking as though cut out of satin, are met with. Alas! the delicacy of these lovely blooms is their undoing—the heavy rains quickly batter them to pieces, only those under the lee of some friendly clump of Bamboo surviving more than a few days of this onslaught.

The genus *Nomocharis* is as typical of the meadows on the Mekong-Salween divide (e.g., the Doker-la) as of the Salween-Irrawaddy divide. On the Doker-la are found *N. tricolor* and other species; in fact, it was here in 1911 that I first saw and marched through meadows junk with *Nomocharis*.

June is the month of lilies, including *Nomocharis*, *Lilium nepalense*, *L. Wallichianum* and *L. giganteum* on the N.E. Frontier, where also is found, but rather later, a magnificent crimson-flowered Lily. This last never dominates the meadow as *L. Wallichianum* may do, never occurs massed like *Nomocharis*, but always singly or in twos and threes, though widely scattered.

In July the Umbelliferae take the lead; at least half a dozen species are prominent, some more than others, and they have the distinction of being almost the only plants in the meadow whose flowers are freely exposed to the rain. However, they are great favourites amongst the flies, beetles and other small insects which haunt the meadows. Another plant which in most meadows becomes dominant towards the end of July, is a large purple-flowered *Geranium*; in places it grows in immense numbers, colouring the entire hillside so that from a little distance nothing else is seen. It is followed in August—I still refer to the N.E. Frontier—by a splendid violet-flowered *Allium* in ever greater numbers, so that the meadow again takes on quite a different appearance.

Not till August has begun do the Compositae begin to assert themselves, save in some cases for the early appearance of their massive foliage. After mid-August they hold the field, both in numbers and variety, mostly yellow-flowered species of *Senecio*, *Solidago* and such familiar genera. In some places, especially where it is marshy, tall *Thalictrums* are conspicuous in August, amongst which mention may be made of the huge purple-flowered *T. semiscandens*; and where the meadow is shaded by scattered trees, masses of *Polygonum*, or elsewhere, of *Strobilanthes*, growing socially, may almost exclude other plants. In one meadow I found the whole hillside purple with a small Orchid not unlike our meadow *Orchis maculata*; and there is a tall cream-coloured *Epipactis* which occurs in sufficient numbers to be conspicuous. Then there are *Louseworts* (*Pedicularis*) in great variety, several species of *Corydalis*, one notably with brilliant sky-blue flowers, the *Balsams*,

often growing socially, and two species of *Aconitum*, which are amongst the very last plants to flower, not opening before the end of August. One species, with deep Tyrian purple flowers, grows erect; the other is a twiner, which, hanging festoons of violet-blue flowers from the Bamboos, is one of the prettiest sights in the meadow. Though I have mentioned only a few of the plants met with (I have said nothing, for instance, of the *Arisaemas*, *Rodgersias*, or species of *Mimulus* and *Ranunculus*), the above will give some idea of the variety and succession of the plants of the meadows.

As a protection against rain, nearly all the meadow flowers are nodding or pendent; for instance, most Liliaceae, *Geranium* and *Thalictrum*. Those of *Meconopsis* stand vertically on edge; those of Orchids, *Corydalis* and *Aconitum* are more or less upside down; *Mimulus*, some of the Compositae and *Impatiens* have nodding flowers. The Umbelliferae alone, with a few Compositae, appear indifferent to the rain; but it may be noted that these plants flower in the latter part of July and early August, when the first fierce rush of the rains is over and a break may come at any time. In any case, the honey is protected by the structure of the flower, and I noticed flies, beetles and other small insects at work amongst the Umbelliferae while it was raining.

Bees, too, seem quite independent of the weather; butterflies, on the other hand, are rarely seen in the alpine meadow and, indeed, there are no flowers adapted to butterflies.

A similar uniformity is observed with regard to seed dispersal by the meadow flowers. The fruit is either a capsule, from which the seeds are shaken out by the wind (*Meconopsis*, *Pedicularis*, *Aconitum* and Liliaceae—with winged seeds); or an explosive capsule as in *Geranium* and *Impatiens*; or the seeds are wind borne as in Compositae and in *Clematis* which scrambles over the ground in these meadows. The Umbelliferae, *Allium* and *Polygonum* furnish a few exceptions.

The Doker-la meadows already referred to occupy broad basins in the upper mountain valleys, which glacier torrents, checked in their tumultuous career, have filled up with sand. They are surrounded on all sides by tremendous precipices, and the openings both above and below are constricted as the valley again narrows. Thus their appearance differs totally from those of the N.E. Frontier, which occupy steep slopes and the flattened crests of ridges, especially where there are depressions, which in summer become marshes. But though there are many plants found at the Doker-la which are not found on the N.E. Frontier at all (e.g., species of *Adenophora*, *Salvia*, *Aquilegia*, *Fritillaria*, etc., none of which genera even yet recorded from the Htawgaw Hills), and others found in the meadows of the N.E. Frontier unknown to the Mekong-Salween divide (e.g., the crimson Lily referred to); and though also the species of *Corydalis*, *Nomocharis*, *Pedicularis*, the Compositae, Umbelliferae, etc., are different in the two areas, yet essentially these meadows are the same throughout the entire region. The general resemblance is unmistakable—it is a single plant association, owing its origin to the same causes.

The general climatic conditions are the same, too, on the Mekong-Salween and Salween-Irrawaddy divides, though the latter has perhaps the heavier rainfall. And as alpine meadow is absent from the drier regions of the Mekong-Yangtze divide, it seems likely that adequate rainfall plays an important part in its development. *P. Kingdon Ward.*



DEMOLITION OF THE GREAT CONSERVATORY, CHATSWORTH.

GARDENERS everywhere will learn with regret that the fine old conservatory at Chatsworth (see Fig. 47), the seat of the Duke of Devonshire, is to be razed to the ground. The reasons given for the destruction of this magnificent plant-house are the great cost of fuel and the difficulty of finding labour for its management. Many would wish that the fine old building could have been spared, if even in disuse, until the present troubled economic problems are more settled and happier times prevail. But the edict for its dismantling has gone forth and the huge structure will disappear during the next

In an ordinary winter about 300 tons of coal and coke were required to heat the great building, but in an exceptionally severe winter about half as much again was necessary. Many of the smaller trees have been removed to the orangery and Camellia house. The larger trees and palms were, however, left to their fate. About twenty years ago the great conservatory was thoroughly overhauled, painted, and glazed. In *Gard. Chron.*, June 26, 1875, the conservatory and its plants were described and illustrated in a Chatsworth supplement, wherein the writer stated that this house and its inmates presented more grace and elegance than the palm-stove at Kew. At that time this magnificent house contained some of the finest specimens of warm exotics in cultivation in Europe.

flowers. A white variety and one with amethyst coloured blooms are not in my possession. Maw does not specify any of the varieties, but gives a good coloured plate of the typical form in his great monograph. The species comes from Dalmatia and Serbia, and probably also from Bosnia. Although *C. tommasinianus* is smaller than *C. vernus* as represented by the Dutch varieties, it is delightfully attractive. By the way Maw says it is later than *C. vernus*, but it is not so with me. *S. Arnott*.

SAXIFRAGA BURSERIANA SULPHUREA.

AMONG the newest of Saxifrages, this sulphur-coloured form is a plant of the greatest charm and distinction. It would appear to be but a

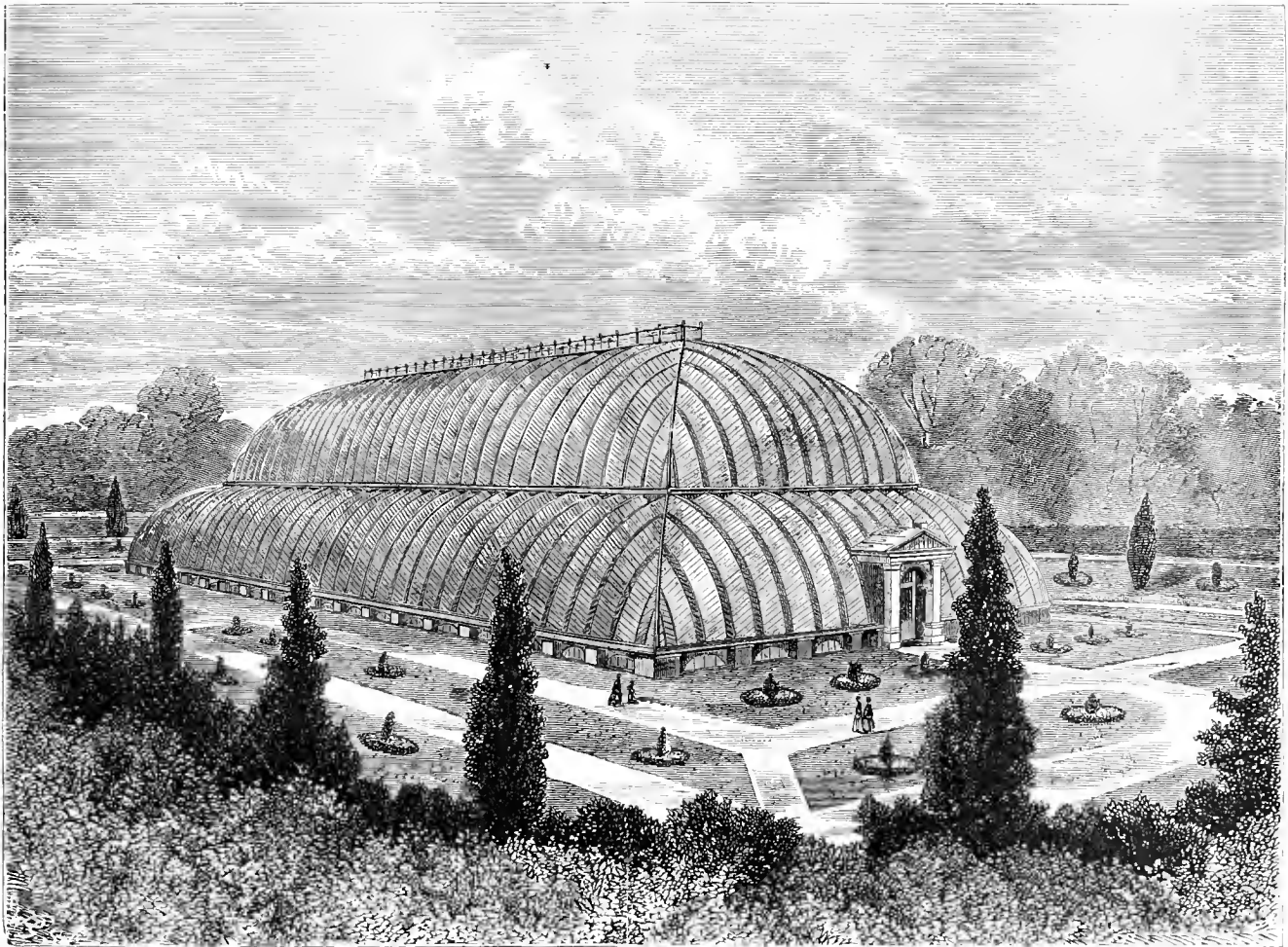


FIG. 47. THE GREAT CONSERVATORY AT CHATSWORTH, NOW BEING DEMOLISHED.

SPRING FLOWERS.

CROCUS TOMMASINIANUS.

THIS season the earliest flowers of *Crocus tommasinianus* were but little behind those of *C. Sieberi*, the latter having been retarded by the absence of sun, although the weather has been exceptionally open.

Spring flowers are few and I am surprised that *C. tommasinianus* is not more frequently cultivated, as it is not only low in price and easy to grow, but is also delightfully bright and attractive. What is more, it seeds better than some other Crocuses in the open and seedlings appear in a delightfully informal fashion even at some distance from the parent clumps.

This *Crocus* varies to some extent, and, besides what is known as the typical form with pretty sapphire-lavender segments, there is a pale coloured one known as *C. t. pallidus* and another known as *C. t. atropurpureus* with lilac

seedling variation of Burser's Saxifrage and its name also suggests this. It is said, however, to be the result of a cross between *S. b. tridentina* and *S. Faldonside* which, seeing that there is so much *S. burseriana* influence in the latter, does not remove the hybrid very appreciably from it. In colour, the newcomer is intermediate between the parents; it has a pure, refined sulphur-yellow tone on opening, which in the final stages resolves itself into rich, deep cream. There is nothing like it. In point of size it surpasses either parent, even exceeding *S. b. tridentina* which, in habit of growth, earliness, and flowers on 3-inch high peduncles, it most closely resembles. In form, shapely appearance and the rubricated character of the flowers the influence of *S. Faldonside* is evident. The flowers are, however, less solid looking than those of *S. Faldonside*. *Saxifraga burseriana sulphurea* gained an Award of Merit two years ago when exhibited by Messrs R Tucker and Sons, who have twice already this year shown it well at Vincent Square. *E. H. Jenkins*.

four months, which is the time it is computed the work will involve.

The whole of the materials, wood, glass, etc., with which the great conservatory was constructed, has been purchased by Mr. Thomas White, of Two Dales, Matlock, and a gang of men have already begun the work of demolishing the house.

The conservatory, from the design of which the Crystal Palace was built, was erected about 1850, and covers exactly one acre of ground. The length is 276 ft., breadth 123 ft., height of central roof 67 ft., and the transverse span 70 ft. The house contains 75,000 square feet of glass, which, in order better to resist the violence of storms, was disposed in angular projecting rows. It was heated by means of seven miles of 6 in. piping, weighing upwards of 200 tons. Round the huge dome of glass and woodwork ran a gallery, supported by light iron brackets, and was reached by a flight of steps formed in the ornamental rockwork. From the gallery a magnificent view of the surrounding country was obtained.

THE FUTURE OF THE POTATO CROP.*

As a member of the Potato Advisory Committee to the Ministry of Agriculture I am privileged to place before you, in addition to my own views, which may not necessarily be of any value, the official views of the Ministry upon the problem with which the country is faced, and I desire at the outset to acknowledge my indebtedness to its officials for their permission to present an indication of the procedure which will probably be followed in the near future.

The Potato is in such universal use that it is difficult to realise that less than 400 years ago it was completely unknown in these Islands. The plant is a specific type of tuber-bearing Solanum, to which Linnaeus gave the name of Solanum tuberosum, and its natural habitat is generally supposed to be Chili or Peru. Consequently it is a semi-tropical plant, which accounts for its susceptibility to frost and the care which it is necessary to take to prevent the destruction of the tubers from extreme cold.

From time to time hybridists claim to have raised seedlings which are frost-proof: I had one sent me not long ago from New Zealand which was stated to possess this characteristic, but it collapsed when put to the test, and I am afraid it is too much to hope for success in this direction.

The probable date of the introduction of the Potato into England is stated by Sir Joseph Banks to have been July, 1586, and at first strong objection was taken to it on the plea that it caused sickness. If so, it was no doubt due to the tubers becoming greened and so rendered unfit for human consumption. Its popularity soon grew, however, until it became what it is to-day, a recognised necessity in every household.

The plant in a wild state is still found in South America in many different forms, some of them being exceedingly ornamental, and a large number of these types have been under observation at Reading during the past thirty-four years. As would be anticipated, the plants are very much smaller and less luxuriant than those of the commercial Potato, and in several cases, notably that of Solanum Maglia, the tubers are produced at the end of very long stolons, sometimes being found as far as 6 feet away from the parent plant. There is one characteristic about all of them which is of great importance, and it is this: the Potato in its wild form, unlike the Potato of commerce, breeds true when self-pollinated, and produces tubers in every way similar to the parent plant, while the pollen grains when examined under a high-power microscope are perfectly elliptical; whereas the pollen grains of the cultivated Potato are quite irregular and possess no particular shape. When or why this character of breeding true was lost is unknown, and all efforts so far made to explain the mystery have proved ineffectual, but the change is undoubtedly a great loss from every point of view. These wild forms are of extraordinary interest, but it is the cultivated Potato with which I am dealing to-day.

Some people believe in second sight, and some appear to see visions in which the future is revealed. Such visions would be useful if they could be produced when required, but as far as I am concerned, the prophecy in this instance can only be deduced from experiences in the past.

Potatoes are grown solely for consumption, and it may therefore be safely assumed that the acreage of Potatoes in the past has been largely influenced by the population. The census returns show the population for England and Wales to be for the years 1910-1914, as follows:—

1910	...	...	55,791,902
1911	...	...	56,070,492
1912	...	...	56,582,456
1913	...	...	56,606,226
1914	...	...	56,960,684

or a general steady increase per year of about 300,000 people. These, according to the

Ministry of Food statistics, would require 30,000 tons of Potatoes, so that if there is a true connection between production and population the acreage of Potatoes should show a certain increase year by year when the birth-rate again goes up and the population increases, as it does after every war, and as we hope it will soon do again. The exact figures of the acreage of Potatoes for England and Wales for the period since 1910 are as follows:—

1910	...	...	402,847
1911	...	...	429,172
1912	...	...	462,905
1913	...	...	442,055
1914	...	...	461,621

from which it will be seen that in the past there has not been the same steady rise in acreage.

In 1911 there was an increase of 28,000 acres, and in 1912 30,000 acres, but in 1913 the acreage declined by 20,000 acres, and the normal acreage was not again reached until 1914 and 1915. We may therefore take it that, as a general rule, the acreage of Potatoes normal to England and Wales is about 460,000 acres, and that this rises and falls as the farmers' experiences during the current year with the crop have been financially good or otherwise.

WAR ACREAGE.

Farmers are to be congratulated on increasing their acreage of Potatoes to the maximum ever grown in this country—viz., 653,852 acres in 1918, a rise of nearly 200,000 acres above the normal. The real advantage of this huge crop would have been apparent had the war continued. Happily it did not, and it is public knowledge now that the crop of Potatoes produced from this acreage was much more than sufficient for our needs, and that as the war conditions had ceased, thousands of tons were lying rotting in the pits. Farmers have realised their true position, and in 1919 quite rightly planted a reduced acreage—viz., 476,050 acres, which even now is 10,000 above the normal. As far as can be seen at present, this acreage is approximately the correct one for England and Wales under the changed conditions to keep markets supplied without causing any undue effects, though bearing in mind the variable yield of the crop, the acreage for the next few years should be on the generous side. A normal acreage with a short yield per acre might land the country in great difficulties if pre-war imports were not available, which in the present unsettled state of Europe is very probable.

EFFECT OF IMPORTS ON PRODUCTION.

Apart from very small consignments we may regard the import trade in early Potatoes to commence in May from Spain, Portugal and the Channel Islands, and imports continue to arrive in large quantities until the home-grown crops are ready for the market, when the foreign supplies fall off rapidly. It appears, therefore, that the importation of these early kinds meets a definite demand in the market which could not be met by home producers.

As regards the importation of main-crops, statistics show that Potatoes are imported into this country during periods when a short crop is experienced here, and also that Potatoes are exported from this country in times of plenty. The exports and imports are governed by the sound principle of supply and demand, and there is no reason to show that any alteration is likely to take place in the future.

INFLUENCE OF DISEASE ON THE POTATO CROP.

Many accurate writings are extant which clearly show the terrible havoc that was made amongst the Potato crop in 1840 by the dreaded Potato blight. It appears that for several years this disease was a very great menace, and led to important changes. The old Victoria, Regents and White Rock seem to have been widely grown just then, and as we know these varieties were extremely susceptible to the disease, they fell into disfavour amongst farmers, and were replaced by the Champion, a Potato introduced by Mr. John Nichol-Ochterloney, Forfarshire, in the year 1866.

(To be continued.)

CULTURAL MEMORANDA.

EARLY MELONS.

To obtain early Melons the grower should have the facilities of a lean-to or small span-roofed house where a night temperature of between 65° and 70° can be maintained. The plants may be raised from seeds sown singly in small pots filled with loamy soil, and germinated in a propagating case over bottom heat. With the soil just moist the seedlings will soon appear and the small plants should be grown on a shelf near the roof-glass. At that stage the house in which they will be fruited should be got ready for them. Red spider is one of the worst pests of the Melon, and, beyond the usual washing down of the woodwork and glass any old soil that may be lying near the hot-water pipes should be cleared away, as nothing is more likely to harbour the insects. The benefit Melon plants derive from sun-heat cannot be over-estimated, and in making up the bed this should be kept in mind. If very early fruits are required fermenting material should be used to provide bottom-heat, but for ordinary purposes in houses adequately heated it may only be necessary to use litter for raising the bed to within about two feet of the roof in order that the plants may receive the full benefit of the sun's rays. Whatever kind of material is used it should be trodden firm before the soil is placed on it. If good loam, somewhat on the heavy side, is available the plants will require nothing further as rooting material beyond a little old mortar or lime rubble to render it sweet and porous.

The bed should be about twenty inches wide and nine inches deep, and may consist of whole turves four or five inches thick, if the turves are of good quality; otherwise they are best chopped apart roughly or pulled to pieces. The turfy material should be made firm to favour the plant making short jointed growth. When strong enough the plants may be set in mounds of finer soil arranged at intervals of about 20 inches. The soil should be allowed time to become warmed through before planting. Water the roots with tepid water, and then place sticks in position to train the leading shoots. Very little water will be necessary after this until the roots are active. A genial atmosphere should be maintained by damping the paths and bare spaces as well as syringing the foliage once or twice daily according to the weather. The weather must also be the guide in the use of the ventilators, for cold draughts and undue fluctuations in the temperature must never be permitted. Close the house in the afternoon before the sun loses its power, damping the bare spaces at the same time. The thermometer will rise rapidly, and the hot moist atmosphere will be of the utmost benefit to growth, provided judicious use is made of the heating arrangement to prevent a too rapid lowering of the temperature on cold nights.

From the main shoot of the plant as a single cordon, and when the shoot is near the top wire pinch out the point. Laterals will then develop rapidly. As the female flowers are about to expand maintain a somewhat drier atmosphere and discontinue the morning syringing of the foliage. Should the weather be cold and dull use a little more heat in the pipes and ventilate accordingly. Endeavour to obtain an even crop of about three fruits on a plant. Stop the laterals at one leaf beyond the fruit and those without fruit at two or three leaves, according to their position. Those near the top of the plant may be allowed a little extension to maintain a regular flow of sap.

Pay particular attention to watering the roots and continue to syringe and damp the bare spaces; at the latter operation in the afternoon weak liquid manure may be used instead of clear water. The value of adding fresh soil to the roots as they appear on the surface ought not to be overlooked as it has a stimulating effect on growth, not equalled in any other way. As the fruits swell support them with nets and encourage them to develop by giving the roots liberal applications of a suitable fertiliser. Melon plants are particularly liable to canker. One of the chief predisposing causes of this disease is excessive moisture about the "collar." To a

* A Paper read by Mr. Martin H. F. Sutton, F.R.S., at a Meeting of the Farmers' Club on Monday, 2nd February, 1920.

large extent this may be prevented by keeping the mounds of soil always on the dry side, and exercising great care in the use of the syringe. It is, however, essential to keep a sharp watch for the complaint, and, on the first signs of it, to dress the affected parts with lime.

When the fruits begin to rot withhold stimulants gradually, but keep the roots still moist or the foliage will suffer, causing the flavour to be inferior. Ventilation may also be a little freer, and, when the weather is unfavourable use a little more fire-heat to permit of admitting a little air at night. When the fruits are almost fully netted care must be taken that the border is not kept too moist or they will be liable to split. When the stalk is cracked all round its base the fruit may be cut, and its flavour improved by keeping it in a cool room for two or three days.

In addition to the constantly increasing number of fine varieties there are two or three good standard sorts, including Hero of Lockinge, The Peer, and Blenheim Orange. *F. T.*

PROPAGATION BY LEAVES.

THE extract from *The Gardeners' Chronicle* of 75 years ago, on "Propagation by Leaves," was very interesting, as showing the patience that the old-time gardeners took in carrying out their experiments. In these days few, if any, are prepared to wait for years to learn the time necessary for a cutting to form roots. Yet at the present day propagation by means of leaves is found to be quite practicable in the case of many plants, notably a number of the Gesneriaceae, and several of the Begonias. In the case of that popular *Begonia Gloire de Lorraine*, some cultivators prefer to increase the plants from leaves, whilst others use cuttings of the young shoots. One thing to bear in mind is that where stock is limited a greater number of young plants may be raised from leaves than from cuttings. The various garden forms of *Begonia Rex* may also be increased in this way. In the case of these plants, several specimens may be obtained from a single leaf. The method generally employed is to take a well-matured leaf and lay it on a bed of Coconut refuse, or on a pan filled with sandy soil, holding it in position by two or three pegs. Then, with a sharp knife, the midrib is severed in three or four places and, to a lesser extent, the secondary ones. In a warm propagating case a young plant will be formed from each cut, so that a single leaf will yield several plantlets. Some cut up the leaves and insert them as cuttings, but this method is, as a rule, less satisfactory than the other.

In the case of *Begonia Gloire de Lorraine*, single leaves with their petioles are taken, these last being dibbled into the prepared soil up to the blade of the leaf.

Gloxinias are readily propagated in the way recommended for *Begonia Rex* and its varieties, but in the case of the *Gloxinia* it is best to make cuts only in the mid-rib. Many other Gesneriaceous plants are increased in this way, but *Gloxinias* are almost the only ones propagated by leaf cuttings, and even for these the practice is less followed than it was formerly.

Many of the numerous succulent plants can be, and are, propagated from leaves, in their case a very simple matter. The leaves may be pulled off from the stem and dibbled as cuttings into pots of sandy soil, standing them on a greenhouse stage or in some similar position. They do not need to be kept in a close case, or even shaded. The grower must guard against the plants receiving an excess of moisture, which would cause the leaves to decay.

Crassulas, *Cotyledons*, *Rochea falcata*, and others may be increased in this way. The showy flowered *Pinguicula caudata* is another subject that may be propagated by means of leaf cuttings. The leaves should be dibbled into clean, well-drained pots or pans filled with a mixture of peat, Sphagnum-moss chopped fine, and silver sand. After inserting the leaf cuttings they should be well watered and the pots or pans placed in a propagating case where gentle warmth is maintained. *H. T.*

HARDY FLOWER BORDER.

ANTHERICUM LILIASTRUM.

ST. BRUNO'S LILY (see Fig. 43) is a very old and much valued garden plant, for it gives a generous display of its beautiful white flowers early in the summer and is an effective border plant, especially when arranged in large masses. It was introduced from Southern Europe in 1629, and quite early the authorities were divided as to its correct designation, for although both Haller and Miller classed it with *Hemerocallis*, Linnæus placed it with *Anthericum*, and as *A. Liliastrum* the plant is known in most gardens. This Liliaceous plant has also been called *Ornithogalum liliiforme*, *Liliastrum album*, *Phalangium Liliastrum* and *Czakia Liliastrum*. But it would appear that we must accept another name to all these—*Paradisea Liliastrum*—as the correct one, for Bertoloni, whose description was first given in *Flore des Serres*, 1875, t. 2182, reduces all the others to synonyms.

The coloured plate of the inflorescence in the work referred to is exceptionally good.

soil in a cool and rather moist part of the garden; its failure in others to poor, warm, dry, sandy soil. In the former conditions the plant spreads and produces a wealth of drooping, white flowers on stems eight inches or so high. There are three varieties in commerce, but, although the one named *grandiflora* or *major* is perhaps the best, the common form is very beautiful. The double white form is prized by some, but the plant is stiff and ungraceful compared with the others. *S.*

ROMNEYA COULTERI.

This lovely plant is not seen in gardens so frequently as its free-flowering and sweet-scented characteristics would seem to merit. The dainty, white, Poppy-like flowers are produced in profusion from July to October, and always attract attention. Seed is produced in abundance, but owing to its minute size, the successful raising of the plant from seed requires expert knowledge, and even such seedlings as develop make slow progress.

A much simpler and quicker method of increase is by means of root-cuttings inserted in the early spring. These should be detached



FIG. 48.—ANTHERICUM LILIASTRUM: FLOWERS WHITE WITH A GREEN SPOT ON THE APEX OF EACH SEGMENT.

The plant grows wild in the Alpine meadows of Switzerland and encroaches towards the summits of the higher levels. In this country it flowers in May and June. The tufts of radical, linear leaves grow about 2 feet high and specimens planted in rich, sandy soil grow vigorously, producing the fragrant, white inflorescences in numbers. There is a form known as *major*, which will attain to the height of 6 feet and has flowers much longer and broader than those of the type.

ANEMONE SYLVESTRIS.

THE beautiful *Anemone sylvestris*, the Snow-drop Windflower, is frequently either too free in its growth or denies its owner the gratification of seeing it happy and healthy and giving an abundance of flowers. It is but rarely that it flourishes without encroaching on the space allotted to other flowers, and in many gardens it becomes rather troublesome in this respect, rambling about and sending up its deep green leaves and stems bearing lovely white flowers. In other places it is planted and yields a few flowers for a year or two, looking all the time as if it resented its conditions, and finally dwindling away. Its success appears to be due to a rich

from the main roots, cut into 1-inch lengths, and inserted closely together in a pan of sandy soil. If placed in a house having a temperature of 65°, the root-cuttings will, in four to five weeks after insertion, commence to throw up strong shoots, and when they have reached that stage they should be placed singly in small pots.

Grown in the same house, they will make good plants by the early summer, when they may be planted out. Good loamy soil suits the plants, and if set at the foot of a south wall, or in any sheltered, well-drained position, they will survive the winters in the south. *H. W.*

NIEREMBERGIA RIVULARIS.

THE Cup Flower, as *Nierembergia rivularis* is popularly known, is a charming carpeting plant when, in summer, it is almost covered with the large white flowers, occasionally tinged with rose. It may be called capricious, for, while some have no difficulty with it whatever, others, with apparently similar conditions, have to confess themselves baffled. The best plants I have seen were in pans set, in summer, in pails of water with the latter just about an inch or two above the bottom of the pan. *B.*

NATIONAL HORTICULTURAL SOCIETY OF FRANCE.

THE report of the National Horticultural Society of France gives some idea of the havoc caused in its ranks, directly and indirectly, through the European upheaval of 1914-1919. The list includes the names of many, perhaps the great majority, of the eminent provincial French horticulturists who, besides belonging to and working enthusiastically for their own local society, are also members of the central one at Paris, which practically corresponds in importance to our own Royal Horticultural Society.

M. D. Bois, in the current number of the society's journal, reviews the society's operations during the war period in a succinct, comprehensive and interesting manner. I am sorry to note that the reduction of the society's strength has been considerable. In January, 1914, the total membership was 5,114, on January 1 this year it had shrunk to 3,906. But that fact plainly stated conveys no idea of the immense loss the society has suffered through the death of members.

M. Bois takes each year's losses by death separately. Many of the names will be familiar to readers of *The Gardeners' Chronicle*; some were close personal friends of my own, others kindly disposed colleagues, who at some time or other have shown great kindness to me, 1914, Eugene Vallerand, of Begonia fame; 1915, J. B. Cme, who was a member of the jury at the 1912 International Chelsea Show; Pierre Thibaut, father of Emile Thibaut, the Paris Treasurer of the French Horticultural Society of London, who was taken prisoner early in the war and was thus doubly tried in his affliction; 1916, Viviani Morel, the eminent Lyons horticultural writer; Jules Graveriaux, the famous rosarian of L'Hay; Ferdinand Jamin; Henri Crepin, a very enthusiastic and famous Chrysanthemum fancier; 1917, Oscar Fanyan, of Lille, practically done to death by the Germans; George Schneider; Etienne Salmon, of Thomery, whose name is known wherever the Grape vine is grown; Rozann Boncharlat, of Lyons, chiefly known here for his early efforts in raising seedling Chrysanthemums (the Pelargonium was also a speciality of his); F. Buvemech, the grand old man of Belgian horticulture; Paul Hai; Philippe de Vilmorin; 1918, Maurice de Vilmorin; Pierre Guibot, the Lyons rosarian; Augustin Graveriaux, or, as we used to call him, Graveriaux sans x, to distinguish him from the Rose grower of that name; 1918, A. Cogniaux; Prince Anatole; Gargarinie of Petrograd; Lucien Charles Ballet, son of Charles Ballet, the famous pomologist of Troyes; Octave Bojn, the publisher. Such is a small part of the toll death has levied on this French society during the past five years. *C. Harman Payne.*

TREES AND SHRUBS.

THE BIRCH AS A STREET TREE

THE Birch has, I believe, never been recommended for planting as a street tree. Can it be recommended for the purpose? I have seen it doing very well under comparable conditions, and should like to learn the experience of others in this matter. There are those who insist upon planting trees if only they have a comparatively narrow street under control, and for these it is extremely desirable to be able to recommend a list of trees, of which, indeed, there are few, that are generally suitable and have a minimum of darkening effect. Nearly opposite the window facing me, as I write, is a Lime tree. It has been pruned into a fan-shaped form so that the maximum of light is cut off from the window which nearly faces north. Had a Cornish Elm been selected it might for years have continued with very little attention from the pruner, and it is possible that Birch might also last a great number of years as a street tree and, besides being very beautiful, a Birch would not obstruct so much light as the Lime. *R. Levin Lynch, F.M.H.S., Torquay.*

RHODODENDRON INTRICATUM.

SEVERAL plants of this interesting Rhododendron are in full flower at Kew near to King William's Temple. The flowers are the nearest approach to blue among Rhododendrons, and this effect is judiciously increased at Kew by planting this Rhododendron near to Erica carnea. The species is also the smallest member of the family that I have yet seen, the flowers being less than half an inch across, and the leaves smaller still. Plants varying from four to fifteen inches in height had an abundance of flowers open on February 27. The species is a native of W. China and forms a valuable plant for sheltered positions on rockwork. It evidently does best where it gets a fair amount of sunshine, as other plants of this Rhododendron growing at the shady end of the rockery are not succeeding so well. The flowers of *R. intricatum* are almost invariably developed in clusters of five. The plant illustrated in *Gard. Chron.*, April 27, 1907, shows how profusely the flowers are produced. *W. H. Divers, F.M.H.*

LONGEVITY OF CYCLAMEN EUROPAEUM.

A SPECIMEN of *Cyclamen europaeum* has been in the possession of a member of our family since 1261. It is always in good condition, and blossoms freely every year. I have never found



FIG. 49. CYCLAMEN EUROPAEUM: LARGE SPECIMEN AT LEAST 60 YEARS OLD; SMALLER SPECIMEN 15 YEARS OLD.

in literature any indication of the age to which *C. europaeum* may attain, and therefore would be very glad to learn if any of your readers have knowledge of a plant of this species lasting sixty years or more. I enclose a photograph of the plant referred to (see Fig. 49) with a 15 year old descendant by its side. *Charles Kollman, Glarus (Switzerland).*

REMEDY FOR BIG BUD IN CURRANT.

AN important result was secured at the Long Ashton Experiment Station last year. It was found that what Americans would call a "delayed dormant" spraying with lime-sulphur greatly decreased the spread of "big bud" on Black Currants. The bushes were sprayed with lime-sulphur at winter strength when the most forward leaves were about the size of a sixpence, a stage usually reached early in May. The leaves were slightly yellowed but the bushes soon recovered their normal appearance; and after the fall of the leaves in autumn it was seen that the sprayed bushes were considerably freer of big buds than the central bushes. The wash used at a strength of 1 in 12 was approximately twice as effective as 1 in 16.

It is realised by the investigation that the evidence of our experiment is not conclusive, particularly as the dry summer may have helped; but the results are so encouraging that it was thought well to make them known.

The effect of the work is no doubt to seal up the big buds and prevent the migration of the mites to fresh buds. *Market Grower.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Onion Fly.—I was interested in the article signed *Norfolk*, on p. 56, on "Onions on Light Soil," especially in his suggestion that soil may retain the pungent odour of Parsley grown there previously, thereby preventing the activity of the Onion fly. For nearly twenty years I have planted, at about thirty yards interval, year old Parsley plants on the new Onion bed, at sowing time, or have thinly sown Parsley seed with the Onions, and with both methods the result has been the same; I have had no Onion maggot. These methods of prevention were suggested to me many years ago by a then celebrated north London market gardener, and the number of years I have tried the plan with unflinching results, seems to indicate that the Onion fly dislikes the smell of Parsley, equally with that of Celery. *H. Collyer, Stoneage Park, Brompton Brian, Hertsford.*

Hosts for the Mistletoe.—I have been interested in reading of the various hosts for Mistletoe recorded in recent numbers of the *Gard. Chron.* The parasite grows on the following trees at G'snevin.—*Acer Lobelii*, *Aesculus flava*, *Crataegus Oxycantha*, *Cydonia japonica alba*, *Pyrus germanica*, *Pyrus Aucuparia fructu-luteo*, *Prunus s.p.*, *Rubus Pseudacacia*, *Tilia petiolaris*, *Symphoricarpos orbiculatus*, and the common Oak stock. *J. W. B., Glasnevin.*

Ultra Violet Light (see *Gard. Chron.*, December 6, 1919, p. 283).—Regarding uranium salts as a sort of poor man's radium, some years before the war I tried the effect of placing a silver tube containing some 10 grms. of uranium nitrate in the centre of a large circular pan in which concentric circles of seeds of two varieties of Tomatoes were sown, so that some seeds were very close to the tube, and the rest at graded distances from it. Thereafter the seedlings were picked out into a long-shaped pan, into which the tube was transformed, and the seedlings, which had been near, were planted near and so forth. No difference in germination or in growth appeared and it was surmised that at any rate the quality of the salt used was insufficient to establish any effect. If the experiment is worth repeating it would not be worth while unless a very much greater quantity was employed. *H. E. D.*

Mangetout Pea, Vilmorin's Sans Parchemin tres large Gosse.—An Abstract of work by N. Sigeroku published in *Bot. Mag., Tokio*, XXXII, 317, May, 1918, appeared in *Gard. Chron.*, Nov. 15, 1919, p. 245, and it is there recorded that crosses with another Mangetout ("Sincendo") yielded a certain proportion of membrane-bearing pods. But it is not clear that a basal fallacy was excluded. I think it was in 1911 that I obtained seed of the dwarf 3 ft. variety from Vilmorin, and a certain amount of instability was found, as a certain proportion, though small, of the plants produced membranous pods; moreover there was an appreciable amount of colour variation in the seeds. The normal seed is wrinkled and dull greenish-brown. On storing, especially after two or more years, the green bleaches out and the seed becomes brown, with perhaps small spotting of dark colour, perhaps really purple pigment. In the first generation, besides the parchment pods, some of the seeds were deep purple in colour (self) and others with some suffusion of the same giving the appearance of a dark blotch. After selection for a couple of years the parchment factor seemed to have been quite eliminated; last year owing to depredations of mice, nearly the whole crop was reserved for seed and all the pods were free from membrane. It does not appear that the experimenter analysed the purity of his original seed or did any selecting before proceeding to cross, so that the appearance of parchment pods in the various generations of crosses is hardly surprising, though perhaps the possibly fortuitous arithmetical agreement with "Mendelian expectation" may be astonishing as well as fatuous. I may add that two types of the variety have become established, one "necklace" type, in which the pods shrink down showing the prominences of the seeds as in a necklace of beads; and the other "balloon" type, in

which the much inflated pod on ripening does not shrink down upon the seeds, but remains as a flabby bag. Both are excellent on the table and apparently keep true. The balloon type only appeared in a few plants, and is perhaps rather nearer to a membranous type. The Mangetout Breton likewise throws a certain number of membranous pods when first obtained, but on selection that too has been purified, and all come down to a necklace type; it may be noted that the shuck substance, when ripe, is of a very thin, soft, papery consistence, whilst that of the "très large Cosse" is like sticky, damp chamois leather to the feel. *H. E. Durham.*

Utilisation of Vacant Railway Land.—Under War conditions food production was materially increased by the cultivation of allotments, the breaking up of pasture, and the like. The production problem is still acute, and it seems rational that cultivation should be largely extended on the land, at present idle on railway embankments and cuttings. Without going into statistics, there are some thousands of acres of land on main and local railway systems, varying from the worst to the most fertile quality. The utilisation of such land by afforestation is precluded by the danger of trees being blown down across the line, and by obstruction of visual signalling. Market gardening and the growing of osiers might be practised on the more level stretches, while on embankments and in cuttings fruit growings would be possible. The cultivation of fruit trees involves simple management, and can be no obstruction to traffic or signalling. Moreover fruit trees would prevent landslips and would help drainage on sloping ground. Varieties could be assorted to the quality of the soil. Difficulties, legal or otherwise, as to access to the line would be overcome by the railways themselves inaugurating the work. The best recommendation for the scheme is that it would provide opportunities for the employment of disabled soldiers, who would, however, first have to be trained at existing fruit farms. They would also for some time have to work under supervision. *H. C. King, School of Forestry, Oxford.*

The Education of Young Gardeners.—The interesting and probably well-meaning letter from G. C. Gough (page 63) on the above subject really resolves itself into the question as to the merits of practical *versus* theoretical training of gardeners. I take exception to the implied ignorance of the average gardener. Many years ago a controversy was carried on in the gardening Press on the same subject, with, I believe, the balance of opinion on the side of the practical man. However, we now have horticultural colleges, and time alone will prove which turns out the most skilful horticulturist, the college or the hard school of practical experience. Never has gardening held such a high position as during the last two decades, and never has such skill been shown as in the production of the wonderful examples of fruit, flowers, and vegetables which have been seen during the last 20 to 25 years. British gardens are the envy of the whole world. All this has been brought about by the practical and intelligent gardener working in the private garden and the nursery. The village flower shows, fostered by the practical gardener, have proved that the cottager and allotment holder have little to learn from theoretical instruction. In fact, I venture to say many of them could teach college-trained students more than they will ever learn from a few months' training at college. How then can we reconcile with these facts the statement of Mr. Gough that few gardeners are to be found fit to instruct the people in the production of more food? Is it not a fact that the practical gardener was the first to give instruction in the Horticultural Colleges? And, if so, why should he not be qualified to instruct generally. The practical gardener has a wider range of subjects to deal with than can be found in many colleges (of course, I except Kew and Wisley), and I very much doubt if the majority of students have the opportunity of obtaining a thorough working knowledge of such important commercial subjects as Grapes, Peaches, Melons, Tomatos and Cucumbers, to say nothing of trees and shrubs, and landscape work, a knowledge of which is so essential to the successful gardener or

teacher. In connection with this I recall the visit of a finished student, who, while waiting for my return from another part of the estate, had whiled away the time by walking around the kitchen garden. On meeting her she told me how sorry she was to see my Pears covered with mildew and gave me yards of advice as to how best to deal with the trouble. On going with her to the tree I found it was a Quince, with the young fruit covered with its natural down. If the subjects are not present I maintain the student cannot be taught soundly, as Mr. Gough asserts is the case. As to the statement that few men are found fit for administrative posts, I am rather of the opinion that it has not been proved, for however capable a man may be I question if he has much chance of success without such ability. If by "as guide and teacher" Mr. Gough means the county posts now being filled, I would say far more good has been done by the practice and example of the skilled gardener and the knowledge he has spread through debating societies than all the organised lectures will ever do, with their attendant expense to the community.—*John T. Tubb.*

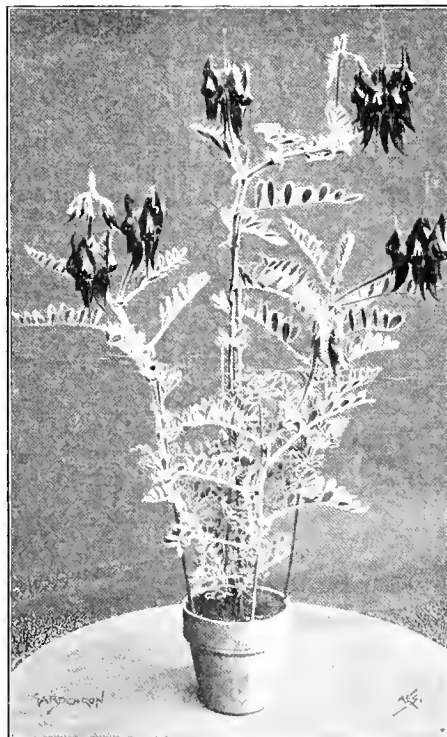


FIG. 50.—*CEANOTHUS DAMPieri.*

Ceanothus Dampieri.—Your correspondent, in issue of February 7, refers to this species as a difficult plant to grow successfully. In this he is quite correct, but if the object is only to produce a few trusses of bloom each year, it may be of interest if I mention that I have several times found this fairly easy to do. When plants are raised in spring, arrange for two or three to be planted out against a south wall as soon as the weather is fit. Here, in a way that must be surprising when fellow plants indoors are possibly fading, they rapidly get strong, make stout stems, and flower quite satisfactorily before the end of the summer. Healthy young plants are desirable to commence with, and it should therefore be pointed out that red spider is the great enemy to be guarded against. The roots of this plant are delicate and seeds should therefore be sown two or three together in small pots in order to avoid potting off. Watering, too, must be careful, but let it be remembered that no dry-country plant in creation ever made growth without some source of moisture. *R. Irwin Lynch, F.M.H., Torquay*

SOCIETIES.

READING AND DISTRICT GARDENERS.

At the meeting held in the Abbey Hall, on the 23rd ult., Mr. F. Townsend presided over a good attendance of members. "Chrysanthemums for Exhibition and Decorative Purposes" was the subject for discussion, introduced by Mr. Small, The Gardens, Sandhills, Wretchingly, a delegate from the Redhill Gardeners' Association. The lecturer claimed for the Chrysanthemum that it was the most stately autumn flower, no other having such a wide range of colour or giving such an abundance of bloom for cutting. After giving a historical resume of the flower, Mr. Small passed on to give cultural details under the following headings:—Japanese varieties for exhibition, Incurred varieties for exhibition, Decorative varieties in pots, and Summer-flowering varieties for growing in the open.

An interesting discussion followed, especially on the timing of buds and varieties, and this was sustained by Messrs. Townsend, Fulker, G. Smith, H. G. Cox, F. Cox, Tovey, Cook, Martin, Carter, Chislett, and E. J. Dore.

The Association's First-Class Certificate of Cultural Merit was granted to Mr. A. H. FULKER, The Gardens, Elmhurst, Reading, for a splendid group of *Primula obconica*. The plants bore large trusses of bloom in pleasing shades of colour.

HORTICULTURAL CLUB.

M. BINTNER'S LECTURE ON "SILVER LEAF."

FEBRUARY 24.—The monthly dinner and lecture of the Horticultural Club, held on the occasion of the last R.H.S. fortnightly meeting in the lecture room of the Horticultural Hall, Vincent Square, Westminster, marked the resumption of these social meetings, which have been so successful in the past. The lecturer was M. Jean Bintner, who came from Luxembourg to address the members on the subject of Silver Leaf. The chair was taken by Mr. H. S. Rivers, and there was a moderate attendance.

In his opening remarks, M. Bintner stated definitely that no cure for Silver Leaf was known. It had become a most serious pest to fruit trees and was also causing considerable damage to ornamental trees and shrubs; in Holland, for example, the whole of the Lilac bushes, which are grown extensively for the market value of their flowers, were threatened with destruction. The disease was world wide, from the Balkans to Siberia across to Vancouver, and down to Australia and New Zealand.

The worst effect in this country was that produced on stone fruits, the Plum in particular. So far only two varieties of Plum, the Pershore Egg and Rivers Early, have escaped the disease, and in Luxembourg they cultivate a variety named Crech which seems to be immune. The disease enters the tree through a wound, or the cut surfaces made in pruning. The hyphae grows upwards in the tree—very fast in an upward, slower in a downward direction. If a silvered branch is cut out directly it is detected the progress of the disease may often be arrested. Growers should be careful in removing suckers to do so without injury to the root, for there is evidence that root infection may take place. The fructifications of the disease develop within 25 days, and usually in September, although spores may be shed at the end of August. These latter are known to have retained their vitality for 10 months, and it is probable that they can remain dormant for three or four years.

A physiological condition of the leaves may give rise to false Silver Leaf, but true Silver Leaf may always be detected by the discoloration of the wood. In false Silver Leaf there is a reduction in the chloroplasts, but no local discoloration of the wood, and in ones placed in water ever gave the same amount of discoloration to the water.

With regard to preventive measures, the grower should cut out silvered branches as soon as they are detected, as near to the main stem as possible, and beyond the discoloured tissue.

This would favour rapid callusing. The wounded surface should, meanwhile, be protected by a coating of Stockholm tar or grafting wax. Nurserymen should endeavour to find a stock that is immune to the complaint, and he (the lecturer) had found types 15 and 16 of the English Paradise stock to be partly immune. The Siberian Crab was very susceptible.

In the discussion which followed, Mr. Barr stated that he had largely restored a silvered Plum tree to health by spreading two large barrowfuls of lime over the roots, and he wondered if dressings of lime and sulphate of potash would be beneficial generally. M. Pintner considered that application of these materials would strengthen the plant and thus make its tissue more resistant to the complaint. Mr. J. Weathers pointed out that the Heston district of Middlesex, where 90 per cent. of the Plum trees are affected, is very deficient in lime. He stated that the disease had been known in the Middlesex Plum orchards for 60 years, and predicted that the Middlesex Plum orchards would soon be wiped out by the complaint.

Silver Leaf had also spread largely to Gooseberries, but had often been mistaken by growers for attacks of red spider. He was sorry to announce that Silver Leaf had now destroyed his tree of Rivers' Early Plum, which could therefore not be regarded as immune. With regard to liming, he had found this to be of no avail, nor had sulphate of iron, permanganate of potash or sulphur been of use. In some of the old Plum orchards in his district the stumps had been allowed to remain, and they were covered with the fungus *Stereum purpureum*, which was so well known locally that it had acquired the name of *Heliotrope fungus*.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

FEBRUARY 5.—*Present*. Messrs R. Ashworth (in the chair), A. Burns, D. A. Cowan, J. C. Cowan, J. Cypher, J. Howes, J. McNab, D. McLeod, E. W. Thompson, and H. Arthur (Secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Radium (G. F. Moore punctatum × *Albiades superbum*); *Odontoglossum A. E. Thompson*, from P. SMITH, Esq.; *Cypripedium Astarte* (Psyche × *insigne* Sanderae), from Mrs. SLINGSBY; and *Cattleya Trianae Mooreana*, from S. GRATRIX, Esq.

AWARDS OF MERIT.

Lycaste Skinnerii vars. *alba* *Great Bc.*, *Doribus*, and *Crimson Glow*; *Odontoglossum Davis West Point* var.; *Cypripedium Persius Queen Alexandra*; *Dendrobium Dillense*; and *Sepholo-Cattleya Sara unguifera*, from S. GRATRIX, Esq.; *Lycaste Skinnerii* var. *Mis Excellency*, and *L. Cravata Bridge Hall* var., from Mrs. BRUCE and Miss WRIGLEY; and *Odontoglossum crispum* var. *Pearl White*, from P. SMITH, Esq.

CULTURAL CERTIFICATE.

To Mrs. SLINGSBY, for *Cypripedium Astarte*, and to Mr. J. HOWES, for *Dendrobium* and *Odontiodia Bralshawiae Colossus*.

GROUPS.

S. GRATRIX, Esq., Whalley Range (gr. Mr. J. Howes), was awarded a Gold Medal for a group. Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), staged a group to which a Silver Medal was awarded. F. A. HINDLEY, Esq., Bradford, staged a group of cut flowers of *Cypripediums*, to which a Silver Medal was awarded.

FEBRUARY 19. *Present*: The Rev. J. Crombholme (in the chair), and Messrs. A. Burns, A. Comingsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, Dr. F. T. Paul, W. Shackleton, E. W. Thompson, and H. Arthur (Secretary).

AWARDS

FIRST-CLASS CERTIFICATES

Cattleya Memoria F. M. Ogilvie var. *The Precious*; *C. Snowdrop intermedia* *alba* × *O. Briviana* *alba*; *Odontoglossum crispum*

West Point March, *Dendrobium Sir Fredk. Moor*, and *D. Samuel Gratix*, from S. GRATRIX, Esq.; *Cattleya Trianae The Baron*, from P. SMITH, Esq.; and *Dendrobium Schultzii*, from Capt. W. HORRIDGE.

AWARDS OF MERIT.

Dendrobium nobile Gibsonii, *Odontoglossum percutatum Black Knight*, *Lycaste Skinnerii rosalba*, *Odontoglossum crispum* var. *Virgin Queen* and *White Lady*, from S. GRATRIX, Esq.; *Lycaste Skinnerii ingrus*, from Mrs. BRUCE and Miss WRIGLEY; *Odontoglossum raynatum* and *Cymbidium Diana Bolholt* var., from Capt. W. HORRIDGE.

AWARDS OF APPRECIATION.

Odontoglossum ardentillius Perfection and *O. crispum Pink Pearl*, from S. GRATRIX, Esq.; *Odontioda Royal Gem Bolholt* var., from Capt. W. HORRIDGE.

GROUPS.

S. GRATRIX, Esq., Whalley Range (gr. Mr. J. Howes), staged a group to which a Gold Medal was awarded. Mrs. BRUCE and Miss WRIGLEY, Bury (gr. Mr. A. Burns), were awarded a Silver Medal for a group. Capt. W. HORRIDGE, Bury (gr. Mr. Coningsby), was awarded a Silver Medal for a group.

BRITISH GARDENERS'.

THE ANNUAL General Council Meeting of the British Gardeners' Association was held at Cheltenham on Friday and Saturday, the 27th and 28th ult. There were seventy delegates present, representing branches all over England, Scotland and Wales. Mr. R. Greenfield, president, occupied the chair. The main feature of the business was the discussion on wages, but this was not so lengthy as was expected. It was carried unanimously that the Association adopt a minimum rate of £3 10s. per week for all horticultural workers over the age of twenty-one. A suitable scale for workers in different grades will be drawn up by the Executive Committee at the earliest possible moment. It was decided to change the name of the Association and in future to use the title of National Union of Horticultural Workers.

Mr. R. Greenfield was re-elected president for the ensuing year. Mr. T. Candler vice-president, Mr. J. W. Craig treasurer, and Mr. Cyril Harding re-elected general secretary.

At the end of the first day's business a large and enthusiastic meeting was held at the Town Hall, Cheltenham, at which the speakers were Mr. Jack Jones, M.P., Mr. R. B. Walker, general secretary, Agricultural Labourers' and Rural Workers' Union; and Mr. Cyril Harding, general secretary, British Gardeners' Association.

A MEETING of the British Gardeners' Association was held at Gloucester on Tuesday, the 24th ult. Mr. R. Greenfield (president of the Association) occupied the chair. Mr. Greenfield stated that the Government had excluded gardeners from the National Wages and Hours of Employment Bill. The Association was now affiliated with the Trades and Labour Councils, and for the first time they were represented at the Trades Union Congress at Glasgow, held last September. The trouble now was that although they had every other union behind them, they had not the support of every gardener.

The speaker alluded to the rapid progress which the Association had made during the past 12 months, at the conclusion of which they had 118 branches and a membership of over 6,000. He appealed to his hearers not to be satisfied by becoming members themselves, but to persuade their fellow workers to join the Society.

Obituary.

George Hugo Tabor.—The death of this well-known Thames Valley artist and amateur gardener occurred on February 22, at his residence in Teddington. Mr. G. H. Tabor, who was 63 years of age, was, in his young days a student in Paris, at Julien's famous studio, where he imbibed a great predilection for colour, which

found expression in his paintings of bright gardens and glowing autumn tints in his landscape studies. He spent much time in his garden where he both cultivated and studied plants, and this, no doubt, was responsible for the fidelity with which he depicted all plants and trees. With his wife, who, with one son, mourns his loss, he was largely responsible for the foundation of the Thames Valley Arts Club, of which he was secretary.

ANSWERS TO CORRESPONDENTS.

ABNORMAL RICHARDIA: F. C. The abnormality in your *Richardia*, in which a leaf below the inflorescence has developed the characters and white colour of a spathe, is of frequent occurrence, and is popularly known as "twin" *Arum*. The true spathe is in the nature of a bract and has developed from one of the ordinary green leaves. It is small wonder that an adjacent leaf should also sometimes assume the white colouring.

AZALEA LEAVES DISEASED: C. The abnormal, fleshy processes on the leaves of your *Azalea* are due to attacks by a fungus named *Exobasidium Rhododendri*. Similar galls are sometimes produced on *Laurus nobilis*, the Bay Laurel. Remove and burn all affected leaves as soon as they are detected.

GRAFTING OR BUDDING WEIGELA ON LABURNUM: G. B. We have never heard of anyone working the *Weigela* on *Laburnum*, and would even go so far as to say that it is not possible to do so, as the two plants belong to two widely-separated orders. The *Cytisus* is easily grafted on the *Laburnum*, but the resulting plants are, as a rule, not long-lived.

HEATING GREENHOUSE AND FRAME: A. P. A better plan than the one you suggest would be to remove a large portion of the soil so that the base of the frame may be brought down to the level of the pipes in the adjoining greenhouse. If this is done, and wide gratings are made in the wall, the frame should receive sufficient warmth; if the gratings are fitted with sliding wooden or slate shutters, the heat may be controlled as seems desirable. A great deal of heat would be wasted if the pipes were placed deeply in a large bank of soil.

MINIMUM WAGE: D. J. Gardeners employed in private gardens do not come under the conditions of the Corn Production Act, therefore there is no legal minimum wage so far as they are concerned.

MUSHROOM SPAWN: O. B. The portion of spawn sent is very dry and hard, but there is no reason why the mycelium, which is plentifully evident, should not give good results if the cultural treatment is correct.

NAMES OF PLANTS: *Interested*. 1. *Dendrobium heterocarpon*; 2. *Populus balsamifera*.—*Inquirer*. 1. *Grevillea juniperina*; 2. *Olearia insignis*; 3. send when in flower; 4. *Griselinia littoralis*; *C. A.* 1. *Elaeagnus pungens aureo variegata*; 2. *Pittosporum Mayii*; 3. *Pittosporum undulatum*; 4. *Berberis Bealii*; 5. *Sequoia sempervirens*; 9. *Pernettya mucronata*; 10. *Rhododendron ciliatum*; 11. *Erica carnea*; 12. *Erica mediterranea*; 13. *Acacia longifolia*; 14. *Rhododendron dauricum*; 15. *Rhododendron venustum* (Jacksoni); 16. *Helleborus orientalis*.—*J. W.* *Eaonymus japonicus* var. *aureus*; this is hardy in sheltered situations in your part of Scotland.—*J. E. R. N.* 1. *Camellia japonica*; 2. *Cornus Mas*; 3. *Erica Instansiana*; 4. *Berberis Bealii*; 5. *Cydonia japonica*; 6. *Muehlenbeckia complexa*; 7. *Vaccinium Vitis-Idaea*; 8. *Olearia dentata*; 9. *Buxus balcarica*; 10. *Pieris floribunda*; 11. send when in flower; 12. *Phillyrea media*.—*Hafolano*. 1. *Rhododendron arboreum* var. *album*; 2. unnamed hybrid between *R. arboreum* and *R. caucasicum*.—*H. C.* *Saxifraga ligulata* var. *speciosa*.—*G. N.* *Omphalodes verna*.

Communications Received.—S. H.—F. E. B.—P. H. D. A.—P.—J. K.—E.—L. B.—D. F.—C.—W. C.—W. A.—A. H.—W. C.—R. B. P.—W. K.—W. T. A. B.—W.—W.—L. A.—S. C.—B. J. M.—M. G.—A. M.

THE Gardeners' Chronicle

No. 1733.—SATURDAY, MARCH 13, 1920.

CONTENTS.

Agricultural workers, increase of minimum rates of wages for .. 126	Plants, new or noteworthy— Rhododendron praevernum .. 127
Alpine garden, the .. 127	Potato crop, the future of the .. 132
Erodium pelargoniflorum .. 127	Potato prices, re-control of .. 125
Hutchinsia alpina .. 127	Rhytiadaceae .. 126
Tropaeolum polyphyllum .. 127	Royal Society, the .. 124
Antwerp, horticultural exhibitions at, in 1920 .. 126	Silver-leaf disease .. 134
Birds and birds .. 134	Snowy or White Fly .. 134
Books, scientific and technical .. 124	Societies— Chester Paxton .. 126
Brassicas, club root in .. 124	Royal Horticultural .. 134
Burton garden, the .. 126	Trees and shrubs— Cotoneaster rotundifolia .. 131
Lilium sticticum .. 133	Hamamelis .. 131
Chrysanthemums, popularity of large .. 134	Wistaria chinensis .. 131
Fruit garden, the market .. 130	United Horticultural Benefit and Provident Society .. 125
"Gardeners' Chronicle" seventy-five years ago .. 126	Vegetables— Lettuces, summer .. 133
Imperial Botanical Congress .. 126	Water, the exudation of, by Colocasia antiquorum .. 126
Manchester, art or day at .. 126	Week's work, the .. 128, 129
Melville, Mr. David, presentation to .. 126	Windsor Rose Show .. 126
Obituary— Rourke, James .. 136	Wye, fruit growers' conference at .. 126
Sisbury, J. H. .. 136	Year Book and Diary, a useful .. 126
Plants, early flowering .. 125	
Plants, greenhouse, with fragrant foliage .. 131	

ILLUSTRATIONS.

Coelogyne asperata .. 129
Potato Edzell Blue .. 133
Potato Kerr's Pink .. 132
Tropaeolum polyphyllum .. 127
Wistaria chinensis .. 131

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.05°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, W. *Wednesday*, March 10, 1920, 10 a.m. Bar. 30.3, temp. 46°. Weather—Dull.

The United Horticultural Benefit and Provident Society.

The United Horticultural Benefit and Provident Society, which was founded in 1871, owes its institution chiefly to the efforts of two distinguished horticulturists, Mr. William Marshall and Mr. Shirley Hibberd, both of whom have, unfortunately, not survived to see the present success which has attended their enterprise. Mr. William Marshall, who was for many years Chairman of the Committee of the Royal Gardeners' Orphan Fund, is also remembered by horticulturists as the first to flower *Odontoglossum crispum* in this country. Mr. Shirley Hibberd was one of the chief horticulturists of his day, and was for a long period editor of *The Gardeners' Magazine*. These gentlemen, aided by their friends, established the United Horticultural Benefit and Provident Society by donations and by the proceeds of exhibitions, their object being to provide horticultural workers with opportunities of making provision for illness, periods of distress, and old age. In its earlier years the Society made but slow progress. From 1890 onwards, however, the membership increased greatly, although, having regard to the advantages which the Society offers, it is difficult to understand why gardeners have not joined in yet larger numbers. It may be that one reason the Society does not secure the adherence of every gardener throughout the country lies in the absence of local "lodges." In any case, there is no doubt of the great benefits which it confers upon its members, and of the high position it occupies among Friendly or Benefit societies. The late Mr. Leopold de Rothschild was for many years Patron of the Society, and was succeeded by Sir Harry

Veitch, whom all hope may long be spared to continue in that office. As the name of the society implies, it is at once a Benefit and Provident Society. In return for payments made according to a prescribed scale, the members are entitled to relief during periods of distress and during illness to sums varying from 4s. to 27s. for 26 weeks; from 2s to 13s. 6d. for the next 26 weeks, and thereafter from 1s. to 6s. 6d. per week so long as illness lasts. The Convalescent Fund of the Society, which was established by the late Mr. N. N. Sherwood, enables all members who have been suffering through illness to obtain that change of air which is so often necessary for complete recovery. The organisation of the Society is such that every member has a personal account which is rendered annually. On one side are placed his annual subscriptions, and on the other his share of the amount disbursed during the year as sick pay. Almost invariably there is a balance to the credit of the member, and the balance is brought forward each year with 3 per cent. interest added thereto, in short, any surplus of receipts over expenditure "is appropriated to benefit members in proportion to the amount of contribution paid by each." The personal credit account (known as the Deposit Account) remains until a member reaches the age of 70 years when he may withdraw the amount, less £10 to be paid to his nominee at death. In some instances members of long standing have been able to withdraw £150 when reaching 70 years of age. At the age of 70 years a member ceases to contribute, but is eligible for assistance from the Distress Fund in case of need; and such assistance may take the form of 5s. per week. It may be stated that a member who reaches the age of 60 years may withdraw annually a sum equal to double the amount of interest accruing to his Deposit Account. Many members meet their annual "dues" in this way and so obtain benefit without further direct payment. Grants from the Distress Fund amounted to £7 6s. 6d. from 1871 to 1880; £25 from 1880 to 1890; £289 8s. 6d., 1890 to 1900; £1,176 14s. 1d., from 1900 to 1910; and £1,107 3s. 10d., 1910 to 1919; a total of £2,605 12s. 5d. No sick pay was claimed during the first six years of the Society's existence, but from 1871 to 1880, 79 members received the modest total of £59 7s. 9d. under this heading, as compared with a total of £6,555 11s. 8d. paid out to sick members from 1910 to the end of 1919. Altogether, the Society has rendered assistance in the form of sick pay to the amount of £12,450 18s. 8d. Till the end of the year 1919, the nominees of deceased members received £4,304 12s. 6d.; withdrawals from the Deposit Accounts of members over 70 years of age, totalled £3,260 2s. 6d.; and lapsed members, on reaching the age of 60 years, received £1,331 3s. 2d. The financial soundness of the Society may be gathered from an inspection of the statement of liabilities and assets; the latter, consisting of investments amounting to £57,147 (including over £10,000 in War stock), are sufficient to meet all claims on the Benefit, Distress, and other funds, and leave a surplus of £6,026, which is regarded as a provision for depreciation of investments—a contingency not likely to arise seeing that most investments have been made under face value and will mature at par. The management of the United Horticultural Benefit and Provident Society is in the hands of a committee and officers elected by the members. There are three trustees, Mr. James Hudson (who was Treasurer for over a quarter of a century), Mr. Riley Scott, and

Mr. Charles H. Curtis. Mr. J. Winter, Supt. of the Marylebone Parks and Open Spaces, is Treasurer. The committee consists of twelve members, one third of whom retire annually. Mr. C. H. Curtis has now entered upon his twentieth successive year of office as chairman of committee; and Mr. A. Bedford, Gunnersbury House Gardens, is vice-chairman. The secretary of the Society is Mr. A. C. Hill, 35, Alexandra Road, West Kensington Park, London, W.14, and we suggest that all young men engaged in private, public, or commercial gardening, or in other branches of horticulture, should apply to him for full particulars of this ably-managed Benefit Society. The 54th Annual General Meeting of the Society was held at the Royal Horticultural Hall, Westminster, on Monday, March 8, but pressure upon our space compels us to hold over our report of the proceedings until the next issue.

The Re control of Potato Prices.—The Government have announced their intention to resume control of Potato prices from March 15 of this year. In making this announcement the Parliamentary Secretary to the Ministry of Food implied that the decision was due to the present high price of Potatoes, which he put at £14 15s. per ton. The figures which he gives of the average and total yields of the 1919 crop, are:—1919 yield, 2,900,000 tons, with an average of 4.7 tons per acre, as compared with the general average (1918-1917) of 3,700,000 tons at 6.3 tons per acre. These figures thus show that the 1919 crop was some 800,000 tons short of the average; that is, taking the average crop at 100 per cent. the 1919 crop was only about 78 per cent. of that crop.

Horticultural Club.—A house Dinner of the Horticultural Club, followed by a lecture on "Travels in British East Africa and round Victoria Nyanza" by Mrs. Ellen S. Blount, F.R.G.S., will be held on Tuesday, March 23, in the Lecture Room, Royal Horticultural Hall, Vincent Square, Westminster.

Early-flowering Plants.—Sir Herbert Maxwell, Monreith, writes:—"It is true that, as my friend W. Arnott remarks, *Adonis amurensis* has the merit of flowering at the darkest time of the year. This season it opened its first bloom on December 29; the dates of some other winter-blooming herbs being:—*Helleborus niger* altifolius, October 7; *Erica carnea*, Christmas Day; *Snowdrop*, January 8; *Winter Aconite*, January 10; *Saxifraga Bursiferana*, January 22; *Saxifraga Irvingi*, January 23; and *Leucojum Vagneri*, January 25. But I cannot profess any affection for *Adonis amurensis*. Like its near relative, *A. vernalis*, it cannot display its beauty without broad sunshine, which cannot be obtained at the time it chooses to flower in our country. And now, when the March sun is beating on the borders, the blooms of the Amur *Adonis* are all but over. As for the double-flowering form, I maintain it is an ugly monstrosity, bad in form and impure in colour."

A Useful Year Book and Diary.—*The Fruit, Flowers and Vegetable Trades Year Book and Diary*, published by the Lockwood Press, 1, Mitre Court, Fleet Street, price 3s. 6d. net, is a valuable book, not only to those specially interested in the raising and marketing of fruits, flowers and vegetables, but to growers in general, including those in private establishments. The diary pages are of ample size for recording events and there are ruled columns for the entering of cash statements; each week's page is conveniently interleaved with blotting paper. The usual diary matter, such as postal rates, Bank Holidays, weights and measures, are included, and in addition, much useful data on matters pertaining to trade growers, including a monthly calendar of the principal operations in the orchard, market garden and nursery; rules and regulations governing the marketing of produce in Covent Garden; and methods of controlling some of the principal diseases and pests.

Horticultural Exhibitions at Antwerp in 1920.

—In connection with the Great Exhibition to be held at Antwerp this year, arrangements have been made for holding a series of horticultural exhibitions, and the dates upon which these will be held, together with their special features, are as follows:—May 1 to 9, Azaleas, Rhododendrons and Orchids; May 15 to 19, Tulips, Irises, and other early flowers; May 22 to 30, Cacti and Ferns; June 5 to 7, cut flowers, principally perennial subjects; June 12 to 15, Roses; June 19 to 22, fruits and vegetables; June 26 to 29, Liliums and Sweet Peas; July 3 to 6, Carnations; July 10 to 15, Roses; July 17 to 21, Begonias and Gloxinias; July 25 to 27, floral designs; July 31 to August 5, cut flowers; August 7 to 10, Annuals; August 14 to 17, Gladioli; August 22 to 24, Dahlias; August 29 to September 1, Pelargoniums, Fuchsias, Palms, and Ferns; September 4 to 8, vegetables; September 11 to 14, Orchids; September 18 to 22, general horticultural exhibits; September 25 to 29, fruits; October 5 to 10, preserved fruits, and fruits packed for market; and October 17 to 21, Chrysanthemums.

Presentation to Mr. David Melville.—The retirement of Mr. D. Melville from the position of gardener at Dunrobin, where he has been in charge over a period of forty-six years, gave his friends an opportunity of showing their appreciation of his personal qualities, his skill as a horticulturist and his services in the public life of the community at Golspie. The appreciation took the form of an illuminated address and a purse of Treasury notes. The presentation was made on February 27 at a largely attended meeting, over which Mr. A. N. Macaulay presided.

Imperial Botanical Congress.—A proposal is under consideration to hold an Imperial Botanical Congress simultaneously with the Empire Exhibition, which will take place in London in September, 1921.

The Royal Society.—Botanists will note with pleasure that in the list of nominations to the fellowship of the Royal Society, their subject is represented by Captain A. W. Hill, assistant director of the Royal Gardens, Kew, and Sir J. C. Bose, the distinguished Indian scientist. Captain Hill has made many and valuable contributions to botanical science. His earlier work dealt with the minute anatomy of plants, and during later years he has devoted attention, with valuable results, to the history of such horticultural plants as *Primula obconica*. Sir J. C. Bose is distinguished for the elegance of his methods of investigating the response of plants to stimulation. Another name in the list is that of Dr. E. F. Armstrong, much of whose chemical work—on sugars and on pigments—has reference to plants.

Fruit Growers' Conference at Wye.—A conference of fruit growers will be held at the South Eastern Agricultural College, Wye, on March 23, when the Minister of Agriculture is expected to preside. The conference will commence at 11.30 a.m., and the morning programme includes addresses by Capt. Wellington, Mr. H. S. Bickham, and Mr. R. G. Hatton, who will deal with Fruit Growing in England. During the afternoon, Messrs. E. S. Salmon and F. V. Theobald will lecture on Diseases of Fruit Trees and their Remedies. Arrangements are being made to provide luncheon and tea at 6s. per head for those who notify the principal, Mr. M. J. R. Dunstan, of their intention to be present.

Chester Paxton Society.—With the object of continuing their work of encouraging food production by allotment holders—which led to such successful results during the war—the Chester Paxton Society organised a series of lectures during the winter months. The programme included lectures on:—Insect pests common to allotments and gardens, by Prof. Newstead, F.R.S.; the cultivation of vegetables most suitable for allotments, by Mr. Ben Ashton; the cultivation of bush fruits, by Mr. W. Stewart; the cultivation of Apples, Pears, and Plums, by Mr. N. F. Barnes. The demand on the part of allotment holders for instruction in fruit growing is noteworthy, and indicates that the holders have every intention of maintaining permanent allotments.

Black's Gardening Dictionary.—Messrs. A. and C. Black, Ltd., Soho Square, advise us that their new *Dictionary of Gardening* is in the press. Mr. E. T. Ellis is the editor and he has had the assistance of over one hundred expert contributors.

Increase of Minimum Rates of Wages for Agricultural Workers.—On the 5th inst. the Agricultural Wages Board considered the reports which had been received from the District Wages Committee on the draft proposal to increase the minimum rates of wages at present in force for all male workers of 21 years of age and over throughout England and Wales to 42s., with a minimum increase of 4s., and, after inserting provisions for adjustments in the overtime rates on the usual principle of week day overtime at the rate of time and a quarter, and Sunday overtime at time and a half, and for consequential alterations in the special rates for stockmen in certain areas, decided to give formal public notice of the proposal forthwith. As already announced, the effect of the proposal would be, in areas where the ordinary minimum rate is now 35s. 6d., 37s., 37s. 6d., or 38s., to raise it to 42s., and in areas where it is now higher, to raise it by 4s. in each case. The proposal was formally published on the 8th March, and, in accordance with the provisions of the Corn Production Act, no order can be made putting the proposed increases into operation until a month has elapsed from that date, during which period any objections to the proposal may be lodged with the Board for their consideration. The Board also discussed the advisability of increasing the minimum rates for male workers under the age of 21, and for female workers, and decided to refer these questions for consideration in the first instance by a special Committee of the Board.

The Exudation of Water by *Colocasia antiquorum*.—The nocturnal exudation of water drops by the leaf tips of *Colocasia antiquorum* is one of the minor wonders of the vegetable world. It is true that the exudation of drops of water occurs in many other plants—Oats, Fuchsia, etc., but in few or none is it so copious as in *Colocasia*, where so much is exuded that nearly a pint of water might be collected in a single night from a dozen leaves. No less remarkable than the quantity is the purity of the water, which is ejected from the leaf; analyses showing that the liquid is to all intents and purposes pure water. Owing to this latter fact, it has generally been assumed that the exudation is of the nature of an excretion; that is to say, that the liquid is filtered through the living cells of the leaf, or at all events, through a vegetable membrane before being exuded. Recent investigations,* however, show that this is not the case—at all events, so far as the leaf is concerned—but that it passes from the woody elements of the leaf, directly into a series of canals, which communicate with the pore at the pouch-like tip of the leaf. The driving force for the exudation, which sometimes may be sufficient to eject the drops to a considerable distance, appears to be the root, and it must be assumed that the activity of the root in absorbing water during the night is so great that more is taken into the plant than can be conveniently retained. It would be interesting to know whether the rate of transpiration of the leaves during the day is less than that of other shade plants or whether the extreme efficiency of the root in absorbing water has imposed upon the leaves this means of getting rid of the surplus.

Arbor Day in Manchester.—The authorities of Blackley Municipal Schools, Manchester, are resuming their tree-planting operations this month, after a break occasioned by the war. The Roll of Honour contains the names of nearly 400 old boys who served their country during those troublesome years. To honour these heroes the boys and girls planted 200 trees in the years 1915 and 1916. On Saturday, March 6, 81 trees were planted to form an avenue through the David Lewis Recreation Grounds. The trees were planted in the following order:—Plane, Elm, Ash, Chestnut, Elm, and each tree will

bear a label containing the name, regiment, year, and tree-planter's name. This will be a monument of living trees—the children's tribute to the old boys. The Lord Mayor of Manchester presided at the function and planted the first tree.

Windsor Rose Show.—H.R.H. the Prince of Wales offers a Challenge Cup, at the Windsor Rose Show, to be held on June 26, for a competition in Sweet Peas, open to amateurs.

Rhyniaceae.—The lecture delivered in Edinburgh recently by Dr. Kidston, F.R.S., on "The Vascular Plants of the Chert Band of Rhynie, Aberdeenshire," has drawn renewed attention to this quaint old Aberdeenshire village, and, indeed, made it quite famous in scientific circles. The generic name of Rhynia has been given to a member of the new botanical order styled "Rhyniaceae." This entirely novel genus and order of plants are delightfully described in the recently issued volume of the *Transactions of the Royal Society of Edinburgh* by Dr. Kidston and Professor W. H. Lang, of Manchester University, the latter of whose fine research work into the morphology and life-history of Bryophyta, Pteridophyta and Gymnosperms is well known and highly appreciated in scientific circles. It was Dr. Mackie, a medical practitioner of Elgin who first discovered in a silicified peat-bed of the old Red Sandstone age at Rhynie the remains of plants the appearance and structure of which were new to science. Dr. Horne, of H.M. Geological Survey, was early informed of the find, and has since taken an intense interest in the matter. The specimens found at Rhynie represent, we are told, the simplest known forms of Pteridophyta or Aerogens—a group that includes ferns, club-mosses, and their allies. To one of the finds the generic name Rhynia has been given, and to another Hornea. Both are included in the new botanical order Rhyniaceae, the members of which are distinguished by having neither leaves nor roots, and by consisting of a subterranean stem with long single-celled rhizoids and of a circular aerial stem dichotomously branched, with sporangia at the ends. These petrified plants from the Rhynie peat-bed are regarded not only as more primitive than any land plants of the present day, but as the oldest of which science has knowledge in the proper sense of that term. They are much simpler than most specimens of the floras of both the Upper Devonian and the Carboniferous formations; and it is not surprising that the discoveries of Dr. Mackie and his fellow-workers have roused great interest. Other vascular cryptogams than Rhynia and Hornea have also been found in the chert-bed at the base of the hill known as Tap o' Noth, Aberdeenshire; and the comparisons and conclusions drawn by Dr. Kidston and Professor Lang (from whom we are promised a further instalment) are sure to attract the keenest interest of botanists and geologists.

"The Gardeners' Chronicle" Seventy five Years Ago.—We have to announce that the Trustees of the Botanic Garden, Cambridge, have decided upon pensioning Mr. Arthur Biggs, the present aged gardener in that establishment, and of appointing a successor. Candidates for the appointment must send in their testimonials before the 7th of April, under cover to the Vice-Chancellor. These testimonials must relate to the candidate's capacity of arranging a new garden, according to a given plan, and to his practical and scientific qualifications. As soon as the testimonials of the several candidates shall have been considered, notice will be given to such as are approved of to repair to Cambridge on a day then to be named, in order that they may undergo an examination by the Rev. Professor Henslow. The value of this appointment is £121 per annum, with an allowance of fuel, and a house free of rent, taxes and repairs. *Gard. Chron.*, March 15, 1845.

Publications Received:—Transactions and Proceedings of the Botanical Society of Edinburgh. Neill and Co., Ltd., Edinburgh. *Apple-grain Aphid.* A. C. Baker and W. F. Turner, Government Printing Office, Washington.

* "Exudation of Water by *Colocasia antiquorum*." By Margaret G. Flood. *Notes from the Botanical School of Trinity College, Dublin*, I, III, June, 1919.

THE ALPINE GARDEN.

TROPAEOLUM POLYPHYLLUM.

THE genus *Tropaeolum* includes several popular garden plants, valuable not only on account of their very showy blossoms, but also for the ease with which they may be propagated and cultivated. *T. polyphyllum*, which forms the subject of the illustration in Fig. 51, has the common name of Yellow Rock Indian Cress, but it is not a native of either of the Indies, its natural habitat being Chili, from whence it was introduced in 1827. The foliage is very ornamental, and coloured glaucous green. The plant has a tuberous root stock and is sometimes used in the flower border, but it is best adapted for the rock garden, where, as is well shown in the accompanying illustration, it drapes the larger portions of stone in a most pleasing manner, and gives a profusion of its rich, yellow flowers, which are streaked with red in the upper petals. In situations suited to the plant the trailing shoots grow sometimes as long as eight or nine feet and in June they are studded with the showy flowers which arise from the axils of the much divided leaves. But it is not always easy to establish the species and many fail to grow and flower it satisfactorily. A writer in *Gard. Chron.*, June 24, 1895, observed that at Scone Gardens, Perthshire, plants trained on two sides of the brick support of the conservatory gave a magnificent picture of bright gold, owing to the profusion of the blossoms.

ERODIUM PELARGONIFLORUM.

APPLY named in every way, this Heron's Bill is a plant which commends itself to the lover of flowers. In foliage it resembles the Pelargoniums, and in flower it reminds one very forcibly of some of the older show and fancy Pelargoniums, at one time so much in vogue. With its large flowers, conspicuously blotched, it is a most attractive plant for a dry sunny border or a warm place in the rock garden. It is frequently ranked as hardy, and it is so in most seasons, but I have found that old plants are extremely liable to die and that it is much better to rely on young ones, raised from cuttings or seeds, either method being easily adopted. Cuttings will strike about as easily as those of a Zonal Pelargonium if taken off and treated in the same way, and seeds germinate well in pots under glass. I have even had a few self-sown seedlings appear in the vicinity of an old plant, but it is not prudent to trust to self-sown seedlings and it is wiser to save some when ripe and sow them under glass.

This is one of the most robust of the choicer Erodiums. It will flower when quite small, but will eventually grow to more than a foot high if it survives two or three winters. As already indicated, *E. pelargoniflorum* should have a warm, sunny place in dry soil. A.

HUTCHINSIA ALPINA

A SMALL plant of *Hutchinsia alpina* rarely attracts much notice from the garden visitor. Its heads of little white flowers are not numerous enough or large enough to claim the notice of the casual passer-by, and the real beauty of this alpine plant is unseen. When, however, a specimen a foot or more in diameter is viewed, it seldom escapes observation and mention. But the true admirer of flowers cannot but be pleased with even a small plant, because of the charming, deep green, finely-divided foliage, which sets off the snowy whiteness of the flowers, which are neat and well-formed, although the *Hutchinsia* is a member of the Cruciferae, a Natural Order embracing many weedy subjects. No one can, however, call *H. alpina* "weedy." The *Hutchinsia*, although a native of moist places on the high mountain ranges of Europe, is not difficult to cultivate, and grows wonderfully well in light soil on rockwork, or even in the front of the border in ordinary garden soil. Its full height is only an inch or two, and a good mass is a close carpet of shining deep green leaves studded thickly with pure white blooms. It is quite readily and quickly raised from seeds, but can be divided when of fair size. It thrives in sun or partial shade. S. Arnott.

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON PRAEVERNUM, N.SP.

FOR some years now growers of Chinese Rhododendrons have known that there was a mixture of types in cultivated plants of so-called *R. sutchuenense*. One of these types, of rather straggly growth, has large leaves with a woolly midrib and a pink corolla merely spotted inside the back of the tube, but without a blotch at the base. A second, and probably much more common plant, of somewhat compact habit, has rather smaller leaves, a glabrous midrib, and a whitish corolla with a huge purple blotch at the base gradually graded into spots on the upper part of the tube. In 1917 Mr. J. C. Williams drew my attention to these two forms, and although then out of flower, I expressed the opinion that they were not specifically the same. I now describe the second plant mentioned as a new species, *R. praevernium*.

The plant with the woolly midrib and pink spotted corolla was figured in the *Botanical*

not very far from the western boundary of the adjacent province of Hupeh, where Wilson made several gatherings of the species. Franchet makes a special point of the hairy midrib ("folia . . . subtus rufescentia, et praeter nervum medium crassum lana cinerea demum detersili obtectum glabra"). And again, in a note at the end of the description, he says: "Voisin du *R. gracilipes* mais ses pédicelles sont courts, ses feuilles laineuses en dessous sur les nervures." He makes no mention of a blotch, and I can find no sign of one on the type specimen.

So we may be quite sure that those plants named *sutchuenense*, which have combined a glabrous midrib and a blotched corolla, are not the true species as described by Franchet. And Millais' observations as to the absence of a blotch from the flowers of his Chenault plants originally introduced by Farges seem to be conclusive.

In 1911 Messrs. Veitch sent to Kew a plant named *sutchuenense*, which we may regard as a third form, with a hairy midrib, a white corolla with a blotch rather broken up and not



FIG. 51.—TROPAEOLUM POLYPHYLLUM.

Photograph by R. A. Malby.

Magazine, t. 8362, as *R. sutchuenense*, the description being supplied by Dr. Hemsley. Through the kindness of Prof. Bayley Balfour, I have been able to compare this with Franchet's type and find them to be identical. The other has remained without a name, no doubt being regarded by some as the true *sutchuenense* and by others as a colour variety of that species. In regard to the colour of the flowers of supposed true *sutchuenense*, Millais says in his book on Rhododendrons, p. 250: "Wilson describes it as a bush 6 m. tall and 4 m. across, with flowers rose, rose-pink or rose-red, with a dark blotch. Specimens that I possess from Wilson's seed bear out this description, but plants I have from Chenault, which are originally of Farges' introduction, have smaller leaves and almost white flowers, only spotted on the upper lobes of the corolla."

R. sutchuenense was first described by Franchet* in 1895 from a specimen collected by Farges in the neighbourhood of Tchen keou-tin, in Eastern Szechuan. I have not been able to find this locality on a map, but probably it lies

so dark as in the second plant mentioned above. This seems to be almost intermediate between true *R. sutchuenense* and the plant described below as *R. praevernium*.

There is still a fourth condition to record, and a very fine plant it is, as shown by Mr. Gerald Loder at the R.H.S. show on Tuesday, February 24. This has all the characters of the *Bot. Mag. sutchuenense* except that the corolla has a deep blotch.

Summarising these observations, then, we have four plants showing different combinations of characters, as follows:—1, true *R. sutchuenense* of *Bot. Mag.* and as grown by Mr. Millais (leaves with floccose midrib, pink corolla with spots on the upper part of the back of the tube, but no blotch at the base); 2, *R. praevernium*, new species (leaves with a glabrous midrib, whitish flowers, with a huge dark purple blotch at the base and spotted in the upper part); 3, a plant (Veitch, 1911), with floccose midrib, and flowers as in number 2; and 4, Mr. Loder's plant, with leaves and colour of corolla of No. 1, but with the purple blotch of No. 2. I propose for the last mentioned the name *Rhododendron sutchuenense*, var. *Geraldii*.

* Franchet in *Journ. de Bot.*, ix., 392

Having established No. 1 to be the real *sutchuenense*, and I can see no reason why it should not be from the evidence before me, I cannot help but conclude that it and *R. praevernum* are two distinct species—at any rate they represent the extremes of a number of closely-allied forms—and that Nos. 3 and 4 are natural hybrids between them. This seems probable because both species occur in Western Hupeh. Experimental crossing between Nos. 1 and 2 should prove whether this view is correct. The following is a description of *R. praevernum* taken from living plants growing at Kew, where they have recently, during the abnormally mild weather, flowered in great profusion. Maybe the earlier flowering characteristics of *R. praevernum* will not always be a recommendation for outdoors, on account of late frosts. It should, however, prove invaluable for cool greenhouses such as the Himalayan House at Kew, where it has made a capital show:—

R. praevernum,* Hutchinson, n. sp.—A spreading, laxly-branched shrub; ultimate branchlets suberect, green, glabrous. Leaves laxly subverticillate, spreading, glabrous, elliptic-oblongate, somewhat gradually acute at the apex, narrowed to the base, 10-18 cm. long, 2.5-5 cm. broad, broadest about or slightly above the middle, firmly papery or almost leathery in texture, closely reticulate on both sides, dark green above, pale grey-green below; midrib slightly impressed above, prominent below, straw coloured, about 3 mm. broad at the base; lateral nerves about 15-18 on each side of the midrib, spreading, forked about 5 mm. from the margin and branched; petioles 2-2.5 cm. long, almost flat above, convex below, glabrous. Inflorescence terminal, about 10-flowered, supported by the upper leaves; bud scales oblong, abruptly acuminate, brown, villous with appressed hairs on both sides, glabrous towards the margin, up to 3 cm. long and 1.8 cm. broad; pedicels spreading, stout, 2 cm. long, reddish-purple towards the apex or along the upper side, glabrous. Calyx obsolete, obscurely 5-lobed, lobes broadly triangular, fleshy, glabrous, 2 mm. long. Corolla white or suffused with rose, with a large dark purple blotch at the base of the tube and with smaller purple spots above; tube somewhat campanulate, 5-pouched at the base, 4 cm. long, pubescent with short white hairs on the lower part within, glabrous and distinctly striate outside; lobes 5, deeply emarginate, about 2 cm. long and 3 cm. broad. Stamens 15, as long as the corolla tube, or slightly longer; filaments shortly villous with white hairs in the lower part; anthers dark brown, almost 3 mm. long. Ovary 10-15 celled, purple and green, 5 mm. long, glabrous; style slightly longer than the stamens, white, gla-

brous, crowned by a disk-like, minutely lobulate reddish stigma about 3 mm. in diameter. Capsule woody, oblique at the base, 4 cm. long, style persistent.

I also take the opportunity of giving a more detailed description of the type specimen of *R. sutchuenense*, collected by Farges in the neighbourhood of Tchen-keon-tin, Eastern Szechuan:—A shrub; one-year-old branchlets about 6 mm. thick when dry, marked by prominent black lenticels and minutely muricate, in an early state minute woolly-pubescent. Leaves rather crowded, oblong or oblong elliptic, rounded and slightly auriculate at the base or obtuse, bluntly mucronate at the rounded apex, 9-18 cm. long, 3.5-5 cm. broad, firmly chartaceous in texture, dark green above, finely reticulate and paler below, glabrous except for the densely floccose midrib, which when the hairs have sometimes fallen off remains prominently postulate or vernucose; midrib slightly impressed above, very prominent below; lateral nerves delicate, about 20 on each side of the midrib, distinct below, freely branched some distance from the margin; petioles 2-2.5 cm. long, nearly flat above but with a very narrow groove down the middle, rounded below and at first finely floccose-pubescent, soon nearly glabrous and finely postulate. Outer flower-bud scales thick and leathery, very minutely puberulous, shortly and abruptly acuminate, the inner ones rather densely villous outside. Inflorescence terminal, about 8-10-flowered; axis about 1 cm. long; pedicels 1.5-2 cm. long, very thinly lanate-pubescent, gradually expanded into the calyx. Calyx with 5 very shortly triangular lobes about 1.5 mm. long, glabrous, fleshy. Corolla widely funnel-shaped-campanulate, 6 cm. long; tube 4 cm. long, minutely puberulous towards the base on both sides, faintly spotted in the upper part but not blotched; lobes 5, rounded, emarginate, about 2 cm. long and 2.5 cm. broad. Stamens about 15, shorter than the corolla; filaments softly hairy in the lower part; anthers 4 mm. long. Ovary 7 mm. long, glabrous, slightly lobulate at the apex, surrounded at the base by a lobulate fleshy disk; style 4.5 cm. long, glabrous, gradually widened into a disciform lobulate stigma about 3.5 mm. in diam. Fruits not present.

Var. *Geraldii*,* Hutchinson; characters of the type but the corolla with a large blotch in the lower half of the tube. *J. Hutchinson*.



THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CALN, Esq., J.P., The Nodde, Codicote, Welwyn, Hertfordshire.

Alpine Strawberries.—Seeds of Alpine Strawberries may be sown now in shallow boxes.

pans. They will germinate quickly in a warm, moist atmosphere. As soon as the plants are large enough to handle they should be pricked off into shallow boxes and still kept growing in a genial temperature. After the seedlings are well established they may be stood in a frame near the glass and gradually hardened in preparation for placing them in the open.

Newly Planted Fruit Trees.—The trees should be examined occasionally, and where they have become loose at the base made firm again.

Cuttings of Bush Fruits.—Should cuttings of Gooseberry, Currants and other small fruits have become loosened in the soil by the action of frost make them firm, treading on either side of the rows when the ground is in a suitable condition for doing this.

Fruit Room.—Examine frequently the fruits in store and remove any that show signs of decay.

Grafting.—Owing to the early season it will probably be necessary to commence grafting operations by the last week in March or early in April. Whip or splice grafting is the method

* *Rhododendron sutchuenense*, var. *Geraldii*, Hutchinson, var. nov., a type *Rubus maculo atropurpureo* magno et superne plumbeo ornato difert.

generally adopted, for it is easily performed and practically certain to succeed provided the work is done carefully. Trees that were cut back as advised in a previous calendar should be made ready by trimming the surface smooth with a sharp knife. Where there is a difference in the sizes of the stock and scion the latter should be placed a little on one side to ensure a union. When the two have been fitted together as accurately as possible, bind them with raffia or some other suitable material. Cover the grafted part with clay or grafting-wax to exclude the air.

Vegetables and Fruit Trees.—Where good fruit is required it is not advisable to plant or sow vegetables close to the bush or tree. A space of five to six feet about fruit trees should be kept clear of other crops to allow the sun and air to reach the soil over the roots of the trees and permit of the use of the hoe. The soil should never be allowed to become hard, and should be well hoed after heavy rain.

PLANTS UNDER GLASS.

By JOHN CURTIS, Foreman, Royal Botanic Gardens, Kew.

Hippeastrum.—The main batch of *Hippeastrum* plants are in flower and good forms should be selected for seed production. Care is necessary in this respect, for indiscriminate cross pollination may result in the spoiling of a good strain. Thus, if one desires to perpetuate good crimson forms, only the best plants of that colour should be selected as parents, and the same should be done in the case of light-coloured forms. Plants that were not repotted and have finished flowering are growing freely and will need increasing supplies of water. Others that were shaken out and repotted will require very little water until they have made new roots and top growth.

Imantophyllum (Clivia).—The *Clivia* does not require frequent repotting, and when it is necessary the work should be done after the plants have flowered. If large specimens are required they should be shifted into larger receptacles, but the general stock should be grown in as small pots as possible. In repotting it is best to wash all the soil off the roots, which will permit of cutting off all the old decayed roots. Propagate choice varieties by division. Plants in good health have a large number of roots making repotting a difficult task. The soil should be on the dry side, in order that it may be easily worked amongst the roots; the fleshy roots are very apt to decay if they are damaged, and on this account water should be very sparingly given until plenty of new roots have developed. Syringe newly potted plants very lightly, for the broad leaves conduct the water into the pot and when there is little root action the soil would soon become saturated from this cause.

Begonia.—Where large plants of *B. Gloire de Lorraine* are required, insert the cuttings obtained from plants grown specially for this purpose. Select the basal shoots as cuttings in all the *Lorraine* forms. The American raised varieties, viz., *Concurrent* and *Glory of Cincinnati*, are worthy of extended cultivation; while Mrs. Petersen, with its brilliant red flowers and dark foliage with metallic sheen, should have a great future as a market plant, as it shows to great advantage in artificial light. It is rather slower in growth than the other forms, thus an early start should be made with propagating it. *Begonia Evansiana*, *B. weltoniensis*, *B. Dregii* and *B. Sutherlandi* are all useful plants for conservatory decoration, and should be started into growth. They are not so generally grown now as formerly, but are deserving of the attention of growers, as they may be had in flower towards the end of the summer when interesting subjects are scarce for conservatory decoration. *Begonia coccinea*, *B. Hageana*, *B. echinosepala*, *President Carnot* and *Luzerna*, all make fine specimen conservatory plants. These *Begonias* should be repotted as they require more root room. *Begonia semperflorens gigantea rosea* is one of the most useful greenhouse *Begonias* and, by propagating successional batches, plants may be had in flower all the year through.

* *Rhododendron praevernum*, Hutchinson, sp. nov.; affinis *R. sutchuenense*, Franch., sed geminis floriferis anguste ovatis, foliis costa media infra glabra (nec lanata), floribus albidis, corollae tubo dorso maculo atropurpureo magno et superne plumbeo ornato difert.

*Frutex divaricatus, laxo ramosus; ramuli ultimi suberecti, virides, glabri. Folia laxo subverticillata, patentia, elliptico-oblongeolata, apice subsensim acuta, basi angustata, 10-18 cm. longa, 2.5-5 cm. lata, creter vel leviter supra medium latio, firme chartacea vel subcoracea, utrinque glabra et crebre reticulata, supra fuscoviridia, infra pallide emereo-viridia; costa media supra leviter impressa, infra prominens, straminea, basi creter 3 mm. lata; nervi laterales utrinsecus 15-18, patuli, infra marginem creter 0.5 cm. bifurcati et ramosi; petioli 2-2.5 cm. longi, supra fere plani, infra convexi, glabri. Inflorescentia terminalis, creter 10-12, folis superioribus suffulta; pediculi oblongae, abrupte acuminate, brunneae, utrinque adpresse villosae, marginibus glabrescentibus, usque ad 3 cm. longae et 1.8 cm. latae; pedicelli patuli, robusti, 2 cm. longi, apicem versus purpureo-olivacei, glabri. Calyx obsolete, obscure 5-lobatus, lobulis late triangularibus carnosus glabris 2 mm. longis. Corolla alba vel rosae suffusa, dorso tubi maculo atropurpureo magno et superne maculis purpureis numerosis ornata; tubus tubuloso-campanulatus, basi 5-pouchatus, 4 cm. longus, infra inferne pilis brevibus albidis reflexis pubescens, extra glaber, distincte striatus; lobi 5, profunde emarginati, creter 2 cm. longi et 3 cm. lati. Stamina 15, corollae tubo aequilonga vel paullo longiora; filamenta inferne breviter albivillosa; antherae atropurpureae, fere 3 mm. longae. Ovarium bifidolobatum, purpureum et viride, 5 mm. longum, glabrum; stylus staminibus paullo longior, albus, glaber, stigmatibus disciforme minute multilobulato creter 3 mm. diametro rubescente coronatus. Fruits lignosis, basi obliquis, 4 cm. longis, crebre persistentes. Western China, Western Hupeh: *E. H. Wilson* (Veitch Exped.) 17 fl. and fr. Apr. 1907. *E. H. Wilson* (Veitch Exped.) 257. *E. H. Wilson* (Ann. Arb. Exped.) 507 partly. South Patung, 6,050 ft., *Henry* 325.*

THE FLOWER GARDEN.

By SIDNEY LIGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

The Tea Garden.—There are variously designed summer or tea-houses, and amongst the best are those built of brick or stone. Some of them have penthouse-aves which give to the building the appearance of a cottage or bungalow. Where space and environment permit, such tea-houses may be made more attractive by the addition of a small cottage garden, which should be of such proportions as to be in keeping with the house. A low Roman wall, allowing suitable openings, will make a useful boundary, as will also a closely planted hedge of Fellenberg Rose. When the borders and a few plain beds have been made it is preferable to flag the remaining ground and leave openings here and there for the reception of small individual plants. If breadth allows, an Apple, Pear or Cherry tree may be planted. A windlass, standing over an imitation well-top, together with bucket and besom, is a pleasing addition. Old-fashioned flowers are the most suitable to plant, and as far as practicable a few of each kind should be used in preference to many of one distinct variety. Lavender, Rosemary, Sage and varieties of Dianthus are indispensable, and it is wise to allow soft colours to predominate so as to harmonise with the grey foliage of the other plants. A few standards of Honeysuckle and Tea Roses will improve the scene, and clumps of Hollyhock and Sunflower will prove effective in the border. *Pyrus japonica*, Jasmine and Clematis may overhang the Roman wall, and *Aloysia*, Winter Sweet, and Vines should be placed against the house. Amongst other plants which may be used are:—*Daphne Mezereum*, *Kerria japonica*, *Fuchsia Riccartonii*, Pansy, Musk, Thyme and early Chrysanthemums. To preserve a realistic appearance, attention should be given to details; for instance, when stakes are required, they should be natural and used as cut.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SUMNER (CIV.), M.P., Ford Manor, Lingfield, Surrey.

Early Permanent Vines.—Keep the shoots clear of the glass, but do not be in a hurry to tie them in position as, later, when the vines are in flower, they may be tied down without much fear of injury. Take advantage of fine days to forward the crop, but do not maintain a high temperature; during cold nights 60° to 63° is quite suitable; 5° more may be given during mild weather. Carefully pinch the laterals, for good, healthy leaves are preferable to lateral growths.

Fertilisation.—When the flowering stage is reached, a constant circulation of warm, buoyant air is essential to a good set. The temperature may be raised to 65° by night for Black Hamburg and 68° for Muscats. Much depends on the weather, however; too much heat and an arid atmosphere are detrimental to a free setting. It has been proved during the past few years that vines fruit freely in a much lower temperature than usually provided, but atmospheric moisture must be reduced when less fire heat is used. The setting of Grapes is helped by artificial pollination. Muscats and other varieties known to be shy setters may be greatly assisted in this direction by charging a camel-hair brush with Black Hamburg pollen and running it very lightly over the flowers every day when the temperature has reached the maximum.

THE KITCHEN GARDEN

By H. WHILLER, Gardener to Mrs. JENNER, Wenloe Castle, near Cardiff.

Seedlings.—Vegetables that have been raised in heat should be pricked off before they become drawn, and grown in a temperature of about 50°.

Peas and Broad Beans.—When Peas and Broad Beans, in pots, attain a height of two inches, they should be placed in a cold frame; cover the frame at night to exclude frost.

Broad Beans.—Seeds of the Longpod and Windsor types may now be sown in the open to succeed those sown in heat. As firm ground is necessary for this crop, select land that has been manured and dug some time previously. Draw two drills at one foot apart and two inches deep and, at intervals of one foot, place two seeds fairly closely together in them; the weaker plants should be removed when the seedlings appear. A distance of three feet should be allowed between the next pair of rows.

Herbs.—Cuttings of Thyme and Sage struck last autumn are ready for transplanting. Tarragon and Chives should be divided into small clumps for replanting. Mud gives better results when propagated from cuttings than from transplanted roots. Reserve the ground for this crop until the cuttings become available in April.

employed, more care is necessary in watering. In re-making the plants into specimens, a number of leads or growing points are required, and they should be arranged evenly over the surface in such a manner that the centre of the plant is well furnished with growing points. It may be necessary to use wire pegs to hold the pseudo-bulbs in position until the plants are re-established in the compost. When the work of repotting is completed, arrange the plants in a warm, moist house, shade them from strong sunlight, afford water sparingly, and spray them overhead each day when the weather warrants the use of the syringe. Where numbers of these plants are grown, a few specimens should be repotted each year. This is preferable to disturbing the whole collection at one time, owing to the fact that *C. cristata* does not flower so freely or so strongly the first year after being repotted.



FIG. 52.—COELOGYNE ASPERATA.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSIGHT, Esq., Castleford, Cheshire.

Coelogyne. During the past few weeks well-grown plants have furnished a fine display, and now that the flower scapes have been removed, any necessary repotting may be done. *C. cristata* does not need disturbance at the roots for several years, but specimens that have overgrown their receptacles with the growing points extended far beyond the soil, should be turned out of their pots or pans, the old soil and dead roots removed, and the back pseudo-bulbs, excepting three behind each growing point, cut away. Pans six or nine inches in diameter are preferable to pots for this class of Orchid, and, as *Coelogyne* are more or less shallow rooting, the pans should be filled quite half their depth with drainage material. Use compost consisting of *Osmunda* fibre, peat, and Sphagnum moss in equal parts, with a sprinkling of finely broken potsherds to render the mixture porous. Some growers advocate the use of good fibrous loam instead of *Osmunda* fibre, but when this material is

Other Species of Coelogyne.—The genus *Coelogyne* is a large one, and contains a number of plants of horticultural merit, one or more being in flower during the greater part of the year. In these circumstances the repotting may be spread over the twelve months. Use the same kind of soil as advised for *C. cristata*. A few, such as *C. Massingeanii* and *C. Dayana* are, on account of their pendulous scapes, best grown in teak wood baskets, furnished with a wire handle, whereby they may be suspended from the roof rafters. *Coelogyne* that inhabit hot, damp countries should be grown in the warmest house; they embrace *C. asperata* (see Fig. 52), *C. Rossiana*, *C. Micholitzii*, *C. Dayana*, and *C. Cumingii*, while *C. barbata*, *C. floccida*, *C. elata*, *C. graminifolia*, *C. ocellata*, *C. Gardeniana*, and *C. speciosa*, may be grown in a house having an intermediate temperature. Partial shade is needed by all *Coelogyne*, and at no time should the soil be allowed to become excessively dry. Although the water supply should be less both in quantity and frequency throughout the period of inactivity, sufficient moisture must be given to keep the pseudo-bulbs in a plump and rigid condition.

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

THE MARKET FRUIT GARDEN.

THERE seems to be a general agreement that the past month was the mildest, sunniest February within memory. At the same time the rainfall was very low, the total of .47 in. recorded by my gauge being less than half the average. There were white frosts on a few mornings towards the opening and close of the month, but they were of the mildest order, and could not be said to give any hint of winter. No one could fail to enjoy the glorious weather, but it must be confessed that the fruit-grower's pleasure was marred by anxiety as to the fate of his crops. Naturally vegetation was phenomenally forward at the close of the month. I consider the season to be four weeks in advance of the normal. The nearest approach to it of which I have any record was 1913, but the present season is slightly more precocious. Blackthorn was in full bloom in the hedgerows by February 15, and at the same date yellow Crocuses were a blaze of colour, followed five days later by the first of the double yellow Daffodils. Turning to fruit trees, the blossom buds of Pears have been showing in compact clusters since the middle of the month, whilst the earliest of the Plums—Monarch and Black Diamond—had just burst their fruit buds by the 20th, exposing the clusters of unopened bloom buds. By the same date the fruit buds of two varieties of Apples (Beauty of Bath and Golden Spire) had advanced so far as to show just the tips of the leaves surrounding the bloom clusters; and it was found advisable to omit the winter spraying of these kinds, as the caustic wash in use was scorching the buds. As a rule, one can safely go on spraying Apples well into March.

Up to the time of writing all is well with the orchards. There has been little interruption to work in the open, which is forward in consequence, and there is promise of a beautiful display of blossom. But what is in store for us during the next two months? We cannot hope to escape all severe frost and cold winds. If a cold spell came immediately, I do not think fruit trees would be harmed. On the contrary, development would be suspended, and all might be well. Danger lies in a continuation of mild weather, which must bring many fruit trees into bloom at a season when they could hardly escape damage from frost.

EARLY SEASONS.

I believe I am correct in saying that early springs are almost invariably followed by fruit crops that are under average. In the springs of 1916, 1913, 1912, and 1903, vegetation was very forward, and in each of these years the fruit harvest was light, taking the country generally.

WINTER SPRAYING.

Winter spraying was carried out under ideal conditions in February. There was scarcely any interruption by rain or wind. When a caustic wash is being used, calm weather is essential, as the spray is very painful if it blows into the men's faces. Rain does not matter if it does not fall whilst the trees are actually wet with the wash. If the wash once gets a chance to dry on, all is well.

Winter spraying is the most trying of the year's spraying operations. It uses the most material, and therefore takes longest and involves the most carting of water, whilst the strong solutions used are destructive to clothes and painful to the hands. There is no job on the fruit farm that the men dislike so much. Spraying in summer is far less irksome. Progress is then more rapid, the weather is finer, and the spray does not burn.

I was rather deceived as to the quantity of wash required. Last year I found that each tree required rather over one gallon. This year, spraying 10 acres, the quantity used averaged over 1½ gallon per tree. The chief reason for this is that many big Plum trees were included, and these seem to take much more wetting than Apples, the growth being bushier and the bark rougher.

It is surprising that winter spraying should use more wash than summer spraying with a contact wash against aphides, etc. In both cases the trees must be drenched, but the contact wash has better wetting powers, owing to the soap it contains, and the foliage on the trees catches and confines the spray. In winter, with the branches bare, half the spray misses the tree and falls on to the ground.

No job needs more supervision than spraying. Success depends very much on thorough work, and some men seem unable to learn the knack. A good sprayer wets his trees thoroughly with half the wash used by another. Some dwell too long in one spot and miss others altogether.

The appearance of the trees after spraying with caustic soda and copper sulphate is ample compensation to the grower for the trouble involved. They look delightfully clean and healthy. Even old canker wounds on Apples are cleared of loose, dead tissue, and left with a good chance of healing over.

BEGINNERS AND PUPILS.

Judging from the number of applications received from people who want to look round the place with a view to seeing something of fruit growing before starting for themselves, it appears that many are attracted to the industry. I suppose it is mainly because Army life has encouraged a longing for outdoor occupation. It will be unfortunate, however, if many people embark on fruit growing at a time when those already in the industry are distinctly pessimistic as to its future. At meetings of trade associations it seems to be generally agreed that all branches of commercial horticulture have a hard time to face. No doubt established businesses will be able to weather it; but one cannot imagine a worse time than the present for beginners. Trees are three times their pre-war value and difficult to obtain at any price; and all other requirements are correspondingly dear. Wages are high, and about to rise again, with the probability of curtailed working hours into the bargain. At the same time, prices for the grower's produce are rapidly falling to pre-war scale. Long before trees planted now come into bearing they will certainly have reached it.

Would-be pupils are also numerous. For them, I think, prospects are better. As growers realise that scientific methods are essential, the demand for intelligent, experienced men as managers will probably increase. Or, should the pupils ultimately wish to start for themselves, by the time they have gained their experience, conditions may be more favourable. However this may be, pupils are now so plentiful that a grower might almost run his business with no other labour, if he cared to do so. Personally, I never take pupils because, if they are to be taught properly, they take up more of one's

time than their labour is worth. They may say that they are willing to give their services in return for tuition, and to work just like the ordinary hands; but you cannot conscientiously put a pupil to hoeing for two or three months on end. You must show him something of every branch, and give him a good deal of time and thought.

LOW PRICES FOR APPLES.

There has been a lot of discussion as to the reason for the low prices of home-grown Apples during the past winter, as compared with those ruling for imported fruit. The Ministry of Agriculture, wishing, no doubt, to point a much-needed lesson, offer the well-worn explanation of inferior grading and packing. This solution, however, does not fit all cases. There are now plenty of growers who pack well, and yet their stored Apples have given poor returns, though better, of course, than those realised for badly-packed samples. I suggest that the true explanation is to be found in the brighter colour of most of the imported fruit. The demand all through the winter has been for coloured Apples—in other words, for Apples that look sweet enough to eat raw, and do not require cooking with sugar. I may be met by the objection that Bramley is a coloured Apple, whilst Newtown Pippin is green; but the reply to this is that even the general public know that the latter is a sweet eating Apple, whereas Bramley is a cooker in spite of its colour. Even at the end of February, with imports getting low, the price of home-grown cooking Apples advanced very little; but I sold some Baumann's Red Winter Reinette (bright colour, but no flavour) at 6s. per half-bushel. The sugar scarcity is a very unfortunate feature of the situation for fruit-growers.

APHIDES AND FROST.

I was much interested in Mr. J. G. Blakey's article on the above subject (p. 78). Such prolonged, painstaking observations as his are of the greatest value to fruit-growers, who have not the time to undertake them for themselves. Evidently we must dismiss once and for all the comforting hope that aphides succumb to frost to any extent. There seems to be more hope that they may be drowned by rain, though it is probable that enough survive all adverse conditions to multiply and infest the trees. Natural insect enemies are of more importance. Last year the ladybird beetles and their larvae did much to keep down aphides, and there is some hope that they may do the same good work in the coming season. Many of the beetles have survived the mild weather, and have been found on the trees during pruning.

PLOUGHING IN ORCHARDS.

Capital work has again been done this winter with the special fruit farm plough. Two Apple orchards, from which the under-crop of Black Currants had been grubbed have been ploughed, throwing the furrow-slices towards the stems of the trees. With the handles of the plough set off at an angle, and the horses attached by a single chain to the beam instead of to the head, both horses and man walk clear of the branches, whilst the plough works close to the trees. An open furrow is left down the centre of each alley, and serves for drainage. This is filled in by cultivation and hoeing during summer, which also draws most of the surplus soil away from the trees again. Running grass, which formed a perfect mat in part of one orchard, and defied the fork and hoe last year, was covered perfectly by the plough. I do not think there is any more root injury than in digging, if as much, and the work is, of course, vastly less expensive. *Market Grower.*

INDOOR PLANTS.

GREENHOUSE PLANTS WITH FRAGRANT FOLIAGE.

FRAGRANCE, whether in flowers or foliage, is appreciated by practically all lovers of plants. First and foremost among greenhouse plants with sweetly scented leaves are the different varieties of Pelargonium, which are not now grown to the same extent as they formerly were. They are, however, very attractive, not only to the sense of smell, but the foliage of most kinds is exceedingly pretty, while, from a flowering point of view, many of them have merit.

Among the best must be included *P. crispum*, of a delightful Citron scent. A variegated-leaved variety of this species was given the high honour of a First-Class Certificate by the Royal Horticultural Society last year. *Clorinda*, with bright rose-pink coloured blossoms; *P. denticulatum*, finely cut foliage; *Duchess of Devonshire*, flowers bluish-white, blotched crimson, foliage very fragrant; *P. lilifolium odoratum*, with Fern-like fragrant leaves; *Fair Ellen*, an Oak-leaved variety, with rose-coloured flowers; *Lady Plymouth*, with variegated foliage; *Lady Scarborough*, with leaves cut like Parsley; *M. Nonin*, with much divided leaves and scarlet flowers; *Pretty Polly*, with almond-scented leaves; *Prince of Orange*, dwarf, Orange-scented; *P. quercifolium*, Oak leaved; *P. radula*, with large and much divided leaves; *Scarlet Pet*, red flowered; *Shottenham Pet*, rosy-purple flowered; and *P. tomentosum*, with large, hairy leaves that have a strong odour of Peppermint.

To these must be added the different forms of the old Unique type, all of which are of rambling growth and bear fragrant leaves. The best is Rollisson's Unique, with rich violet-crimson coloured flowers. Though the Pelargoniums named above are so desirable in many ways, they cannot be regarded as popular at the present day, hence it is often difficult to obtain certain varieties as few nurserymen stock them.

Another fragrant plant is the Lemon-scented Verbena (*Lippia citriodora*), often known as *Aloysia citriodora*. In the milder parts of the country it survives the winter out of doors, but it is generally regarded as a greenhouse subject. The rough leaves are deliciously scented. Complaints are sometimes made that the Lemon-scented Verbena does not root readily from cuttings, but no difficulty need be experienced in that respect. If an old plant is placed in a warm greenhouse in early spring, it will at once start into growth, and as soon as the young shoots are a couple of inches in length they are suitable for use as cuttings. They should be inserted quickly into pots of sandy soil, and if placed in a close propagating case where gentle warmth is maintained, roots will soon be formed.

The Myrtle is another greatly appreciated scented-leaved shrub, but in order to obtain the best of the fragrance, the leaves must be lightly crushed. The Myrtle also occupies a high position as a flowering plant. There is a small-leaved variety—*Jenny Reicheubach*, which blooms freely when quite young.

Eucalyptus citriodora has a very pronounced Citron-like fragrance while the leaves retain their juvenile character, but in the adult foliage fragrance is less pronounced. The Blue Gum—*Eucalyptus globulus*—may also be included with scented-leaved plants. *Erlangea tomentosa*, a comparatively recent introduction from Central Africa, is valued because it produces its heads of mauve coloured blossoms during the winter months, and has also very pleasantly scented foliage.

The Pineapple *Salvia* that bears the specific name of *S. rutilans* gives out an agreeable perfume if lightly touched, but if roughly handled the Sage-like smell becomes very pronounced.

An old plant in gardens is the South African *Diosma ericoides*, a much branched Heath-like shrub. If the hand is passed over the foliage a pleasing aromatic fragrance is given off. The Balm of Gilead—*Cedronella canariensis*—which was formerly known as *Dracocephalum canariensis*, is a member of the family Labiatae. The rough leaves are highly fragrant, and specimens at exhibitions attract particular attention, as the plant is now seldom met with in gardens.

Andropogon Schoenanthus, the Lemon Grass,

is a fragrant species that grows well in a warm greenhouse. The leaves when bruised emit a very pleasing odour and the plant is of very attractive appearance. This *Andropogon* is the source of Indian Geranium oil.

Artabotrys odoratissimus is another sweet scented plant that needs a warm house, being a native of the Malayan Islands. It forms an evergreen shrub and produces its Apple-scented, reddish-brown flowers in terminal racemes. W. T.

TREES AND SHRUBS.

HAMAMELIS.

The mild weather prevailing at the time of writing, and for the past few weeks has been very favourable for the development of the flowers of the Witch-Hazels. Four species—*H. arborea*, *H. japonica*, *H. mollis*, and *H. vernalis*, and one variety, *Zuccariniana*, are at present in flower; while *H. virginiana* blossoms



FIG. 53. WISTARIA CHINENSIS FLOWERING ON A TERRACE WALL.

in autumn. Of these, *H. mollis*, the Chinese Witch-Hazel, is the best and most showy species when in flower, while in leaf in summer the bushes are distinct and attractive. In the pleasure grounds at the present time the Hamamelis, with their deliciously fragrant flowers and narrow-twisted or hooked yellow petals, are unsurpassed. Being deciduous, the bushes are particularly showy with an evergreen background.

The least known species is *H. vernalis*, a native of Arkansas, Louisiana, and Missouri, introduced to Kew from the Arnold Arboretum in 1910. It may perhaps be best described as a January and February flowering *H. virginiana*. The new introduction will be sought after for collections, but as a decorative and showy species it is inferior to the Asiatic species.

The usual method of propagation is grafting under glass in spring, using *H. virginiana* as the stock. Seeds ripen during some seasons, and these should be sown as soon as ripe, but germination may take a year or more. *H. mollis* ripened seeds at Kew during 1914. The Witch-Hazels thrive in a moderately light, loamy soil, with a little leaf-mould or peat immediately around the plants.

COTONEASTER ROTUNDFOLIA

THE species *rotundifolia* is perhaps the most useful shrub in the Cotoneaster family. It forms a spreading bush four feet to six feet or more in height, and,

as many leaves usually remain on the plants until early spring. *C. rotundifolia* is best described as a semi-evergreen species. The flowers are white, tinted with pink, not conspicuous among the rather small Box-like leaves. The particular season of beauty is when the bushes are in fruit, for the latter are fairly large, half-inch long, Pear-shape, and in colour a brilliant sealing-wax red. Besides forming freely, the fruits remain in good condition on the plants until February or March, as they are the last of the Cotoneaster fruits taken by the birds. *C. rotundifolia* is most effective when planted in groups, either in the shrubbery borders, or a large bed in the pleasure grounds. With the mid-winter sun glistening on the fruits the bushes are particularly attractive.

Cotoneasters may be propagated by seeds and cuttings, the latter made of half-ripened shoots during July and August, inserted in a slightly heated propagating frame; or ripened shoots may be inserted in a cold frame in October or November. A. O.

WISTARIA CHINENSIS

CHINA has enriched our gardens with a wealth of beautiful flowering plants, but none is more handsome or more generally cultivated than the *Wistaria*, which was introduced so long ago as 1816. The plant is very long lived, and the fine specimen on the wall in the Chiswick Gardens, raised (probably by layering) from one of the first specimens imported, is well within the recollection of many. Age only seems to cause greater freedom of flowering, as witness the many fine examples of old plants on garden buildings and walls, which each season are draped with the long racemes of bluish-lavender blossoms, forming one of the most attractive features in their season.

The long, rambling shoots lend themselves admirably to trailing and entwining among balustrades of low containing walls, such as is seen in the accompanying illustration, which shows the terrace wall at Paddockhurst, Sussex, furnished with the plant in bloom. In some seasons the *Wistaria* develops a second crop of flowers late in the summer, forming a succession to those of May and June.

It will be noticed also that this plant is used as a climber against the wall of the adjacent building, where it is flowering freely.

Besides these purposes, the *Wistaria* is a good subject for pot cultivation and it often forms part of the decoration of the "Japanese" garden, where it is usually associated with pools or streams, a fine effect being produced when the shoots hang down over the water.

THE FUTURE OF THE POTATO CROP.*

(Continued from p. 120.)

So far as one can gather, Champion was not exactly the kind of Potato required, but inasmuch as the variety was resistant to the disease, it became popular with the farmers, for they were able to grow good, sound crops with the minimum of risk. Breeders of Potatos then set to work to produce varieties suitable for market purposes, but which, like Champion, retained resistancy to disease. Magnum Bonum, introduced by my own firm in 1876, Schoolmaster, Up-to-Date and Maincrop, and many other excellent varieties possessing these qualities, became popular, and, as these wore out, their places were taken by such newer introductions as May Queen, Epicure, British Queen, Abundance, President, King Edward and Arran Chief. Many of these, though in possession of factors rendering them resistant to blight, lacked others which rendered them highly susceptible to another parasite which produces wart disease.

The first time this disease was brought to my notice was in the autumn of 1898, when a case was reported to me by the late Mr. W. Kerr, of Dumfries, though the plant was grown on the

The disease is exceedingly virulent, exceedingly contagious, and no cure has yet been found for it; perhaps it will prove incurable. Infection may be carried on the soles of the boot, and probably a great deal of contagion has been conveyed in this way. On that account I sometimes, indeed, fear that the presence of so many experts on the poisoned soil at the Ormskirk trials from all parts of the country may itself be a danger, though whether the Ministry of Agriculture would be successful if they applied to the Treasury for a grant to enable them to provide a few hundred pairs of boots or goshes for the use of visitors to Ormskirk is perhaps open to doubt! It is also likely that the disease has been spread and will to some extent continue to be spread as the result of the conveying of truckloads of Potatos from infected districts, for it is for all practical purposes impossible either to retain railway trucks for the use of immune varieties grown in clean areas, or to cleanse these trucks sufficiently to ensure that the next consignment may not be infected by the tubers carried on a previous journey.

During the past summer Mr. Snell has been conducting a valuable series of experiments with insecticides and preparations of various kinds to secure non-immune Potatos from attack on infected land, but I understand that so far his

I have already referred to the discovery of immunity made by Mr. Gough in the year 1908, and I should like at this stage to call your attention to its extraordinarily interesting nature. Plant diseases are legion, and many eminent men are doing invaluable work in ascertaining their causes and suggesting preventive measures, with considerable success; as a result, the Ministry of Agriculture has published a large number of leaflets which are of great assistance to the grower of farm plants, fruit trees, vegetables and other plants of all kinds possessing characteristics of more or less value to the nation. For many years hybridists have been devoting their energies to the production of Potatos capable of resisting the ravages of the ordinary Potato disease, *Phytophthora infestans*, and much good work has been done in this direction. Some of us have fairly clear ideas as to the lines upon which such work should be conducted with the best prospect of success. In the case of Wart Disease, however, we find ourselves confronted, as a result of this discovery, with a circumstance which, so far as I am aware, is practically unique, for varieties are constantly being produced which are not merely resistant, but absolutely immune to attack. I do not think it is possible to resist this conclusion; you may plant an immune variety in infected soil and surround it with plants of susceptible varieties, and in no genuinely authenticated case, so far as I know, has the immune variety been infected in the slightest degree.

It has been suggested to me that a collapse may be expected when in the course of time a variety loses its constitution through age, but against this has to be placed the fact that many of the best-known immune kinds have already been in cultivation for many years, notably such Potatos as Sutton's Abundance and the Sutton Flourball, introduced into commerce in 1836 and 1895 respectively. We may, therefore, I think, consider that point settled.

An equally important question both to the grower and the hybridiser is: What constitutes immunity? Here, unfortunately, at present we have no answer to give, though we cannot doubt that this problem will be settled in the near future. We all probably have our theories, and many of us are engaged in research work for the elucidation of this mystery. I venture to hold the opinion that when it is solved it will be far easier to produce immune varieties of great merit than is the case at present.

PLANTING IN THE FUTURE.

In the 'eighties the farmers, to overcome blight, gave up growing Victorias and Regents, and planted the resistant variety Champion. The farmers of to-day in the North-Western and Midland parts of England must forsake their old and perhaps favourite kinds and grow the immune varieties. There is no other safe course for them to adopt, and no other which would be fair to their neighbours with the clean lands in the Eastern Counties. The plan is the only one which the community as a whole could accept.

Apart, therefore, from the regulations of the Government, this change will take place in the future. At present fully 95 per cent. of the disease in England and Wales is confined to land lying north of a line drawn from the Humber to the Bristol Channel, and any regulations made by any Government Department would be for the purpose of keeping the disease within these limits. Most growers in this infected part naturally take advantage of the researches mentioned, but there are others who might be inclined to keep varieties producing diseases every year irrespective to the danger to others. Regulations are made to prevent this. The important Potato industry of the Home and Eastern Counties is practically clean, and growers there are viewing with considerable anxiety the chances of their lands becoming infected; they know of the infected lands on the West Coast, and realise the danger of bringing Potatos across. In the public interest, therefore, the trade in Potatos for the future may be somewhat controlled so that all Potatos grown in the infected parts may be consumed therein and not moved to the clean areas.



FIG. 54.—POTATO KERR'S PINK.

Cheshire side of the Mersey, near Liverpool. Probably, however, the Ministry of Agriculture are acquainted with earlier instances of its appearance.

About 1907 it began to cause alarm, and in 1908 the Board of Agriculture wisely carried out exhaustive inquiries, and Mr. Gough, one of their inspectors, noted that varieties like Snowdrop, Conquest, Langworthy and Golden Wonder were not only resistant, but were never infected with the disease. This discovery marks an important stage, and led the Board to institute trials from which there developed a piece of experimental work by Mr. Malthouse in Shropshire, and Mr. Snell, in Lancashire, which saved the whole situation, and incidentally raised the Potato industry of Great Britain to the first rank in the world. Practically all varieties of Potatos in commerce were tested, the result showing the startling fact that over one hundred are immune to Wart Disease, some of the more important being Dargill Early, Arran Comrade, Great Scot, Tinwald Perfection, White City, Kerr's Pink (Fig. 54), Majestic and Abundance. During the period 1909-1915 hundreds of acres of Potato land in this country became infected with this disease.

efforts in this direction have proved unavailing.

The researches of the Ministry of Agriculture have, however, given to the farmer the solution of the problem, for even if his lands are absolutely poisoned with the disease, or situated in a suspicious district, he need not despair.

The following table will give an indication of how far it is at present possible to replace the more popular Potatos which succumb to Wart Disease with varieties which are immune:—

	Non-Immunes.	Immunes.
First Earlies	May Queen ..	Dargill Early.
	Duke of York ..	Edzell Blue
	Express ..	(see Fig. 55)
	Eclipse ..	Snowdrop
Second Earlies	Epicure ..	Witch Hill
	British Queen ..	Sutton's Ashleaf
	Royal Kidney ..	Great Scot
	Edinburgh Castle ..	Ally
Main- crop	Queen Mary ..	Arran Comrade
	The Colleen ..	King George
	Arran Chief ..	Sutton's Early
	Up-to-Date ..	Market
	King Edward ..	Abundance
	Factor ..	Majestic
	President ..	Kerr's Pink
		Tinwald Perfection
		White City

* A Paper read by Mr. Martin H. F. Sutton, F.R.S., at a Meeting of the Farmers' Club on Monday, 2nd February, 1920.

WART DISEASE AS AFFECTING EXPORT.

Owing to the existence of wart disease, foreign nations are making regulations for the purpose of preventing the introduction of infected seed Potatoes from this and other countries. There is no doubt that foreign countries are anxious to secure our varieties, and the desire will increase provided the Potatoes can be obtained from clean lands. This is another reason why stronger efforts must be made to keep the clean lands from becoming infected. It could be accomplished by the wholesale planting of immune sorts at once, but farmers with clean lands are not ready for the change, seeing that varieties such as May Queen, Ninetyfold, Epicure, British Queen, King Edward, Evergood and Arran Chief give such excellent results.

Taking a broad view, it is distinctly a dangerous practice to continue planting any variety which shows any special susceptibility to the disease. Statistics of the Ministry of Agriculture show that the bulk of fresh cases of this disease occurring in the clean districts are on Arran Chief; the experiments of the Ministry of Ormskirk also show that Arran Chief and Cumberland Ideal are more susceptible to the disease than others. This being the case, these two varieties will soon go out of cultivation, and the sooner growers in the Eastern Counties give them up the better.

Rapid changes are at all times difficult to effect without causing disturbance, and even disastrous results. Raisers of Potatoes must review the whole subject carefully and produce the kinds required. The right Potato must possess the fine shape and cropping powers of the Up-to-Date, with the resistance to blight of the Sutton Flourball and the immunity of a Golden Wonder.

(To be concluded.)

VEGETABLES.

SUMMER LETTUICES.

LETTUCES are in demand throughout the summer, so that it is necessary to keep up a succession. The hotter the weather, the greater is the demand for Lettuces and the more difficult it becomes to supply them, owing to the liability of the plants to "bolt" or run to seed. This is most likely to happen if the plants remain too long in the seed-bed and are then planted when the soil is somewhat dry. In hot weather sowing on seed-beds should not be done; it is a better plan to sow the seeds thinly in drills where the plants are to stand. In these conditions the plants are able to bear drought, provided the roots have a cool, rich medium. In the latter case seeds should be sown at the bottom of a fairly wide drill, drawn about two inches deep; the plants are then grown in a shallow trench, so that they get the full advantage of showers. Should the soil be dry at the time of sowing, the drill can be filled with water an hour or so in advance, no watering being done after sowing. This plan ensures rapid germination, even in the driest of weather. If good seed be used it can be sown quite thinly, as nearly all will germinate, and it is an advantage to have as little thinning to do as possible. The plants removed in thinning may be set elsewhere if required. If the soil is dry and transplanting is done, holes should be made in advance and filled with water, the plants being put in when the moisture has drained away.

Frequent small sowings made as described will give a succession of Lettuces throughout the summer with little trouble. Large sowings are not advisable, as the crop is soon over in hot weather. The growing crop benefits much from constant hoeing and from the occasional use of liquid manure, or, failing that, a very light top-dressing of nitrate of soda.

The Cos varieties are generally most appreciated in summer, and of these, Sutton's Non-such and Peerless are as good as any. The first-named is a medium grower, but very solid; Peerless is large and a grand summer Cos variety. If a Cabbage variety is wanted, Ideal will be found satisfactory. *James A. Paice.*

THE BULB GARDEN.

LILIUM SPECIOSUM.

THIS Lily, which is represented by several varieties, must be regarded as the best all round Lily that flowers during late summer and early autumn. Prior to the war, immense quantities of the bulbs were sent to this country from Japan when in a dormant state, but this season comparatively few have been received. Such being the case, it will be necessary to take care of those that have flowered, and grow them on for another season. This was not always done when bulbs were plentiful and cheap, a frequent practice being to depend upon fresh importations each year.

Lilium speciosum may be put to a variety of uses. It is invaluable for the embellishment of the greenhouse or conservatory, for it flowers when many of the summer flowering occupants of these structures are on the wane. The plants may be placed out of doors during summer and taken under glass just as the earliest blossoms are on the point of expanding. If desired to have them in flower earlier, they may be grown entirely in the greenhouse.

L. speciosum and *L. longiflorum* are the two best species for retarding purposes. By this means

bulbs of *Lilium speciosum*, then known as *L. lancifolium*, from Holland, as, though originally a native of Japan, it rapidly increased under cultivation by the Dutch. The Japanese forms sent over within recent years have given flowers much superior in size and colouring to those grown in Holland.

Of coloured sorts, the best are *Melpomene* and *rubrum magnificum*, in both of which the flowers are deep carmine, edged with white. Not all the coloured forms from Japan are of equal merit, for individual differences among them are many. In those from Holland, the names of *purpureum*, *roseum*, and *rubrum*, seem to be used indiscriminately, for there is often no difference between them. I have heard the suggestion made that the form with green stems should be known as *roseum* and the dark coloured one as *rubrum*. This differentiation cannot, however, be relied on, as occasionally some of the green stemmed plants bear flowers deeper in hue than the dark tinted ones.

One variety that I have never obtained among the many thousands of Japanese bulbs I have flowered is the punctatum of the Dutch, with an almost white ground, dotted in a varying degree with deep pink. It is of a more delicate constitution than the others, and the anthers are yellowish.

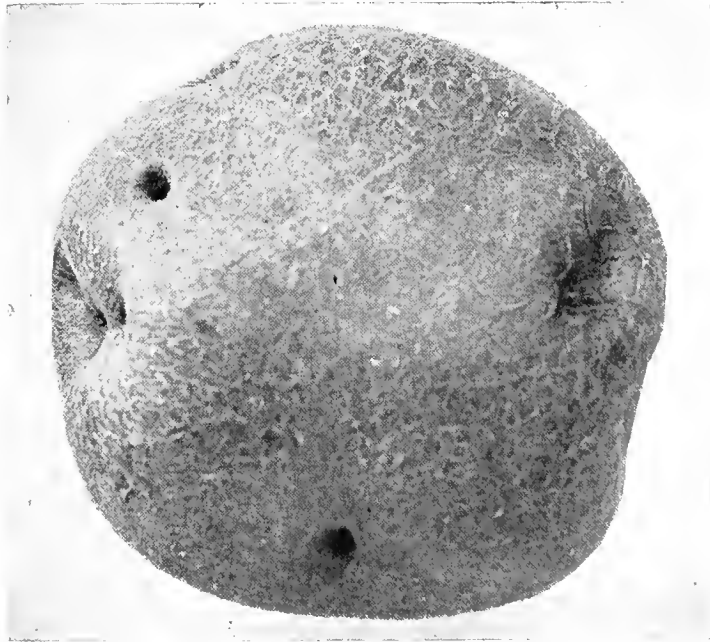


FIG. 55.—POTATO EDZELL BLUE.
(See p. 132.)

flowers may be had practically all the year round, and they are extremely useful for various decorative purposes. When potting the bulbs of *Lilium speciosum*, it should be borne in mind that it is one of those Lilies which produces roots from the base of the stem as it continues to grow. For this reason, when the bulbs are being potted, enough space should be left to allow of a liberal top-dressing as the stem roots develop.

The value of *Lilium speciosum* in the outdoor garden may be considered next. It is not one of those species that will hold its own in ordinary soil and improve year by year, but, grown in good loamy soil of a sandy nature and quite free from stagnant moisture during the winter, it will do well. In the open ground it should be planted in a fairly sunny spot, for if much shaded the blossoms are later in opening, and are apt to be disfigured in the event of heavy rains and cold nights. The bulbs should be planted so that there are fully six to eight inches of soil above their apices. If the soil of the garden is somewhat adhesive the bulbs may be embedded in a little clean silver sand.

Varieties are numerous, and the names that have been applied to them are far more numerous. Time was when we obtained all our

The best white flowered form is *Kraetzeri*, which was formerly sent here in very large numbers from Japan. The firm, compact bulb is of a yellowish tint, while the pale green, pointed leaves are very thickly arranged on the stems. The flowers, the segments of which reflex in a regular manner, are pure white, except for a greenish stripe which extends about half way down the centre of each segment. The anthers are chocolate coloured, while in the nearly related *album novum* they are clear yellow. This last named has rather more massive petals of a purer white than those of *Kraetzeri*. Another white flowered form is the Dutch *album*, with very deeply coloured bulbs, while the foliage is dark green and the stems, as well as the exterior of the buds, are heavily tinged with chocolate. When first expanded the flowers are pure white, except for a small greenish star in the centre, but after a few days' sunshine the petals frequently become slightly tinged with pink. The segments, too, reflex in a very irregular manner. There are a couple of varieties, one white, and the other coloured, with fasciated stems, grown in Holland. They are known as *corymbiflorum* or *monstruosum*, and are of no value from an ornamental point of view. *J. T.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Birds and Buds (see p. 95).—I think more is accounted to the sparrow in destroying fruit buds than it deserves. If Mr. Boyes will make observations early in the autumn, he will find that chaffinches are the culprits. In my own case these birds did not even wait for the leaves to fall, but began to take the buds the third week in October, and now I notice that tits are destroying the Pear blossoms. *H. Teatherton.*

Silver-Leaf Disease.—Interest in this disease is certain not to wane, and since in a recent issue of the *Gardeners' Chronicle* it was stated that it occurs in South Africa and New Zealand, I would ask correspondents in those countries to provide further definite information. It would be interesting to know whether it is precisely *Stereum purpureum* that produces Silver-leaf in their countries, or whether some other fungus might not be responsible there. There need be very little difficulty about determining what is responsible. If a branch or a tree has Silver-leaf, and dying back produces a crop of anything like *Stereum*, or even perhaps any fungus, it would be easy to know what to expect and it would require very little scientific experiment to determine with certainty the relation between them. *R. Irwin Lynch, F.M.H., Torquay.*

Club Root in Brassicas.—As a remedy for Club root and maggot in Brassicas, I place a shovelful of garden soil in a pail, add 1 lb. of red lead, mix the two well together and then add half a shovelful each of soot and slack lime. These ingredients should be mixed and water added to make the whole into a thick paste. If the soil is of a light nature, cow dung could be added to make the material adhesive. The mixture should be well stirred before the roots of Brassica seedlings are dipped in it as they are taken from the seed bed, or the red lead will sink to the bottom of the pail. Last season we had no rain from the middle of March until the end of June, but no plants were lost from Club disease or maggot infestations. Gardeners are frequently advised to plant out Brassicas in showery weather; I prefer to plant in dry weather, and then water the plants thoroughly each day for the first week or two. A lad or strong girl can do a vast amount of watering in an afternoon if the water supply is handy. I raise my early Brussels Sprouts and Cauliflowers in boxes, but never lift them out with a ball of soil; they are pulled out as from an outdoor seed bed. This practice may check them for a few days, but if the plants are well watered they soon grow freely and are not troubled with Club disease and maggots. *W. Chitty, Sennour Park, Guist, Norfolk.*

Popularity of Large Chrysanthemum Blooms.—The interest in large exhibition flowers of Chrysanthemums is small. In bygone days I had a severe attack of what was known as "Mum fever"; it was a pleasant malady, and I hope there will soon be an outbreak of it and that it will spread widely. Personally, I am of opinion that circumstances prevent a revival of the once great popularity of large blooms. Mr. Harman Payne (see p. 87) refers to the immense crowds which attended the N.C.S. shows at the Royal Aquarium, Westminster; undoubtedly they came to see the large flowers, and other crowds visited the principal shows all over the country up to within a few years prior to the great war. But the interest had waned and was still waning prior to this period. Old growers dropped out and young ones were not forthcoming, or only in a very limited number. Doing away with "boards" was said to be the cause of diminished interest, but I doubt it. To produce a fine exhibit entails considerable labour and much patience and expense. Gardeners work fewer hours than previously, and in many gardens expenditure on labour has been greatly reduced. The newly rich have not yet attained to an interest in horticulture. To produce the large show flowers means a considerable expense for fuel alone. The cost of packing-cases, carriage, and fares is very different from what

it was in previous days, to say nothing of other items. I regret to have to say it, but I cannot reasonably anticipate a revival of interest in big Japanese blooms. Personally, I am pinning my faith to the single-flowered section, and the public taste seems to be in this direction. At the show held in Birmingham last autumn, the most talked-of exhibit was a vase of singles put up by Mr. Leo Thomson, of Liverpool. *W. J. Godfrey.*

Snowy or White Fly.—I have been looking forward with interest to answers to Mr. E. Beckett's appeal for some efficient method of exterminating this terrible pest. Without doubt it is very much on the increase, especially in Tomato houses, and a remedy will be most welcome. The most effective time to adopt remedial measures is during the early part of the year—January and February—when the temperature in the houses is generally low, and the mature insects, not so active, are more easily destroyed. At this period fumigate the houses three times with XL All Compound, missing three nights between each fumigation, and keeping the houses as cool as possible. After fumigating, spray all plants, walls, etc., with Katakilia, which will not injure tender foliage and appears to me the best insecticide to use. During 1918 we experienced a bad attack of White Fly in the Tomato houses, but by applying the above remedies energetically the pest was nearly stamped out, very few insects appearing in 1919. *W. Chisholt, Bill Hill Gardens, Wokingham.*

—Professor Lefroy's method of conquering White Fly, given on p. 96, is amusing if not effective. I am afraid some of the flies would refuse to be carried out with the Beans. Some years ago, a friend who called on me had a few Tomato cuttings in his hand. I saw a solitary White Fly take wing from the cuttings, but how many more escaped I do not know. My plants, which were clean of the pest up to that time, were soon infested. I have not been troubled with the pest for some years now, because I grow nothing in the winter which would keep it alive. According to my experience, it is easily got rid of. It cannot stand fumigation if sufficient fumes of nicotine reach it. As soon as the liquor begins to boil the flies fall to the ground, and the fumes which reach them are not sufficiently strong to kill, but if sprayed with a nicotine wash while still on the ground and rather unhappy, they quickly succumb. Nicotine wash applied with a syringe will also kill all the eggs it reaches, but one cannot be sure of reaching all of them, so that the best plan is to follow up the fumigating and spraying the ground under the plants for a week, by which time, if the weather is fairly warm, hatching will be finished. In a hot season, this insect, or one closely allied to it, may be seen on many outdoor plants, so that it is necessary to keep a watch on the Tomatos. *Wm. Taylor.*

Scientific and Technical Books.—One part of the descriptive catalogue of the British Scientific Products Exhibition, organised by the British Science Guild last year, was devoted to selected lists of books on Science and Technology. The Guild has been asked to extend these lists so as to include not only all branches of science—both biological and physical—but also the chief technical subjects. It has undertaken to do this; and a committee, of which I am chairman, has been appointed to prepare such a catalogue. The lists will be limited to books of British origin actually in current catalogues of the publishers, so that they can be obtained in the usual way through booksellers. School books and elementary manuals will not be included, and the general standard will be that of college courses in scientific and technical subjects, or of works' libraries. Each list will be submitted to authorities upon the subject with which it deals, but in order to secure that no important work is omitted, the committee invites the assistance of everyone interested in its task. Such aid may be afforded by sending to the British Science Guild, 6, John Street, Adelphi, London, W.C.2) lists or single titles of British books of standard value or proved worth in any branch of science or industry. *R. A. Gregory.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 9.—The exhibition in connection with the meeting held on the foregoing date was a splendid one and crowds of Fellows and visitors took advantage of the bright and brisk spring weather to visit the Royal Horticultural Hall in Vincent Square. Orchids, Hyacinths, Daffodils, Alpines, Carnations, flowering shrubs, Apples and home-grown Oranges were the leading features of the exhibition. Novelties were fairly numerous. The Rev. J. JACOB's small group of new Freesias, some of them showing deep pink and red shades of colour, was one of the most interesting of the many exhibits, as it indicated great progress in the evolution of a coloured race of Freesias.

Floral Committee.

Present: Messrs. H. B. May (in the chair), C. Williams, W. J. Bean, John Green, G. Reuthe, J. W. Barr, R. C. Notcutt, Jas. Hudson, H. Cowley, John Heal, Geo. Harrow, J. W. Moorman, C. R. Fielder, J. F. McLeod, W. Howe, J. Jennings, W. H. Page, Clarence Elliott, John Dickson, C. Dixon, Arthur Turner, E. H. Jenkins, Reginald Cory, W. R. Dykes, Chas. E. Pearson, Chas. E. Shea, E. F. Hazleton, W. P. Thomson, J. T. Bennett Poë, H. R. Darlington and George Paul.

AWARDS OF MERIT.

Freesia Roschul.—This charming variety has shapely flowers and produces them on sturdy stems. The colour is white, tinged with pink, with rose-pink tips to the three lower segments and a blotch of yellow on the central lower petal. Shown by Rev. J. JACOB, Whitechurch.

Freesia Quakeress.—A showy variety, with bright, rosy lilac flowers, the three lower segments being of a deeper and richer tone with a pale yellow blotch on the middle segment. Shown by Rev. J. JACOB.

Rhododendron calophyllum.—This fine species was represented by a flowering growth bearing one large head of nineteen broadly campanulate flowers. The colour is bluish pink, with a deeper flush on the outer side, and a few veins of the deeper shade. In all the flowers examined there was a deep chocolate-red blotch in the lower part but only occupying one-half of the base—as though pushed to one side. The deep-green leaves are about 10 inches long. Shown by Mr. REUTHE.

Helleborus Gertie.—A showy Lenten Rose, with broad flowers coloured deep rose and speckled with red.

Helleborus Eva.—A large-flowered variety, the cream-coloured filaments contrasting finely with the dark, reddish-crimson of the broad segments.

These two Lenten Roses were shown by ADELINE DUCHESS OF BEDFORD (gv. Mr. C. Dixon, Cheries).

Primula denticulata magnifica.—A very fine and robust strain of this popular Primula. The flowers were large and the colouring bright and varied. Shown by Messrs. BAKERS.

GROUPS.

A magnificent group of Hyacinths, arranged by Messrs. SUTTON AND SONS, was one of the features of the meeting. The whole of one length of tabling was filled with handsome spikes of leading varieties, grouped in circular mounds in a setting of small Ferns and Berberis foliage. Some of the combinations were delightful, notably King of the Blues with the pale blue Schotel; the rosy Queen of the Pinks with the yellow City of Haarlem; Corregio, white, with Enchantress, pale blue; and the dark King of the Blues with the yellow City of Haarlem (Gold Medal).

MESSRS. ALLWOOD BROTHERS' display of Carnations was an artistic one. Against a background of black velvet, this firm disposed about fifty vases of varying heights, filled with handsome flowers of Wivelsfield Apricot, Red May Day, Mary Allwood, Wivelsfield Beauty, Wivelsfield Claret (very fine), Jessie Allwood, Rose Pink Enchantress and other varieties (Silver-

Gilt Flora Medal).—The corner group of flowering plants of perpetual Carnations, exhibited by C. A. CAIN, Esq. (gr. Mr. T. Pateman), The Node, Welwyn, was in a rather out-of-the-way place, nevertheless the fine blooms came in for a fair share of admiration (Silver Banksian Medal).

Mr. C. ENGELMANN'S contribution of Carnations was a large one and the blooms were in fine condition. Of Lady Northcliffe, Carola, Delice, Saffron, White Wonder and Peerless there were very large vases of blooms (Silver-Gilt Flora Medal).—Messrs. STUART LOW AND CO. were also exhibitors of Carnations, and in their group the perpetual Malmaison variety, Hugh Low, was an outstanding feature (Silver Banksian Medal).—Messrs. K. LUXFORD AND CO. had a pretty group of Carnations, and made a special feature of blooms of White Wonder, Mrs. E. W. Ward, Aviator and Enchantress (Bronze Banksian Medal).

Messrs. G. G. WHITELEGG'S rock garden provided a great attraction for lovers of alpine flowers; on this occasion it was furnished with *Morisia hypogaea*, *Primula kashmeriana*, *Myosotis Ruth Fischer*, *Iris pumila excelsa*, *Saxifraga correaephyllo* and *Viola graeca* (Silver Flora Medal).—Messrs. PETERS arranged a little garden, with roughly paved pathway and steps. The background consisted of shrubs, and clipped shrubs were used in the foreground. Most of the colouring was provided by *Aubrietias* planted in rockwork on both sides of the steps (Silver Grenfell Medal).

Messrs. R. TUCKER AND SON showed a fine selection of choice *Saxifragas*, together with *Draba imbricata*, *Morisia hypogaea*, *Iberis stylosa* and *Primula Juliana* (Bronze Banksian Medal).—Mr. J. J. KETTLE'S Violets were scarcely so fine as on previous occasions, nevertheless visitors crowded round his fragrant group (Bronze Banksian Medal).—Mr. G. W. MILLER again contributed a display of spring flowers, and showed *Polyanthuses*, *Primroses*, *Tulips* and *Adonis* (Silver Grenfell Medal).

Mr. G. REUTHE showed many interesting plants, his *Rhododendrons* being especially attractive, notably *R. calophyllum*, carrying a large head of pale-pink flowers (Bronze Banksian Medal).—

Messrs. J. CHEAL AND SONS showed flowering sprays of various *Prunuses* and *Cydonias*, *Prunus Pissardi* being the most attractive subject.—Forced Lilies, *Wistarias* and *Forsythias* were grouped with Ferns and Palms by Messrs. W. CUTBUSH AND SON (Silver Grenfell Medal).—The *Mollis Azaleas* exhibited by Messrs. R. and G. CUTHBERT provided a patch of brilliant yellow and orange colouring and proved the value of these shrubs for forcing (Silver Flora Medal).

Mr. L. R. RUSSELL exhibited *Azaleas*, *Camellias* and *Rhododendrons* and produced a fine effect in one corner of the hall (Bronze Banksian Medal).

Messrs. H. B. MAY AND SON'S group of *Genistas*, *Cinerarias*, *Hydrangeas*, *Cyclamens*, Ferns and Palms was rendered fragrant by specimens of *Boronia megastigma* (Silver Banksian Medal).—Mr. E. J. HICKS exhibited a few Roses, the chief varieties, all beautifully shown, being *Princess Mary*, *Mdm. E. Herriot*, *Climbing Lady Hillingdon* and *Queen of the Belgians* (Silver Banksian Medal).—Messrs. W. ARTINDALE AND SON exhibited cut flowers of their capital strain of *Primula obconica*.

Orchid Committee

Present: Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. sec.), Wm. Bolton, W. H. White, Arthur Dye, Gurney Wilson, R. A. Rolfe, J. Charlesworth, Fred K. Santer, S. W. Flory, J. E. Shill, W. J. Kaye, E. R. Ashton, R. Brooman-White, T. Armstrong, A. McBean, and Frederick J. Hanbury.

AWARDS.

FIRST CLASS CERTIFICATE.

Cypripedium Florense Spencer *Chardcar* variety (*Memoria Jerninghamiae* × *Actaeus langhyense*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. An addition to the class comprising *C. aureum* Surprise and *C. Actaeus* Bianca. The broad, snow-white dorsal sepal, with small yellowish base, is superior to that of other varieties in its broad,

square development, and in its beautiful wax-like texture. The broad petals and lip are pale-yellow, with a slight rose shade, and some dark spotted lines appear on the upper parts of the petals.

Sophras-Laelio-Cattleya Mense var. magnifica (L.-C. *callistoglossa* × S.-L.-C. *Marathon*), from Messrs. J. and A. McBEAN, Cooksbridge, Sussex. A very handsome and richly coloured flower of fine shape. Sepals bright reddish-rose. Lip dark rose, with a glowing crimson centre and yellow disc.

PRELIMINARY COMMENDATION.

Odontoglossum Hymen (*Lambarenum* × *Mars*), from Messrs. ARMSTRONG AND BROWN. A fine continuation of their violet-tinted *Mars* hybrids, with broad segments of dark reddish-violet colour, with slight white lines and margin.

CULTURAL COMMENDATION.

To Mr. FARNES, Orchid grower to Pantia Ralli, Esq., for a finely-grown plant of a good, rose-tinted form of *Cymbidium Alexanderi* Ashstead Park variety.

OTHER EXHIBITS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a large group composed principally of fine *Odontoglossums*, *Odontiodas*, *Cypripediums*, and *Laelio-Cattleyas*. New hybrids in the centre of the group were *Odontoglossum* W. E. Bisset var. *majestica* (*crispum* *Mossiae* × *Mars*), wholly dark mahogany-red, with white margin; *Odontioda* *Colinge* var. *Virginity* (*Odm. crispum* × *Oda. Coronation*), a model flower, in shape like a large *O. Pescatori*, and of fine substance, pure white with a cluster of claret blotches on the sepals; *Oda. Dauntless* (*Oda. Coronation* × *Odm. Armstrongii*), a bold flower with the inner parts dark violet and the tips and margins white; *Oda. Juno* var. *Neatness*, an advance on *Oda. Coronation*; and some specially good *Dendrobiums*.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a very effective group rich in showy *Odontoglossums* and *Odontiodas*, among the latter being *Odontioda Manora* (*C. Noezliana* × *Oda. Coronation*), a fine example of again using the original colour-species (*Coelioda Noezliana*) on enlarged forms which possess inferior colouring. In the novelty the form of *Oda. Coronation* is improved, but the markings are bright scarlet derived from *C. Noezliana*. Another very interesting novelty in the group was an *Odontocidium*, between *Odm. Epicasta* and *Oncidium cornephorum*, with much of the rose tint of the latter in the segments.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for a group of showy *Cattleyas*, *Laelio-Cattleyas* and other hybrids. The centre was of fine plants of the large, yellow-lipped *Oncidium splendidum*.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group with a fine selection of hybrid *Cymbidium*s in the centre, with showy *Odontoglossums* and *Odontiodas*.

Messrs. FLORY AND BLACK, Slough, secured a Silver Banksian Medal for a group of *Odontoglossums* and other hybrids, among which were the new *Rolfeara Ceres* (B.-C. *Heue* × S.-C. *Saxa*), a blush white flower of good size and shape; and *Sophras-Cattleya Venus*, of reddish-copper colour.

Baron BRUNO SCHROEDER (gr. Mr. Shill) showed fine cut spikes of *Calanthe Baron Schroeder*. Dr. F. BEDFORD, Dovercourt, Fulford, York, sent *Brasso-Cattleya Dietrichiana* var. *Firmiu* *Lambeau* (*C. Fabia* × B.-C. Mrs. J. Leemann), with rich crimson-purple flowers and superior in colour to most other *Brasso-Cattleyas*; a noble form of *Odontioda Madeline*, *Dovercourt* variety, and other hybrids.

PANTIA RALLI, Esq., Ashstead Park (Orchid grower Mr. Farnes), sent three forms of *Sophras-Laelio-Cattleya*, His Majesty (S.-L.-C. *Marathon* × *C. Trianae*) differing in colour from rose-purple to red.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles (in the chair), W. F. M. Copeland, J. T. Bennett Poc, W. B. Cranfield, G. Reuthe, G. W. Leak, J. W. Jones,

P. R. Barr, Geo. Churcher, H. V. Warrender, C. Bourne, Herbert Smith, H. G. Hawker, F. H. Chapman, W. Poupart, Reginald Cory, W. R. Dykes and H. Backhouse, Rev. C. T. Digby, Rev. G. H. Engleheart, Rev. J. Jacob, Rev. Rollo Moyer, Miss Willmott and Chas. H. Curtis (hon. sec.).

AWARDS OF MERIT.

Narcissus Magnificence.—A splendid large-flowered, trumpet variety of deep golden yellow colour. It is somewhat like *N. King Alfred* in its size, strength of stem and colour, but it differs from that variety in showing some evidence of the influence of *N. maximum*, and also in coming into bloom a fortnight before *N. Golden Spur* when grown in similar conditions. At Newcastle, Co. Down, *N. Magnificence* was in flower out of doors on February 17. Shown by THE DONARD NURSERY CO.

Narcissus Mrs. Leonard Harrison.—A delightful Daffodil, derived from *Narcissus Jonquilla* × *N. triandrus albus*. The flowers are pendent on stems about a foot high, and their colour is pale sulphur yellow. The effect of *N. Jonquilla* is seen in the colouring and appreciated in the fragrance, while the shape of the flowers and their grace come from *N. triandrus albus*. A beautiful, free-flowering hybrid, suitable for the rock garden. Shown by L. F. HARRISON, Esq., Orchards, East Grinstead.

Narcissus triandrus calathinus.—Although this is an old plant, it appears not to have received much recognition from Daffodil experts. A Botanical Certificate was awarded it in 1877. As shown in a pot, its sturdy stems carrying several drooping flowers, cream-white and graceful, it deserved a higher award, but to grant it an award as an exhibition flower, as on this occasion, at once raises the question of what constitutes an exhibition flower in the opinion of Daffodil experts. Shown by the Rev. G. H. ENGLEHEART.

GROUPS.

The Group of Daffodils exhibited by Messrs. BARR AND SONS provided a great attraction for the majority of visitors. The blooms were arranged in small vases on a high-pitched five-tiered stage, consequently every flower could be seen to advantage. Many of the varieties were unnamed seedlings. Chief among the named sorts were *Jasper*, *Furnace*, *Battle-axe* and *Blazing Star*, all richly coloured; *Empire*, *Vivian Gosnell* and *Madonna*, white sorts; and *General French*, *Yorick* and *King Harold*, golden yellow (Silver-Gilt Flora Medal).

A very pleasing exhibit, consisting of *Tulips* and *Poetaz Narcissi*, grown in fibre, in fancy bowls, was made by Messrs. P. H. BATH, and was greatly admired. The flowers were very fine. The same firm showed cut blooms of the handsome *Daffodils Croesus*, *Silver Dawn*, *Phyllis*, *Homespun* and *Buttercup* (Silver-Gilt Banksian Medal).

Capt. HAWKER, Strode, South Devon, and Mr. F. HERBERT CHAPMAN, Rye, each showed a few cut Daffodils.

Fruit and Vegetable Committee.

Present: Messrs. C. J. A. Nix (chairman), E. Beckett, W. H. Divers, W. Bates, G. Woodward, S. B. Dicks, P. D. Tuckett, W. J. Jeffries, H. Markham, A. Bullock, John Vert, W. E. Humphreys, E. A. Bunyard, Geo. F. Tinley, P. C. M. Veitch, H. S. Rivers, W. Poupart, W. Crump, O. Thomas, G. P. Berry, J. Harrison, Jos. Cheal, W. Wilks, F. Jordan, and J. Kelly.

AWARD OF MERIT.

Apple Alfriston.—This well-known late variety has several synonyms, including *Shepherd's Pippin*, *Oldaker's New*, and *Lord Gwydyr's Newtown Pippin*. It was raised by a Mr. Shepherd, at Uckfield, Sussex, but derives its name, Alfriston, from the village of that name, near Hailsham. Hogg describes it as one of the largest and best late culinary Apples. The skin is clear, pale yellow, flushed with rose colour on the side exposed to the sun; the flesh is white, crisp, juicy and sweet. Shown by Mr. W. CRUMP.

GROUPS.

Messrs. BUNYARD'S, Ltd., Maidstone, exhibited 80 varieties of Apples, for which a Gold Medal

was awarded. This splendid exhibit was noteworthy for the high colour and large size of the fruits, and included many uncommon sorts, so that it was of more than usual interest to pomologists. Amongst varieties which were shown especially well we noted Calville des Femmes, Christinas Pearmain, Farmer's Seedling, and Reinette d'Osnabruck.

C. A. CAIN, Esq., The Node, Welwyn (gr. Mr. T. Pateman), showed an extensive exhibit of Apples and a few dishes of late Pears. The fruits were selected specimens and were in fine condition for so late in the season (Silver-Gilt Knightian Medal).

Messrs. J. CHEAL AND SONS, Crawley, were awarded a Silver Knightian Medal for 45 varieties of Apples of such sorts as Newtown Wonder, Adams's Pearmain, Cornish Aromatic, Nancy Jackson, Crawley Beauty, and Bess Pool.

Messrs. T. RIVERS AND SON, Sawbridgeworth, exhibited Oranges and other Citrus fruits grown in their nursery under glass. The brilliantly-coloured fruits, arranged with the natural foliage, made an attractive as well as uncommon exhibit. The Oranges were represented by such varieties as Achilles, St. Michael, Dom Louise, Embligo or Navel, Bittencourt (a late sort), and Long Orange (notable for its rich golden colour) (Silver Hogg Memorial Medal).

Colonel BUDDLEIGH, Grey Court, Ham Common, was awarded a Silver Banksian Medal for an exhibit of Cox's Orange Pippin Apple.

Lady KATHLEEN DRUMMOND, Sherbourne House, Warwick, exhibited seven varieties of Apples, for which a Silver Banksian Medal was awarded.

MISS HOLLAND was awarded a Bronze Grenfell Medal for fruits of Bess Pool Apple.

Mrs. PULMAN, The Willows, Bisley, Surrey, was awarded a Silver Banksian Medal for 12 dishes of Apples, including local varieties.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver Knightian Medal for an exhibit of vegetables, in which Broccoli were of outstanding merit. The varieties Snow White and Superb Early White were represented by magnificent heads shown in large numbers. There were also splendid Lettuces of the Golden Ball variety, Improved Hearting Kale, well-blanching heads of Chicory and Mushrooms.

Obituary.

James Rourke.—It is with deep regret we announce the death of Mr. James Rourke, assistant superintendent of the Glasgow Parks. He died suddenly on the 1st inst., following an attack of acute pneumonia. Mr. J. Rourke was only 46 years of age. He was a native of Dublin. After serving in the gardens at Rathmore and Castle Oliver, Mr. Rourke entered the Royal Botanic Gardens, Dublin, and afterwards went to Kew, where he remained three years, gaining experience, winning the esteem of the authorities and making many friends. From Kew he obtained an appointment as foreman in the Glasgow Botanic Gardens, in 1897, and when Mr. Whitton became Curator of those gardens in 1902, he appointed Mr. Rourke as resident superintendent. He proved such an excellent cultivator and administrator, that in June, 1915, he was promoted to the important position of assistant superintendent in the Glasgow Parks. He is survived by his wife, two sons and a daughter.

J. H. Silsbury.—Many of your readers will regret to hear of the death of Mr. James H. Silsbury, who died at Shanklin, Isle of Wight, on Tuesday, March 2, at the age of 58. The names of Mr. Silsbury and Mr. Martin Silsbury, his younger brother, are well known in the horticultural world as those of raisers of some of the finest exhibition Chrysanthemums. In business, the Messrs. Silsbury Bros. were printers and publishers, and one of the first firms in the Isle of Wight to practise artistic typography; they won prizes for their work in national competition. Recently Mr. James Silsbury was elected chairman of the Isle of Wight Horticultural Association, which holds meetings at Newport, C. Orchard.

MARKETS.

COVENT GARDEN, March 9th.

Vegetables: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English,	35 0—	Mustard and Cress	1 6—2 0
Devon 100's ..	12 0-15 0	Mushrooms, per lb.	2 6—3 0
Middlesex ..	2 6—3 6	Onions, per cwt.	12 0-16 0
Beans, Gutfusey,	2 6—3 6	Parsley, per doz.	2 0—3 0
per lb. ..	8 0-10 0	—Worthing ..	8 0-10 0
Beets, per bag ..	2 0—4 0	Parsnips, per bag	12 6-16 0
—Worthing ..	4 0—4 6	Potatos, per cwt.	1 4—1 6
Carrots, per 1/2 bag	3 0—6 0	—Guernsey, per lb.	2 0—4 0
Cauliflower, per	3 0—4 0	Radishes, per doz.	1 3—1 6
doz. ..	3 0—4 0	Rhubarb, forced	2 0—2 3
Celery, per fan,	0 3—0 6	Seakale per punnet	17 0-18 0
(12 heads) ..	1 3—1 9	Spaush Omens	22 0-23 0
Chicory,	3 0—3 6	5 tier ..	2 0-2 4 0
—English, per lb.	2 0—2 6	Spring Onions, per	3 0—4 0
—Belgian ..	3 0—3 6	doz. bunches ..	2 0—3 0
Cucumbers, each	3 0—6 0	Sprouts, per	30 0-40 0
Garlic, per lb. ..	4 0—6 0	bag 28 lb. ..	7 0—8 0
—Batavia, per doz.	6 0—8 0	Tomatoes, Teneriffe	0 9—
Herbs, per doz. bun.	6 0—8 0	best, per bundle	3 0—4 0
Mint, per doz. bun.	6 0—8 0	Turnips, per bag	7 0—8 0
		Watercress, per doz.	0 9—

REMARKS.—The improvement in business has been steadily maintained, the demand from the provinces being particularly good. The latest and heaviest shipment of Cape Fruit has been practically cleared. New arrivals due at mid-week are somewhat light. Home-grown Cooking Apples in good condition are getting dearer. Cucumbers, in view of the lower quotations lately ruling, have become in better demand and prices show a tendency to harden. Pines are in good condition and, with no advices of further arrivals this side of Easter, prices promise to be fairly firm. Canary Tomatoes of the best marks are very scarce; severe gales in the Canaries have practically ruined the second crop. English Grapes are limited in supply and their prices have an upward tendency. The last shipment of British Columbian Apples consisting of 8000 cases is due to arrive early next week. Forced Beans are in rather freer supply and prices are now reasonable. Cauliflowers from France, Cornwall and Guernsey are available; those from Guernsey are particularly good. Outdoor green Vegetables are fairly plentiful and prices are moderate. In view of the pretty plentiful crop of Potatoes there is some uncertainty in this market, but best samples will remain an extremely difficult trade until the finish of the season.

Out Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Azalea white, per	6 0—7 0	Petargonium, dou-	12 0-15 0
doz. bun. ..	2 6—3 0	ble scarlet, per	
Camellias, per doz.	3 6—6 0	doz. bun. ..	6 0-10 0
Carnations, per doz.	3 6—6 0	Richardia (Arums),	
blooms, best,		per doz. bms.	5 0—6 0
American var.	8 0-10 0	Roses, per doz.	12 0-18 0
Chrysanthemums—		blooms—	8 0-10 0
—White, per doz.	25 0-54 0	—General ..	12 0-18 0
blooms ..		—Ophelia ..	8 0-10 0
—spray White,		—Richmond ..	12 0-18 0
per doz. bun.		—Sunburst ..	30 0-36 0
Daffodils, Single,		Tulips, White, per	30 0-48 0
per doz. bun. ..	12 0-15 0	doz. bun. ..	48 0-64 0
—Empress ..	12 0-15 0	—Coloured var. ..	6 0—8 0
—Golden Spur ..	3 0—4 0	—Barvens, in	
—Henry Irving ..	4 0—9 0	variety, per doz.	3 0—5 0
—Princes ..	10 0-12 0	bun. ..	
—Sir Watkin ..	6 0—9 0	Violets, Single	
—Double Van Zion	3 0—6 0	large, per doz.	6 0—8 0
Freesia, White,		bun. ..	3 0—5 0
per doz. bun.	10 0-12 0	—Ordinary ..	18 0-20
Heather, white,		French Flowers—	
per doz. bun.	1 9—2 0	—Allium, Star of	
Hyacinth, large		Bethlehem, per pad	3 0—4 0
per doz. spikes	20 0—	—Anemones, Pink,	6 0—7 0
Lilium longiflorum,		per doz. bun.	3 0—4 0
per bunch ..	5 0—	—Lilac white, per	
Lilium speciosum,		doz. spray ..	3 6—4 0
album per bunch	4 0—5 0	—Marguerites yellow,	
—rubrum, per bun.	2 6—4 0	per doz. bun.	8 0-10 0
Lily of the Valley		—Mimosa, per pad	18 0-25 0
per bunch ..	5 0—	—Narcissus, Paper	10 0-12 0
Narcissus,		White, per pad	10 0-12 0
Grand Primo, per		Ranunculus, Carmine,	
doz. bun. ..	8 0-12 0	per doz. bun.	8 0-12 0
Pheasant Eye,		Scarlet ..	8 0-12 0
per doz. bun.	24 0-30 0	—Stock double	
Orchids, per doz.		white, per pad	5 0—6 0
—Cattleyas ..	4 0—6 0	Violets,	
—Cypripediums		Parma, per bun.	

REMARKS.—Owing to the stoppage of supplies from the South of France during the past week, on account of the strike, home-grown flowers and those from the Channel Islands have received more attention, and all white blooms have sold freely at increased prices. Roses are now all attracting more attention, and some excellent fine blooms of Richmond are now offered; also some very fine coloured blooms of Sunburst and Ophelia, with a limited quantity of Niphetos and W. Stevens. Small consignments of Sweet Peas, white and coloured, are being received from home growers; also small quantities of mauve Spanish Iris. Amongst Orchids large Cattleyas and Odontoglossums are very limited supplies; the kinds which are more numerous consist of Cypripedium, Hediostrum, Laelias, and Cymbidiums. Darwin's Tulips are now a good line, and all Lilium are well supplied. Lily of the Valley continues to be available, but first-quality blooms are scarce.

ANSWERS TO CORRESPONDENTS.

FAILURE WITH LOUISE BONNE OF JERSEY PEAR: J. J. S. M. The best plan to secure the pollination of the flowers of your Louise Bonne of Jersey Pear tree will be to obtain a tree of Williams' Bon Chretien and place it near the Louise Bonne. A pot tree would be best, as the opening of its flowers could be controlled, whereas if planted in the open its blooms would expand later than those of the tree on the wall.

INDOOR ROSES FOR MARKET SUPPLIES: F. A. C. If quantities of flowers are required indoors, the two best red Roses are Richmond and Liberty; there is also a climbing form of both. Duke of Edinburgh is also suitable, but does not give successional crops of flower. Mrs. John Laing is an excellent pink variety for pot culture, as the blooms may be cut with long stems; while Mme. Abel Chateau Rose, shaded salmon, is one of the best sorts for indoor cultivation. Your best market would be with some local florist, as London and the large towns are supplied by the large trade growers. Any local florist could tell you where you could buy the necessary boxes, or you could obtain them from one of the sundriesmen who advertise in our pages.

LILY-OF-THE-VALLEY: F. A. C. Lily-of-the-Valley is easily grown in any good garden soil. The ground should be trenched, or deeply dug, and enriched with well-rotted farmyard manure. For convenience of gathering the spikes the plants are best grown in beds, four feet in width, with a path 12 inches to 18 inches wide between them. Plant single crowns, in lines six inches apart, and four inches apart in the lines. The plants require little attention beyond keeping them clean and giving a top-dressing of rotted manure every winter. The beds should be in full bearing in three years from planting and, if well attended to, will continue to produce good flowers for many years. If first-class spikes are desired, a number of fresh beds should be planted every year; and the older plants, for forcing, should be lifted in their third and fourth year.

NAMES OF FRUITS: Cox, 1, Hornead Pearmain; 2, Tower of Glamis; 3, Wilson's Prolific.—B. E.; Apple, Gascoyne's Scarlet; Pear, Catillac.—J. H. J.; Cheshunt Pippin.—J. H.; I, Minchall Crab; 2, Radford Beauty; 3, Imperial.—R. R. T.; Wyken Pippin.—A. P.; Probably Radford Beauty.

NAMES OF PLANTS: A. P. Hoffmannia Gheibreghtii variegata.—E. R.; 1, Cedrus atlantica glauca; 2, Persea miconioides; 3, Pieris floribunda; 4, Berberis Darwinii.—A. P.; 2, Ruellia Portelliae; 3, Asclepias curassavica.—G. L.; Prunus pissardii.—Miss B.; Ligustrum ovalifolium var. aureum.

REGISTRATION OF LOCAL SOCIETY: J. H. S. There is no need to register your local horticultural society.

SULPHATE OF IRON FOR FRUIT TREES: P. Many authorities consider that nothing is to be gained by applying sulphate of iron as a fertiliser to fruit trees. Practically all soils contain the very minute quantity of iron required by plants; and if this is supplied in excess it is harmful. As a general fertiliser for Pears use two parts of superphosphate, one part of sulphate of ammonia and one part of sulphate of potash. Mix thoroughly and apply the fertiliser at the rate of 3 ozs. per square yard, covering a space rather wider than the spread of the branches. If farmyard or stable manure can be obtained, this would be much more certain in its results, and should be followed by an autumn or winter dressing of basic slag at the rate of 4 ozs. per square yard. Ground carbonate of lime (chalk) would be best for Plums growing in a light soil.

Communications Received.—R. P. B.—F. C.—H. H.—D. A. B.—H. C. F.—R. W. G.—H. C. R.—R. W.—T. S.—E. J. M.—W. A.—I. L. R.—L. A.—E. P. and Co.—P. A. R.—F. E. B.—J. E.—I.—J. M.—(Chicago)—H. C.—W. G. B.—J. D. H.—D. W.—Dr. R. (Florence).

THE
Gardeners' Chronicle

No. 1734.—SATURDAY, MARCH 20, 1920.

CONTENTS.

Aberdeen "Choir of Botany, appointment to .. 138	Obituary— Prime, H. .. 148 Stanton, George .. 148
Adonis 'amurensis, the double .. 145	Ordinance survey maps .. 138
Alpine garden, the .. 149	Pear scab .. 137
Apples, the double grafting of .. 142	Plants, indoor .. 143
Books, notices of— Outlines of the History of Botany .. 139	Potato The Champion .. 115 Propagation by cuttings .. 143
Cultural memoranda— Perennials from seed .. 144	Relation of Botany to commerce .. 138
Dobson, the late Mr. W. H. .. 146	R.H.S. exhibition of British grown fruits .. 137
Farginal, Mr. Reginald, exploration in Asia .. 142	Societies— British Carnation .. 147
Florists' flowers— Carnations, perpetual "Gardeners' Chronicle" seventy-five years ago .. 138	Leds and District Market Gardeners .. 148
Gardeners, the education of young .. 145	Reading and District Gardeners .. 147
"Gardeners' " Horticultural Society .. 137	Royal Hort. .. 147
Gardeners' Royal Ben. Inst. .. 137	United Hort. Ben. & Prov. .. 147
Insect pests and plant diseases .. 138	Thames Valley allotments .. 138
Ireland, notes from .. 148	Timber, Empire grown, exhibition of .. 138
Lazy-beds .. 146	Torquay wheelbarrow, the .. 147
Linnean Society of London .. 137	Trade notes .. 148
London Daffodil show .. 137	Trees and shrubs— Lebanon Oak, the .. 139
Mistletoe, hosts of the .. 145	Picea jezoensis .. 139
Narcissus Soleil d'Or .. 145	Pinus Thumbergii as a shelter tree .. 139
North of England Hort. Society .. 146	Prunus microlepis .. 139
	Vine Maple, the .. 139
	Vegetables .. 145
	Weather in Scotland .. 149
	Week's work, the .. 149, 141

ILLUSTRATIONS.

Begonia Polyantha .. 143
Carnation Wivelsfield White .. 148
Exacum macranthum .. 141
Lazy-bed method of growing Potatoes .. 145
Narcissus Magnificence .. 146
Picea jezoensis and P. j. hondoensis .. 139
Rheum Alexandrae .. 142
Stanton, portrait of the late George .. 148

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.8°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, March 17, 1920, 10 a.m.: Bar. 29.9, temp. 55°. Weather—Dull.

Pear Scab.

The spring climate of the humid sections of the Pacific North West of the United States (parts of Oregon and Washington) is very similar to that experienced in most parts of this country, and in these humid districts as in ours, Pear scab, due to the attack of the fungus *Venturia pirini* is common and often causes severe losses to growers. With their usual thoroughness, the United States Department of Agriculture have made special investigation* into the incidence of Pear scab in the Pacific North-West, which shows that the factor which determines the provocation of scab is atmospheric and soil humidity—particularly Spring humidity. In the arid regions of the Pacific North-West, Pear scab does not occur, but where the climate is humid and Spring rainfall abundant, it is universally present, and unless spraying is resorted to, the fruit is severely attacked and damaged. The reasons for these facts are, first, that infection occurs chiefly in the Spring; blossom infection taking place at any time from the first opening of the buds until a month after full flowering; second, that for infection to take place, two consecutively wet days are required—a state of affairs unfortunately common in Spring. Failing 48 hours during which a water film covers the surface of the flowers, etc., the spores do not infect the tree; third, the spores causing Spring infection are produced by the fungus wintering in fallen leaves as well as in diseased twigs, and in a wet climate, the fungus produces its Spring crop of spores

at the time of flowering of the Pear, discharging them into the air, whence, settling in the flower or other part of the tree, they set up infection under the conditions of moisture already described. Once the fungus has found a lodgment in flower, stem or foliage, it continues to produce summer spores which re-infect the trees. Knowing this course of events, the grower is in a position to control the fungus, that is to say, though it may prove difficult to cure an affected tree it is not difficult to prevent infection. The method of prevention consists of a spray which when deposited in the tree renders the growth of the spores impossible. The sprays which are most effective are lime-sulphur and Bordeaux mixture. The timing of the application is no less important than the choice of the right material, and evidently the first spraying should be given just before the blossom buds show white or begin to swell. For this first spraying lime-sulphur is needed at a strength of 1 to 20, and Bordeaux mixture at 4-4-50. As the Bulletin points out, this treatment is necessary in orchards already infected, and specially so in those in which the fallen leaves, which harbour the disease, have not been destroyed or ploughed in during the Autumn or early Spring. Dusting with sulphur is also found to be an effective preventive. In relatively clean orchards, this first application need only be made if the weather is so continuously humid as to provide ideal conditions for the germination of the spores. A second application should be made as soon as the unopened flowers have escaped from the bud, and in this case the lime-sulphur must be diluted to 1½ pint in 50 gallons of water. Experience shows that this spraying is most important and should be given at the time of the fall of the petals, thus serving to protect the young fruits which have already begun to form. It is advisable to add lead arsenite as an insecticide when spraying at this period or the next earlier period. A fourth spraying, after an interval of ten or fourteen days, and a fifth a month later may also be necessary, and in these spraying, lead arsenite is added to the lime-sulphur or Bordeaux mixture at the rate of 1 pound (or paste 2 pounds) to 50 gallons of spray fluid.

Change of Price of "The Gardeners' Chronicle."—The attention of our readers is directed to the announcement (see page x.) that on and after April 10, the price of *The Gardeners' Chronicle* will be raised to 6d. We owe it to our readers—who are to-day more numerous than at any previous period of the 79 years during which *The Gardeners' Chronicle* has been in existence—to explain that the change of price has been made with the greatest reluctance, and only after the most careful consideration of present costs of production. A comparison of pre-war and present costs of production shows that there has been an increase varying from 150 per cent. to 350 per cent., and that the larger items have increased at the higher rate. So long as there seemed any prospect of costs of production falling, the Gardeners' Chronicle, Ltd., were prepared to bear the present heavy costs and to find recompense for their efforts in the knowledge that, as shown by the numbers of their readers, they were fulfilling the first aim of the founders of the Journal—that of advancing the interest of horticulture. There is, however, no sign that costs of production are likely to fall, and hence it has become necessary to ask our readers to bear a larger share in the expenses attaching to the publication of the Journal. It is not without interest to observe the varying prices of the Journal during the past three quarters of a century. In the year of its foundation the price of *The Gardeners' Chronicle*, was 6d., and remained at that figure until 1862 when, owing to the repeal of the stamp duty, it was found

possible to reduce the price to 5d. Continued cheapening of the costs of production and the growing popularity of advertisements, permitted of a further reduction to 3d. in 1887. For thirty years *The Gardeners' Chronicle* remained at that price until the changed economic conditions brought about by the war necessitated an increase to 4d. Thus the vicissitudes of economic conditions of the country are reflected in the price of *The Gardeners' Chronicle*. We may hope with reasonable confidence that in course of time the country will enjoy economic stabilisation and reduction of costs of production with a corresponding reduction in the price of this Journal.

London Daffodil Show.—The Royal Horticultural Society will hold its Annual Daffodil Show on April 13, in the Society's Hall at Vincent Square, Westminster. Schedules may be obtained by sending a stamped addressed foolscap envelope to the Secretary.

"The Gardeners' " Horticultural Society.—This Sussex Society (Horsham) proposes to hold its annual flower show on August 25, 1920.

R.H.S. Exhibition of British-Grown Fruits.—The Council of the Royal Horticultural Society has decided to hold its Autumn Show of British-grown Fruit on October 5 and 6 next, thus reverting to the pre-war policy of holding the Show on two days. Fellows of the Society are requested to make a note of this extension in their tickets and book of arrangements.

Festival Dinner of the Gardeners' Royal Benevolent Institution.—The Duke of Connaught will preside at the Annual Festival Dinner in aid of the funds of the Gardeners' Royal Benevolent Institution, on June 29 next, at the Grocers' Hall, City. Ladies and gentlemen willing to have their names placed on His Royal Highness's list of Stewards are kindly invited to communicate with the Secretary, Mr. George J. Ingram, 92, Victoria Street, Westminster.

Linnean Society of London.—For some time past the Council of the Linnean Society has been considering the increase in the cost of management, particularly with regard to repairs and furniture at Burlington House, heating, lighting, and salaries. The greatest advance, however, is in printing and paper, and it has been estimated that the publication of the new catalogue will cost £500. Taking all these matters into consideration, and believing that authors cannot be expected to bring forward papers if these are not published in an adequate manner, the Council has decided to ask the Fellows of the Society to alter the By-Laws as necessary and raise the annual subscription for each Fellow from £3 to £4. We learn that the Council has approved a proposal to establish a fund to be used for the reduction or remission of admission fees and annual contributions; this fund will be dedicated to the memory of Bishop Goodenough, the first treasurer of the Society. When the capital reaches a total of £1,000 it will be possible to pay from the income the sum of £1 towards the reduction of the admission fee, as well as to meet special cases where the payment of the whole admission fee may be thought proper.

Demise of Three French Botanists.—Our Paris correspondent writes:—Three French botanists of advanced age have passed away during the past few months. M. Jules Poisson, assistant honorary professor of botany at the Natural History Museum in Paris, died on the 27th November, 1919, after more than 65 years' work in the Jardin des Plantes, which he entered as a student gardener in 1843 at the age of ten years. He was chiefly famous for his great knowledge of economic botany, and was well known for his researches in seeds, textiles, and various drugs of vegetable origin. M. Emile Bondier, the celebrated French mycologist, died in his 92nd year. He was the author of an important work, *Lecons Mycologiques*, containing 600 magnificent plates reproduced from his own water colour drawings. M. Th. Delacour, born in 1831, was formerly treasurer of the French Botanical Society. For many years he was connected with the firm of Messrs. Vilmorin, Andrieux and Co., of which he eventually became a partner. His herbarium, which was of considerable value, he bequeathed to the French Botanical Society.

* Published in *Farmers' Bulletin* 1056, U.S.A. Dept. of Agric.

Association of Economic Biologists.—A general meeting of the Association of Economic Biologists will be held in the Botany Department of the Imperial College of Science on March 24. The morning session will commence at 11.30, and the programme will include:—1, Short Communications and Exhibitions; 2, The Relation of Protozoa to Soil Problems, by Mr. D. Ward Cutler; 3, Correlation between Seed and Crop, by Miss Winifred E. Brechley, D.Sc. At the afternoon session, commencing at 2.15, the subjects discussed will be:—4, The Nature and Scope of Botanical Research in the Cotton Industry, by Mr. W. Lawrence Balls, Sc.D.; 5, The Calcifuge Habit in Ling (*Calluna vulgaris*) and other Ericaceous Plants, by Mr. M. C. Rayner, D.Sc.; and 6, Shoot Wilt of Plum Trees, by Mr. H. Wormald, D.Sc. The papers will be illustrated by lantern slides and specimens, and followed by discussion. Sir David Prain, president of the Association, will preside.

Appointment to Aberdeen Chair of Botany.—On Tuesday, the 9th inst., the Scottish Office issued the intimation that the King had, on the recommendation of the Secretary for Scotland, approved the appointment of Mr. William Grant Craib, M.A., to be Regius Professor of Botany in the University of Aberdeen, in the room of the late Professor Trail. Mr. W. G. Craib is a son of the late Mr. William Craib, farmer, Kirkside, Banffshire, where he was born a little over 30 years ago. He received his early education at Banff Academy and Fordyce Academy, Banffshire, and later entered Aberdeen University, from which he graduated in arts with special distinction in botany, in 1897. He was a great favourite of the late Professor Trail, who formed a high appreciation of his work, and who anticipated a great future for him. On leaving Aberdeen Mr. Craib's first appointment was at the Royal Botanic Gardens, Kew, under Sir David Prain. From Kew he went as an assistant at the Botanical Gardens, Calcutta, and while there undertook two botanic journeys of investigation in different parts of India. These proved markedly successful. Returning to this country, he became assistant at the Royal Botanic Gardens, Edinburgh, and also lecturer in Forest Botany and Indian Forest Trees in Edinburgh University. Only a few days ago Mr. Craib was elected a Fellow of the Royal Society of Edinburgh. He returns to his alma mater with a reputation as a systematic botanist and reliable worker, and it is felt he will bring to the chair an enthusiasm and ability that will fully maintain the high traditions so worthily upheld by his predecessors. Among his other work, Mr. Craib has compiled a *Flora of Banff*, which was published in the *Transactions of the Banff Field Club*. Mr. Craib is the tenth graduate of Aberdeen University to be appointed a professor, either at home or abroad, in less than six months, a result that reflects the highest credit on the "Lamp of the North."

Insect Pests and Plant Diseases.—The technical advisers of the Ministry of Agriculture are giving careful attention to the question of preventing the introduction into this country of insect pests and plant diseases from abroad. Several countries already possess these safeguards; for instance, the United States and Cape Colony prohibit altogether the importation of plants except under special permit. Such a policy, if adopted in this country, would present obstacles to the development of agriculture and horticulture and would probably not meet with the approval of growers; while the alternative plan of placing potentially dangerous host plants in quarantine for a definite period is open to criticism on the grounds of expense and delay. Experts consider the quarantine system has many good points and might with advantage be adopted in this country. In any case, a system of inspection at ports of entry might be made. In the case of imported Gooseberries, such a system of inspection led to the adoption of a somewhat similar method of inspection by exporting countries, resulting in the despatch of much cleaner fruit to this country. If similar steps were taken in regard to nursery stocks

arriving here from abroad, there would be good reason for expecting an improvement in quality and cleanliness. In addition, the danger of epidemics arising from the introduction of foreign plant enemies would be considerably lessened.

Ordnance Survey Maps.—Landowners, farmers and all connected with the land will find the large scale Ordnance maps of exceptional value. The maps on the scale of 25 inches to the mile show hedges, walls, fences, ditches, roads, paths, streams, houses, woods and orchards, in fact, every feature of the countryside, whether natural or artificial. The acreage of each field or enclosure is also shown. For trifling sums, owners or occupiers of land can obtain thoroughly reliable maps of their properties. The price per sheet of these large scale maps is 5s. The Ordnance Survey also publish maps on the scale of six inches to the mile, quarter sheets of which are priced from 1s. to 1s. 6d. Several editions of excellent maps on the scale of 1 inch to the mile, and on smaller scales, are also published at prices ranging from 1s. to 5s. each. All roads are shown; in the coloured editions, these are classified by means of distinctive colouring according to the nature of their surfaces, including suitability for fast traffic. Footpaths, towns, villages, railways and stations, rivers, streams, parks, woods, county boundaries, high and low water-mark are all accurately delineated. The whole country has been completely surveyed, and the maps are kept up to date by a system of periodic revision. They are unsurpassed for accuracy of detail and are of the greatest value to those who desire to possess an accurate knowledge of any district or locality in which they are specially interested. They can be purchased through any bookseller or stationer, or direct from the Director-General, Ordnance Survey Office, Southampton.

The Relation of Botany to Commerce.—This was the subject of a highly instructive lecture delivered to the members of the Aberdeen Chamber of Commerce on Monday, the 26th ult., by Dr. Macgregor Skene, who is earning high praise by the fine work he is accomplishing in the teaching of Botany in Aberdeen University. The science of botany, Dr. Skene pointed out, made the student of it acquainted with a number of simple biological facts—the fundamental facts of life, which all should know; it told him of the relations between the animal and plant kingdoms; it showed him the conditions necessary for healthy development, the way in which environment affected growth, and the way in which characters were inherited. Secondly, it was an invaluable training in manipulation and observation. The professional botanist in his investigations had laid down a groundwork of knowledge for the purpose of his own interests, which was at the same time the necessary foundation for any work of an economic character. That did not aim at diminishing the importance of the work of the farmer, who was himself a researcher, continually asking questions, carrying out experiments, and drawing conclusions. It was really to be regarded as an effort to use all the available knowledge and trained power of observation and reasoning of the scientific worker to draw the full possible return from the soil. Hundreds of generations of "practical" farmers had raised the productiveness of crops and the fertility of the soil by hundreds per cent. Under the present conditions of extensive production and intense competition, even a five per cent. increase in a crop might mean an addition of millions of pounds to the wealth of the nation. That the scientist was able to do this when he worked in conjunction with the practical man could be proved by many examples in which it was always clear that the advance could only have been made by using the general botanical knowledge which had been accumulated for purely scientific purposes. Of that there were such examples as the ether method for forcing spring flowers, soil sterilisation for curing soil sickness in Tomato houses, and, most important of all, the production of rust-resisting and strong Wheats by Professor Biffin. In the future they could look to great advances in the production of improved and absolutely true races of im-

portant crops, and also to increased fertility of the soil, both by improvement of manures and by the control of their bacterial population. In particular, they could look with confidence to the help that would be given by botany, if it were properly utilised, to the solution of their own most pressing national problem—the utilisation of the moors.

Exhibition of Empire-grown Timber.—We understand that the Department of Overseas Trade is organising an exhibition of timbers grown within the British Empire, to be held at the Holland Park Skating Rink, London, W., from July 5 to July 17 next. Besides endeavouring to display the full range of Empire-grown timbers, the promoters are arranging to demonstrate the chief uses to which such timbers may be put. A committee has been formed to arrange all details connected with the exhibition, and includes representatives of the Colonial Office, the Crown Agents for the Colonies, the Government of India, the self-governing Dominions, the Forestry Commission and the various British societies interested in forestry and utilisation of timber.

Thames Valley Allotments.—The demand for allotments in the Hampton, Teddington and Twickenham districts continues to be pressing, in spite of the fact that large areas have been parcelled out. Applications are being made to H.M. Office of Woods and Forests for an extension of the Paddocks' Allotments to the public footway leading from Hampton Wick Church to Bushey Park. The Teddington District Council has acquired additional land in various parts of the district. Complaint has been made to the Hampton District Council that an allotment holder grew flowers on his plot for sale in Kingston market contrary to the usual conditions of tenure. In the course of the discussion, the Vice-Chairman said he thought there was no more harm in so doing than in selling surplus vegetables, but the general opinion was opposed to this, and it was felt that any holder who has more ground than he requires for vegetables to meet his home requirements should, in view of the great demand, release it for some one in want of a plot. The Surveyor was instructed to ascertain what allotment land in the district was used for flower cultivation.

The "Gardeners' Chronicle" Seventy-five Years Ago.—The Fellows of the Horticultural Society will be glad to know that letters have been received from Mr. Fortune, dated the 16th December. He was then at Hong-Kong, arranging for the shipment of his collections to Europe. They occupied many chests, and were about to be despatched as fast as opportunity occurred. We are happy to add that the indefatigable exertions of this zealous young traveller are likely to be crowned with great success. Mr. Fortune had met with many very beautiful shrubs, and it is hoped that a large part of them will prove hardy, or nearly so. Viburnums, with heads of large flowers, like a Hydrangea; Moutans in great variety; Peaches, Apricots, Roses, handsome Creepers, Azaleas, Daphnes, both sorts of the curious hexangular Camellia—a great desideratum, for it must be the most beautiful of the varieties; others from Fokein; Hydrangeas, a very fine double white Gardenia, with flowers as large as a Camellia; a curious Chrysanthemum, named as a perfect gem; new Pines, Honeysuckles, and Plums, are among the rarities mentioned as being actually on their way to England. We learn from other sources that Mr. Fortune has been consulted by the Governor of Hong-Kong as to the practicability of planting the bare hills of that island, which at present consist more of buildings than vegetation. In the former respect, the place was making extraordinary progress, a large town having already started up. The panic as to unhealthiness was wearing off; good hospitals and barracks for the troops were rapidly erecting; the rest of the inhabitants were already well provided for, and the ships in the harbour were perfectly healthy. It is rumoured in this country that Mr. Fortune had proceeded to Formosa. *Gard. Chron.*, March 22, 1845

NOTICES OF BOOKS.

A HISTORY OF BOTANY.

In this well-printed volume of 262 pages Professor Harvey Gibson gives an eminently readable account of the historical development of botanical science. The author exhibits generally a good eye for perspective, and the space which he allots to descriptions of the work of the chief contributors is well proportioned. The tribute to Theophrastus of Eresus (B.C. 370) as the founder of botanical science and the describer of 500 species will, together with Sir Arthur Hort's translation of the *Historia Plantarum*, help restore the fame of this true student of nature. To Brunfels and contemporary 16th century Herbalists, Professor Harvey Gibson is less kind. His criticism that Brunfels and Fuchs added little or nothing to the description of the plants they figured may be true, but he fails to give them the credit they deserve for their often faithful and beautiful delineations of plants.

Coming to less ancient times, Professor Harvey Gibson's treatment of Linnaeus is severe and, we think, undeservedly so. He regards Linnaeus as little more than a card cataloguer of plants and is dissatisfied with him because his system of classification is not a natural one. But it may be asked where is the natural system even to-day? Who shall expound the natural system

TREES AND SHRUBS.

PICEA JEZOENSIS.

In 1914 Mr. E. H. Wilson made an expedition to Japan to study trees and other plants. He paid particular attention to this Spruce and satisfied himself that there was only one species of flat-leaved Spruce in Japan. The name *Picea jezoensis* was given to it by Siebold and Zuccarini in 1842, and their name must stand for the type.

I believe this is represented in my photograph reproduced in Fig. 56. The tree is not in general cultivation, but will probably be found in botanic gardens, such as those at Kew, Edinburgh and Dublin. Fig. 57 represents the forms usually found in gardens and nurseries, where it is labelled either *Picea ajanensis* or *Picea hondoensis*.

There are no doubt many intermediate forms, but for gardening purposes these two are quite distinct. Fig. 57 shows much the handsomer kind. The leaves have a beautiful silver-white under surface, and they are curved and more crowded together than in the type. Wilson, in his book on *The Conifers and Taxads of Japan*, quotes Mayr as saying that the young leaves of *Picea hondoensis* are tinged with red and that Dr. Henry transposes the statement and applies it to *Picea ajanensis*. I have noticed this red, foxy tinge on the young leaves of *Picea jezoensis*, but not on the variety *hondoensis*. Edmund Giles Loder, *Leonardslee*.

THE VINE MAPLE.

ACER CIRCINATUM, the Vine Maple of California, is one of the most conspicuous of the American Maples in autumn, for at that time the leaves assume brilliant orange and scarlet tints, which make a bush a conspicuous object from a considerable distance. It is rarely seen except as a bush in this country, although under favourable conditions in America it sometimes attains a height of 30 or 40 feet. Its rounded leaves, which are margined by from seven to nine acuminate lobes, are distinct from those of other Maples, and there is no mistaking the species when it is growing amongst others. The flowers also are showy, for they are bright red in colour, whilst the fruits also have a red tinge. Although often spoken of as a Californian plant, the Vine Maple is found also in other parts of western North America, for it is met with from the coast of British Columbia northwards through Washington to Mendocino County in California. Though discovered in 1806 it was not until 21 years later that the Horticultural Society succeeded in raising plants from seeds sent home by David Douglas. Though *A. circinatum* can have no future from an economic standpoint so far as timber is concerned, it well deserves a position in the garden on account of its decorative qualities.

THE LEBANON OAK.

QUERCUS LIBANI, the Lebanon Oak, is noticeable during summer by reason of its elegant outline and narrow leaves, but in autumn another and more distinct character is apparent, for the acorns and the acorn cups are quite unlike those of other species. The Lebanon Oak is a native of Asia Minor and grows freely in this country, forming a tall, pyramidal tree with graceful branchlets and lance-shaped leaves $3\frac{1}{2}$ inches to $4\frac{1}{2}$ inches long and rarely more than an inch wide, with margins broken by regular, sharp-pointed teeth, and leaf stalks rarely more than half an inch in length. The acorns are large, being from one to one and a half inches long and three-quarters of an inch to an inch or more in width. The cup, which is mounted on a short, thick stalk, encloses the greater part of the acorn, and it is with difficulty that the acorn can be extracted without breaking the cup. The latter is covered with rough greyish scales which give it a netted appearance. *Q. Libani* is a tree which might well be included in gardens where rare trees are encouraged, for it grows well; the foliage is of good, healthy appearance and its large and distinct fruits give it an unique character amongst other Oaks. Though often increased by grafting, trees on their own roots are to be preferred,

PINUS THUNBERGII AS A SHELTER TREE.

People who are desirous of planting shelter trees or trees which may be established in exposed positions in sandy ground near the sea, would do well to give this Japanese species a trial, for it is likely to succeed quite as well as the Austrian Pine in similar conditions, whilst there is a probability of its timber being of better quality. In the few places where it has been tried in the vicinity of the sea in Great Britain, it has given satisfactory results, whilst it is one of the chief trees used for planting in sandy soil in exposed situations in Japan. Its value for seaside planting and for securing shifting sand are referred to in *Forestry of Japan*, published by the Bureau of Forestry, Tokyo, whilst the same work states that its timber is hard and full of resin, that it can be preserved for a lengthy period, and that it is well adapted for the foundations of bridges and other engineering works. *Pinus Thunbergii* belongs to the two-leaved section of the genus, its dark-green leaves being four to six inches in length, and the sheath round the base of each pair about $\frac{1}{2}$ inch long. Its cones are rather larger than those of the Scots Pine and brown in colour. It sometimes happens that they are produced in large clusters which

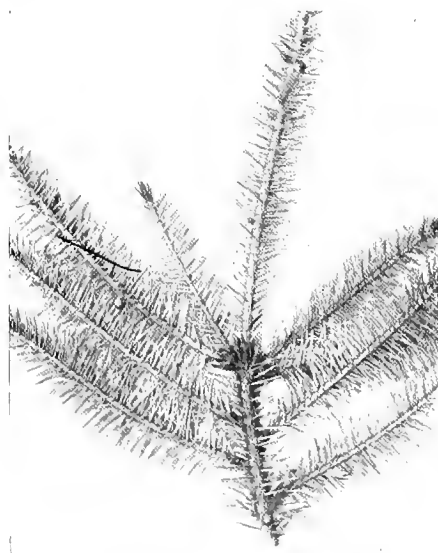


FIG. 56.—PICEA JEZOENSIS.



FIG. 57.—PICEA JEZOENSIS VAR. HONDOENSIS.

based on phylogeny and to be likened to a genealogical tree? Is not the genealogical tree itself a chimera, and was not Linnaeus perfectly right in "card indexing" plants? It is well to be compelled to review our admiration for great men; but we think that Linnaeus will survive.

It is a pleasure to find clear accounts of the work of the great British Botanists, Ray, Hales, Knight and Robert Brown, but we cannot subscribe to the adverse comments passed on John Lindley. It may be that his contribution to systems of classification was not considerable, but for the diagnosis and description of species few botanists have surpassed Lindley—and a perusal of the early pages of this journal would, we are convinced, have shown Professor Gibson that Lindley's name will remain as that of a great systematist.

Within the scope of such a volume as that under review some departments of Botany must perforce be treated all too briefly, and the specialist reader may be inclined to regret the brevity of treatment of his particular subject; but when regard is had to the multiplicity of aspects presented by botanical science, we think that Professor Harvey Gibson deserves special commendation for the balance which he has preserved in dealing with these many sections.

* *Outlines of the History of Botany*, by Professor Harvey Gibson, C.B.E., A. and C. Black, Ltd., 1919, price 10s. net.

completely surround the stem, as many as from 45 to 65 having been counted in different clusters. As is the case with all other Pines, the most satisfactory results are obtained by planting the young trees in permanent positions when quite small, for those which are from nine to fifteen inches high become established more quickly and often outgrow others which may be four or five feet high at planting time. W. D.

PRUNUS MICROLEPIS.

It is surprising that this beautiful Cherry is not more frequently seen in gardens. I do not know any other tree or shrub which can surpass it for brightening the dull winter season. It commences to flower early in December, and through January and February it is clothed in its beautiful double pink flowers, with buds of deeper colour. A tree measuring about 18 feet in height by 20 feet through, is a very pretty object in these gardens at the time of writing (Feb. 16). In a wet or very cold season it suffers somewhat, but even though its wealth of blossom is a delight only periodically the species is worth a prominent place in gardens. A native of Japan it was put into commerce by Mr. Smith of Newry, about 1911. D. Williams, *Hillbrook Plant Gardens, Trer Heath*.

THE ALPINE GARDEN.

CASTILLEJA ACUMINATA.

OFFERED sometimes as *C. miniata*, this Californian plant has never found its way into general cultivation. It suffers from a doubtful reputation which, I fear, is not undeserved. It is wonderfully hardy, and I know one or two Scottish gardens in which it has been successfully established, besides that specimen in Yorkshire which is the subject of an interesting note in Mr. Reginald Farrer's *My Rock Garden*. It has its special likes and dislikes, and the worst thing is that these are not easy to discover. Mr. Farrer writes of it as growing in a peat bed, and certainly it succeeds with him, but I have seen it growing excellently in light, sandy loam, as well as in a moraine with peat below the chips and stones. But it is safer not to dogmatise, and I believe a good deal depends upon the drying off of the roots in summer, only to be secured in a sunny, warm place. As for its appearance, few can mistake it with its flamboyant vermilion-scarlet flowers on stems from one to two feet high. The species is apparently the hardest of the race, but must always be bought without any confidence as to its success in any special garden or position. *S. Arnott*.

SPHAERALCEA PEDATA.

UNDER the name of *Malva Creeana*, *Sphaeralcea pedata* was figured in the *Botanical Magazine*, t. 3, 698. There it is stated to be of obscure origin, or probably a hybrid, but it is evidently identical with *S. pedata*. It also figures in gardens under the name of *S. murina* variety. *S. pedata* is a native of the Western borders of Texas and New Mexico, and under its various names has been grown in gardens since 1837, when it was cultivated in Edinburgh Botanic Gardens in a greenhouse. Of freely branching habit, it should be planted on a sunny ledge where the branches can hang down over the face of a wall. In such a position it has been attractive at Kew, in summer, producing its rosy red flowers from June to August. The stems are about two feet in length, and, with the petalately pinnatifid leaves, are covered with a soft pubescence. Like the other *Sphaeralceas*, *S. pedata* is easily propagated by means of cuttings inserted in summer. *W. J.*

THREE BLUE-FLOWERED ALPINES

ONE of the loveliest of free-growing Alpines is the *Cynoglossum*, with flowers like Forget-me-nots, known as *C. amabile*. It has the reputation of being not quite hardy. Plants that have flowered certainly do not come through the winter alive, and it is good practice to lift them in autumn, pot, and winter a sufficient stock under glass. The species may quite well be grown as an annual by sowing seeds early in the year in heat and growing the plants under glass until May, when they should be strong enough to be planted out.

Another good blue-flowered plant of similar appearance when in flower is the large-leaved *Anchusa myosotidifolia*. There is no doubt as to the hardiness of this species, but after a few years the plants become enfeebled and should be divided and replanted. To the foregoing, *Myosotidium nobile* may be added. Of this I have both blue and white forms, but they cannot be recommended for cultivation except in specially warm localities.

But I would like to recommend another Alpine which I do not recollect to have seen mentioned by your readers. I got it under the name of *Lithospermum Proebelii*. It is a suffruticose plant that is perfectly hardy, and in summer becomes one mass of grey-blue flowers. This Alpine plant may be increased by means of cuttings inserted in autumn. I have found cuttings of this and some other sorts root fairly well when dibbled into light soil in a 6-inch pot placed inside an 8-inch one and covered with a sheet of glass. A cold pit, or, better still, a Carnation pit, where just a little heat is provided during winter, is well suited for striking the cuttings in. Once they are rooted, it pays to pot the plants singly and so establish them previous to planting on the rockery. *R. P. Brotherton*.



THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Odd Corners.—The treatment of odd corners often requires much forethought, especially where large trees overhang or strong winds have direct access. It is essential to determine at the outset whether the corner may be barren in winter, partly so, or must of necessity be fully clothed. Where it is desired to furnish the ground, under overhanging evergreen trees, with the idea of providing a permanent screen, there is nothing more accommodating than *Ruscus aculeatus*. The soil should be enriched with well-rotted manure and young specimens used for planting; it is essential that the shrubs be well supplied with water during the two succeeding summers. Evergreen flowering shrubs which will thrive in partly shaded positions are: *Laurustinus*, *Berberis*, *Olearia Haastii*, *Cotoneaster* and *Pernettya*. In more open situations effective combinations may be made by associating evergreen, deciduous, herbaceous and bulbous species. Pleasing examples are:—(1) Golden Privet, *Lilium tigrinum*, *L. croceum*, *Fuschia Riccartonii* and *Winter Aconite*; (2) the purple-leaved Hazel, *Verbascum*, *Berberis Darwinii*, *Kniphofia* and *Crocus*; (3) *Betula sylvatica*, *Forsythia suspensa*, Gorse and Snowdrops. It is advisable to plant wind-swept places with evergreens, such as a bold group of Holly interplanted with *Crataegus Pyracantha* and *Berberis aquifolia* in the foreground. An effective combination is thus formed which will withstand the strongest winds. I advocate the planting of evergreen shrubs during early spring, especially in cold districts.

Hardy Evergreen Azaleas.—As with deciduous species, the evergreen Azaleas need to be boldly planted to create a brilliant effect. They may be used to give solidity in large rock gardens, or planted in beds sheltered from strong winds and the midday sun. In districts north of London it is advisable to choose a very sheltered position for these plants and afford them protection during severe weather by the use of dried Bracken fronds, which may be placed on and between the foliage of the shrubs. The plants will succeed in good loam, free from lime, but the best results are obtained, over a number of years, by planting in a peaty compost 2 feet in depth. The bottom of the bed should be thoroughly broken up before adding the prepared compost. Close attention to watering during very dry weather is essential, and occasional fine sprayings with soft water during the growing season are very beneficial to the new growths. Planting may be done at this season; give the roots a thorough soaking after the planting is finished. The following species may be recommended:—*A. amoena* and its varieties, including *Hindogiri*, and the white *A. ledifolia*.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CATN, Esq., J.P., The Nole, Cudecote, Welwyn, Hertfordshire.

Staking Fruit Trees.—To obtain well-trained specimens of bush Apples and Pears it is necessary to place neat stakes as supports to some of the weaker varieties and those of a spreading habit of growth. The stakes are chiefly required in the case of trees that have been planted during the past three or four years. Strong, erect-growing varieties such as *Bramley's Seedling*, *Warner's King*, *Newton Wonder*, *Rev. W. Wilks*, *Rival* and *Chas. Ross* will grow shapely by careful pruning and do not need supports.

Leaf Curl in Peaches and Nectarines.—This disease is very prevalent in some localities on wall trees, and I have often noticed that it appears when the material used to protect the

blossoms is removed. Leaf curl is caused by a fungus, and all affected parts should be removed and burnt. In the case of bad attacks, the trees should be sprayed with a mixture of soft soap and sulphur, prepared by mixing four ounces of soft soap with six ounces of sulphur, and adding three gallons of water. In applying it, keep the mixture well stirred, or the sulphur will remain at the bottom, and use a fine syringe. Another good specific is a weak solution of potassium sulphide. Should the weather be frosty at night, spray the trees early in the day in order that they may become dry again early in the afternoon.

Protection of Fruit Blossom.—Every effort should be made to protect the blossoms of choice fruit trees. Pea-sticks, before they are cut ready for Peas, will help considerably to ward off frost, and are frequently used here for the purpose with success. Since keeping bees I have never troubled to use a rabbit's tail to pollinate the flowers of fruit trees.

General Remarks.—Overhaul all netting, and put in order any needing repair. The work will find labour for the staff on wet days. Where new netting is required, place the order at once. Square-mesh netting will cover a greater length than the same amount of diamond-meshed netting. Where stakes are used to carry the nets over Strawberries, Raspberries, and bush fruits, they should be prepared in readiness. Endeavour to have all fruit quarters put in order by this date, and on wet days prepare shreds and shading material in readiness for use in summer.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSIGHT, Esq., Castleford, Cheshire.

Thunia.—This small genus of decorative Orchids embraces the species *T. alba*, *T. Bensouia*, *T. Brymeriana*, *T. Marshalliana*, *T. Winniana*, and *T. Veitchiana*. To obtain the best results with these plants annual repotting is necessary, and now that growth has restarted the work may be proceeded with. *Thunias* may be grown either in the Orchid house proper or in the ordinary plant stove, in which they will often give the best results. The atmosphere of the house should be warm and humid. A light, sunny position is essential.

Repotting Thunias.—Use a moderately rich and retentive compost consisting of fibrous loam, good quality peat or Polygodium fibre, partially decayed Oak or Beech leaves and chopped Sphagnum-moss in equal parts. Fill ordinary flower pots one-third of their depth with drainage material, and over the crocks place a thin layer of Sphagnum-moss. Shake all the old soil from the stems, and shorten the roots to a small tuft which will serve to hold the pseudo-bulbs in position until new roots are established in the soil. Grade the pseudo-bulbs into three sizes to ensure growths of equal strength and to render the plants of more uniform size when in flower. Four or five of the longest stems may be placed in a pot seven or eight inches in diameter, but the smaller pseudo-bulbs should be arranged in receptacles in accordance with their size. Each old stem should be tied to a thin stake.

Cultural Requirements.—*Thunias* require an abundance of water during their period of active growth, therefore the rooting medium should be made fairly firm and the surface half an inch or so below the rim of the pot. Arrange the plants near to the roof-glass, keep their surroundings moist by spraying and, for a week or two, water the roots sparingly. When the roots are seen to be creeping near the edge of the pot the amount of water may be increased with advantage, while a light spraying overhead may be given whenever the condition of the weather warrants the use of the syringe. Few insect pests trouble *Thunias*, but it is advisable to watch for thrips in the early stages of growth, while red spider will soon make its appearance if the atmosphere is kept too dry.

Treatment of Old Plants.—After flowering is over the plants are best grown in a light, airy house to thoroughly ripen the pseudo-bulbs, but in such conditions plenty of water will still be needed. A few weeks of this treatment will suffice to harden the stems, when the water supply may be gradually diminished until moisture is withheld. Store the dormant plants in a house having a temperature of 50°.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Melons.—The earliest plants have been stopped, and in order to secure an even crop of fruits it may be necessary to remove the first female flowers. Pollinate the flowers daily until two or three fruits of an even size are secured on each plant. If the plants are grown in pots, feeding may be commenced as soon as the fruits are set, subsequently supplying the roots with alternate waterings of liquid manure and light dustings of a quick-acting chemical manure. This system of feeding encourages roots to develop on the surface, where they are directly under the influence of the warm, moist atmosphere of the house. Plants set out on ridges or beds should be lightly top-dressed with rich compost, warmed, as the roots appear on the surface. Maintain a genial atmosphere by damping and syringing, and let the temperature at closing time be 90°, with a night temperature of 68-75°, according to the weather. Melons may be sown more freely after this date, with better prospects of success. The plants are easier to cultivate as the days lengthen and the sun increases in power.

Strawberries.—As the sun gains power Strawberry plants in pots will require liberal supplies of tepid water and liquid manure to cause the berries to swell. If the plants are forced in favourable conditions, including plenty of light and air, the fruits will set freely. Remove all small, weak flowers before they open. Fumigating the house is as essential as the watering and syringing of the plants, which should be removed frominery shelves to a light place where they may be syringed freely. Discontinue feeding the roots with liquid manure as soon as the berries change colour, and remove the plants to a cooler house when the Strawberries are ripe, to improve their flavour. Later varieties, such as British Queen and Dr. Hogg, grown in pots or frames, produce large fruits of the finest quality, and maintain a succession of ripe berries until the crop of the earliest outdoor varieties is available. Keep the plants in cool conditions and admit air freely; when the fruits are set fire-heat may be dispensed with.

THE KITCHEN GARDEN.

By H. WHILLER, Gardener to Mrs. JESSIE, Wemyss Castle, near Cuthbert.

Capsicums and Aubergines.—A house having a temperature of 70° and a moist atmosphere is required for the successful culture of these plants, and special attention must be paid to syringing, as they are very liable to attacks of red spider. The seed should be sown in pans filled with light, rich soil. Transfer the seedlings to small pots when they are large enough for shifting, finally potting them in 7-inch pots. Only in exceptionally hot summers are these vegetables a success out of doors; if their cultivation in the open is attempted, grow them in a warm situation such as at the foot of a south wall.

Globe Artichokes.—The protecting material should be removed from established plant. of Globe Artichokes. Young plants produce the finest heads; therefore, if existing stools are three or more years old, it will be advisable to make a fresh plantation. The ground should be trenched in readiness for planting later. Well-rooted suckers give the best results; if seedlings are used, the seed should be sown now in slight

warmth to ensure having strong seedlings for planting out in May.

Peas.—Seedling Peas that have been forwarded in heat will, after careful hardening, be ready for transplanting in the open ground. Plant firmly, and take great care not to disturb the roots more than is necessary. Fresh sowings to maintain a regular supply of pods should be made at intervals. The height to which the Peas will attain is the distance at which the rows should be apart. The ground between the rows may be cropped with early Cauliflowers or Spinach.

Tomatos.—To be successful with outdoor Tomatos it is necessary to have strong plants—with the first flowering truss well advanced—ready for planting out early in June. To ensure this the seed should now be sown thinly in pans, covering them very lightly, and the seedlings grown on in a house having a temperature of 55°. Use an open compost formed of loam, leaf mould and sand. Earliest of All, Sunrise, and Ailsa Craig are three excellent varieties for outdoor cultivation.

addition of leaf mould, peat and plenty of coarse silver sand. This plant may also be propagated by means of cuttings.

Statice.—At one time Statives were favourite exhibition plants, but are now seldom seen, although deserving of more general cultivation. *S. brassicaefolia*, *S. Halfordii*, *S. intermedia*, *S. imbricata* and *S. profusa* are all good garden plants. *S. brassicaefolia* and *S. imbricata* are best raised from seeds, when they can be obtained. The shrubby Statives are generally slow growing and uncertain of increase by means of cuttings, but the latter root readily if they are tongued and mossed after the manner of propagating *Dracaenas*. The plants may also be propagated by means of root cuttings. *Statice Suworowii* is a beautiful hardy annual, and is a fine subject for pot culture. Seeds may be sown now. This species is best grown singly in 48-sized pots.

Browallia—Sow seeds of the following:—*Browallia elata* and its var. *alba*, *B. speciosa* var. *major*, and *B. viscosa*. *B. elata* is a slender-growing plant, and it is best to place several specimens together in a 48-sized

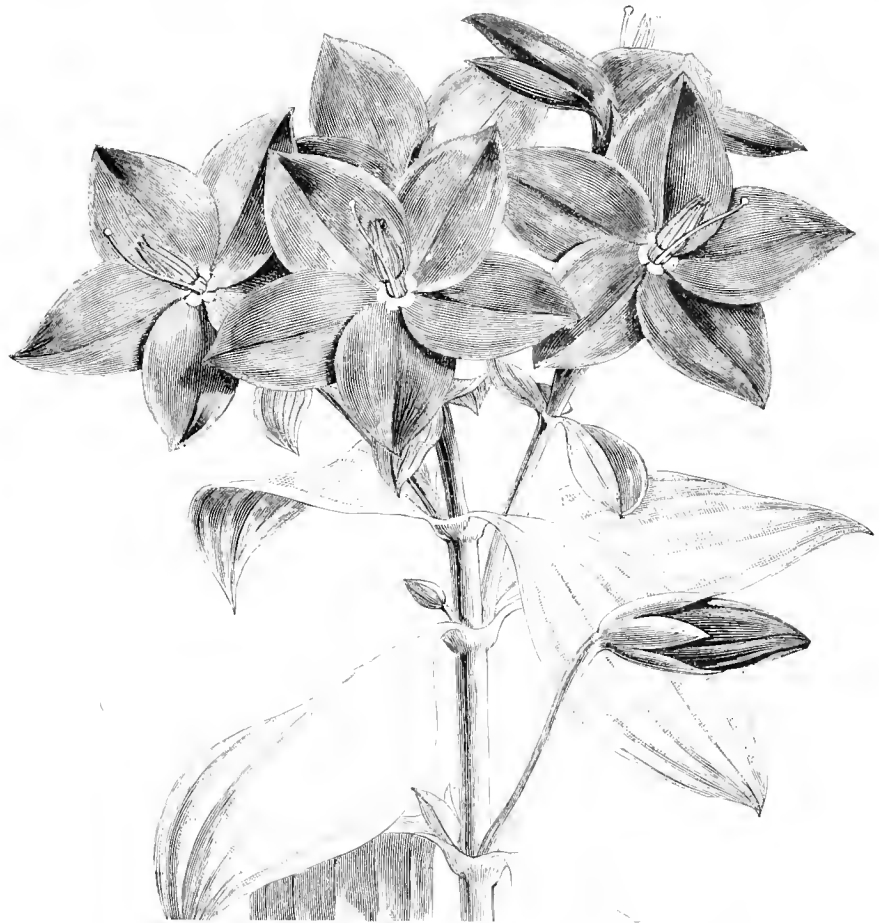


FIG. 58.—EXACUM MACRANTHUM; FLOWERS BLUE, WITH YELLOW STAMENS.

PLANTS UNDER GLASS.

By JOHN COITTS, Foreman, Royal Botanic Gardens, Kew.

Exacum.—Both *Exacum macranthum* (see Fig. 58) and *E. affine* may be raised from seed sown now in a warm house. The latter is a compact growing plant, about six inches high, producing small, bluish-lilac flowers, and may be treated as an annual. It grows well in an intermediate house and may be placed in the greenhouse when in flower. The former is a very beautiful plant, with its large, blue-purple flowers set off by bright yellow stamens. It is a stove biennial, but may be grown in a warm greenhouse when in flower. It is not a very easy subject to manage; the roots should never be over-potted, and require careful watering at all times. The compost should consist of medium loam, with the

pot; *B. viscosa* is a larger growing species, which, if stopped several times, makes a fine plant in 6-inch pots. Both species do best with ordinary cool-house treatment. *B. speciosa* var. *major* has large, blue flowers with a white throat, and grows best in a house having an intermediate temperature; the plants may be removed to a cool house when in flower. This species is frequently propagated from cuttings, and by raising successional batches it may be had in flower all the year round. *Browallia (Streptosolon) Jamesoni* is a beautiful greenhouse plant, seen at its best when planted out and trained up a pillar. Where it receives full exposure to sunlight, it produces its beautiful orange-coloured flowers in profusion. This plant also makes fine specimens if grown in large pots.

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

16.—THE BARENJOCH.

SOUTHWARD, the Sabiya Kaw valley winds upward to its end, in a curve of great, gaunt peaks and precipices; on the east, immediately above, towers the long wall of the ridge that here bounds Burma and China, but on the west, the corresponding wall is broken by the deep bay of an Alpine valley, about five hundred feet above, retreating in a little "plain" or marshy plain, between projecting buttresses of mountain, with a high rocky arête behind, ascending to a culminating pinnacle of 15,000 feet. The first part of the ascent is steep, through Bamboos, and up water-courses. The mossy floor of the hillside suggests new *Primulas*, but not one is to be seen, not even the lovely little pale-blue *Davidii* of similar situations across the valley, which seems confined to the actual neighbourhood of the pass, on either side. And otherwise the flora of the "Cambuseta" is dull. But soon after we top the rise and come out into the woodland of the marsh-level, a new matter of interest leaps to light.

In England, a year or two since, I heard a caustic critic complain that he had bloomed *Primula* (*Omphalogramma*) *Delavayi*, and that it was not worth growing, being of an ugly pink-magenta. This I accepted without question, though not without regret. But on the top of Hpwashi Bum, *P. Delavayi* at last met my own eyes, and I was amazed, for it was glorious: enormous-flowered, fussy, violet, of an imperial magnificence. What mortal taste could be so exacting as to want more? But now I think I know the answer to the riddle, and the character of *P. Delavayi* is cleared, for the genuine plant abounds, it seems, all along these Alps, in cool or marshy places (where it develops into giant masses, like beds of Violet clumps), from eleven thousand feet upwards, in the edges of Alpine scrub, along rill banks and by springs, and even, in its highest extension, out in the long hay of the open Alp itself. It blooms everywhere in June, and its leaves are always like those of *Viola odorata*, usually broader than their length. But when *P. Delavayi* is already a foot high in fat seed-pods, there comes into flower, in July, the impostor that has got itself confused with the genuine treasure and brought discredit on it, for this is another *Omphalogramma*, absolutely indistinguishable, to my eye, from *P. Delavayi* itself, either in habit or habits, except that it neither begins so low, nor mounts so high, invariably flowers a month later, and invariably has leaves longer than their breadth, more like those of some large form of *Viola hirta*. But the species are quite distinct, and their flowers alone would set them worlds asunder. When first I saw the sham *Delavayi* in bloom, indeed, I imagined its flowers were a very poor diseased secondary-blossoming of the real one; but full subsequent investigation has now shown me that these flowers are the unvarying rule in this second *Omphalogramma*, and not dishonourable exceptions in the other, for the impostor never

produces anything but small, inferior stars of a very ugly pink-magenta; indeed, huddled down so as barely to escape from the fat sheath of reddish scale-leaves, nothing could be more readily distinguished from the boldly emerging, huge, violet trumpets of the real *Delavayi*, even in differences in the tube be not taken into account. And, since all explorers are not able to do their work with their own eye and hand, and as the two species cannot be known apart, when out of flower (except by their foliage, which no native "collector" could be expected to remark), I believe that some of the indiscriminate gleaners in the vast field of China must have gathered the wrong *Omphalogramma* instead of, or as well as, the right; and that this is the history of the disappointment expressed by some growers over what they have hopefully reared as *P. Delavayi*.

In any case, the wrong *Delavayi* fills the light Alpine wood above the marsh, and ascends to damp places under the rocks above, never so luxuriant and large in spread as the other, but in close clusters of two or three crowns. Higher up, the scrub tails off, the Bamboo ceases, and



FIG. 59—*RHEUM ALEXANDRAE* GROWING IN ITS NATURAL HABITAT.

we emerge into grassy glades ascending to the ridge. On the crest the line of demarcation is as definite as in the ranges of North Tibet. On the south side, long grass and flowers, on the north a uniform springy sheet of dwarf *Rhododendrons*, in three or four species, sinking away unbroken for five hundred feet or so, to where the woodland of Spruces resumes. The point has a far wonderful view westward, over all the intermediate depths and valleys of richest blue, tumbled up in white fluffs of cloud, away to where the great range of Imaw Bum towers along the west, itself so lost in cloud as even to obscure the thought of Mr. Kingdon Ward sitting on its far side, probably collecting very much the same plants as I. But here, upon this neck, more immediate matters claim the mind, for it was here that my orderly had a memorable encounter with a mother bear and her two babies, which resulted in the demise of all three and the consequent immortalising of this col as the Barenjoch.

When he had finished gesticulating out the heroic tale, I parted from my companion and pursued my upward way towards the peak along the ribs of hay and lawn which descend from the unbroken wall of cliff that mounts above. The flowers, lovely and numerous as the stars, were those of all these high Alpine elevations,

and, as such, shall be dwelt on at ampler leisure. But hardly had I embarked on my climb than I was aware of a new *Rhododendron*—a sturdy, stocky little bush, wider than its height of a foot or two, with neatly splayed-out foliage. All the flowers were long since over, of course; but no, I had the luck to happen on a plant producing secondary trusses, and was rejoiced to find them loose and large-flowered, with trumpets of a waxy flesh—or rose—white, flushing to pink between the lobes, and with basal glands of deep carmine. Greatly kindled by this delightful discovery, and by a lap of marsh all azure with Gentians, I achieved the rest of the ascent with alacrity, and at length, by a steep Takin-track up a couloir, rejoined my companion on the actual summit. Here there was nothing but boulder-screes, too large for flowers, and sear brown turf beginning to be golden with a little *Potentilla*. And Mr. Cox had also found "nothing." But among that "nothing," when produced for inspection, there turned up no less a treasure than the long-lost *Rheum Alexandrae* (see Fig. 59), about which there was such a clamorous perquisition in all the gardening papers a season or two since. But rare (if not extinct), as it then appeared in gardens, *R. Alexandrae* is hardly less so on these, its native Alpine heights. The most protracted and keen search on all the neighbouring ridges and heights throughout this range never brought to light more than this one small colony of some twenty plants, stolidly standing up from the bare dead lawn of that wind-swept arête, and looking, paradoxically, comfortable solid phantoms, with their pallid ghostly spires, like cellar-bred stalagmites, against their background of wild high Alpine cloud. *Reginald Farrer.*

THE DOUBLE GRAFTING OF APPLES.

As the time for grafting Apples is once again almost with us, the value or otherwise of double grafting may be considered. Very old trees are not suitable for grafting; at least, any above about 30 years of age that I have treated have never been a success. Those of about 10 to 15 years, on the contrary, quickly grow into handsome specimens. But it is the fruitfulness of the tree and the quality of the fruit that is of most importance, and in my experience a double grafted Apple is never so fruitful as one that has been only once grafted or budded. Some varieties, of which Newton Wonder is an example, are barren, or only once in the course of several years bear a few fruits. Even such a consistently free-bearing variety as James Grieve never carries more than one-third of the crop which it does on a once-worked stock. Of course, the Apple on which the double graft is made may have an important bearing on the imposed variety, but in every case that I have tried the hosts have been particularly free-bearing sorts which were re-grafted on account of their earliness and being too many of each for our requirements. These are Ecklinville Seedling, Lord Grosvenor, Lord Suffield, and one or two of Paradise Pippin. When one comes to discuss the size and quality of the fruit borne on these trees, it has invariably been very superior to that of the same sort growing in the same garden. Still, it has to be considered whether or no the small crop may not be entirely the cause of such fine fruit as, again instancing James Grieve, these produce; but on the whole I think not. And if one gets a good crop year after year, and the individual fruits forming the crop be of the largest size and superior quality, that is all that is asked for in a private garden. I may add that all the trees to which reference has been made are grafted in the rind, a simple and effective method, and, the stock being of a proper age, three scions on each in a very few years entirely cover the cut-over portion. I would also recommend grafting wax for its cleanliness and general utility. *R. P. Brotherton.*

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, and February 28.

INDOOR PLANTS.

BEGONIA POLYANTHA.

THE subject of the illustration (Fig. 60) has been in cultivation at Kew for at least twenty years, and is supposed to be a native of Mexico. It is a very pretty and useful winter flowering Begonia for the greenhouse. Propagated by cuttings inserted in March, and given good cultivation during its growing season in a house with an intermediate temperature, the plant makes a specimen about two and a half feet high with shoots that arch over along their upper halves in a very graceful manner, and bear, during January, a profusion of pale pink flowers. If propagated later in the season and grown in six-inch pots, *B. polyantha* is a very useful plant for furnishing the side of a conservatory stage. Old plants may be grown a second year if large specimens are desired. *J. C.*

BEGONIA SEMPERFLORENS GIGANTEA.

A VERY desirable Begonia, which I did not see mentioned in Mr. Heal's admirable article on "Winter Flowering Begonias" (see p. 43), is *Begonia semperflorens gigantea*. It does not bloom so early in the season as the different hybrids of *B. socotrana*, but may be had in flower during the early months of the year, and will furnish a succession of bloom for a long time. As is well known, *B. semperflorens* is an exceedingly variable species, for the several forms differ widely from each other in habit, colour of the flowers, and other particulars. The one named *gigantea* is of hybrid origin, and was obtained by the intercrossing of *B. semperflorens* with the Mexican *B. lynchiana*, which was, when first introduced, known as *B. Roezlii*. This last is a tall-growing, sparsely-branched species, with brightly-coloured blossoms. The *gigantea* section—for there are two or three of this class which do not differ markedly from each other—was raised by M. Lemoine, of Nancy. It is by no means a novelty, but is well worth more attention than is usually bestowed upon it. Cuttings are very easily rooted, and soon grow to a flowering size. Effective specimens may be grown in pots from five to seven inches in diameter. They must not be stopped too freely when young in order to induce a bushy habit of growth, as the weighty clusters of deep rose pink blossoms are seen at their best on stout, vigorous shoots. When the pots are well furnished with roots the flowering season is greatly prolonged by watering the plants on frequent occasions with liquid manure or some other stimulant. *W. T.*

ASYSTASIA (MACKAYA) BELLA.

THIS plant is known as the Crimson Flag and tings of this beautiful plant; large cuttings, six to eight inches long, root readily in a close propagating case. The shoots should be severed at the internodes, and the untrimmed joint just buried in the soil. In twelve months' time the plants will be good specimens in six-inch pots, and they may be grown in a cool greenhouse well exposed to light and air.

The plants should be kept on the dry side during the winter. In their second year they may be shifted into ten-inch pots, in which some will grow three to four feet high.

Asystasia bella is generally regarded as a difficult plant to flower successfully; the essentials are good cultivation during the growing season, a partial rest during the winter and, most important of all, removal of all the lateral growth on the flowering shoots when the flower spikes are developing, for neglect to do this invariably results in the flower buds dropping.

ACALYPHA HISPIDA.

CUTTINGS of this *Acalypha* may be inserted now. The plant grows quickly and the cuttings will form good specimens by the early autumn. They should not be stopped, but allowed to run up with a single stem. Being a free-rooting subject, this *Acalypha* needs plentiful supplies of water and feeding with

liquid manure. It makes a good standard; plants intended for standards are best rooted the previous autumn. All *Acalyphas* are very subject to attacks of red spider, which is best controlled by a free use of the syringe on the under side of the leaves.

SCHIZOSTYLIS COCCINEA

THIS plant is known as the Crimson Flax and Kaffir Lily; it is hardy in the south on warm, sheltered borders, and in borders in front of plant houses, but even in the south and west the flowers frequently get damaged by frost during the autumn. In gardens where it is grown in quantity for supplying cut blooms, it is wise to erect a frame-work that may be covered with canvas to protect the flowers from frost. It is a beautiful subject for the greenhouse, and, if intended for this purpose, the present is a good time to plant it out. The best method of planting is in clumps, which in the autumn may be lifted and placed in six-inch or seven-inch pots. *F.*

Once having got the subject into stock there was no difficulty in striking cuttings from the stock plants. It is a case of restricting growth. *Combretum purpureum* I have had to produce rooted in order to show that cuttings can be struck. *Ipomoea Horsfalliae* is another subject that presents no difficulty if the cuttings are taken from restricted stock plants. This point of propagation to which I draw attention must be well known to nursery propagators, but they are not writers, hence this note. There must be many points, perhaps, known to practical men, that do not get into print, just as success seems sometimes to be obtained by quite exceptional methods. It is almost always recommended, for instance, that cuttings should be placed over bottom heat in greater warmth than usual, but I have always thought that I succeeded with *Camptopus Mannii*, one of the old *Bot. Mag.* plants, by rooting it in a lower temperature than usually advised, because other cuttings treated differently had failed. If I am correct, the reason is obvious—there is a natural tendency on the part of the



FIG. 60.—BEGONIA POLYANTHA: FLOWERS PALE PINK.

PROPAGATION BY CUTTINGS.

VERY interesting articles and notes have been published by *The Gardeners' Chronicle* on the subject of Propagation by Cuttings. It has been rightly stated, I believe, that there is no subject which cannot be propagated by this method. It has also been said that everything depends upon the right kind or condition of cutting. This is true, but I do not think that any writer has mentioned how these cuttings are to be obtained. In the case of many of the difficult, or so-called impossible, subjects, it is a question of restricting the growth of the plants from which the cuttings are to be taken. There may be the greatest possible difficulty in striking the cuttings that have to be taken from the specimens of the great stove or conservatory subjects, but once a cutting has been struck there is no difficulty in propagating from the plant so obtained. Many years ago I had serious responsibilities in propagation and I constantly found that this was the case.

cutting to continue growth, thus exhausting itself, and the active state of the cutting is checked by lower temperature so that it has time to recover. To prevent the exhaustion of the cutting is always the first consideration when propagation is done by this method.

Difficult, or so-called impossible, subjects I have at various times succeeded with, but there is one, to my great regret, that I have never taken in hand. This is *Chimonanthus fragrans*, and I recommend it to the attention of anyone who wishes to try experiments. If I had the opportunity now, I should begin by growing a plant in a pot, no longer than necessary, to provide the cuttings. The difficulty of striking this subject is such that Dr. Lindley offered a guinea, it is said, to any gardener who would bring him a rooted cutting. The guinea was never paid, I believe, but I should be greatly disappointed if I failed to succeed in one way or another. *R. Irwin Lynch, Ex-Curator, Botanic Garden, Cambridge.*

FLORESTERS' FLOWERS.

PERPETUAL CARNATIONS.

The cuttings of these most useful greenhouse plants may be inserted either in the autumn or early spring. I have found the best rooting medium to consist of two parts brown sand, one part leaf-mould, and one part loam, sifted through a sieve with a quarter-inch mesh, and well mixed. Prepare thumb-pots or very small sixties, and place one cutting in each pot. Make the soil firm and scatter fine sand on the top of each pot. Select strong, well-ripened shoots as cuttings, preferably those from the centres of the plants, as they will be found to grow freely and ultimately make the best plants. Prepare the cuttings with a sharp knife, making a clean cut just below a joint, and strip off the bottom leaves. Insert one cutting in each pot and label the variety as the work proceeds. Cuttings of these Carnations strike more easily and quickly if a little bottom heat is provided, such as a hot-bed of leaves and stable litter affords. On the hot-bed place a layer, two or three inches deep, of ashes or cocoanut fibre refuse. When the heat is just on the decline plunge the pots up to their rims and arrange a frame on the bed to cover the cuttings. Keep the frame close until the cuttings show signs of growth, and then examine the pots: if roots are developing admit a little air, and when all are rooted remove the plants to a shelf in a cool house having a steady temperature of 45°. Watering should be done at all times with great care, as herein lies the secret of successful culture. A suitable compost for the first potting consists of two parts fibrous loam, one part leaf-mould, and one part manure from a spent hot-bed, with a sprinkling of silver sand, charcoal and sifted mortar rubble. Pot firmly, and place the plants on the shelves again, and as soon as they have made three or four pairs of leaves, pinch out the points to cause them to break sturdily. With careful treatment, the young plants will grow quickly, and as soon as the pots are filled with roots they should be shifted into 5-inch pots, using similar soil as before, but in a slightly rougher state. At that stage the plants may be grown in a cold frame on a base of finely sifted ashes, covering the light at night if frost threatens. Keep the plants close for a day or two, but afterwards admit air on every possible occasion, taking care to prevent cold draughts. Keep the growths pinched to obtain shapely specimens.

A sprinkling of Carnation fertiliser and occasional waterings with weak soot-water will greatly benefit the plants when they have filled their pots with roots. At that stage the plants will soon be ready for their final shift. They will flower well in pots six or seven inches in diameter; the strongest specimens in the larger and the weaker ones in the smaller size. A little more rough loam may be used at the final potting. If an excess of manure or leaf-mould is used the plants are apt to grow too rank, and coarse shoots do not produce the best flowers. They should be staked neatly and the shoots kept tied as growth develops. Shade the plants on bright days with tiffany, and lightly spray them with rain-water in the afternoons; the moisture will help to ward off attacks of red spider. There will not be much fear of this pest, however, if the plants have been well looked after and fed with discrimination. Some growers are troubled with rust in their plants, which I think is most prevalent in a damp season or in gardens in damp situations. If it appears the affected leaves should be picked off and burnt. At all stages of growth the plants should be kept tied neatly to the stake; they will grow much better and produce finer flowers if the growth is not allowed to become twisted.

As the days lengthen the plants will grow fast and produce a large quantity of bloom, and consequently will respond better to liberal feeding than during the winter. If good flowers are desired through the spring and summer, the plants should be potted on about the end of February, and have all surplus growth removed. Certain varieties make a lot of growth about this time, which is very suitable for use as cuttings.

Varieties that are shy in producing cuttings should be propagated whenever suitable shoots are available, otherwise the stock of that particular variety may be lost. Weak plants that do not need re-potting may be top-dressed, first removing some of the old surface soil. During very bright weather the plants may be shaded and syringed, and should also be fed with soot-water, alternated with a concentrated manure. In the autumn these Carnations may be placed out-of-doors to harden the growth preparatory to taking an autumn batch of cuttings. I have found this an excellent plan, as cuttings from good, hard plants strike much more readily than those from overgrown, sappy specimens. Varieties which are difficult to strike may be layered in the same manner as Souvenir de la Malmaison Carnations; indeed, the Perpetual Malmaisons are best propagated in this way. When the layers are rooted, lift the plants carefully and pot them in sixty-sized pots. Grow them on a shelf, as advised for those struck from cuttings. R. H. Thatcher, Carlton Park Gardens, Market Harborough.

CULTURAL MEMORANDA.

RAISING PERENNIALS FROM SEED.

THE raising of perennials from seed, besides providing us with a plentiful supply of vigorous plants of many of our favourites, is one of the most interesting phases of gardening. As in the raising of new varieties of flowers, fruits and vegetables, so in the general practice of raising perennials, there is always the element of uncertainty to give zest to the work, in addition to the possibility of something really good being obtained. Many of our garden perennials are not true species, but varieties which have been obtained either from a chance sport or by deliberate hybridisation. They have not been fixed, as new Sweet Peas are supposed to be, before being sent out, but the plants have been propagated by division or by cuttings and so distributed. They are, in fact, in pretty much the same condition, as regards fixity, as varieties of fruits, and seedlings from them may be expected in many cases to vary no less than in the case of fruits.

Thus, if we sow a packet of seed of some perennial of which there are varying shades of colour, such as *Erigeron speciosus*, *Lupinus polyphyllus*, *Pyrethrum roseum*, *Aubrietia*, *Lenten Roses*, *Trollius*, *Delphiniums*, *Lobelia cardinalis*, *L. fulgens*, and *Sea Hollies*, we may plant them out in a nursery bed and leave them there to flower the first year, after which we may select those which we like best and do away with the rest, when, besides getting some fine, vigorous clumps, it is not at all improbable that we may get some with distinct shades of colour. Many of the most beautiful introductions of recent years have originated in this way without any artificial cross-fertilisation. By selecting both the pollen and the seed parents we can, of course, greatly increase the chance of raising good novelties, but, leaving this out of account, if we consult our own taste in the selection of seed parents alone we shall stand a good chance of getting varieties nearer our own ideal of that particular flower—the richest orange in the Iceland Poppy, the clearest blue in the *Delphinium*, and the most glowing crimson in the *Gaillardia*. Many perennial plants vary a great deal in many ways when raised from seed, as, for instance, in the case of *Campanula persicifolia*, *C. carpatia*, *C. trachelium*, the *Dropmore* variety of *Anchusa*, *Centaurea montana*, *Michaelmas Daisies* and tall *Phloxes*, and if we start with a packet of seed of the best strain procurable we may reasonably expect to get some fine sorts as regards not only colour, but foliage, habit, season and duration of flowering.

But this is only one aspect of the subject. Some plants when received from the nursery are difficult to establish, the lifting and the journey together apparently lessening their powers of adapting themselves to our more or

less uncongenial conditions, with the result that they die or only just linger on in an unsatisfactory condition.

On several occasions I have purchased young plants of *Scabiosa caucasica* which have never put forth a leaf afterwards, the plants apparently not finding it worth while to try and get over the move with the prospects of growing in such a wet clay as mine. By raising seedlings, however, and putting the plants into their flowering positions when in their third or fourth leaf I have obtained good specimens. Slugs are very fond of this plant, but where these are not a difficulty it might be better to sow the seed in small patches on the borders and thin the seedlings to one or two plants, which should be left to flower there. The *Dropmore* variety of *Anchusa italica* is well worth raising in the same way, bought plants being of little use, as a rule, as they do not make good flowering specimens the first year, and often do not live the second if the soil is a damp one, unless they are made into root cuttings, which means waiting another year. If this plant is raised in pans it should be planted out very soon, its root or roots being allowed to fall straight down a deep hole made with a dibber and filled with good soil. I have measured a root nearly two feet long when the plant has only been in the third leaf.

There are many plants which are very easy to cultivate but difficult to move.

In these cases, again, it is a good plan to raise the plants each season from seed and put them in their flowering positions in their early stages. *Gypsophila paniculata* is a case in point, its brittle, fibreless roots receiving such damage in the process of lifting, if the plant is an established one, that it is often three years before it makes a good specimen, by which time we can get good plants from seeds which will go on improving. The same is true of the great *Sea Lavender*, some of the *Sea Hollies*, *Echinops Ritro* (choosing seedlings of the best colour), *Delphiniums*, especially *D. Belladonna*, of which seed can now be obtained; *Catananche*, *Alyssum saxatile*, *Oenothera macrocarpa*, and *Lupinus polyphyllus*, all of which resent being moved and rarely make such fine specimens after the transplanting as when flowering where they have grown since they were in the seedling stage. This applies especially to the *Tree Lupin*, which is difficult to establish in the spring and does not withstand the winter very often if planted in the autumn, especially in wet soils. There are many plants, some of them, perhaps, rather doubtful perennials, which do better the first year than in succeeding ones, and in such cases it is worth while raising a batch every year to replace those which are flowering the same year. Seedlings of *Campanula persicifolia*, for instance, if raised from seed sown in a frame in February, make good plants by October, and give a splendid display the following summer, but they are often not nearly so good in any subsequent year. They vary a great deal, and it is a good plan to save seed from the best specimens. The hybrid *Columbines* should be treated in the same way, and if some of the short-spurred varieties are grown among them some fine strong types may be expected after a year or two, and we may get some stronger plants of certain colours than we can buy. *Gaillardias*, *Iceland Poppies*, *Sweet Williams*, *Lobelia cardinalis*, *L. fulgens*, *Coreopsis grandiflora*, *C. lanceolata*, *Verbascum phoeniceum*, *Pentstemon* hybrids, *Polemonium* (*Jacob's Ladder*), the *Primrose* family (including the *Auricula*), and many others, should be treated in the same way.

Hollyhocks, too, are much less likely to suffer from disease if treated similarly.

One or two things should be borne in mind by those who raise and grow perennials from seed. The seed should be sown very thinly in order that the seedlings sustain no damage either in the process of thinning out or through becoming leggy before this is done. Though the seed of many perennials may be sown at almost any time in the year, and in some cases germinates better if sown as soon as ripe, yet to obtain plants to flower the year after they are sown one can scarcely sow the seed too early in the year in the case of true perennials. *Alger Potts*.

VEGETABLES.

EARLY POTATO PLANTING IN AYRSHIRE.

DURING recent weeks many thousands of acres of early Potatos have been planted in the Girvan district of the Ayrshire coast and in Wigtownshire.

The planting season usually commences about February 7, but owing to the exceptionally wet weather at that period, operations were this season delayed until about February 18. Since that time the weather has been extremely favourable for the work, and another week of fine weather should see the planting practically completed.

The variety which is universally grown is Epicure. It has so far proved to be the most successful of all, as it yields the heaviest crop for digging in June, and although occasionally touched by frost, this does not have a very adverse effect upon its growth. Another point which is greatly in favour of this variety is the heavy foliage it carries. This is of great assistance in dry seasons in conserving the moisture in the soil, which, being of a sandy nature, dries quickly.

The general methods of cultivation employed may be of interest. In the first place, every farmer sprouts his Potatos in specially-made trays, and these are usually kept in sheds built for the purpose. The tubers are set up in September, or as soon after that time as possible. In frosty weather lamps are kept burning night and day if necessary, and in favourable weather the doors are thrown wide open to admit plenty of air and light.

As those Potatos are grown on the same land every year, very heavy manuring is necessary. Sea-weed, or "wrack," as it is better known in this district, is regarded as very valuable material. It contains a considerable amount of potash, and is invaluable for bringing the soil to a fine tilth. The farmers cart it at every available opportunity, and use it so far as is possible every second season. In the alternate season farmyard manure is used.

At planting time a heavy dressing of artificial manure is used, the usual quantity being from 12 cwt. to 15 cwt. per acre. The analysis of the mixture commonly employed is:—7.40 per cent. nitrogen, 9½ per cent. ammonia, 16 per cent. soluble phosphates, 2 per cent. citric soluble phosphates, 2 per cent. insoluble phosphates, and 5 per cent. of sulphate of potash. This system of manuring has been adopted year after year, and the results have been highly gratifying. In addition to the above, a dressing of bone meal is occasionally given, and so also is a dressing of lime.

After the crop has been lifted, a second, or "catch crop," is usually sown. This may take the form of Rape, Mustard, Italian Ryegrass, Barley, or Borscole. The first three are used either for ploughing in during the autumn as green manure, or for sheep-feeding. The Barley in good seasons often threshes very well, and in less favourable seasons provides useful fodder. The Greens or Kale constitute a most profitable crop to send to market, and are being more extensively grown each year.

During the past few years exceptionally high prices have been obtained for those famous early Ayrshire Potatos, and the farmers again anticipate that record prices will rule, owing to the probability of old Potatos being almost unobtainable by May and June. *John Stewart.*

LAZY-BEDS.

IRELAND has always been the chief home of the Potato, and Potatos and milk are still the staple diet of the greater percentage of the "crofter" population.

A description of the method by which the Potato crop is generally grown in small gardens, or even on 5-10 acre fields, will probably be of interest to readers. I am confident that the lazy-bed system (as it is usually called) has much to recommend it, either for reclaiming waste land, breaking up pasture, or cultivating

land that has water close to the surface. The tool used is either the long-handled graft or a digging spade with a 5-foot haft; but I have found an ordinary garden spade quite as useful a tool when used by a man who is used to it.

Whether the land is under grass or has been cultivated before, the procedure is exactly the same. The ground is marked out into alternate strips 3½ feet and 1½ feet wide, respectively. Manure is lightly scattered over the wider strips and sufficient soil to bury the manure half an inch deep is thrown on from the narrow strip. The Potato sets are then placed in position in three rows at one foot apart each way; sometimes 18 inches is allowed between the rows of three. The sets are covered with about three inches of soil from the narrow strip or trench and all the soil for the subsequent earthings is

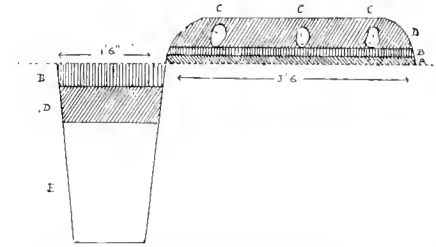


FIG. 61.—LAZY-BED METHOD OF GROWING POTATOS. A, manure; B and D, soil; C Potato sets; E, soil for subsequent earthing.

taken from the trench or trenches. The trenches are filled in when the crop is being harvested.

On dry lands this method would obviously be doomed to failure, but no other method of cultivation could, I believe, so aerate the soil and at the same time produce a crop. Of course, our humid climate is a great factor in success.

As an experiment, last season I adapted this method to the growing of Celery and Peas, and with great success, on land taken over in May. The ground was old pasture, about 300 feet above sea-level and 30 feet above the water-table, but a good supply of water was available for artificial watering. The trenches were dug two feet wide and two and a half feet deep and the soil was banked up between them. They were then filled with one foot of manure covered within three inches of the new level with a mixture of soil and old manure. Peas were sown and Celery planted in these trenches, and the ground between was cropped with salads or used as seed-beds for Cabbage, etc.

During the past few weeks we have been double-digging part of the land that was treated

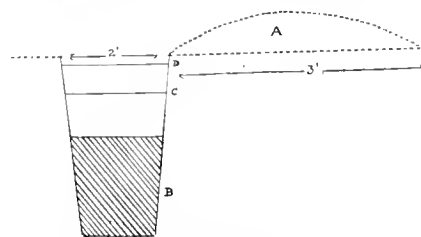


FIG. 62.—LAZY-BED ADAPTED TO CELERY AND OTHER CROPS. A, soil from trench; B, manure; C, soil level for planting Celery; D, soil level for planting Peas.

in this way. The whole of the soil to a depth of two spits has turned up remarkably easily and appears to be in as good a condition as ground that was thoroughly trenched and liberally manured during the winter of 1918. There is a tendency for grass and weeds to grow strongly at the edges of the beds, but this is easily overcome by turning the outside turf before commencing to plant; if this precaution is taken even top-rooted weeds, except a few at the outsides, seem to disappear entirely.

I am certain if the lazy-bed method of cultivation is tried in England it will become popular, more especially as a method of converting pasture land to good, deep garden soil. *C. A. Corke, Kilwarth, Co. Cork.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The Double Adonis amurensis.—In the note on terms of Adonis amurensis (see p. 115) no mention is made of a peculiarity of the double flower. The number of petals is enormous and the adventitious ones from the stamens, instead of being yellow, gradually assume a green colour until the whole centre of the broad flower becomes green. It is a case of chloranthly of the petals. The variety is certainly highly interesting, but if the metamorphosed petals were to remain bright yellow like those of the single form, the double one would almost certainly become a favourite in gardens, because the plant is of easy cultivation, and more durable than the other perennial species which find their way into gardens from time to time. It flowers early in almost any position, but a little shelter from prevailing winds would be beneficial to the flowers. *J. F.*

Narcissus Soleil d'Or.—The popular bunch-flowered Narcissus Soleil d'Or proves to be one of the earliest, hardiest, and brightest of its section, and it has been in full bloom here for the past fortnight, outside, planted close to a south-east wall, but without any other protection. The plants withstood the effects of 7° and 8° of frost on February 22 and 23. They have been planted five years and, at the time of writing, the trusses carry four and five fully developed flowers of a very bright colour. *A. B. Wadds, Englefeld Gardens, Brading.*

The Education of Young Gardeners.—I am very interested in the correspondence on the above subject, and should like to add a few suggestions. In the first place, I consider every young gardener should endeavour to spend a few years in several well-managed nurseries. My experience is that, after two to three years in a general nursery or private garden, a young man should spend a year at a time in nurseries or gardens; for instance, one year as journeyman in a good private garden, one year in a good hardy plant nursery, one year in a tree and shrub nursery, and so on. This system adds interest to one's work. I believe in every county having its demonstrating and trial grounds which require a man qualified for administration purposes, but I also think each county should make much greater use of its practical men. I know many practical gardeners who are good lecturers, and who, during the winter months, would be glad to give a course of lectures in their own locality if the county would arrange such courses and pay the lecturer a fee. During the past fifteen years I have given many addresses in the various parts of the country where I have been staying, and, on looking up my records for the winter of 1911-1912, find my expenses, without wear and tear of cycle, came to over £5. These lectures were all given in small villages, out of the range of the county lecturer. Very few gardeners can afford such an expense, and, in consequence, their valuable experience is lost both to the young gardener and the general public interested in gardening. *A. H. B.*

Hosts of the Mistletoe.—In a note on p. 69 *J. F.* writes: "For many years past, however, I have noted a fine colony of large plants of Mistletoe on the English Elm (*Ulmus campestris*) in the churchyard at Leatherhead." As I have never seen Mistletoe growing on any kind of Elm, on March 4 I went to see the specimens referred to. There are now only two Elm trees in the churchyard; these are comparatively young and have no Mistletoe. On enquiring of a friend, who has lived close by for several years, I was told Mistletoe could be found over the wall in a grass field, but, on further investigation, I found the Mistletoe growing on Lime tree! Is it possible that *J. F.* has forgotten owing to lapse of years? Can any reader give an instance of Mistletoe growing on the Elm at the present time. *W. H. Divers, V.M.H., Westdean, Hook, near Surbiton.*

Potato The Champion.—My friend Mr. William Cuthbertson, of Messrs. Dobbie and Company, calls my attention to an error in the article on "The Popularity and Deterioration of

Potatos" (see *Gard. Chron.*, Feb. 28, p. 108). By an oversight the raising of Champion was attributed to Mr. Barclay, whereas it was raised by Mr. John Nicol in his garden at Ochterloney. In 1880 Mr. Nicol was examined by Mr. Barclay, M.P., when appearing before a select committee of the House of Commons, and stated that it was in 1862 that he planted Potatos and obtained seed-apples. The seed was sown the following year, and from this seed The Champion variety was produced. *H. I. Taylor.*

The late Mr. W. H. Dobson.—As one who was in close touch with the scientific work of the late Mr. W. H. Dobson, I wish to add my tribute to the appreciation of his labours which appeared in your issue of February 25. Throughout the years during which I was engaged in agricultural-chemical work in the University of Leeds I had frequent opportunities of seeing and discussing his work, and early formed a high

as manganese and boron, on the growth and fruiting of vines, would be adequate to give him an honourable place amongst scientific investigators, and it is sincerely to be hoped that some means may be found of placing them on record. His scientific work throughout was characterised by the most scrupulous regard for accuracy, and he would spare no efforts to secure complete mastery of the technique of any analytical method before applying it in his investigations. Living in the country, he was largely cut off from the modern facilities and intercourse with fellow-investigators, which afford so much assistance to the academic worker. A bedroom served as his chemical laboratory and, in adapting it for his purpose, he displayed a fertility of resource which compelled admiration. Reference is made in your obituary notice to the valuable advisory work which he accomplished for Yorkshire farmers and horticulturists, work which throughout was carried out with scientific

Chronicle. The question I desire to ask of those interested in horticulture in the north of England is this: Is there still a need for such a society as the N.E.H.S., and how can it be placed in a strong position? We have at present a Reorganisation and Reconstruction Committee at work, but I am told their difficulties are great. We have about £75 in hand to our credit so we are not bankrupt by any means. And to me the wonderful thing is that, notwithstanding a state of suspended animation from March 21, 1916, to June 17, 1919, and even now the impossibility of getting fellows together as in old times, we have good and loyal friends. Our "good will" is an asset. Perhaps a little history will help to straighten matters out. On January 6, 1911, in the Lord Mayor's Rooms at Leeds, the society was inaugurated, after a fair amount of local agitation and Press correspondence. The name of the late John Clayton stands out pre-eminent among the pioneers. The general feeling was that up in Yorkshire and in these northern counties we were too far away from London to benefit by the R.H.S. shows. Growers and others who desired recognition of their efforts in the shape of diplomas or certificates, apart altogether from money prizes, felt themselves severely handicapped. Although I had not desired the post of secretary I did my best to carry out the plans outlined and when I retired, October 1, 1913, the following was our position:—Paid-up fellows and members, 520; paid-up affiliated societies, 20. If I may be allowed to criticise, two mistakes were made which placed the society in a dangerous financial position. First, no guarantee fund was established to pay off initial expenses. I advocated this as I had seen the beneficial effects at our first (Hexham) Northern Fruit Congress, 1910. Then there was the natural Leeds and Yorkshire bias which over-balanced affairs too much, and generally made the society untrue to name. Until February 16, 1917, I was out of the society except as the one and only honorary life member, although I helped Mr. J. C. Jackson, our secretary, by raising some £127 towards wiping out the deficit. The name of Major J. W. Dent, Ribston Hall, should be for ever remembered in this connection for his princely generosity. One great source of weakness, financially, 1913-16, to the N.E.H.S. was the Journal Committee, who took over the matter in 1913, up to which time the Magazine, as it was then called, was self-supporting. The Investigation Committee appointed on January 21, 1919, was able to place its finger on this weak spot. The loss in 1914 was £90 and in 1915 £119. These figures speak for themselves. The auditor also reported £50 owing for advertisements. As hon. sec. since February 16, 1917, I have had to mark time and "wait and see." Mr. J. S. Barnton and myself have tendered our resignations twice, but by request they are held over. What does the horticultural fraternity in the north of England wish and desire? For myself, I think the vegetable and allotment departments are fully catered for and fully organised already. There is one opening which I would like to see accepted, and it is summed up in the word "fruit." Whether it be in garden cities, villa gardens, market gardening or fruit growing there is scope here for organisation, encouragement, and experiment. At Wye, Long Ashton, and Wisley, to mention only three centres, you have for the south of England great educational facilities. Except for the work of Mr. A. J. Sowman, under the Lancashire C.C., we have nothing, to my mind, and, so far as I know, progressive or really helpful in the north of England. What does go on is fitful and haphazard. The Yorkshire experimental grounds are a disgrace—let anyone visit Hunsingore and see the trees growing together and full of mussel scale. This is largely due to horticulture being under the heel of agriculturists who naturally cannot understand, or, if not farmers, they are townsmen who do not grasp what openings there are for home production of fruit. At our Knaresborough Red Cross Fruit Show in October, 1916, Dr. Keeble advocated a Northern Trials Station. Is this not fit work for the N.E.H.S.? *J. B. Rowland Hall, Paraham Vicarage, Knaresborough.*



FIG. 65.—NARCISSUS MAGNIFICENCE.

R.H.S. Award of Merit, Tuesday, March 9 (See page 135.)

opinion of his character and ability. British horticulture may well be proud of its successive generations of practitioners of the highest technical excellence, but rare indeed is it to find skill in practice combined with the enthusiasm for, and solid achievement in, scientific research which was the outstanding feature of Mr. Dobson's career. Modest to a fault concerning the merits of his research work, he could never be persuaded to publish the results of his work in scientific journals, and despite the most strenuous pleading of his friends he could never be persuaded that it would not be presumptuous on his part as a practical man to put himself forward as a scientific investigator. His researches on vine-culture alone, in which, with infinite pains and skill, he investigated the influence of various soil factors, notably the supply of lime and the rarer ingredients of soil, such

thoroughness and a close acquaintance with the latest developments of agricultural and horticultural research. Alongside these manifold activities he displayed the warmest interest in the general welfare of British horticulture. The work of the private investigator is the peculiar glory of British science, and it is with a view to ensuring that some little tribute may be paid to the memory of one whose modesty alone deprived him of recognition during his lifetime that I am asking you to give the publicity of your journal to this imperfect appreciation. *Charles Crowther, Director, Research Department, Olympia Agricultural Company, Ltd.*

North of England Horticultural Society.—I shall greatly esteem the advice and counsel of yourself and the readers of *The Gardeners'*

The Torquay Wheelbarrow.—Under the above designation I desire to refer to the kind of wheelbarrow almost universally used in Torquay. It has simply the addition of smaller wheels to the two legs. These are no inconvenience when the wheelbarrow is lifted by the two handles and used in the ordinary way, and it is conceivable that in case of weight, against a rise of the ground for instance, it is very convenient to be relieved of the weight on the hands and to push the barrow. Thus the wheelbarrow becomes practically a hand-cart, and this seems sometimes to be recognised by modification of the construction. For going down hill there must certainly be an advantage. If it were possible, the Royal Horticultural Society might do worse than maintain an exhibition of garden implements and materials. There is an extremely valuable form of shovel commonly used in the south-west of England which, I think, is never seen in London and some other parts. The shovel in common use is like a spade, with the same straight handle, but with larger blade. This requires that a man, in loading a cart for instance, should bend his back to the horizontal and then, from this weak position, have no great power in the necessary push. The west of England shovel, on the contrary, allows a man to remain nearly upright and to have enormous power of push by means of the leg above the knee. This shovel, with the blade flat on the ground, has an upturned tube to take a curved handle, which rises over the leg, above the knee, to the right hand, the left hand being rather below the knee. In this position there is enormous power of leverage on the leg for loading a cart, and enormous power of push on the ground without any danger of breaking the back. The ordinary shovel makes the back take all the strain. A difficulty I have found is that the ordinary garden labourer would rather strain his back than take to an implement that is new to his experience. *R. Irwin Lynch.*

NOTES FROM IRELAND.

THE spring show of the Royal Horticultural and Arboricultural Society of Ireland will, by kind permission of Viscount Iveagh, K.P., be held in the covered yard, St. Stephen's Green, Dublin, on April 8. As far as can be foreseen this date should suit Daffodils, for which the Irish schedule provides sixteen classes, although last year a date two days later found them behindhand.

Generally speaking, vegetation is a month earlier than it was this time last year, which, of course, is not a matter for unqualified congratulation. The morning of the 8th inst. found a very cold night culminating in 7 degrees of frost at the Royal Botanic Gardens, Glasnevin. But notwithstanding the frost, plants of *Primula denticulata* in full bloom on the cool side of the extensive rockery at Glasnevin had not lost their beauty, indeed, I never saw this *Primula* more pleasing than on that morning, after the unkind night, while Kauffman's Tulip, in royal red, gave a splash of colour.

It is interesting to notice Mistletoe making use of the weak-wooded Snowberry bushes as a host at Glasnevin (as recorded on page 122). It seems to raise the question as to what the parasite will not avail itself of, rather than what it will thrive on. However, it is not a matter for surprise to find it there, as a shower of berries must have fallen from the dense clusters on the Chestnut overhead, on which luxuriant bushes abound, with the possibility of lodgment in the forked, twiggy growth of the Snowberries underneath.

Very noticeable at the entrance to the Glasnevin Gardens are the wall-trained plants of *Pyrus crenulata* Gibb'sii, and *P. c. yunnanense*, with their profusion of brilliantly red berries, notably the last-named, which is almost dazzling as the sun chases the frost away. In the little Alpine house, a pan of *Saxifraga porophylla* is beautiful, its pink-purple flowers springing from small, encrusted crowns; *S. Irvingii*, pink, and *S. lilacina*, with a "Blue-eyed Mary" in *Omphalodes cappadocica*, were equally charming. *K. Dublin.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 9.—*Present:* Messrs. E. A. Bowles, M.A. (in the chair), J. Fraser, H. J. Elwes, W. Hales, A. Worsley, W. R. Dykes, H. J. Page, F. J. Chittenden (hon. sec.); Messrs. Crane, Jardine, and Rev. J. Jacob (visitors).

Primula crosses.—Messrs. BAKER, of Wolverhampton, showed a cross between *Primula acaulis* and *P. Juliae*, with dark purplish red flowers and leaves like those of *Primula Juliae* and also *Primula Juliae* × *P. elatior*, with pinkish flowers very similar to the form shown by Dr. Rosenheim a few meetings since.

Variation of stem in Freesia.—Rev. J. JACOB showed a variety of *Freesia* with orange flowers, the lower part of the stem of which showed alternating bands of darker and paler green. These were deferred for further examination.

Pruning, etc., of seedling fruits.—Mr. A. Worsley gave an account of his observations upon the growth of seedling fruits of various kinds, including Apples, Pears, Plums, Peaches, and Apricots, and remarked upon the methods of pruning such seedling trees and upon the characteristics of certain seedling fruits as compared with their parents.

Valthemia viridifolia.—Mr. Blythwayt, of Porlock, sent a specimen of this interesting Cape bulb. It is nearly hardy, but not quite, frost being fatal to it.

READING AND DISTRICT GARDENERS.

At the meeting held in the Abbey Hall on Monday, March 8, Mr. Alderman F. B. Paritt, presided over an excellent attendance, including several members of the Berkshire Bee-keepers' Association. The subject for the evening was "Practical Bee-keeping," and the lecturer was Mr. Henry Edwards, who gave a very exhaustive discourse on skeps, comb formations on frames, swarming, extracting honey, and honey flowers. A splendid series of lantern slides was shown enabling the audience to more closely follow the lecturer's remarks.

A beautiful exhibit was staged by Mr. F. Townsend, The Gardens, Hillside, consisting of Hyacinths in pots, each bulb carrying a splendid truss of bloom. The most noticeable varieties were *La Victoire*, *King of the Blues*, *City of Haarlem*, *Corregeio*, *Jacques* and *Schotel*.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MARCH 8.—There was an unusually large attendance of members of the United Horticultural Benefit and Provident Society at the fifty-fourth Annual General Meeting, held at the Royal Horticultural Hall, Westminster, on the above date.

The report and accounts for 1919 were presented. These show that the total income for 1919 was £4,261 5s. 9d., including £1,339 16s. from dividends on investments. The expenditure amounted to £3,968 7s. 1d., this sum including the purchase of investments. The sick pay for the year came to £343 0s. 2d., as compared with £325 5s. 10d. in 1918. In Scale A, forty-three members received a total of £279 14s.; in Scale B, 118 members received sick pay amounting to £507 8s.; in Scale C, twenty members received £47 14s. 8d.; in Scale D, seven sick members received £8 13s.; and one juvenile member received 10s. 6d. The total amount paid out in sick benefits included £108 2s. paid to wounded and sick members serving with His Majesty's forces. The grants from the Distress Fund came to £187 1s. 6d. Twenty-three members withdrew interest in accordance with Rule 19, amounting to £89 4s. 4d., and two members over the age of seventy years drew from their deposit accounts amounting to £209 17s. Two lapsed members who had reached the age of sixty years closed their deposit accounts, amounting to £9 15s.,

whereas the payments in this connection in 1918 were £96 19s. 10d. Fourteen members, including seven soldiers, died during the year, and their nominees received sums varying from £1 8s. 2d. to £49 11s. 4d., and making a total of £226 12s. The cost of management was £332 12s. 8d., and £30 9s. 1d. was spent in advertising the Society.

Forty-three members were admitted during the year, and five juvenile members were transferred to the Adult Section. The total membership now stands at 1,685, made up as follows:—Scale A, 334; Scale B, 1,059; Scale C, 175; Scale D, 100; Juveniles, 17.

The Chairman, Mr. Chas. H. Curtis, in moving the adoption of the report and accounts, briefly outlined the work accomplished and referred to the purchase of £2,500 of War Loan during the year, this amount bringing the total invested in War Stock to over £10,000 and the total investments to £57,147 (see p. 125).—Mr. Price seconded the motion, which was carried.

Votes of thanks were accorded the Trustees, Officers, Members of Committee and the Horticultural Press. Messrs. Bashford, Bedford, Penton and Wesker, the retiring members of the Committee, were re-elected. Mr. T. Winter was reappointed Treasurer and voted £20 from the Private and State Sections for his work. Mr. A. C. Hill was reappointed Secretary, and Mr. Chas. H. Curtis was re-elected Chairman of Committee for the twentieth consecutive year.

At the close of the general business, a Special General Meeting was held, and alterations of rules were adopted, whereby a special scale of sick pay was created, in which, by an increase of subscriptions by 50 per cent., the members will receive an advance of 50 per cent. in payments during illness. This is a voluntary scale, and members may enter it irrespective of age until the end of 1921, when fees will be payable according to the age of the member joining.

Other alterations agreed to allow a grant of £10 to be paid to the nominee of a deceased member, in addition to any sum standing to his credit, in short, a funeral benefit fund has been arranged without an extra subscription, the benefit paid out being covered by a pro rata deduction from the amount of surplus cash credited annually to each member.

Mr. Butler gave a résumé of the model rules which the Commissioners of Friendly Societies have recommended for adoption. It would almost appear as though these rules have been drafted on the basis of those now used by the U. H. P. B., therefore the necessary adaptations were few. The meeting gave the Committee and officers full power to put these rules into force, subject to the necessary adaptation, both for the Private and the State Sections.

The meeting closed at a somewhat late hour, with a very hearty vote of thanks to the Chairman.

BRITISH CARNATION.

THE twenty-fourth exhibition of the British Carnation Society was held at the Horticultural Hall on Wednesday, March 10. It cannot be said that the show was up to pre-war standard, as we have seen more trade groups and larger entries in the competitive classes, but it was nevertheless a good show, and so far as quality of bloom is concerned some of the varieties of recent introduction were in advance of those formerly recognised as the best sorts.

Two novelties were granted Awards, both belonging to Messrs. ALLWOOD BROS., Wivelsfield Nurseries, Haywards Heath. Wivelsfield Claret is a large, substantial flower, supported on strong stems. Its colour is a very full rich claret, distinct and effective in a good light. The other variety is named Wivelsfield Beauty, a light yellow, neatly edged and striped with rose pink. This appears likely to be a useful addition to exhibition varieties.

The principal class in the schedule was that for which the George Monro Cup was offered, the requirements being 12 vases of distinct varieties, 25 blooms in each. Mr. W. E. WALLACE was the only exhibitor. Among his varieties were Lady Northcliffe, Mrs. C. W. Ward, Winsor, Pink Delight, Scarlet Glow, and Mikado, but he also showed his own variety Una Wallace, a brilliant

rose-cerise flower of fine quality; Romeo, a rich crimson of capital shape, with all the appearance of a market flower, but devoid of scent; Sunstar, White Wonder, Enid and Day Dream. There were four entries in the class for a vase containing not fewer than 100 blooms of one variety. The successful exhibitor was Mr. C. ENGELMANN, who showed Lady Northcliffe. There were those who thought Mr. T. PAGE'S vase of a new variety, named John Page, was superior. It is a shade lighter in colour than Lady Northcliffe, but it is a grand flower. None of the vases presented an elegant appearance, and we would suggest that so large a number of blooms as one hundred would make an infinitely more attractive display if arranged in a basket or an epergne.

The best three vases of 12 blooms each, confined to British novelties distributed since January, 1917, brought another first prize to Mr. ENGELMANN. His varieties were Bona, a handsome flower, shading from salmon pink through

PETERS coming second with the same variety; third prize was awarded to Chastity, a new variety, shown by Mr. J. GREEN, March. The NEWPORT CARNATION NURSERIES also led for a pink variety, with Lady Meyer. Mr. ENGELMANN'S Bona excelled in the "salmon" class, and the same exhibitor won the first prize in the "crimson" class with Carola, and for "scarlet" with Thor, which is a scarlet of vivid colouring and superb form. Mary Allwood, Iona, and Nora West were the other three prize winners in individual colour classes.

Mr. R. F. FELTON had matters all his own way in the decorative classes, showing a magnificent basket of the new pink variety named Mrs. Walter Hemms, and a superb bouquet of the yellow "Saffron."

TRADE EXHIBITS.

Mr. C. ENGELMANN was awarded a Gold Medal for a splendid group, which included fine blooms of Lady Northcliffe, Laddie, of wonderful size;

Mr. H. H. BROWN, Castle Hill Gardens, Englefield Green, Surrey.

Mr. HERBERT BLAKE, Tower Cottage Alverstoke, Hampshire, showed best in the Amateurs' Section, winning 1st prizes for one vase of a pink variety, one vase of a salmon-pink variety, one vase of a crimson variety, and one vase of any other colour than those enumerated.

Mr. W. G. OAKLEY, Hill Croft, Luton, was successful in the class for a white variety, and he was awarded the 2nd prizes in the classes for pink, salmon-pink, crimson and scarlet varieties.

At 3 p.m. a conference was held in the lecture room of the Royal Horticultural Society, when a paper on "The Culture of Carnations in Pots" was read by Mr. F. Jordan, Ford Manor Gardens, Lingfield, Surrey.

In the evening some sixty-six members and their friends were present at the Annual Dinner, held in the Duke's Room, Holborn Restaurant. Mr. J. S. Brunton presided. A pleasant evening was spent, the Committee having arranged an excellent musical programme.

LEEDS AND DISTRICT MARKET GARDENERS.

A COMPETITIVE Rhubarb exhibition was held at Leeds, on the 6th inst., under the auspices of the above Association. The show was the seventh of the series, and it was made the occasion of a social event, a smoking concert being held after the show. There were four classes for (a) six sticks of Prince Albert or Linnaeus; (b) six of Victoria or any other variety; (c) six of Dawe's Champion; and (d) three marketable bunches of Victoria Rhubarb, not to exceed $\frac{3}{4}$ lb. each.

Messrs. WHITEWELL AND BRIGGS, Bramley, excelled in the two first classes and Messrs. T. W. and H. POPPLEWELL, Farsley, in the other two. The first prize in the last class was a silver cup, offered by Messrs. Garcia, Jacobs and Co., valued at 10 guineas. The cup has to be won three times in all before it is the property of any exhibitor.

The Committee states that the show is the only one of its kind in the Empire.

At the close of the show all the exhibits were sent to the wounded soldiers at the Military Hospitals, Leeds.

Obituary.

Henry Prime.—It is with deep regret we have to record the death of Mr. H. Prime, gardener at Hatfield House, Hatfield, Hertfordshire, at the early age of 40. For some time past he had not been in very robust health and the end came peacefully on February 19. Mr. Prime succeeded the late Mr. Norman as gardener to the Marquis of Salisbury about 14 years ago, and he thoroughly maintained the high reputation the Hatfield gardens have so long enjoyed. Mr. Prime was a clever cultivator of fruits and the raiser of several new Strawberries. The funeral took place at the Hatfield Cemetery on the 24th ult. In addition to the relatives, estate officials and garden staff, Mr. Hazelton, Mr. H. Muckham, Mr. Fitt and several other gardeners resident in the immediate neighbourhood were also present. A widow and one child are left to mourn the loss of a modest and kindly man, who was one of the most skilful gardeners of our times.

George Stanton.—It is with deep regret we announce the death, on the 14th inst., of Mr. George Stanton, formerly gardener at Park Place, Henley-on-Thames, in his 80th year. Mr. Stanton was for 42 years in charge of the gardens at Park Place, and for the past six years he had lived in retirement on the estate where he had laboured for the greater part of his manhood. He was born on December 10, 1840, at Bramley, near Guildford, Surrey. His gardening career commenced at Rydinghurst, where he remained for three years; he next served in the gardens at Knowle Park, and, after two years there, he entered the Royal



FIG. 64.—CARNATION WIVELSFIELD WHITE.

shrimp pink to a darker salmon tint toward the edge of the petals; Speckles is a flower well named, it being speckled with red on a pink ground; and Iona. The Misses PRICE and FIFE showed good flowers in this class of Isobel Felton, a white variety which was described as a model of form; Cholita and Mrs. Walter Hemms. Unfortunately, there were two points in which this exhibit fell short of the Schedule, *i.e.*, wiring in one instance, and the showing of a variety not yet in commerce. In other respects this exhibit merited the first prize.

Mr. ENGELMANN won first prize for three American novelties, with Laddie, a very large, bold flower; Peerless and Crystal White. Mr. WALLACE'S Romeo was placed first in the class for one vase of a British novelty; second, Dolly, a rich salmon pink, smooth-petalled variety of Mr. ENGELMANN'S. The NEWPORT CARNATION NURSERIES led in a class for the best vase of a white variety, showing White Wonder; Mr. J. E.

the new Bona, and Carola, with all its spots. Messrs. ALLWOOD BROS. showed a large table group, which was also awarded a Gold Medal; their novelty, Wivelsfield Claret, was made a conspicuous feature. The exhibit also contained good blooms of the "Wivelsfield" varieties, including Wivelsfield White (see Fig. 64); there were also several unnamed seedlings of great promise. A big bank of Chastity, a pure white variety, from Mr. J. GREEN, March, demonstrated the usefulness of this addition to white sorts. Messrs. KEITH, LUXFORD AND Co. showed flowers of good quality, evidencing skilful cultivation.

The schedule included sections for gardeners and amateurs, there being seven classes in each of the two divisions, each class for one vase of 5 blooms of a distinct colour.

The principal prize winners in gardeners' classes were Mr. R. LAY, gardener to E. Wormald, Esq., Sheepwell, Potter's Bar, and

gardens at Windsor, where he was employed for a further two years. He next gained experience in the Royal Botanic Gardens at Kew, and was successful in winning the first prizes for botany in his two years' studentship. He rose to be first hand in the propagating department, and left Kew with an excellent testimonial as to his conduct and attainments. He continued to gain successes in botany and horticulture, and filled posts as foreman at Berry Hill, Maidenhead, the residence of Mr. John Noble, and gardener at Whittlebury, Northampton. His former employer, Mr. Noble, having purchased Park Place, Henley, invited his old foreman to take charge of the gardens and pleasure grounds, and this post he held until 1914, when he retired, but continued to live on the Park Place Estate. During his long period of service at Park Place many young French gardeners served under him, and his connection with our gallant ally found other scope, for in 1867, and again in 1878, he was selected by the Society of Arts to report on horticulture at the Paris exhibitions. In 1901 he was elected an honorary member of the French National School of Horticulture at Versailles, and in the same year was nominated by the French Government, Chevalier du Merite



THE LATE GEORGE STANTON.

Agricole, as "a fitting recompense to an excellent cultivator and a worthy man," words aptly chosen as testifying to the abilities, as well as the character of a great English gardener. In 1918 Kew men honoured him by electing him President of the Kew Guild, in recognition of his great ability and regard for his personal qualities.

TRADE NOTE.

An important meeting of those interested in the Dutch bulb trade was held on Monday, the 1st inst., at the Adelphi Hotel, under the auspices of the Chamber of Horticulture, and at the request of a Scandinavian Committee who desired to have an expression from the English trade on the whole matter. A full discussion resulted in the passing of the following resolution:—"That this meeting recommends members of the horticultural trade not to make any purchases of Dutch bulbs prior to June 1, at the Dutch Bulb Exporters' Association's present unjustifiable prices, in view of general conditions (including prices and points of trading) coming under discussion, and important revisions likely to result therefrom."

CATALOGUES RECEIVED.

G. R. DOWNER, Chichester.—Herbaceous and Alpine Plants.
 ROBERT SYDENHAM, LTD., Birmingham.—Seeds.
 KENT & BRYDON, Darlington.—Seeds.
 S. F. CURTIS, Wingate-Saill Road, Lancaster.—Sweet Peas.
 J. CHEAL & SONS, LTD., Crawley.—Dahlias.
 ISAAC POAD & SONS, LTD., Walsgate, York.—Seed Potatoes.
 DIXONS, Hull.—Seeds.
 FOREIGN.
 PETER HENDERSON & CO., New York, U.S.A.—Seeds, Plants, Sundries, etc.

MARKETS.

COVENT GARDEN, March 16th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Apples (English)		—Grapes, white,	16 0-20 0
—Cox's Orange		—Black,	18 0-20 0
—Pippin, per bus.	8 0-11 0	—Gros Colmar	25 0-30 0
—Best		—Grapes—English	
—Bleuheim Pippin, per bus.	10 0-14 0	—Gros Colmar	7 0-8 0
—Newton Wonder	6 0-10 6	—Special	5 6-6 0
—Lane's Prince		—Almeria per 12 lb.	12 0-20 0
—Albert, per bus.	6 0-9 0	—Lemons	
—Bramley's Seedling, per bus.	7 0-12 6	—Naples 300's	28 0-—
—Brit. Columbian		—Messina 300's	20 0-25 0
—Full control		—Oranges—	
Nova Scotia—		Murcia 300	40 0-45 0
—Golden Russets		Blood 360	35 0-—
—Nos. 1 & 2	60 0-—	Seville 200's	7 6-—
—Baldwin		Valencia 300	35 0-—
—1's and 2's	45 0-50 0	—240	30 0-—
—Bonaas, singles	25 0-40 0	Nuts—Brazilis(new)	
—Doubles	35 0-40 0	—per cwt.	135 0-140 0
Cape Fruit—		—Chestnuts—	
—Peaches, ..	8 0-12 0	Naples	36 0-40 0
—Pears, ..	9 0-10 0	Cob Nuts, per lb.	1 2-1 4
—Plums ..	10 0-12 0	Walnuts 35 kilo.	45 0-—
		Pears, Californian	
		—Winter Nelis	42 0-45 0
		Pineapples, each	2 6-7 6

Vegetables : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English,		Mustard and Cress	
—Devon 100's	25 0-26 0	—per doz. punnets	1 6-2 0
—Middlesex	12 0-15 0	Mushrooms, per lb.	2 6-3 6
—Cavaillon	4 0-4 3	Onions, per cwt.	18 0-20 0
—Lauris	6 0-7 0	Parsley, per doz.	2 0-3 0
Beans, Guernsey,		—bunches	2 0-3 0
—per lb.	2 6-3 6	—Parsnips, per bag	8 0-10 0
—Worthing	2 6-3 6	Potatoes, per cwt.	13 0-18 0
Beets, per bag	8 0-10 0	—Guernsey, per lb.	1 3-1 4
Cabbage, per doz.	2 0-4 0	—Algerian, new,	0 5½-0 6½
Carrots, per ½ bag	4 0-4 6	—Radishes, per doz.	
Cauliflower, per doz.	3 0-6 0	—bunches	2 0-4 0
Celery, per fan, (12 heads)	3 0-4 0	Rhubarb, forced	
Chicory		—per doz.	1 3-1 6
—English, per lb.	0 3-0 6	Seakale per punnet	2 0-3 0
—Belgian	0 5-0 6	Spanish Onions	
Cucumbers, each	1 3-1 9	—4 tier	16 0-17 0
Garlic, per lb.	1 6-1 9	—5 tier	22 0-23 0
Greens, per bag	2 0-2 6	Spring Onions, per doz. bunches	3 0-4 0
Endive, per doz.	3 0-6 0	Sprouts, per bag 28 lb.	2 0-3 0
French Lettuce per doz.	2 0-2 6	Tomatoes, Tenerife,	
—Batavia, per doz.	4 0-6 0	—Best, per bundle	30 0-40 0
Herbs, per doz. bun.	4 0-6 0	—Turpins, per bag	7 0-8 0
Mint, per doz. bun.	6 0-8 0	Watercress, per doz.	0 9-—

REMARKS.—A moderate tone has prevailed during the week, with many commodities increasing in quantity. Cape Fruit holds considerable attention, and although shipments have been fairly heavy, there is little or no slackness in demand. English Apples continue a difficult trade and good fruits are getting scarcer. English Grapes are a shorter supply and are hardening in price. Pineapples are available in excellent condition: no further arrivals are expected until after Easter. A fair quantity of forced Strawberries has been available during the week at very high prices. Apples from British Columbia and Nova Scotia are in rather firm demand, mainly due to a lack of home-grown coloured dessert fruit. Canary Tomatoes have been arriving in more or less unsatisfactory condition, and best marks are very scarce. Cucumbers are getting more plentiful. Mushrooms have been fairly numerous but the colder weather in the earlier part of the week considerably shortened supplies and prices remain firm. Forced Beans from Worthing and Guernsey show improvement in quantity and prices have an easier tendency. Forced New Potatoes are in better supply and quotations are appreciably lower. Some excellent samples of Algerian New Potatoes are available at very reasonable rates. Hardy green Vegetables continue to be fairly plentiful. The Potato trade remains difficult, good examples being extremely short.

Plants in Pots, Etc. : Average Wholesale Prices.

(All 48's per doz. except where otherwise stated.)		s. d. s. d.		s. d. s. d.	
Aralia Sieboldii	10 0-12 0	Cyclamen	24 0-30 0	Erian melantha,	30 0-26 0
Asparagus plumosus	12 0-15 0	—per doz.	24 0-30 0	—	24 0-30 0
—Sprengeri	12 0-18 0	Genistas	24 0-30 0	Lilium lancifolium	3 6-4 6
Aspidistra, green	48 0-72 0	—rubrum 48x32sc'eb	18 0-24 0	—	24 0-36 0
Azaleas, each 3 0	5 0-7 6	Marguerites-white	18 0-24 0	—	15 0-18 0
Cacti, per tray		—60's	15 0-18 0	—	24 0-36 0
—12's, 15's	5 0-6 0	—Cocos	24 0-36 0		
Cinerarias, per doz.	15 0-24 0				
—Stallata	24 0-30 0				

Ferns and Palms : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Adiantum cucumatum 48's,		Nephrolepis, in	
—per doz.	12 0-15 0	—variety, 48's	12 0-18 0
—elegans	15 0-18 0	—32's	24 0-36 0
Asplenium 48's, per doz.	12 0-18 0	Pteris, in variety	
—32's	24 0-30 0	—48's	12 0-21 0
—nidus 48's	12 0-15 0	—large 60's	5 0-6 0
Cyrtomium 48's	10 0-15 0	—small 60's	4 0-4 6
		72's per tray of	
		15's	3 6-4 0

REMARKS.—Flowering plants are now making a bright display in this department. Cinerarias are exceptionally fine, and Genistas have greatly improved in quality. Other flowering plants consist of Azaleas, Boronias, Acacias armata, Marguerites, white and coloured Hyacinths, Daffodils and a few pots of Spiraeas, which are quickly purchased. Ferns and Palms are offered in fairly large quantities.

Out Flowers, &c. : Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Anemone fulgens, per doz. bun.	5 0-6 0	Petargonium, double scarlet, per doz. bun.	12 9-15 0
Azalea white, per doz. bun.	7 0-8 0	Richardia (Arums), per doz. blms.	6 0-10 0
Camellias, per doz. blooms, per doz.	3 0-3 6	Roses, per doz. blooms—	
—American var.	3 6-6 0	—General	3 0-5 0
Daffodils, Single, per doz. bun.	6 0-8 0	—Ophelia	12 0-18 0
—Barrii	6 0-8 0	—Richmond	6 0-10 0
—Empress	6 0-12 0	—Sunburst	8 0-12 0
—Golden Spur	4 0-5 0	—Niphotes	4 0-5 0
—Princess	4 0-5 0	—W. Stevens	8 0-12 0
—Sir Watkin	5 0-6 0	Sweet Peas, white and coloured, per doz. bun.	10 0-15 0
—Double Van Zion	3 0-5 0	Tulips, White, per doz. bun.	30 0-36 0
—Freesia, White, per doz. bun.	3 0-12 0	—Coloured var.	30 0-48 0
Heather, white, per doz. bun.	10 0-12 0	—Darwens, in variety, per doz.	48 0-60 0
Hyacinth, large, per doz. spikes	1 9-2 0	Violets, Single large, per doz. bun.	6 0-8 0
Iris, Spanish, per bun	4 0-5 0	—Ordinary	3 0-5 0
Lilium longiflorum, per bunch	20 0-—	Wallflowers per doz. bun.	6 0-12 0
Lilium speciosum, album per bunch	5 0-—	French Flowers—	
—rubrum, per bun.	4 0-5 0	—Allium, Star of Bethlehem, per pad	12 0-15
Lily of the Valley per bunch	2 6-4 0	—Lilac white, per doz. spray	6 0-7 0
Narcissus, Grand Primo, per doz. bun.	4 0-6 0	—Marguerites yellow, per doz. bun.	3 0-4 0
—Pheasant Eye, per doz. bun.	4 0-6 0	—Ranunculus, Carmine, per doz. bun.	6 0-10 0
—Scarlet	6 0-10 0	—Stock double white, per pad	10 0-12 0
—Cypripediums per doz.	4 0-6 0	—Violets, Parma, per bun.	5 0-6 0

REMARKS.—Roses are arriving in larger quantities, and their prices are considerably reduced since a week ago. Exceptionally fine blooms of Liberty, Richmond, Sunburst and Ophelia are offered. White blooms are also getting more plentiful, Niphotes being most in demand at the present time. Nearly all other flowers, excluding Daffodils, are a shorter supply. Lilium longiflorum is very scarce. Other flowers the prices for which are advancing are Tulips, Lily of the Valley, Sweet Peas, Freesias, Camellias, and best quality Princess of Wales Violet. A good supply of Daffodils, White Narcissus Primo, White Pearl and Ornatus continues to arrive from Seilly and Guernsey in good condition. The first consignment of French flowers since the French railway strike arrived last Friday, and was greatly welcomed. It consisted of Anemones, double and single Narcissus, white and coloured Stocks, Allium (Star), and a few baskets of Mimosa (Acacia). All these flowers arrived in an excellent condition, and were soon sold. Supplies from France have been much larger since Saturday, the 13th inst.

THE WEATHER.

THE WEATHER IN SCOTLAND.

FEBRUARY was an exceptionally mild month, with a medium rainfall, and an amount of bright sunshine in excess of the average for the district. Rainbows were seen on the 8th and the 13th. There was only one gale during the month. The total rainfall of 1.92 inch was spread over 15 days, of which only 8 were official "rain days," the wettest day with 0.53 inch being the 18th. Of sunshine 95.1 hours were registered, being an average of 3.3 hours, and a percentage of 34.8; there were 5 sunless days. With a mean of 29.96 inches the barometer varied from a highest of 30.58 inches on the 5th, to a lowest of 29.16 inches on the 11th.

For the month, the mean temperature was 40.5° the mean maximum being 47° and the mean minimum 34°. The highest maximum was 56° on the 2nd, and the lowest minimum 27° on the 21st, giving an absolute range of 29°, while the lowest maximum was 38° on the 19th, and the highest minimum 47° on the 21st. On 9 nights the temperature fell below the freezing point. On the grass the mean minimum was 30° with a lowest of 21° on the 21st. There were 18 nights of ground frost. At 1 ft. deep the soil temperature varied considerably, but rose from 34° to 38°. Snow fell on 3 days. The prevailing winds were westerly. James Mulloch, Director of Studies, St. Andrews, Training College Gardens, Kirkton of Mains, near Dundee.

ANSWERS TO CORRESPONDENTS.

ADDRESS: *W. H. J.* The address you require is Messrs. R. Tucker and Sons, Oxford.

BLANKET WEED: *W. G.* Skim as much of the weed from the water as is possible, and continue the use of copper sulphate, increasing the strength if the water contains no fish or cultivated aquatics.

CORRECTION.—*Mr. H. Collyer* points out that in his note on the Onion Fly (see p. 122) the distance apart which the Parsley plants are set is three yards, and not thirty, as printed.

FRUIT GROWING AND MARKET GARDENING: *H. E. R.* The following works would be suitable for your purpose:—*Modern Fruit Growing*, by W. P. Seabrook, The Lockwood Press, 1, Mitre Court, London; *Fruit Farming*, by George Bunyard, W. S. Vivish and Co., 26, King Street Maidstone; and *Commercial Gardening*, by John Weathers, The Gresham Publishing Co., 34-35, Southampton Street, Strand, London.

FRUIT "SPOT" DISEASE: *S. E.* and *A.* The trouble is the same in both the fruits, which are attacked with "Spot" disease. Several distinct fungi are associated with it, and it is not known exactly which species of fungus is the first cause of the disease. Useful information on the subject will be found in the recent reports of the Fruit and Cider Institute (Long Ashton, Bristol). The conditions of storing Apples is one of the main factors concerned with the severity of the disease.

FUNGUS ATTACKING AZALEAS: *F. E. B.* The swollen, gall-like appearance of the foliage is due to attack by the fungus *Exobasidium Rhododendri*. Diseased leaves should be removed and burned before the spores of the fungus develop.

GARDENERS AND UNEMPLOYMENT: *G. J.*—The unemployment insurance does not apply to agricultural or horticultural workers.

GLOXINIA LEAVES WITH BROWN MARKINGS: *J. E.* The rusty appearance of the foliage of your Gloxinias and Begonias is caused by a mite. The pest may be destroyed by Tobacco water, and, where the plants may be conveniently dipped in the liquid, this is the best method of destroying the mite. Large plants should be syringed, taking care to wet the undersurfaces of the leaves, which may be done by placing the plants on the floor on their sides.

NAMES OF FRUITS: *C. A. 6.* Annie Elizabeth; 7. Flower of Kent; 8. Mabbot's Pearmain; *F. K.* Broad Eye Pippin, not Grecian Pippin; Claygate Pearmain, not Northern Spy.—*E. P. and Co.* The fruit reached us in a decayed condition. Send specimens next year earlier in the season.

NAMES OF PLANTS: *A. B. H.* *Chimouanthus fragrans*.—*E. R.* *Cupressus pisifera* var. *squarrosa*.—*P. H. O.* *Arctostaphylos Manzanita*.—*P. B.* *Pinus canariensis*.—*J. R. 1.* *Codiaeum Oerstedii*; 2. *C. Mr. J. Laing*; 3. *C. Mrs. Lucy*; 4. *C. illustris*; 5. *C. Veitchii*; 6. *C. Chelsonii*; 7. *C. edmontiensis*; 8. *C. sinitzianum*; 9. *C. Weismanni* improved; 10. *C. variegatum*; 11. *C. Reidii*; 12. *C. Evansianus*; 13. *C. Nestor*; 14. *C. Wiesmaunii*; 15. *C. Johannis*; 16. *C. Laingii*; 17. *C. elegantissima*; 18. *C. elegantissima*.—*J. L. B. 1.* *Neprolepis acuta*; 2. *Polypodium aureum*; 3. *Acalypha Wilkesiana*; 4. *Fatsia japonica*; 5. *Liriope japonica* var. *variegata*; 6. *Davallia*, specimen dried up; 7. *Nephrodium intermedium*; 8. *Adiantum fulvum*; 9. *Maranta leuconeura* var. *Kerchovana*; 10. *Fittonia argyoneura*.—*C. C.* Probably *Ornithogalum caudatum*; specimen imperfect.—*W. K.* *Tropaeolum tricolorum*.—*C. L. 1.* *Habenaria Bonata* (syn. *Bonata speciosa*, *Bot. Mag.*, t. 2, 926); 2. *Eranthemum pulchellum*; 3. *Leucojum vernum*, Snowflake.—*E. R. W.* *Erica Cavendishiana* (yellow); *Boronia heterophylla* (pink).—*J. Mc. G.* *Cornus Mas* and *Smilax aspera*.—*J. W.* *Cypripedium Lord Woolmer* (*Lecanum* × *Hera Euraydes*).

NARCISSUS POETICUS ORNATUS: *H. B.* The deep planting and moisture recommended for the double white *Narcissus poeticus* are neither desirable nor essential for *N. p. ornatus*, which, flowering and maturing earlier, has distinct advantages over the May flowering variety. As a rule planting 3 to 4 inches deep is suitable for *N. p. ornatus*, and deeper planting is not calculated to render it immune from attacks of the grub of the *Narcissus* flies, *Merodon equestris* or *Eumerus strigatus*. These deposit their eggs on or about the plant, and the grubs of *Eumerus* follow the growth and enter the bulb, when reached, from without. In the first case the descent is easy and more direct. Trapping the flies with a butterfly net from April to June is one way of reducing the pest, and by occasionally spraying the *Narcissus* foliage with *Quassia* extract and soft soap in solution during the same period, the plants may be made distasteful to the insects. The large *Narcissus* fly is not unlike a bumble bee, but has two wings only, whereas oees always have four. Immersing the bulbs in water for forty-eight hours will often force out the maggot from the bulb, and if this be done early in August the pest will not cause much harm.

PEACH TREES UNSATISFACTORY: *P. A. K.* The probable reason of the flower buds of your Hale's Early Peach failing to open was an excessively dry condition at the roots in the resting season. The trouble may also result from other causes such as over-cropping, unsuitable stocks and soil of too light a texture. Indeed, any wrong cultural condition that causes a check to the tree may predispose the latter to cast or fail to open its flower buds.

PLANTS FOR A PAVED GARDEN: *J. H. E.* We take it provision has been made for the roots of the plants, though the sketch submitted does not show it. That, however, is necessary, both as concerns the spaces (interstices) and the soil beneath the stones if success is to be achieved. If by "rough plant stones" you mean some form of oolite, then their irregularity will provide ample accommodation for plant life, while their weight and thickness will dispense with any need for bedding them in. Neither plant too freely, nor use many mound-forming subjects. Insert small plants thinly and use one variety of plant only in each seam. The following are useful subjects:—*Monarda Requienii*, *Lemon Thyme*, *Erius alpinus* (seeds), *Acena microphylla* (for large spaces only), *Linaria pilosa*, *Antennaria tomentosa*, *Arenaria balearica*, *Campanula pumila*, *C. p. Miss Willmott*, *Dianthus squarrosus*, *Thymus lanuginosus*, *T. serpyllifolium coccineus*, *Myosotis rupicola* (seeds), *Sedum lydium*, *S. hispanicum glaucum*, *Saxifraga muscoides atropurpurea*, *S. sanguinea superba*, and *S. Cymbalaria* (seeds). Near the base of the sundial, a solitary tuft of *Armeria Cephalotes* would look well, and along the base supporting the pedestal *Corydalis lutea*. On one of its steps or ledges the Cobweb House Leek (*Sempervivum*) could be placed, a sprinkling of soil below, and placing it firmly thereon being all the planting required. If much floral colour is desired, it could be obtained from *Aubrietias* and *Phlox subulata*; what would be best, however, depends not a little on the colour of the stone, and of this you say nothing.

PRONUNCIATION OF PLANT NAMES: *G. L.* This work is out of print, and can only be obtained occasionally from second-hand book sellers.

SEEDLING APPLE: *T. D.* The fruits sent are of rather good shape. If the tree is carefully attended it might produce Apples of a larger size. The fruit has the appearance of a small Annie Elizabeth, with a stalk like that of Newton Wonder.

SILVER LEAF DISEASE IN PLUM TREES: *A. J.* Your Plum trees are suffering from a severe attack of the real Silver Leaf disease (*Stereum purpureum*). The peculiar discolouration of the wood is ample evidence of the attack and the diseased branches should be cut back to and beyond the healthy wood.

TOMATOS FOR OUTDOOR CULTIVATION: *F. L.* The ideal Tomato for outdoor cultivation should, above all, be early fruiting, produce heavy lower trusses and have a firm, elastic skin. Colour and shape are also desirable, but these qualities should be of secondary importance. As the season of ripening is short, the heavy bottom truss is, naturally, of great importance, and, as the crop is exposed to all weather, the fruits of a thin-skinned variety will split and be unsaleable should there be heavy rains just as they approach ripeness. Because of this a selection from the early sorts do best under outdoor cultivation. On heavy soils we have had excellent crops from *Kondine Red*, a variety which possesses the qualities we have enumerated in a marked degree. Its only drawback is a habit of frequently producing twin flowers at the apex of the first truss and these, of course, produce large, badly-shaped fruits. But it is a small matter to nip out the first flowers when giving the plants routine attention. At Messrs. Sutton's trial of several hundred varieties last year we noted that this variety was very prolific, even on their comparatively light soil, though at Reading Sutton's Mamcrop, Abundance and Earliest of All gave the very best results. All the plants in the trial were grown under ordinary cultivation such as would be given by the market grower. In addition to these varieties, *Merrivale*, a selection from the well-known Carter's Sunrise, is favoured by many for outdoor culture on medium and light soils. Should you wish to grow a yellow-skinned Tomato, *Golden Queen* is to be recommended.

TO MEASURE TIMBER: *D. A.* Multiply the square of the quarter-girth, or of $\frac{1}{4}$ of the mean circumference by length. The girth of standing trees is taken by means of a leather timber strap, 12 feet in length and about $\frac{3}{4}$ inch wide, and on which every fourth inch is numbered from 1 to 36. Thus a tree having a circumference of 120 inches would read 30 inches on the strap. Allowance must be made for the bark according to the kind of tree, and there are other circumstances to be taken into account, which you will find in an inexpensive work on forestry, such as *Webster's Practical Forestry*, published by William Rider and Son, Ltd., 8-11, Paternoster Row, London, E.C.

TURKISH AND VIRGINIAN TOBACCO: *Smudge*. Three species of *Nicotiana* are concerned in the production of smoking Tobacco, viz.: *N. Tabacum*, cultivated in North America; *N. rustica*, grown in Central and South America, Germany, Hungary and Russia, and probably the source of Turkish and Latakia Tobaccos; and *N. persica*, which produces the Shiraz Tobacco of Persia. There are numerous cultivated varieties of each of the above species, and some are better suited to particular districts than others. The classification of Tobacco according to the variety grown is not of much value for trade purposes, as the plant is influenced greatly by soil and climate, and the same variety grown in different localities may produce leaf of different types. The same plant may also produce several grades of leaf; for example, the lower leaves may serve for pipe Tobacco, the next for cigarettes, the middle for plug, and the tips for plug fillers or low-grade pipe Tobacco. Although one district may produce several types of Tobacco, it is usual for one type to be confined to a certain restricted area. The methods employed for curing the leaf also affect the finished product, which is known either as air-cured, sun-cured or fire-cured.

WORKING HOURS IN A NURSERY: *E. B.* The hours for agricultural workers (which includes horticultural and market garden workers) are 48 hours from October 1 to February 29, and 50 hours from March 1 to September 30. This is the normal round; time in excess of this is paid for at the rate of time and a quarter.

Communications Received.—*F. H.*—*A. O.*—*S. L.*—*O. M.*—*H. P. Z.*—*W. D.*—*R. W.*—*A. C.*—*W. H. A.*—*E. M.*—*W. L. B.*—*S. A.*—*G. B.*—*M. N. T.*—*J. E. P.*—*T. E. T.*—*J. S. W.*—*W. C. R.*—*F. T.*

THE
Gardeners' Chronicle

No. 1735.—SATURDAY, MARCH 27, 1920.

CONTENTS.

Alpine garden, the—	155	Obituary—	
Androsace glacialis ..	155	Cowan, Charles W. ..	162
Ants, methods of destroying ..	152	Orion fly ..	160
Apple Altcrston ..	160	Orchid notes and gleanings—	
Association Francaise d'Horticulture ..	151	Cymbidium P'Ansonii ..	153
Basic slag value of ..	152	Cymbidium Alexandri ..	153
Books, notices of—		Cypripedium Hazeldene ..	153
Flowering trees and shrubs for use in South Africa ..	158	Oncidium splendendum ..	151
Brassicæ, club root in British Gardeners' Association ..	159	Pacony in America, the ..	151
Carnations in pots, the cultivation of perpetual flowering ..	156	Plants, indoor—	
Carnations, American, for Belgian growers ..	151	Hypocisternum paradinum ..	155
Chrysanthemums, late rooted ..	157	Sparmannia africana ..	155
Fruit Register—		Potatoes, seed, the price of ..	151
Apples, Egremont Russet 158; Syke House Russet 158; Thomas Coomber ..	158	Potatoes, the planting of early, in intercalary years ..	151
Gardeners' Chronicle seventy-five years ago ..	152	Royal Gardeners' Orphan Fund ..	151
Hardy flower border—		Seaweed as manure ..	151
Senecio candicans ..	153	Snowy or White fly ..	160
Sphaeralcea ambigua ..	153	Societies—	
Hybrid Orchids ..	153	National Sweet Pea Reading Gardeners ..	162
Kew Gardens, war memorial, at ..	152	Royal Horticultural ..	162
Norfolk, demonstration farm in ..	151	Spring time in the garden ..	157
		Timber, home-grown ..	152
		Trade note ..	162
		Trees and shrubs—	
		Birch, as a town tree ..	157
		Travinculus Martesii ..	157
		Vegetables—	
		Potatoes ..	158
		Week's work, the ..	151, 155

ILLUSTRATIONS.

Adonis amurensis, the double-flowered form of ..	159
Androsace glacialis ..	155
Apple Thomas Coomber ..	158
Dahlodis, colonies of, at Gravetye ..	157
Memorial to Kew men who fell in the war ..	153

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 42.7°.

ACTUAL TEMPERATURE:—Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London E.C.4, March 24, 1920, 10 a.m.: Bar. 30.0, temp. 57°. Weather—Dull

The Pacony in America.*

THE record of the activities of the American Pacony Society, contained in the *Bulletin* for August, 1919,

shows that the Pacony continues to grow in favour in the United States. It also shows that the plant is not free from the troubles of disease which affect it in this country. Thus Mr. Boyd, in discussing "root disease" of Pacony, mentions that by lifting plants, cutting away all diseased parts and dipping them in Bordeaux mixture and transplanting them, though it reduced the disease, did not remove it altogether. He therefore suggests that the American Society should offer a prize for the best paper on the cure and prevention of the disease. British nurserymen will appreciate the tribute paid to them by Mr. J. C. Wister, who, after two years of service in Europe, was able to visit the R.H.S. show of June 17th, 1919. Mr. Wister, in speaking of the show, remarks that he had never seen at any flower show such uniformly high quality of exhibits, and that the Paconies exhibited by Messrs. R. H. Bath and Co. and Messrs. J. Kelway and Sons showed that the English "possess more of the newer French varieties than the French do themselves."

Mr. Wister also visited M. Emile Lemoine's nurseries at Nancy, and refers in terms of high praise to Lemoine's hybrid P. lutea l'Esperance, which was produced by crossing P. lutea and a variety of P. Moutan. The flower of the hybrid is single and of clear, perfect yellow, with reddish stamens

* *Bulletin of Pacony News*, No. 9. Published by the American Pacony Society, Aug., 1919.

and pistil. This, and other similar yellow Tree Paconies, bridge the gap of time between the Tree Paconies and the later herbaceous Paconies; they have the further advantage that, unlike P. Moutan, they do not make so early a start as to risk damage from late spring pests.

Another Pacony referred to by Mr. Wister is P. Delavayi, the Chinese herbaceous species with small, single and reddish-chocolate flowers, not decorative, but probably of value for breeding purposes.

Of plants other than Paconies, Mr. Wister mentions the hybrid Lilac, produced by Mr. Lemoine by crossing the pink-flowered Syringa Wilsonii and S. Sweginowii superba. Another visit paid by Mr. Wister was to M. August Dessert at Chemonceaux, in whose nurseries he saw a fine display of Japanese single Tree Paconies. He attributes the rarity of these plants in the United States to the fact that importations from Japan are generally grafted on P. Moutan stock, and that the strong growth of the latter smothers the scion. M. Dessert grafts them on herbaceous Pacony stocks. For this purpose he uses sorts of a strong growing variety such as festiva maxima or edulis superba. Mr. Dessert's method is to take a piece of root half an inch or so in diameter, to trim the top square, and to insert two or more eyes by means of a cleft graft, which is then waxed and tied, the top of the scion being also waxed to prevent drying. The work—in France—is done in July, August and September, and the plants are put at once in sandy soil and covered with clutches. They make growth in the following spring, and are either sold as one-year-olds or transplanted and grown on for larger plants.

Change of Price of "The Gardeners' Chronicle."—On and after April 10, the price of *The Gardeners' Chronicle* will be raised to 6d. As explained in our issue of March 20, p. 157, the increase in price is rendered necessary by the increased and still increasing costs of production. It is made with great reluctance, and only after the most careful consideration have we decided to ask readers to bear a larger share of the expenses of publication.

Great Heath Fire in Surrey.—Chiefly as a consequence of the dry conditions brought about by the recent brilliant weather, there have been numerous Heath fires on the beautiful commons for which Surrey is famous. It is particularly unfortunate that at Hook Heath, Woking, the Gorse, Heather and Pine trees were almost wholly destroyed by fire early in the present week.

Linnean Society of London.—The proposal to increase the rate of annual subscriptions to the Linnean Society, as outlined in the *Gard. Chron.* of March 20, p. 157, was accepted by the Fellows at a meeting held at Burlington House on the 18th inst. The annual subscription will be £4 in future instead of £3.

Price of Seed Potatoes.—In reply to enquiries made by the National Union of Allotment Holders as to the increased price of seed Potatoes, the Ministry of Agriculture stated that the high rates are due to the scarcity of supplies. The Ministry also pointed out that on January 1, 66 per cent. of the Scottish Potato crop remained in the growers' possession; therefore, if the prices altered at all, they should have a downward tendency.

National Sweet Pea Society.—The twentieth exhibition of the National Sweet Pea Society will be held, in conjunction with the Birmingham Horticultural Society, at Handsworth Park, Birmingham, on Friday and Saturday, July 23 and 24. The schedule has been issued and includes forty-eight classes. Copies may be obtained from the secretary, Mr. Henry D. Tigwell, Greenford, Middlesex.

Royal Gardeners' Orphan Fund.—Mr. D. Ingamells has been elected Chairman of the Committee of the Royal Gardeners' Orphan Fund for the ensuing year. The Victory Festival Dinner, under the presidency of the Rt. Hon. Viscountess Astor, M.P., will be held at the Princes' Galleries, 191, Piccadilly, W.1, on Wednesday, May 19. Ladies and gentlemen desirous of being present on this occasion in support of the Viscountess Astor, are requested to communicate with the Secretary.

American Carnations for Belgian Growers.—The American Carnation Society's Committee appointed to care for the welfare of Belgian and French nurserymen who suffered during the war, is still in being, and has recently issued a request to the members of the Society to send plants of the Carnations introduced during the past two years to Mr. W. E. Wallace, Eaton Bray, Dunstable, or Mr. C. Engelmann, Saffron Walden, both of whom have promised to care for the plants on arrival and make all arrangements for their distribution.

Association Francaise d'Horticulture.—The French Horticultural Association (formerly the Chrysanthemum Growers' Association) recently held its general meeting under the presidency of Mr. Charles Delonde, Senator, at the offices at 34, Rue de Lille, Paris. It was decided to resume the work of the Society, and to make an appeal to all members to help carry on its activities. It should be recalled that this Chrysanthemum society, which was transformed in 1914 into a society for horticulture in general, comprises nearly three thousand members, with sections for those specially interested in Chrysanthemums, Roses, Carnations, Orchids, Dahlias, Sweet Peas and other flowers. Already the Society has been able to group its members according to their particular tastes, and to publish a paper, *The Amateur's Garden*, while its members take a leading part in competitions, congresses and exhibitions.

Demonstration Farm in Norfolk.—With the object of showing what is possible by good husbandry on poor Heath land, the Ministry of Agriculture last year purchased an estate of over 1,500 acres at Methenold, in Norfolk, which will be known as the National Demonstration Farm of the Ministry. On this area, 1,043 acres are under arable, 45 acres under grass and 441 acres are waste Heath. The estate is a stretch of typical Norfolk Heath land in a poor state of cultivation, and in the past has been largely devoted to game. It includes 200 acres of Bracken land which have been reclaimed under the auspices of the Development Commissioners. In farming this large area, the Ministry intends to profit by the lessons learned from the reclamation of the Bracken land and to make full use of labour-saving implements and machinery, and to improve the land by chalking and by the addition of organic matter. The latter will be supplied by folding sheep and ploughing in green manure. As the soil is notably deficient in potash, liberal dressings of this manure will be applied. The scheme of demonstration also includes pig breeding and rearing on the open-air system, stock rearing, and poultry keeping. A feature of the cultivation on this land will be the growth of Tobacco on a comparatively large scale.

Peach Leaf Curl.—Peach Leaf Curl is, in certain seasons, very destructive to outdoor Peaches and Nectarines, especially to those grown on north walls. The leaves of affected trees become thickened, puckered and twisted, and their colour changes to yellow and red. Later they become covered with a delicate bloom which consists of the minute reproductive portions or "spores" of the fungus. Finally the leaves die and drop from the tree. The young wood of the tree is also affected and, more rarely, the flowers and fruit. Trees liable to be affected should be thoroughly sprayed with either Bordeaux or Burgundy mixture before the buds begin to swell.

Seaweed as Manure.—Some species of Seaweed contain as much nitrogen as farmyard manure (although in a more slowly-acting form), and

more potash, but less phosphate, so that it is advisable to add a phosphatic manure when seaweed is used instead of farmyard manure. It should be put direct on the land, or mixed with dung or other material which will absorb some of the decomposition products. The Ministry of Agriculture states that fresh seaweed cannot economically be used as manure at any great distance from the coast, as the expense of carriage of so bulky a product would make the cost prohibitive. For it to be used at all on inland farms it would either have to be dried and ground, or burnt. Taking the price per unit of potash at about 8s., the value of burnt seaweed as a potash manure would be over £11 per ton in the case of *Laminaria* stems, and over £8 per ton in the case of *Laminaria* fronds; while *Fucus* would be worth about £6 per ton. These values compare with a price of about £7 per ton for kaimit at the present time. It seems possible, therefore, that the collection and burning of *Laminaria* and *Fucus* might prove profitable.

War Memorial to Kew Men.—Sir Robert Lorimer's design for the memorial to be erected at Kew, inscribed with the names of the members of the garden staff who lost their lives in the war, is illustrated in Fig. 65. The tablet contains the names of thirty-three members of the Kew Guild, and, as two other names are to be added, it will be seen that these famous gardens paid a heavy toll in its past and present members who made the supreme sacrifice. The Temple of *Arethusa*, in which the memorial will be erected, was illustrated in *Gard. Chron.*, October 4, 1919, Fig. 82. It is estimated that the total cost of the tablet and its erection will be £150, which sum is being raised by a special Memorial Fund of the Kew Guild, with Mr. J. Coutts, 5, The Gables, Kew Green, Kew, as Treasurer.

The Planting of Early Potatoes in Infected Areas.—The Ministry of Food has come to the conclusion that at the present rate of consumption, the remaining supplies of eating Potatoes from the 1919 crop will be exhausted before the new Potatoes of the 1920 crop are available. For this reason, there will be a very heavy demand on the latter as soon as they appear on the market, and it is desirable that the acreage planted with first early varieties be increased to the largest extent possible. The possibility of such a situation was foreshadowed some weeks back and growers in the Eastern and Southern Counties have responded to it in a very laudable manner, large quantities of first early varieties being planted. Growers occupying land within those areas in which Wart Disease is widespread and common, point out, however, that their willingness to co-operate is hindered by the marked shortage of stocks of first early immune varieties. The Ministry of Agriculture and Fisheries, after careful consideration of this question, has decided as a temporary measure to issue general licences authorising the planting in infected areas of own-saved "seed" of any true first early variety, and also of those varieties recognised by the Ministry as of the Eclipse type, provided that they are planted on land on which Wart Disease has not occurred and that they are grown and lifted as first early. Potato growers will not require individual licences for such planting. This concession does not extend the list of early varieties allowed to be introduced under licence by bona-fide market growers for planting in infected areas. It is reported from many parts of the Midland Counties that, when sown and planted early, the second early immune variety, King George, grows quickly and can be marketed practically as early as *Epiure*. Seed of King George is plentiful and its price is much lower than that of first early varieties.

Assistant Forestry Commissioner.—We learn that Mr. Hugh Murray, late Deputy Controller of Timber Supplies, has been appointed Assistant Forestry Commissioner for England and Wales.

A Specific for Mussel Scale.—The following recipe for a spraying mixture against Mussel Scale is given by a correspondent in the *Agricultural Gazette*, March 22, 1920:—Dissolve 1 lb. caustic soda (70 per cent.), 1 lb. carbonate of

potash (80 per cent.), and 1 lb. treacle in several gallons of water. Then dissolve 1 lb. copper sulphate (98 per cent.) and 2½ lb. carbonate of soda (soda crystals, 98 per cent.) in separate vessels, the former (copper sulphate) being prepared in a ten-gallon tub for preference in two or three gallons of water. When all is ready, pour in the soda solution, stir vigorously, and add the caustic soda and potash fluid. In cases of very bad attacks of Mussel Scale, hand-wash the tree, using a moderately coarse scrubbing brush and ordinary paraffin emulsion. This will soften the scale, and thoroughly cleanse the trees. The spray fluid should be applied afterwards.

Method of Destroying Ants.—The *Journal of the Jamaica Agricultural Society* states that a good poison for ants is made of one part of tartar emetic to ten parts of sugar dissolved in 100 parts of water, or combined with cold lard or some such grease so that it will not evaporate readily. The poison may be spread on chips of wood or pieces of glass or china and placed in the ant trails out of the way of domestic animals.

Covent Garden Estate.—We understand that Mr. E. C. Fairweather, of Avisford Park, Arundel, is in negotiation with the Covent Garden Estate Company for the purchase of the famous Fruit, Vegetable and Flower Markets, and the surrounding streets, comprising an estate of about 18 acres, at a price of nearly £5,000,000. Our readers will remember that the estate has changed hands several times during recent years, and the last purchaser was Sir Joseph Beecham.

Home-grown Timber.—It is estimated that the timber sold by the Home-grown Timber Department last year approximated in value to £5,700,000. The Department is being wound up, but there are still 6,500 workpeople in its employ.

American Iris Society.—Iris experts in America are anxious to secure the co-operation of their British confrères and hope that many will join the newly formed American Iris Society, to which we referred on p. 56. Owing to the rate of exchange, the annual subscription of three dollars may be computed at 12s. for British members and such subscriptions should be sent to Mr. A. J. Bliss, Morwellham, Tavistock, who is acting as the Society's agent during the unsettled state of the exchange, and who will give an official receipt.

Cotton Growing in Uganda.—In a paper on Uganda read by Sir Robert T. Coryndon, Governor of that country, before the Royal Colonial Institute on the 23rd inst., it was contended that there could be no doubt as to the Protectorate's commercial and industrial destiny. If the English would supplement their genius for colonisation with business enterprise the result, he said, would be a notable increase of raw material for the Empire's needs. The crop on which the Protectorate would increasingly depend was cotton, the quality of which was a little below that of Egypt, but a good deal above that of Africa or India. The present price at Manchester, 4s. a pound, was 1s. 8d. above that of middling American, and there was no reason why a premium of one shilling should not be obtained for some years. A large proportion of the country was suited to cotton cultivation, and, assuming an energetic Government staff, there was every reason to anticipate a steady increase in production.

The Value of Basic Slag as Manure.—At the meeting of the Faraday Society held on Tuesday, 23rd inst., Sir T. H. Middleton, in a contribution to a general discussion on "Basic Slags: Their Production and Utilisation in Agriculture and Other Industries," dealt with the national aspects of the case for increasing the supplies of basic slag. He remarked that if the old corn-growing lands of England were again to take their place in producing wheat, it seemed probable that one feature in the scheme of management would be the alteration of corn-growing with a period during which clay soils would rest and regain fertility by growing clover manured with basic slag. He estimated that if the necessity arose, and all the products of the soil were efficiently

distributed, the present population of the United Kingdom could be supplied with breadstuffs from the produce of about 14 million acres. Towards this total England and Wales would be required to contribute 10 million acres. With 15 million acres under the plough, we would grow from 7½ million acres when corn prices were low to 8½ millions, or even nine millions when prices ruled high. Should danger arise it would be impossible to secure 10 million acres of corn if we started, as in 1914, with 11 million acres of tillage land. In spite of the great effort made, we only got 7½ million acres in 1918. But if we began with 15 million acres of tillage in hand, our task, though formidable, would be by no means impossible. Dealing with a comparison of various types of open-hearth basic slags on grass-land, Mr. G. S. Robertson said the field trials indicated that open hearth basic slags provided a valuable source of phosphoric acid on soils very deficient in this ingredient, and that these slags could be very profitably used for the improvement of heavy clay soil pastures and meadows.

The Weather.—The beautiful weather experienced in the Metropolitan and southern counties since the 19th inst. has altered the face of Nature and turned many dull gardens into beauty spots. In Middlesex and Kent the Plum Orchards are white with blossom, and the earliest Pears are rapidly opening out their clusters of flower buds, while beneath the trees Daffodils of many kinds provide delightful pictures. Many railway banks are brilliant with the golden flowers of the Coltsfoot, while in parks and gardens the Forsythias, Berberis, *Prunus pissardi*, *Ribes sanguinea*, early Rhododendrons, Squills, Chionodoxas, Wallflowers, Aubrietias, Primroses, Polyanthus and Narcissi in variety are in bloom. From Usk Priory, Monmouthshire, Mr. R. Windsor Rickards has sent us a spray of the common Hawthorn with new leaves of abnormal size for such an early date, and with flower buds in an advanced stage of development.

The "Gardeners' Chronicle" Seventy-five Years Ago.—Seedling *Eparisus*.—In the report of the meeting of the Horticultural Society, of the 13th inst., it is suggested that, if *E. impressa* were crossed by grandiflora something good might be expected. The seedling in question (*ardentissima*) is descended from those two varieties. In the early part of 1842 I bloomed between 200 and 300 seedlings, the produce of grandiflora on *impressa* or vice versa; the whole, with very few exceptions, were long flowers much resembling each other in colour and form, with a habit more like that of grandiflora than *impressa*. They were rather too dull in colour. Not despairing, however, of obtaining something good in another generation, I crossed these upon grandiflora and vice versa; and my expectations, in this instance, were fully realised, for many beautiful and distinct varieties have been the result. This cross produced flowers brilliant in colour, and various in character; grandifloras with beautifully white and well reflexed lips; *impressas* as long as grandiflora, with trumpet-shaped tubes; while others, again, showed an evident disposition to be striped; and one plant has nearly a white tube with a pale rosy lip. Such is the character of the grandchildren of grandiflora and *impressa*, and from their tendency I have no hesitation in predicting that another cross, aided by miniata, will open such a field for the hybridist as will bring this somewhat neglected, but beautiful tribe of flowers more into general cultivation and public favour.—W. H. Storey, *Gard. Chron.*, March 29, 1845.

Publications Received.—*Note on the European Corn borer (Pyrausta nubilalis Hubner)* Carl Heinrich. Government Printing Office, Washington. *Seasonable Hints, Dominion Experimental Farms.* The Hon. S. F. Tolmie and E. S. Archibald, Canada. *Journal of the Royal Society of Arts*, Vol. LXXVIII, No. 3506. G. Bell and Sons, Ltd., Price 6d. *British Fern Gazette.* F. W. Stansfield, British Pteridological Society, Kendal, Westmorland. *Indian Runner Duck Breeding.* Rev. John Wilson, Armthwaite, Carlisle, 1s. 6d. post free.

HARDY FLOWER BORDER.

SENECIO CANDIDANS.

This is a new addition to the Groundsel family, which is already extensively represented in gardens. It is a native of the Falkland Islands, where, with *S. Smithii*, it is abundant on the sandy beaches, forming a rank herbage about three feet high. *S. candidans* is a handsome foliage plant with large fleshy leaves of a silvery whiteness. The flowers are yellow, but somewhat small, and are produced in large corymbs. Plants of this were brought home by Mr. Elliot from the Falkland Islands along with *Oxalis emnephylla*. Another very interesting plant collected at the same time was a curious Umbelliferous plant called the Balsam Bog (*Azorella caespitosa*). It forms huge compact hummocks several feet in diameter. The flowers are small and insignificant, like those of most members of this order, and it is more of a botanical curiosity than an acquisition from a garden point of view. H. J.

SPHAERALCEA AMBIGUA.

The genus *Sphaeralcea* belongs to the Mallow family and consists of about seventeen species, of which only three or four are in cultivation. The most familiar member is *M. Munroana*, a handsome plant which has been in cultivation for nearly a century. The present species resembles it somewhat in the colour of its flowers, but is more erect and shrubby in habit. It grows from one foot to three feet high, forming a bushy plant with silvery, canescent leaves, broadly ovate or cordate in outline, lobed and toothed. The brick-red flowers, about one inch in diameter, are produced in racemose inflorescences during the months of June and July, often extending well through August. *S. ambigua* is a native of the arid plains of Arizona and Southern California. The plants, which have flowered during the past summer, were raised from seeds gathered at 6,000 feet elevation on the border of the Death Valley, California, by Mr. Whitney, who sent them to Kew in 1909. A hot summer is ideal for this species as well as many other Californian plants, as all the *Sphaeralceas* require a warm, sheltered position and to be planted in well-drained soil. Plants left out during a severe winter in the open border may succumb to the cold and wet, but others in pots kept in a cold frame survive and flower freely. *S. ambigua* is evidently a plant for the warmer parts of this country, where it would make an attractive subject. H. J.

ORCHID NOTES AND GLEANINGS.

CYMBIDIUM TANSONII.

WHEN this supposed natural hybrid flowered out of an importation of *C. Lowianum*, with Messrs. Low and Co., in 1900, it was suggested that it resulted from a cross between *C. Lowianum* and *C. Tracyanum*, and the record has been recognised by some and is likely to confuse subsequent records if persisted in. The fact is that it is nearer to *C. Lowii-grandiflorum*, but as nothing definite is known about it, it is better to retain the record as "nat. hybr. undetermined."

C. Cravenianum, said to have been raised between *C. Lowianum* and *C. Tracyanum* was shown in 1906, but its record must have been erroneous, for it was very near to *C. Tansonii*. So also was *C. Mandalaum* previously shown. Both these are forms of *C. Tansonii*. *C. gattoneuse* (*Tracyanum* x *Lowianum*), for which Sir Jeremiah Colman, Bart., received an Award of Merit, Jan. 28, 1903, holds the record for the cross assigned to it, as it is evidently correct and totally dissimilar from the *Tansonii* class, the error of whose record it definitely proves.

CYMBIDIUM ALEXANDERI.

THE great beauty and variability of this charming hybrid has been finely demonstrated this year by flowers from G. Hamilton-Smith, Esq., Sir Geo. L. Holford, and now from Mrs. Bischoffsheim, who has some two hundred specimens of

a superb strain of it in flower. The blooms are all large, and wax-like in texture, and vary from wholly pure white, to white with crimson blotches on the lip; pale rose, and rose with darker lines; clear canary yellow with red zone on the lip; and one pale copper colour with red markings on the lip. Several white forms have intensely dark claret markings on the lip, extending to the base in the Warren House variety. The species concerned in its production are *C. insigne*, *C. eburneum*, and *C. Lowianum*, in none of which the copper-yellow and deep maroon shown in some of the varieties appears.

ONCIDIUM SPLENDIDUM.

This fine, large yellow-tipped species received a First-Class Certificate when shown by Lord Lonsborough at the Royal Horticultural Society, Feb. 16, 1870, and it has always been a comparatively rare plant. It is interesting to know that a nice batch of it is blooming in the extensive nurseries of Messrs. Stuart and Low and Co., Jarvisbrook, Sussex, in company with the pretty yellow *O. concolor* and other

*Oncidium*s and scarlet *Sophonitis*, the showy and interesting species being a speciality there. *O. splendidum* is one of the most distinct *Oncidium*s, although it has been confused with the totally dissimilar *O. tigrinum*. Its short, hard pseudo-bulbs, each with a stout and fleshy upright leaf, renders it easily distinguishable from any other species, except *O. microchilum*, even when not in flower. The slender branched inflorescences of small blooms borne by *O. microchilum* are surprisingly different from those of *O. tigrinum*.

CYPRIPEDIUM HAZELDENE.

A flower of this fine cross between *C. insigne* Harefield Hall variety, and *C. Dowleri* Hundemann (*Godefroyae leucochilum*, *insigne* Harefield Hall), sent by William Bolton, Esq., Wilderspool, Warrington, is very interesting as showing that the second introduction of the *C. insigne* parent has not materially affected the form of the *C. Dowleri* variety which bore the seed, the elongated deflected petals and fleshy lip being still retained. The colour is yellowish-cream, with blotched lines of dark chocolate-purple on the dorsal sepal and petals.

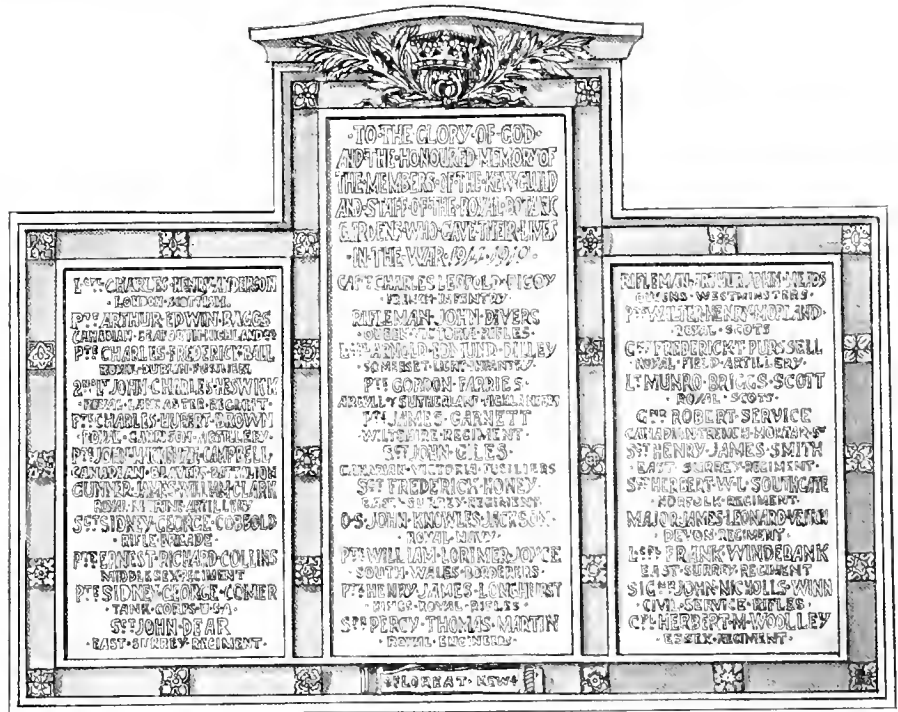


FIG. 65.—DESIGN OF PROPOSED MEMORIAL TO KEW MEN WHO FELL IN THE WAR.

NEW HYBRIDS.
(Continued from March 6, p. 117.)

Name.	Parentage.	Exhibitor.
<i>Cypripedium Sadie</i>	<i>Hera Enryades</i> - <i>Draco</i>	Mrs. Bruce and Miss Wrigley.
<i>Laelio-Cattleya Alborak</i>	L.-C. Isabel Sander - C. Maggie Raphael alba	Baron Schroder.
<i>Laelio-Cattleya Etma</i>	L.-C. Baroness Schroder - C. Drapsiana	J. and A. McBean.
<i>Laelio-Cattleya Golden Light</i>	Lunghosa - Golden Plover	Sir Geo. L. Holford.
<i>Laelio-Cattleya Missiones</i>	L.-C. Baroness Schroder - C. Dowiana	Dr. M. Lacroze.
<i>Laelio-Cattleya Persis</i>	L.-C. aureusis - C. Dowiana aurea	McBean.
<i>Laelio-Cattleya Themus</i>	L.-C. Myrtha - C. Trianae	Charlesworth.
<i>Odontioda Archibald</i>	Graipona - Bradshawiae	Sir J. Colman.
<i>Odontioda Elizabeth</i>	Phwaesii - Bradshawiae	H. G. Thwaites, Esq.
<i>Odontonia Pittie</i>	M. Heuana - Odon. Harryanum magnificum	Charlesworth.
<i>Odontonia St. Andre</i>	M. Phalaenopsis - Odon. Edwardii	Sanders.
<i>Odontoglossum Cordium</i>	cordatum - cadmium	Sanders.
<i>Odontoglossum crispa-Solon</i>	crispa - Solon	H. T. Pitt, Esq.
<i>Odontoglossum Dorothy Arkle</i>	Entredouin	Charlesworth.
<i>Odontoglossum Horatio</i>	Menor St. Vincent - Rex	Armstrong and Brown.
<i>Odontoglossum Model</i>	Azlan - promerens	Armstrong and Brown.
<i>Odontoglossum Robin Hood</i>	Mars - illustriusimum	Armstrong and Brown.
<i>Odontoglossum San Juan</i>	Doris - Lumbucanum	Dr. M. Lacroze.
<i>Odontoglossum Thetis</i>	Solon - Dusky Monarch	Charlesworth.
<i>Odontoglossum Triomphe de Bruges</i>	Black Prince x Vuylstekei	Sanders.
<i>Odontoglossum Valetta</i>	Doris - Armstrongiae	Armstrong and Brown.
<i>Oncidium incrochiphorum</i>	menyrum - corynephorum	Charlesworth.
<i>Sopbro-Cattleya Eileen</i>	Doris - Sana	McBean.
<i>Sopbro-Cattleya Santa Fe</i>	C. Rhoda - S.-C. Doris	Dr. M. Lacroze.
<i>Sopbro-Laelio-Cattleya Florvi</i>	S.-L.-C. Marathon - C. Carmen	Flory and Black.
<i>Sopbro-Laelio-Cattleya Rubens</i>	L.-C. Rubens - S.-C. Doris	Flory and Black.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENNER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Planting Vines.—Those who intend planting one-year-old vines should make preparation for placing them in the borders. In the issue for February 7 I recommended making the borders in advance and also shortening the rods to two buds. The new growths should now be two or three inches long and the vines in good condition for planting. Disentangle the roots, spread them out carefully, and cover them with warm compost to the thickness of about three inches. Water the roots freely with water warmed to 75°.

Early Peaches.—The disbudding of the earliest Peach trees will now demand almost daily attention, and may be carried out conjointly with the thinning of the fruits until each fruit and shoot has ample room for full development. Young trees can only be trained in the best style by careful and judicious disbudding. As soon as the fruits have set on healthy trees disbudding may be commenced, but in the case of trees that are breaking weakly owing to a check induced by lifting, root-pruning or other cause, the disbudding should be delayed until the roots and sap become more active. Do not remove a large quantity of shoots at one time, but follow the rule "a little and often." Tie down the shoots as they advance in growth, but do not overcrowd the trees with young wood. A space of 6 inches is none too much between the shoots. In mild weather the night temperature may be raised to 60°, but on cold nights 55° is suitable. Endeavour to have the temperature about 75° to 80° at closing time with plenty of atmospheric moisture, syringing the trees freely with tepid soft water to ensure this, but allowing the foliage to dry before nightfall. Pay careful attention to watering the border with water warmed to 60° to 70°. Old trees may be given weak liquid manure. Where the drainage and general condition of the borders are satisfactory, it is seldom that growing Peach trees suffer any evil from overwatering.

Succession Houses.—The trees in the later houses are very forward this season, and little or no fire-heat will be needed. It may, however, be necessary to provide some artificial warmth on very cold, damp nights. Keep the conditions of the house moderately moist if no fire-heat is used, with a night temperature of 50°; if it is desired to hasten the development of the trees the temperature may be raised 5°. The latest houses should be kept as cool as possible to retard the trees, as very late fruits are almost as valuable as the early ones, and much depends on the treatment the trees receive now, for once they commence to grow freely they must not be checked. Keep the trees clean of pests by fumigating the house or syringing occasionally and lightly with quassia extract, and pay the same careful attention to watering and disbudding as recommended for the earlier trees.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenhoe Castle, near Cardiff.

Seakale.—Plant thongs, saved from the forcing roots, in a warm house. Stand them upright in deep boxes and fill the box with fine soil, which should be kept moist. If not already prepared, the ground the plants are intended to occupy should be double-dug as soon as possible, incorporating a good quantity of decayed manure with the bottom spit.

Potatos.—Early varieties of Potatos may now be planted. As some form of protection from spring frosts will probably be necessary, the situation should be one in which protection may be

conveniently afforded. A distance of two feet between the rows and one foot between the sets will be sufficient for the earliest varieties. Drills of about five inches in depth should be made with the hoe, and they should remain open for a short time before planting in order that the sun-heat may raise the temperature of the soil. Soot is an excellent manure for Potatos, and if some is sprinkled in the drills it will act also as a deterrent to slugs. Cover the seed tubers by forking between the drills, burying them to a depth of three inches. If the seed tubers are large and require dividing, it is advisable to cut them at once rather than wait until the time of planting. Each portion should possess one or more good "eyes," and, in cutting, which should be done from the rose end, do not completely sever the tuber, but leave just sufficient uncut at the bottom to hold the Potatos together. The portions may easily be broken apart when the tubers are lifted from the trays for planting.

Spinach.—Spinach provides a crop in a comparatively short time after sowing. At this time of the year sow round-seeded varieties such as Victoria or Long Standing in shallow drills made one foot apart. Spinach may be sown between rows of Peas on an early border, and the plants will receive protection from cold winds, which the Pea sticks will break. Seed of New Zealand Spinach should be sown in warmth to raise plants for transplanting in the open in June.

Vegetable Marrow.—Plants raised from seed sown at the end of February are ready for planting in a heated pit where a temperature of 50° may be maintained. A heap, nine inches deep, of rich, open loamy soil should be made and the seedlings planted therein. Damp the walls and ted daily at the time of closing the pit, but guard against overwatering, otherwise the fruits will fail to set. Admit air on all favourable occasions by tilting the lights at the back.

Carrots.—The main-crop varieties should be sown in rows made fifteen inches apart as soon as the ground is in a suitable condition. Choose land that has not been recently manured, and if the crop was attacked by the Carrot Fly last season make the new planting as far from the old one as is convenient. This is a difficult pest to combat in the spring and early summer, and where prevalent the sowings to provide winter supplies should be deferred until early in July, after which time Carrots are not attacked by the fly. Carrots intended for exhibition should be grown in specially prepared stations made by filling holes made with a crowbar with special soil, as was recommended for the growing of exhibition Parsnips; very little firming of the soil is required in the case of Carrots. They should be ready for pulling in eighteen to twenty weeks from the date of sowing if they are desired for exhibition purposes. Intermediate Matchless and Early Gem are two good varieties of their respective types.

THE HARDY FRUIT GARDEN.

By T. PATMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codrington, Welwyn, Hertfordshire.

The Early Season.—The season is quite three weeks in advance of the normal, and all fruit trees are in a forward condition. After a brief spell of colder weather, the precociously warm spring has come again and with it increased danger for late fruits. I do not think fruit trees in the open are so far advanced as to take any harm at present; but should mild weather continue we can hardly expect the blossom to escape damage by late frosts.

Apple Aphides.—To obtain the finest and cleanest fruit, and to keep the trees in the healthiest condition, systematic sprayings are essential. Perhaps the best time to spray is during the period between the opening of the leaf buds and the bursting of the flower buds. Apple aphides may be controlled by spraying, but in a great many cases it proves ineffective

owing to the fact that it is done too late. It is a great mistake to defer spraying until such time as the leaves have curled, for the pests have then protected themselves, and to spray under these conditions is a great waste of material and labour. There are several reliable proprietary washes on the market, but whatever specific is used it should be of a poisonous nature. Nicotine emulsion is a good wash, and if used according to directions proves very effective. This spray may also be used after the petals have dropped. The spraying must be thorough, so that the insecticide penetrates well into the buds and reaches every insect. The spraying should be done on a calm day, and in frosty weather the trees should be sprayed early in the day in order that they may become quite dry again by the evening.

PLANTS UNDER GLASS.

By JOHN COVTS, Foreman, Royal Botanic Gardens, Kew.

Primula.—Make early sowings of *P. sinensis* varieties, *P. obconica*, *P. kewensis* and *P. verticillata*. These plants all grow well in an ordinary greenhouse, but the *sinensis* forms do best in a temperature of 50° to 55°. The seeds are uncertain and irregular in germination; on this account the seed pans should be retained until it is certain the seeds have all germinated. The *stellata* forms are very beautiful and valuable for decorative purposes as pot plants.

Primula.—The double white *Primula* should be prepared for propagation. Some of the bottom leaves should be carefully trimmed off with a sharp knife, and fresh Sphagnum-moss mixed with silver sand packed around the base of the stems. When the moss is well filled with roots, the plants may be pulled to pieces and potted in a light, rich compost to which some old mortar rubble has been added, or, failing mortar, lime. Lime in some form should always be added to the compost used for Chinese *Primulas*. The newly-potted plants should be placed in a close case for a few days until they are established; the after treatment should be the same as that given to the seedling Chinese *Primulas*.

Impatiens.—There are several species of *Impatiens*, including *I. Holstii* and its varieties (which are probably hybrids with *I. Sultanii*), *I. Sultanii*, *I. Oliveri* and *I. platyptala* var. *alba*, which are very useful for greenhouse decoration. By propagating successional batches, the plants may be had in flower all the year round. They may all be propagated either from cuttings or seeds; it is usual to treat *I. Sultanii* as an annual, raising the plants from seed during the spring. The good colour forms of *I. Holstii* should be propagated by means of cuttings. *I. Oliveri* is a giant amongst *Impatiens*; when planted out or grown in large tubs it attains a height of some six to eight feet and flowers more or less all the year through, its delicately coloured flowers having a remarkable resemblance to those of a *Miltonia*.

Panax fruticosum var. *Victoriae*.—This pretty plant is useful for decorative purposes, small specimens being suitable for placing on tables. Cuttings root readily in a warm propagating case. I have found it a very useful stock on which to graft choice *Aralias* such as *A. elegantissima* and *A. Veitchii gracillima*.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warton Priory, Yorkshire.

The Rock Garden.—Make preparations for replenishing the rock and Alpine garden with plants where certain subjects have failed. With the exception of a few species, September plantings in the north are not, generally speaking, so successful as those performed in the spring. Empty cavities behind rocks are detrimental to the well-being of plants with far-seeking roots; therefore such open spaces should be tightly filled with light, porous soil. Simplicity, together with boldness, should be the aim of the planter and, in no less degree, of the builder. Where rocks are sparsely placed, solidity may be attained by a judicious planting of compact

trees and shrubs. Amongst suitable subjects for this purpose are: Rock Roses, *Juniperus communis nana*, *Skimmia japonica*, *Daphnes*, *Permettya microcarpa*, *Cistuses*, Japanese Maples, *Berberis*, and prostrate *Cotoneasters*. Should dry weather follow the planting of these species, manure from a spent Mushroom bed will offer the best material with which to mulch the soil, and, moreover, it is not unsightly. Small young plants should be chosen, as they become established quickly and ultimately give more satisfaction than older specimens. Where extra soil is necessary, a compost consisting of fibrous loam, leaf-mould, mortar rubble and river sand will meet ordinary requirements. I do not advise the use of old potting soil, as it may introduce weeds, also insect and animal pests. Careful treatment should be afforded to peat-loving plants and also to those impartial to lime. *Ranuncias* thrive best when planted in perpendicular stations in a sheltered northern aspect, in a compost containing no lime. Alpine *Primulas* in general require a half-shady, cool, well-drained slope, but certain species, for instance *P. japonica* and *P. rosea*, are most suitable for growing on the flat in moist soil. The best stimulant to apply to rock plants, collectively, at the present time is a sprinkling of steamed bone-flour, which should be given when signs of rain are apparent. Endeavour to keep the garden scrupulously clean, but retain moss on stones and lichen on trees where it is necessary to give an appearance of age.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Potting *Calanthes*.—Three parts of the compost should consist of good, fibrous loam, the remaining part of chopped Sphagnum-moss, finely crushed potsherds, and half-decayed Oak-leaves. If good fibrous loam is not obtainable one part of *Osmunda*-fibre may be added. Some growers advocate a sprinkling of dried cow manure, others discard loam and use peat, and, no doubt, in low-lying districts such a rooting medium has its advantages. In any case the fine particles should be removed, and especially from the loam, by means of a coarse sieve, and the mixture prepared a few days before it is needed and placed in a warm house. The proper time at which to repot the plants is when roots appear at the base of the new growth, and fresh soil should always be given before the roots are far advanced. If not already done, remove the pseudo-bulbs carefully from their pots and shake away the old soil. Cut away the dead roots to within one inch of the base; the small tuft will help to hold the plants in position. Scale insects often infect the base of the pseudo-bulbs, and if present they should be removed by means of an old tooth brush. Ordinary flower-pots or deep pans are suitable receptacles, and they should be one-third filled with drainage material. The largest pseudo-bulbs of *C. Veitchii*, *C. Wm. Murray*, *C. Regnierii*, and *C. Harrisii* may be potted singly, but those of the *luteo-oculata* group are best placed several together in the same pan. A good-sized pseudo-bulb will require a pot six inches in diameter, and so on in proportion to the size of the plant. *Calanthes* are strong-rooting Orchids, and the soil should be made firm; leave sufficient space at the top of the pot for watering. When the operation is completed the base of the new growth should rest upon the soil, for, if buried deeply, it is liable to damp off. Arrange the plants in their growing quarters about two feet from the roof-glass, and, if the soil was fairly moist at the time of potting, no direct watering will be needed for several days, but it will be expedient to syringe between the pots twice or three daily, according to the amount of atmospheric humidity in the house. For a few weeks give water with extra care, for an excess of moisture in the soil will prove very harmful. Later, when the plants are rooting freely, and particularly when the new pseudo-bulbs are formed, let the roots have an abundance of water. At this stage an occasional application of weak liquid manure made from cow dung will be beneficial. But discontinue feeding the roots

when the foliage begins to show signs of maturity. Keep the plants free from insect pests, and, when it is necessary to vaporise the house, it is much safer to fumigate lightly on two nights in succession than give a single strong fumigation.

THE ALPINE GARDEN.

ANDROSACE GLACIALIS.

THE genus *Androsace* consists of a large number of beautiful little plants which inhabit the mountains of Europe and Asia. Many of them are typical alpine plants of low growth and tufted habit, covered in spring with masses of bloom which entirely hide the foliage. The different species which comprise the genus may be divided into two sets; one group (of which *A. Laggeri* is an example) is usually found growing in alpine, turf meadows, forming large spreading carpets. The members of the other



FIG. 66.—ANDROSACE GLACIALIS, NEAR THE AUGSTBORD PASS (9,500 FT.).

group, which includes *A. glacialis*, are sometimes known as *Aretia*, and are all of close tufted habit; they grow in the fissures of rocks and stony slopes.

The former group is easier to grow in this country, and many charming species are quite at home in the rock garden. For the others, special conditions are necessary, either planting in deep crevices, or in a stony moraine where there is abundant moisture but perfect drainage.

Androsace glacialis is a native of the high granitic alps, between 6,000ft. and 10,000ft. The plant illustrated in Fig. 66 was growing wild on a loose, stony rock face on the Gruben Alps, near the Augstbord Pass, at an altitude of over 9,000 ft. It made a beautiful picture some six inches in diameter, the whole plant being practically hidden with its charming pink flowers. The species makes a dense tuft, like a cushion, formed of numerous shoots closely packed together that bear small rosettes of leaves at their extremities. These are pubescent, giving the tufts a hoary appearance when not in flower. Young plants were collected and brought home, but did not survive long in these low altitudes, evidently missing the pure air and conditions of their mountain home. Seeds offer the best means of success in raising this plant. W. J.

INDOOR PLANTS.

HIPPEASTRUM PARDINUM.

THE numerous garden forms of *Hippeastrum* are now grown to such an extent that the original species are but rarely met with. One of the species which was very popular in gardens half a century ago, is *H. pardinum*, but it is now seldom seen. The flowers, of which, generally speaking, two or three are borne together on a scape about eighteen inches high, are quite shallow, moderately large, and of fairly good shape. They are usually of a bright cream colour, with just a slight tinge of green, and are profusely dotted with crimson. There is a certain amount of individual variation in the flowers, some having broader petals than others, while the spotting also varies considerably. The finest form that has ever come under my notice bore the varietal name of *superbum*. It is included in the *Kew Hand List of Tender Monocotyledons*. In this variety the flowers

are of good size and shape, while they are so closely freckled with red that little of the creamy tint can be seen. A native of Peru, *H. pardinum* was introduced by Richard Pearce, of tuberous *Begonia* fame, when travelling in South America on behalf of Messrs. Veitch and Sons. It first flowered at Chelsea in 1867, and was awarded a First Class Certificate by the Royal Horticultural Society on March 30th of that year. In spite of its distinct character, *H. pardinum* has been but little employed by the hybridist, and it has played no important part in the present day race of hybrids. Occasionally a variety may be seen with spots which show a more or less marked influence of *H. pardinum*, but not often. W. J.

SPARMANNIA AFRICANA.

As large plants pass out of flower, they should be pruned hard, and encouraged to break and make new growth in a temperature of 50° to 55°. As growth advances, give the plants cooler conditions, and stand them out doors from the end of June until the end of September; they may lose most of their leaves and look very shabby after such treatment, but it is the only way to get them to flower freely. The plant may be propagated from cuttings. Foreman.

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THE CULTIVATION OF PERPETUAL-FLOWERING CARNATIONS IN POTS.

A LECTURE on the cultivation of perpetual-flowering Carnations in pots, from the special point of view of the grower in private establishments, was delivered by Mr. F. Jordan, Ford Manor Gardens, Lingfield, Surrey, before the members of the British Carnation Society on the 10th inst. Mr. Jordan stated that the number of new Carnations introduced each year and the remarkable improvement that most of them show are sure signs of the ever-increasing interest taken in this beautiful flower. He dealt specially with the growing of perpetual-flowering Carnations in pots, and proceeded as follows:—Pot culture is generally more convenient than the bench system for amateurs and private gardeners, as it is seldom there are sufficient glass-houses at the disposal of private growers, especially when, in addition to perpetual-flowering varieties, room is required for *Souvenir de la Malmaison*, Perpetual Malmaison, and border varieties, such as *Cecilia*, *King Arthur*, *Lady Hermoine*, and *Elizabeth Shifner*, all of which should be more extensively cultivated.

Perpetual-flowering Carnations are easy to cultivate, their requirements are simple, and, from a market grower's point of view, their value to-day is greater than ever. I have no commercial experience in growing the flower, but I have been successful in obtaining a good display of Carnation blooms in private establishments during the winter. A suitable house is the first consideration, and it cannot be too light or too well ventilated. A grower whose plant houses are under the shade of large trees, unsuitable in structure or badly ventilated, cannot hope for any measure of success. Growers of these Carnations whose gardens are in, or near, large towns are handicapped very heavily.

It is most important to obtain healthy stock from a reliable grower, and if the plants are raised at home the proper selection of the cuttings is one of the chief items to consider. When the plants are in flower it is easy for the amateur or professional gardener to mark or place together plants with healthy foliage and highly coloured flowers possessing sound calyces and good stems. This is one of the many advantages amateur and professional gardeners have over the commercial grower, and

I have practised such careful selection for many years with a fair amount of success.

The best growths for use as cuttings are found in the centre, among the flower stems, and although they may be rooted at any period of the year, from December to March are the best months. I have always had the finest results from January-rooted cuttings; these have the best season for growth before them. Moreover, the plants recover more quickly after stopping, and with me have always proved the most floriferous and strongest specimens during the winter. Cuttings struck too early often collapse at a time when the flowers are most needed. The best and most convenient cuttings are those termed "heel" cuttings, about three inches long, and these may easily be pulled off the plant, sideways. Remove the small bottom leaves carefully and insert the cuttings in a propagating case, one or two inches apart. Pippings may also be rooted in a similar manner; these are pulled out with a sharp jerk and are ready to be placed in the case, as the joint is pulled in half.

Nothing is superior as a rooting medium than a layer of about three or four inches of sharp sand. A propagating case is necessary, and it should be of a convenient size to accommodate the number of shoots to be rooted. The cuttings should be struck in boxes about ten inches in depth, but if only a small number of shoots are to be inserted large pots may be used instead. The box, or pot, should contain a few crocks at the bottom to ensure a free drainage. When the cuttings are inserted they should be watered carefully by means of a can with a fine rose. Place a sheet of glass over the box or pot to exclude the air and keep the frame fairly close for a week, removing the glass early in the mornings to get rid of condensed moisture. Gradually increase the ventilation after the first week, removing the sheet of glass entirely during the night until, after about three weeks, it may be dispensed with entirely. Strike the cuttings in a bottom heat of 55° and an atmospheric temperature of 50°. The plants should be ready for removal in a week or ten days, as they should not be grown in the case. Gradually accustom them to more light and air and transfer them to two-inch pots, using a compost of loam and sand in a fine state. Always use clean pots and a sweet compost.

Never allow Perpetual-flowering Carnations to become pot-bound. Grow them in a light position in a house having a night temperature of 50° with a rise of 5° during day, until the next potting, when 4½-inch pots should be employed. Use similar compost to that already advised, with the addition of a little ash from the garden fire, and grow the plants in the same temperature until they become established. Water the roots carefully and lightly syringe between the pots and overhead on bright days, always being careful to see that the plants are dry again before night. At this potting care must be taken that the plants are not placed too deeply in the receptacle, and this also applies to the final potting.

The first stopping of the shoots should be done when the roots are well established in the new soil. The shoots should be pinched at the fifth or sixth pair of leaves; the point should not be pulled out as is so often done. The plants must be kept clean of pests; observing cleanliness both in the plants and the house is the first important step towards success. To ensure this one or two light fumigations may be necessary at this stage, and fumigating should always be done in the evening when the plants are dry.

The plants should at this stage be making rapid progress and soon be ready for their final potting. The amount of ventilation may be steadily increased as the days lengthen, maintaining the same day and night temperatures as before. After May more air, both day and night, should be admitted.

Perhaps the most essential point to success is the provision of suitable rooting material. Loam or turf should be the basis of almost every kind of compost. Turves from good old pastures may be cut in various thicknesses, according to the quality of the soil, and stacked in heaps, grass side downwards, with a little freshly slaked lime between each layer. The lime will cause the grass to decay, kill weeds that may be present, and generally improve the compost. Decayed leaf-mould, such as the gardener can obtain, is also valuable, especially for the first two pottings, but much depends on the quality of the loam. Where it is necessary to purchase loam, the yellow Banstead loam is to be recommended, but this is not always so valuable as some believe. In my opinion, fibrous local loams are quite as good, and I have seen but few loams that could not be used for growing good Carnations. As a general rule about two-thirds loam to one each of the other materials may be used; but much depends on the texture of the soil. Lime may be applied in a fresh state to heavy loams and as lime rubble for medium and lighter loams. Pull the loam to pieces by hand, removing all wire-worms and other insect pests. I have used oyster shells, charcoal, finely ground potsherds, and other materials, but, in my opinion, there are no substitutes for lime rubble and burnt ash. Nor are artificial manures needed, with the exception of good bone meal, which may be used at the rate of a seven-inch or eight-inch potful to each barrow-load of the compost. Medium and poor quality loams may be greatly improved by the addition of well-decayed manure.

Having prepared the compost in a fairly rough state, pot the plants as they become ready. Use clean seven-inch pots, and see that the balls of the plants are in a moderately moist condition: it is almost impossible to pot too firmly.

In the north, in cold districts, the plants should not be stood out of doors, therefore a house should be prepared for their reception. Stand the plants on a cool ash or gravel bed which has previously been lightly dusted over with soot. Six-inch pots are large enough for such varieties as *Triumph*, *Mikado*, and *May Day*. Endeavour to have all the plants in their flowering pots by the middle or end of May, and allow them to have plenty of air and all the sunshine available.

Water the roots carefully for some time after potting the plants, in fact, great care is necessary in watering all through the year, and the grower must be guided by the weather and the season. The soil should be kept in a moderately moist condition.

Occasional fumigations are necessary to keep down greenfly. The second stopping should take place at this stage, and should be carried out at short intervals until the end of June. By stopping one or two shoots at a time on each plant, at the fifth pair of leaves, the flowering season will be prolonged. The *Carola* varieties and *Baroness de Brieven* should only be stopped once to obtain early winter flowers. Place one stake to each plant, or patent wire stakes may be used. Tie the shoots to the stake; afford only one tie to each flower stem, at the base, and allow the stem to support the flower in a natural manner. (To be concluded.)

LATE ROOTED CHRYSANTHEMUMS.

AMONGST the various means adopted to produce dwarf Chrysanthemum plants, that of rooting cuttings in March or April to flower eventually in 6-inch and 7-inch pots, is perhaps the easiest. It is also a method not without its advantages to the exhibitor. The trade set the example in this respect nearly thirty years ago, and although in present-day varieties there is a higher standard of quality than prevailed at that time, it has been found possible to continue, to some extent, on similar lines. The value of the method to the average grower lies in the fact that it enables him to produce creditable blooms on dwarf plants.

It is advisable to propagate late varieties towards the end of March, or even a little earlier in special cases, for the reason that, as soon as they are established in 60-sized pots, some will require stopping to produce their flower-buds in good time. Others that come to time from a natural break early in June when propagated earlier in the season, may be inserted early in April, while decorative varieties may be kept very dwarf by rooting them at the beginning of May.

The cuttings may be rooted in boxes of sandy soil in a closed propagating case, but it will be necessary to keep them quite cool, shaded from bright sunshine and lightly sprayed overhead should they droop excessively. A little air should be admitted at night after the cuttings have been inserted a few days, to prevent the accumulation of moisture. When rooted, gradually inure the cuttings to the atmosphere of the house, and pot them into 60-sized pots at the earliest opportunity. In most cases it will be safe to grow them in a cold frame, but the lights must be protected if frost is imminent. Free ventilation must be afforded in mild weather. The plants should be placed in their flowering pots before they experience the slightest check through being pot-bound in the smaller pots.

Employ a similar compost to that usually afforded Chrysanthemums grown in large pots. It is no advantage, however, to use artificial manure in the compost. Bone meal has a lasting rather than a stimulating effect, and used in moderation is beneficial. Provide moderate drainage, pot firmly, and leave space for one of two light top-dressings later. Frame accommodation until the roots are active in the new soil is an advantage if the weather happens to be wet or cold. The summer quarters should be quite open, but sheltered from the boisterous winds that invariably occur during August. Means of supporting the plants should be provided, and the rows of plants should run north and south, with a maximum of light and air between them. As the plants will have a smaller rooting space than is usually allowed, watering will be a matter of more than ordinary importance. During hot weather frequent waterings will be necessary, and the foliage of the plants should be syringed twice a day. Further encouragement to growth will be provided during August by watering the immediate surroundings of the plants with liquid manure. Success rests entirely upon the judicious carrying out of all cultural details.

Chrysanthemums in small pots should be fed more liberally than those in large ones, and it is best to commence with light weekly supplies of liquid manure before the pots are quite full of roots.

Regular attention must be paid to the removal of side growths and to proper staking and tying. Early in August the first top-dressing may be applied and watered in. Once these late-struck plants become established they make headway considerably faster than those rooted at the beginning of the year, and as their buds require less time to open it will not be found advisable to stop them until ten days or so after the process has been carried out on the earlier plants.

Varieties that require stopping to produce umbels about the middle of August include Capt. Fox, Undamited, Salonic, General Smith Dorrien, and W. Vert, and stopping is best done at the

end of April, as soon as the plants have become established in the small pots. W. Rigby, Mrs. C. Drabble, General Petain, Princess Mary and Queen Mary should be encouraged to break early in May. Mrs. H. Kensey, Mrs. G. Gibson and Rosamund are amongst those varieties that should be stopped towards the end of the month, while up to the middle of June varieties which produce buds at the usual time from a natural break on early-struck plants may be stopped according to their strength. Decorative mid-season varieties of all kinds may be stopped twice in the case of April struck cuttings, but for those rooted in May the vigour of the plants must be taken into consideration before stopping them more than once. Very late bush sorts, such as Bertha Lachaux, do best when stopped once in the middle of April. *R. T.*

SPRING TIME IN THE GARDEN.

SPRING, the time of the Daffodils and other early flowers, seems always the happiest season in gardens, for the youth and vigour of awakening vegetation appear to be reflected in every living thing around. At no other time is the countryside more interesting or charming, for



FIG. 67.—COLONIES OF DAFFODILS AT GRAVETYE.

apart from the glorious colouring of the earliest flowers, there is great delight even in the unfolding of the buds on trees and hedgerows, and in the joyous songs of the feathered populace, which, like the flowers, serve to remind us that the dreary winter is nearly over.

It is at this time that the wild garden presents its most beautiful appearance, and there is joy in the wanton and untrammelled manner in which the plants in such a garden associate. In these informal quarters the various subjects are, to a large extent, left to care for themselves, and after a year or two form colonies such as the clumps of Daffodils at Gravetye, Sussex, shown in the accompanying illustration (Fig. 67). The scene depicted is a most beautiful one, and its chief note is simplicity. The abundant arboreal vegetation amidst which the picturesque little cottage is situated will appeal to all lovers of nature, and the water is in happy association with the Narcissus, bringing to mind the old legend connected with the name of the flower. In this precocious season it is surprising that the Daffodils have not been greatly influenced in their season of blossom, but have observed their own time more strictly than have the early flowering trees.

TREES AND SHRUBS.

THE BIRCH AS A TOWN TREE.

THOUGH the Birch is rarely recommended as a street tree or for town planting as stated by Mr. R. Irwin Lynch (see p. 122), yet that it can, and does, succeed in such situations is proved by the beautiful avenue of these trees that is the pride of Stepney Churchyard, or the single specimens at Fulham Palace, Chelsea, Kensington or Finsbury Park. In the comparatively pure air of Golders Green, the Birch thrives amazingly and has attained goodly proportions. The Stepney trees, which average 25 feet in height and form a graceful and pleasing shade along one side of these nicely kept grounds, are thriving well in the impure atmosphere of the eastern end of the great Metropolis.

With reference to a recent note on the Ginkgo, or Maidenhair tree, it may be of interest to state that a tree of this kind attained to goodly dimensions in a very cramped position by Commercial Road in the east, where dust and foul air are the order of the day. But the finest of London's Maidenhair trees is growing near the Refreshment Kiosk in Waterloo Park—a perfectly shaped specimen fully 50 feet high, the stem girthing 3 feet 9 inches at a yard from the

ground. Few perhaps know that there is a healthy young Ginkgo growing in St. Paul's Churchyard. *A. D. Webster.*

FRAXINUS MARIESII.

The common flowering Ash or Manna Ash, *Fraxinus Ornus*, is a well-known ornamental tree, but other members of the *Ornus* group, of which a dozen or so have been introduced, are seldom represented in gardens. *F. Mariesii* is one of the number, and though introduced so long ago as 1879 very few well-grown trees are known. Maries is said to have discovered the tree in the Lushan Mountains in Central China when collecting for the Messrs. Veitch, and it is reported to have flowered for the first time in England in the Coombe Wood nursery in 1882. It grows into a small, bushy-headed tree with purplish branchlets clothed with the usual pinnate leaves, made up of about five oval leaflets which are from one and a half to three inches long and moderately stout in texture. The white flowers are borne about the end of June in large, erect, terminal panicles and they are succeeded by purplish fruits which are very similar in size to those of *F. Ornus*. It is suitable for planting to form a lawn specimen. *H. D.*

NOTICES OF BOOKS.

Flowering Trees and Shrubs for Use in South Africa.*

This work is from the pen of Mr. T. R. Sim and it is written with a view to directing the attention of residents in South Africa to the numerous trees and shrubs, exotic and native, available for their gardens. The early part of the book is given up to chapters on general work connected with tree and shrub arrangement and cultivation, including Landscape and Garden Effects, Trees and Shrubs for a Small Villa Garden, Trees and Shrubs for Special Localities and Special Purposes, Propagation and Culture and Care of Trees and Shrubs, these subjects being followed by short descriptions of a large number of species. On reading this book we are greatly impressed by the wonderful climatic conditions of a country that enables the horticulturist to grow within its boundaries the best of the trees and shrubs known in the outdoor gardens of the British Isles, and also many of our hot-house plants such as *Gardenia florida*, *Medinilla magnifica*, *Bougainvillea glabra*, *Jacaranda mimosaeifolia*, and *Hibiscus rosa-sinensis*, in fact there appears to be scarcely any limit to the trees and shrubs that may be grown in one or other part of the Union of S. Africa. There are, of course, many plants grown in our hothouses that would stand, and often be better for a much lower temperature than they are given during the resting period. That the wealth of material found in S. African gardens is not due entirely to climatic conditions is evidenced in the first chapter, where the author reminds us of the fact that 12 years ago, what is now beautiful garden surrounding the viceregal residence at Bryerton, was a solid rock surface, with not an inch of soil over the greater part of it, and that 10 years ago, what is now the beautiful gardens on the Durban Beach, were tide swept sand dunes, perplexing the municipality as to how they could stop the sand drift, which, starting there, threatened to bury the town. The plants are described in alphabetical order: first the exotics, then the native plants. In many instances the inflorescences are illustrated by small drawings, and in other cases full-page photographs are given of well developed plants. The work is not only useful to residents in S. Africa, but is also useful as a work of reference for people in other countries.

FRUIT REGISTER.

APPLE THOMAS COOMBER.

The new variety of culinary Apple illustrated in Fig. 68 was shown by Mr. Thomas Coomber, The Hendre Gardens, Monmouth, at the meeting of the Royal Horticultural Society on November 18, 1919. The fruit is of very handsome appearance, and is of the Emperor Alexander type, the shape, as will be seen on reference to the illustration, being conical. The skin is coloured deep crimson over two-thirds of its surface; the side not exposed to the sun is greenish-yellow. The stalk is about $\frac{3}{4}$ -inch long and set in a deep cavity; the eye also is in a depression of considerable depth with pletings around it. The quality is good. We have no personal knowledge of the habit or cropping qualities of the tree, but Mr. Coomber obligingly furnishes us with the following particulars:—"Apple Thomas Coomber was raised upwards of twenty years ago by my youngest son, when a school boy, and consequently the parentage is unknown. The original tree was destroyed after it had fruited for several years, and the only specimen we have of the variety is a bush which was grafted on a tree of Frogmore Prolific. The seedling has a free, spreading habit of growth, and is a very prolific bearer. The fruits are in season from October to the end of February. The variety was submitted to the R.H.S. Fruit and Vegetable Committee in

* *Flowering Trees and Shrubs for use in South Africa*. By T. R. Sim, Pietermaritzburg. Published by the Speciality Press of South Africa, Ltd., Johannesburg: Cape Town, 1919. Price 7s. 6d.

October, 1918, when I was asked to show it again in December, 1918, which I did, and was asked if the tree could be seen when in fruit by members of the Committee. Up to the present, however, no inspection has been made."

APPLES EGREMONT RUSSET AND SYKE HOUSE RUSSET.

I INCLINE to the opinion that Egremont Russet is quite the best of the russet Apples and, moreover, it has not the tough skin which is characteristic of the majority of the Apples of this class. In colour it is quite apart from any other variety that I know; a well finished fruit bears a striking resemblance in tone and in colour to an Orange, so that this Apple is always a feature

flat shape. Its poor appearance is its only failing, for it is one of the best of the very late dessert varieties, and I much prefer it to that much-lauded Apple, Sturmer Pippin, which, here in Gloucestershire, is of very little value. The fruits of Syke House Russet should be allowed to hang on the tree for as long as possible. The variety is in season during April. The flesh is sweet and very pleasant and the fruits of suitable size for dessert. Syke House Russet may be recommended as a very late Apple. This variety makes a neat bush tree on the Paradise stock, grows very freely, and bears a moderate crop with great regularity; it flowers late enough to be generally safe from the spring frosts. *Ralph E. Arnold.*



FIG. 68.—APPLE THOMAS COOMBER.

in an exhibit. The flesh is yellow, somewhat resembling that of Cox's Orange Pippin; the flavour is first-class, sweet and decidedly aromatic, and the variety is a decided acquisition for table use during January and February and sometimes well into March. The crop should be allowed to remain on the trees as late as is possible, for the skin has a tendency to shrivel on early gathered fruits—a common failing with many "russets." Trees grafted on the Paradise stock, and trained either in bush or espalier form, preferably the latter, grow well, if somewhat slowly, and crop consistently and freely.

Syke House Russet is unprepossessing in appearance, being small and green, irregularly marked with a greyish brown russet, and of a

VEGETABLES.

POTATOS

At a recent meeting of the Bath and District Gardeners' Mutual Improvement Association, I asked the opinion of the members as to how much land a man could cultivate if he planted it exclusively with Potatoes.

There was some difference of opinion at first, but when the plan was unfolded of anticipating busy times by getting over some of the routine earlier than is usually practised, it was agreed that two acres could be managed, provided help was given at the time of lifting the crop, but as there frequently would be nothing to do on

the Potato patch, it would not altogether be more than equal to one man's labour for the whole year.

Supposing he starts digging with a fork in the middle of October, it would take a man 40 days at the rate of 8 perch per day to turn over two acres, but, as the weather would not always be suitable, the time may be reckoned to the end of the year, *i.e.*, 76 days to complete the task. Then, whenever the weather and the land are favourable, he should draw drills over the whole plot, 3 feet apart and not less than 5 inches deep. These drills will become partly filled up by the rain, so that early in March it will be necessary to go over the ground again and regulate the depth.

About the middle of March, or as soon as the conditions are favourable, one may commence placing seed tubers of late varieties in these drills from 12 to 15 inches apart, and covering them with about two inches of soil. Should frost follow, it may be advisable to give a little more covering, but at this time of the year, excepting in the northern parts of the kingdom, frost seldom penetrates more than two inches.

The end of April should see the planting finished, and some of the earlier planted tubers should be showing their shoots above ground. Some of the pulverised soil on the surface may then be pulled towards the stems, not much at a time, and the ground may be gone over twice or thrice, finally leaving the stems and the primary leaves in a broad V-shaped trench. I object to burying the stems 6 inches deep. In my experiments the primary leaves have been the best leaves, and they have continued green and robust to the end. This could not be if the rows of strong-growing varieties were less than 3 feet apart. But when there is plenty of lateral room and the stems are not supported by earthing up, the haulms spread out early and allow the sunlight to reach the base of the plant. The internodes, when the haulm has plenty of room and light, is not drawn; consequently the haulm itself is shorter. Every leaf not exposed to the light is worse than useless. There are a few varieties of Potatoes which bear the tubers close to the main stem, and some of them may be above the original ground level; these are not suited for the plan described, but we may do very well without them, as there are many to choose from. Most of the varieties develop their tubers a few inches from the stem, and in my experiments I hardly found a green tuber. I believe that any land which has 12 inches of moderately good soil is, if properly treated, capable of producing 30 tons of Potatoes to the acre.

In this neighbourhood it is a favourite plan for the operator to carry the Potatoes in a bag slung before him, make a slanting hole with a spade, holding this implement with one hand, while he throws the tuber in behind it. Or, if he prefers not to place the shoots upside down, he makes a plastered hole with a dibber, and lodges the tuber somewhere between the top and bottom. Then, after the shoots are 6 inches above ground, he does what the natives here call hacking, *i.e.*, he chops off any roots which may have grown out a few inches from the tubers, previous to burying the primary leaves and stems. Last season my Potatoes were planted in trenches made 4 feet apart, and when the stems were a few inches high I tested the soil between the rows, which was much above the level of the tubers, and although there had been no nitrogenous manure applied for two years, I found the roots had already taken possession of the whole breadth.

The produce of the two acres may be reckoned at 60 tons. If early varieties are planted, the yield will not be so great, but the difference in price will compensate for the smaller crop. Costly as manual labour now is, it might be applied with profit to growing Potatoes, but had I 100 acres to cultivate I should endeavour to get over the work more quickly. When I see the ease with which the apparatus fixed to a steam-roller tears up a macadamised road, I think that it would not be difficult to make a revolving grubber worked by stationary engines. We already have the engines, but I want the grubber. The machines mentioned by *J. E.* are pushing machines. *Wm. Taylor.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

The British Gardeners' Association.—It is quite certain old members of this Association will have been interested in the report of its annual general meeting in your issue of March 6. Some folks will wonder what the Association is going to do. It is now proposed to alter the name of the Society. Not long since a new scale of wages was to be announced. The gardening fraternity waited, and later, as we all know, condemned the scale as unfair. Everyone will agree that wages in horticulture have been far from what they should be, but to suggest £3 10s. per week for workers at 21 years of age when other trades cannot get 50s. is foolish. The hesitancy shown in withdrawing the old and proposing a new scale of wages suggests that members of the Ex-

ecutive Council are not all agreed. I believe the names of the Council members are not published as formerly; unless this is done and the position they hold is given little interest will be shown in their doings by an intelligent gardener. It must be remembered the British Gardeners' Association was not formed to help the garden labourer, but to assist the professional gardener. All the British Gardeners' Association appears to concern itself with now is wages and hours. This may attract the younger workers, but will it build up a great society or be helpful to members generally? I was a member of the British Gardeners' Association from its commencement, 1914, until I joined His Majesty's Forces. From that time the British Gardeners' Association had nothing to do with me. I wrote asking whether a Journal was being published, as I thought it might give me something to read. Others could tell of similar experiences, and they ask, "Is it worth while to join again?" There is no doubt a feeling abroad that while members who have helped to build up the British Gardeners' Association with money and their time have been away, others at home have taken up the reins of government and instituted new rules. Some time ago it was stated that membership had increased by 2,000 weekly, but the total membership now, it is believed, falls far short of the pre-war figures. What does the gardening community need? Does it need its old British Gardeners' Association or does it wish to give its allegiance to a body which so often changes its coat? I know something of what the British Gardeners' Association did in its early years when at the R.H.S. Council rooms. I worked on the Executive Council, and remember the careful scrutiny of applications for membership,



FIG. 69.—DOUBLE-FLOWERED ADONIS AMURENSIS. (see p. 161).

and the rejection of those with no experience. That is why the British Gardeners' Association moved slowly at first. It was laying its foundation and branches were formed on educational lines. Lectures by many able men were given, including Professor Bottomley, the late Mr. George Gordon, and Mr. R. H. Pearson (late editor of the *Gard. Chron.*), Mr. C. H. Curtis and others. Opportunity was given to anyone to state a grievance, which was passed on to the Executive Council to deal with. The grievances of Kew men and L.C.C. gardeners were dealt with in this way. It only remains to say horticulture is one of the oldest of professions and its dignity as a profession should remain. It cannot be classed with transport workers and kindred trades. No trade union is stronger than the medical or the legal associations, and it was upon their system the British Gardeners' Association was formed. A well-

and the rejection of those with no experience. That is why the British Gardeners' Association moved slowly at first. It was laying its foundation and branches were formed on educational lines. Lectures by many able men were given, including Professor Bottomley, the late Mr. George Gordon, and Mr. R. H. Pearson (late editor of the *Gard. Chron.*), Mr. C. H. Curtis and others. Opportunity was given to anyone to state a grievance, which was passed on to the Executive Council to deal with. The grievances of Kew men and L.C.C. gardeners were dealt with in this way. It only remains to say horticulture is one of the oldest of professions and its dignity as a profession should remain. It cannot be classed with transport workers and kindred trades. No trade union is stronger than the medical or the legal associations, and it was upon their system the British Gardeners' Association was formed. A well-

known lawyer, Mr. Garnett, worked hard for the Association and recovered hundreds of pounds in or out of court for gardeners. He also settled many disputes. At the outbreak of war employers were beginning to consult the British Gardeners' Association and to seek employees therefrom. The Earl of Plymouth proved an ideal President; he was able to hold the balance for both sides. Is it not the time to deal with this matter now, when it is proposed to alter the name of the British Gardeners' Association? One way would be for gardeners to join it *en masse* and get a voice in the affairs. On the contrary an eminent horticulturist has suggested to me the formation of another association? What do other gardeners think? *A. J. Hartless.*

Snowy or White Fly.—For killing Snowy Fly by means of sodium cyanide. I use two fluid ounces of water, two fluid ounces of sulphuric acid, and two ounces of sodium cyanide for every 4,000 cubic feet of space or $\frac{1}{2}$ oz. of each to every 1,000 cubic feet; these quantities will not harm the tenderest fern fronds. When cyaniding, the greatest possible care should be taken, as the gas is a very deadly poison, and to inhale it would cause sudden death. The manner in which I proceed is perfectly safe. Take a house 2,000 cubic feet in size, for an example. Two vessels are required, each containing one fluid ounce of water. Then add in each case 1 oz. of sulphuric acid to the water. Place each vessel a short distance from either end of the house and see that all ventilators are tightly closed. It is urgently necessary to place notices on the doors, marked: DANGEROUS, POISON GAS; DO NOT ENTER THIS HOUSE. The operator should also see that everybody on the place and at the house is warned. Having taken these necessary precautions for safety, everything is ready for the cyaniding. Take sufficient newspaper to wrap in each packet $\frac{1}{2}$ oz. of sodium cyanide. Drop one packet in the vessel furthest from the door and walk straight out, dropping the other packet in the vessel nearest the door on leaving. Close the door, lock it, and do not go near the house until next morning, when I am sure all the gas will be gone; but, to make absolutely sure of this, set the door wide open for an hour before entering, and then enter with a wet towel wrapped round the nose and mouth, keeping this on until all the ventilators have been opened. Then leave the house for another half hour as an extra precaution. Remove the vessels and place them safely under lock and key. I may add that the temperature of the house when fumigating should be from 48° to 54°, and the foliage of all plants should be perfectly dry. I would have sent this note earlier but I have been waiting to ascertain whether any eggs of Snowy Fly have escaped the fumigation, and would hatch as the warmer weather arrived. I have hunted high and low, but I am delighted to say that I have been unable to find any traces of fly after one fumigation only. I hope this note will be of assistance to Mr. E. Beckett and other gardeners affected with the White Fly scourge. *James Birkett, The Gardens, Bunk House, Ayrington.*

—For treatment under glass, I would refer your correspondent to the Ministry of Agriculture's Leaflet No. 188—Fumigation with Hydrocyanic Acid Gas. The strength recommended for Tomatos in the leaflet we have used here with entire success, and without injury to a large variety of plants, which included Greivilleas, Richardias, Ericas, Pelargoniums, Cinerarias, Primulas, Polygalas, Abutilons, Begonias, Albizzas, Ferns, seedling Tomatos and Lettuces. *C. B. Hudson, East Anglian Institute of Agriculture, Chelmsford.*

—Fumigating with Auto-shreds will clear the houses of Snowy Fly. We use no other fumigant here, as we find Auto-shreds both economical and effectual. *Thos. Spencer, Goodrich Court Gardens, Ross-on-Wye.*

—I have had White Fly on Tomatos, Salvias and Heliotropes, under glass, every year, but have always been successful in destroying the insect by fumigating with XI. All Nicotine

compound two evenings in succession. *Edward F. Usher, The Grange Gardens, New Eltham.*

Onion Fly.—On page 122, Mr. R. Collyer states that he has been able to prevent the ravages of the larvae of the Onion Fly, by either planting year-old Parsley plants on the new Onion bed at sowing time, or by thinly sowing Parsley seed with the Onions. For some time past a large number of allotment holders in the mid-land counties have tried the Parsley method, but in every case that has come to my notice as much damage has been caused by the Onion Fly maggot on the beds containing Parsley as on beds where Parsley had not been sown or planted. Has any reader of the *Gard. Chron.* yet found a really effective remedy for this pest? *C. H. O., Southampton.*

Apple Alfriston.—At the fortnightly meeting of the Royal Horticultural Society, held on the 9th inst., the Fruit and Vegetable Committee gave an Award of Merit to Alfriston Apple. This Award has caused considerable comment in Scotland. Alfriston has been in commerce at least three-quarters of a century, and is rapidly dropping out of cultivation, and rightly so. It is a lumberer of the ground. What justification is there for an Award of Merit to an old and worthless fruit of this type? Practical opinion has had good reason to question many of the awards granted by what is assumed to be the leading horticultural organisation of the world, and the case of Alfriston Apple simply accentuates the suspicion that its Committee are lacking in sound judgment. In these days we have many Apples far superior to Alfriston. Many of them are as yet unhonoured by the Royal Horticultural Society, and it is sad to think that awards will not be given them until the Fruit Committee find that the fruit growers of the country have tested them for themselves. Popularity gained by experience will, in short, force the Committee to make awards as it has done before. It is a lamentable reflection upon the perspicacity of the R.H.S. Fruit Committee Alfriston is doomed to the rubbish heap; its day is done, and yet, after being nearly a century in cultivation, it actually obtains an Award of Merit! A Fruit Committee that gives an award to such an Apple as Alfriston cannot hope for the confidence or respect of practical men. When one considers the names of the members of the Committee, an award to Alfriston is inexplicable. *Northern Fruit Grower.*

Club root in Brassicas.—A mixture similar to that recommended by Mr. W. Chitty (see p. 154) for preventing Club root in Brassicas has been in vogue with certain gardeners as long as I can remember, but it does not go to the root of the evil. When Club root is prevalent in a kitchen garden it is a sure sign that the land is more or less sour through lack of lime, and in many cases the disease is fostered by the absence of any proper system of crop rotation. During the past sixteen years I have had to deal with two badly Club-infested gardens, and have used nothing but air slaked lime, with the best results. The first thing to do is to make sure of a clean seed-bed. Select the site early in the year and dig in a good dressing of lime; another and lighter dressing should be applied and forked in a week or ten days before sowing the seeds. I also make a practice of forking in a dressing of lime on each plot of ground selected for Brassicas about a fortnight before planting, and always avoid following one crop of Brassicas by another on the same land. By this method the disease is easily stamped out on the worst infested land, and, in addition, the condition of the soil is greatly improved for other crops. I am not surprised that Mr. Chitty finds it necessary to water his plants every day for a week or two after planting, as I imagine his "dipping mixture" burns up all their root fibres. I favour the method of planting in drills which may be watered a few hours before planting; if thorough watering follows planting, and the soil is kept well cultivated, the plants will quickly establish themselves. Plants recover from the check caused by transplanting sooner in fine, warm weather than in dull, cold weather. *W. C. Bonson.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 25.—Gloriously fine spring weather was experienced on Tuesday last, and as a consequence there was a large attendance and a capital exhibition at the Royal Horticultural Hall, Vincent Square, Westminster. Daffodils were prominent and so were Rhododendrons and other early-flowering shrubs, while Orchids and a few exhibits of fruit were forthcoming, and there were two large rock garden exhibits. Mr. Dalrymple's new Freesias provided one of the chief attractions and they showed an immense advance in colouring.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, E. Harrow, John Heal, G. Reuthe, W. B. Craufield, J. W. Moorman, C. Williams, C. R. Fielder, John Green, Thos. Stevenson, Arthur Turner, John Dickson, Chas. Dixon, H. J. Jones, Jas. Hudson, W. Cuthbertson, J. Jennings, G. W. Leak, E. A. Bowles, J. T. Bennett Poe, Chas. E. Shea, E. F. Hazelton, W. P. Thomson, Chas. E. Pearson, W. R. Dykes, E. H. Jenkins, J. W. Barr, H. Cowley and R. C. Notcutt.

Clematis Mayoniana.—A sweetly-scented, white-flowered species, some of the axillary clusters bearing a total of fifteen flowers each about two inches across. The leaves are stiff, light green and usually borne in threes. Shown by Capt. B. H. B. Symonds-Jeune, The Chalk-pit, Henley-on-Thames.

Iris bucharica aurea.—A pretty hybrid, obtained by crossing *I. bucharica* with *I. orchoides*. It has the characteristic sturdy growth and glistening green leaves, but the flowers are clear yellow, with two red brown lines along the basal part of the golden yellow falls. Shown by W. R. Dykes, Esq.

Freesia Yellow Prince.—A large-flowered variety, with broad, rounded segments of a soft sulphur-yellow colour, and deeper yellow shading.

Freesia Robinetta.—A delightful Freesia, with deep rose-pink colouring that is set off by the gold in the throat and on the lower segment.

Freesia Golden King.—This vigorous variety has medium-sized flowers of a bright yellow colour, with deep golden shading. These three Freesias were shown by the raiser, Mr. G. H. DALRYMPLE, The Nurseries, Bartley, Hampshire.

GROUPS.

The Hon. VICARY GIBBS (gr. Mr. E. Beckett), Aldenham House, Elstree, made up a large and interesting rock garden that was greatly admired. Of the golden *Ranunculus montanus* there was a fine colony, and of *Viola gracilis* Clarence Elliott, *Primula hirsuta* alba, *P. hirsuta* Mrs. J. H. Wilson, *Draba imbricata*, and *Erica carnea*, there were goodly groups. *Mollis* Azaleas and *Viburnum Carlesii* crowned the highest point, and other shrubs noticed were *Osmanthus Delavayi*, *Cytisus praecox*, *Ledum palustre* and pygmy Junipers. Near by Mr. Vicary Gibbs showed a collection of alpinas in pans (Gold Medal).

Messrs. PIPERS showed a rough-flagged terrace, with *Morissias*, *Primulas* and *Gentians* growing between the joints. Below the terrace wall were *Aubrietias* and *Saxifragas*, and a background was provided by the sweetly-scented *Viburnum Carlesii* (Bronze Flora Medal).—A pretentious rock garden was constructed by Messrs. WHITELEGG AND CO. The stonework was rather prominent but, nevertheless, there were fine colonies and drift of *Saxifraga oppositifolia* W. A. Clarke, *Viola gracilis*, *Myosotis Ruth Fischer*, *Primula denticulata* and *Azalea Hindijiri* (Silver-gilt Banksian Medal).

Messrs. R. GILL AND SONS grouped *Rhododendron* flowers effectively and made a feast of colour. They showed grand trusses of Gill's Triumph, Duchess of Cornwall, Blood Red, H. T. Gill and a number of seedlings (Silver Flora Medal).—Messrs. J. CHEAL AND SONS showed sprays of *Primulas* and *Cyclonias*, as well as a collection of *Aubrietias*.

Brilliant colouring was provided by Messrs. WM. CUTBUSH AND SON, who showed sinensis and mollis Azaleas in variety, associated with Magnolias, tall standards of Viburnum Carlesii and Japanese Maples (Silver Flora Medal).—Mr. G. REUTHE'S group contained Camellia reticulata, Rhododendron Elsie (grande × Falconeri), with big creamy flowers; R. Aucklandii, Shortia galacifolia, in fine condition; Osmanthus Delavayi, Berberis and Anemones (Silver Banksian Medal).

Mr. ELISHA J. HICKS exhibited a lovely group of Roses, the leading sorts being Mrs. Elisha Hicks, Princess Mary, Joanna Bridge, Lady Hillingdon and Chas. E. Shea (Silver Banksian Medal).

Messrs. ALLWOOD BROTHERS made a charming exhibit of perpetual-flowering Carnations, and they displayed Mikado, Wivelsfield Charet and Salmon Enchantress in fine form (Silver Banksian Medal).—Messrs. STUART LOW AND CO. filled a table with Carnation blooms set up in receptacles of varying height; Baroness de Reinein, Hugh Low, Mephisto, Red Ensign, Eileen and Mrs. Hamilton Fellows were the leading varieties shown (Silver Banksian Medal).—Mr. C. ENGELMANN again contributed a fine group of Carnations, wherein the large varieties Iona and Saffron stood out prominently (Silver Banksian Medal).

Mr. J. J. KETTLE again delighted everyone with his Violets, and Mr. G. H. DALRYMPLE, The Nurseries, Bartley, astonished everyone with his group of variously coloured Freesias. A whole series of yellow varieties was shown and a number of sorts of the Amethyst type, besides orange-shaded and rose-tinted sorts. In this very charming exhibit Le Charmante, Yellow Prince and Golden King were notably fine (Silver Grenfell Medal).

Tillandsia Lindenii, carrying its beautiful blue flowers, was shown by Mr. L. R. RUSSELL, who also sent other Bromeliads. Mr. Russell also had a very bright group of mollis Azaleas, Wistarias, Camellias, Indian Azaleas and Clematis (Silver Flora Medal).—Messrs. H. B. MAY AND SONS had a pleasing exhibit of Ferns, Palms, herbaceous Calceolarias, Cinerarias, Genistas, and the fragrant Boronia megastigma (Silver Banksian Medal).—Messrs. BAKERS showed their excellent strain of Primula denticulata, both white and coloured forms; with these were Anemones of sorts, Saxifragas, Viola gracilis Lord Nelson and sprays of early-flowering shrubs (Silver Banksian Medal).—The large display made by Mr. G. W. MILLER consisted chiefly of Primroses and Polyanthuses, Tulips, Daffodils and Azaleas (Silver Flora Medal).

Messrs. BOWELL AND SKARRATT, Cheltenham, grouped Alpines with dwarf shrubs, and showed the double form of Adonis amurensis (see Fig. 69), Trachystemon orientale, Corydalis Wilsonii and the double Cheiranthus Harpur Crewe (Bronze Banksian Medal).—In Messrs. R. TUCKER AND SON'S group of Alpine plants we noticed examples of Adonis vernalis, Primula Juliae, and Omphalodes cappadocica (Bronze Flora Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), William Bolton, R. Brooman-White, R. A. Rolfe, Frederick J. Hanbury, E. R. Ashton, Richd. G. Thwaites, Gurney Wilson, T. Armstrong, H. G. Alexander, J. E. Shill, W. J. Kaye, Fred K. Sander, Walter Cobb, Arthur Dye, S. W. Flory, J. Charlesworth, C. J. Lucas, W. H. Hatcher, and Stuart H. Low.

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Cowaniana alba (interbreed *alba* × *Mossiae Wagnerei*), from Messrs. J. and A. McBEAN, Cooksbridge. One of the best of the pure white crosses, shown for the first time by Messrs. McBean in 1915. The flowers are as large as those of *C. Mossiae Wagnerei* and are pure white, with light yellow disc to the lip.

Odontoglossum Everest (*Princess Mary* × *Mirabeau var. Mastiff*), from Messrs. J. and A. McBEAN. This novelty is a great advance on the grand hybrid for which, as *O. Mastiff*, this

firm gained a F.C.C. some years ago. The flowers have the pure white ground and dark purple blotching of *C. Mirabeau* var. *Mastiff*, and its fine substance, but the segments are very much enlarged. The plant bore a spike of five flowers.

AWARDS OF MERIT.

Acridio-Vanda Mundyi (*V. teres* × *A. vandarum*), from Sir JEREMIAH COLMAN, Bart., Gotton Park, Surrey (gr. Mr. Collier). This is one of the most interesting hybrids, and it gained recognition at the Royal Horticultural Society when first shown and was illustrated in the *Gard. Chron.*, March 2, 1918. The flowers are nearest to *Acridies vandarum*, and clear white.

Odontioda Joan, *Warham Court variety* (*Oda. Charlesworthii* × *Odm. ardentissimum*), from C. J. LUCAS, Esq., Warham Court, Horsham (gr. Mr. Duncan). Like most of the *Oda. Charlesworthii* crosses, this variety is almost self-coloured. The flowers are large and of fine form, deep red in colour, with bluish white front to the lip.

Phione Pricei, from W. R. PRICE, Esq., Chesham, Mommouthshire (gr. Mr. J. Adamson). A pretty addition to the class known as Indian *Crocus*, the nearest to this, which was collected in the Island of Formosa, being the Indian *P. Hookeriana*. The plant bore many lilac-tinted, fringed-lipped flowers of great beauty. It is figured in *Bot. Mag.*, t. 8729.

Odontioda Joycei (*Odm. Promerens* × *Oda. Coronation*), from J. J. JOYCE, Esq., The Hill, Witley, Surrey (gr. Mr. J. Mackay). One of the best of the improvements of *Oda. Coronation*. The flowers are large and of perfect form; they are heavily blotched on the inner two-thirds with reddish purple, the ground being flush white. The white band around the basal colour of the petals is very attractive.

CULTURAL COMMENDATION.

To Messrs. J. and A. McBEAN, Cooksbridge, for a superb specimen of *Odontoglossum Souvenir de Victor Hye de Crom* (*Harryannum* × *luteo-purpureum*).

GROUPS.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a very effective group of finely-grown Orchids, the features being the beautiful *Odontoglossums*, among which their snow-white "xanthotes" hybrids were prominent; rich scarlet *Odontiodas*, including several which were flowering for the first time; *Laelio-Cattleyas* and *Brasso-Cattleyas*.

Messrs. ARMSTRONG AND BROWN, Orchardhurst, Tambridge Wells, were awarded a Silver Flora Medal for a good group containing several new hybrids, which showed their improvements in *Odontioda Coronation*, *Oda. Jupiter* var. *violacea*, (*Odm. eximillus* × *Oda. Coronation*), with fine violet blotched flowers; and *Oda. Lady Patricia Ramsay* var. *Flambeau* (*Odm. Lambeanianum* × *Oda. Coronation*) had large and very curiously tinted white flowers, with reddish orange markings. *Brasso-Cattleya Chitonii* magnificent and various good *Cymbidiums* were also shown.

H. T. PITT, Esq., Roslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for a pretty group of hybrids, with some interesting species. *Cymbidiums* were arranged at the back with other tall-growing species; *Miltonias* and *Odontoglossums* and showy *Cattleyas* in front. Specially good was the new *Laelio-Cattleya* H. T. Pitt (*L. C. Bella* × *C. Enid*), a grand flower of true *Cattleya* form.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for a very effective group of hybrids and species.

Messrs. J. and A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for a group of finely-grown hybrids.

Messrs. FLOREY AND BLACK, Slough, were awarded a Silver Flora Medal for a selection of hybrid *Orchid* novelties, in which were *Sophro-Laelio Cattleya Juno* (*S. C. Saxa* × *L. C. Dominiana*), large and of good form, red, with crimson lip; *Brasso-Laelio-Cattleya Alcides* (*R. L. C. Veitchii* × *L. C. Walter Cobb*), a

rather showy hybrid, still showing *C. bicolor*; and *Laelio-Cattleya Elsie* (*L. C. Ophir* × *C. Suzanne Hye de Crom*), white tinged with pale yellow.

OTHER EXHIBITS.

SIR JEREMIAH COLMAN, Bart., showed *Brasso-Cattleya Mildred Gotton Park* var. (*C. Schroderae* × *B. C. Digbyano-Schroderae*), with handsome, blush-white flowers; and *Laelio-Cattleya Lady Evelyn* (*L. C. Goldfinch* × *C. Empress Frederick*), a very pretty and finely-formed flower. Sir Jeremiah Colman also showed fine spikes of the rare *Vanda suavis pallida* and *Lycaste Skinneri armenica*.

G. W. BIRD, Esq., Manor House, West Wickham (gr. Mr. Redden), showed *Odontioda Sensation Manor House* variety, *Oda. Sunbeam* (*Oda. Vaylstekeae* × *Odm. Lambeanianum*), a very fine scarlet *Oda. Cooksonae*, and *Oda. Gladys*, the original and very pretty form.

Narcissus and Tulip Committee.

Present: Messrs. A. E. Bowles (in the chair), W. F. M. Copeland, G. Reuthe, W. R. Dykes, W. B. Cranheld, P. R. Barr, F. Barchard, H. V. Warrender, John W. Jones, Geo. Monro, Jnr., Chas. Dawson, W. Poupard, J. T. Bennett, Poe. J. Duncan Pearson and F. H. Chapman; Rev. J. Jacob, Mrs. Backhouse, Miss Willmott, and Chas. H. Curtis (hon. sec.).

AWARDS OF MERIT.

Narcissus Honeycomb.—A double-flowered Daffodil, with large cream white segments and with the centre of the flower filled in with shorter frilled portions of a pale cream yellow colour.

Narcissus John Evelyn.—This is a bold Daffodil belonging to the bicolor section of the incomparabilis group. The spreading perianth is white and composed of rounded, overlapping segments. The crown is very broad, frilled and deep yellow, but often split. Both Daffodils were shown by W. F. M. COPELAND, Esq.

GROUPS.

Messrs. BARR AND SONS exhibited a beautiful group of Daffodils that was attractive by reason of its arrangement as well as the quality and variety of the flowers. Bonaparte, Danesfield, Golden Chief, Red Beacon, Buttercup, Mrs. G. H. Barr and Whitewell were leading varieties shown (Silver-Gilt Flora Medal).—Messrs. R. H. BATH displayed Tulips finely grown in bowls of fibre, but rather spoiled the effect by leaving some faded Daffodil blooms among the Scillas and *Chionodoxas* used as ground work. The same firm showed a few fine varieties of Daffodils as a separate group (Silver Flora Medal).

Some charming Daffodils were shown by Messrs. H. CHAPMAN; there were many unnamed seedlings in addition to Dazzle, Red Lady, Kestrel and the tall, golden Flagstaff, with stems 25 inches high, which just failed to get an award (Silver-Gilt Grenfell Medal).—W. F. M. COPELAND, Esq., Shirley, Southampton, contributed an interesting display of Daffodils that included fine flowers of St. Vincent, Orange Dublon, and the new Rosalie, Henrietta and John Evelyn (Silver-Gilt Grenfell Medal).

Some fine spikes of Hyacinths were contributed by Messrs. R. and G. CUTBERT, who showed fourteen large pans of these flowers (Silver-Gilt Banksian Medal).—Major CHURCHER, Ayrstone, was an exhibitor of Daffodils (Bronze Flora Medal).

Fruit and Vegetable Committee.

Present: Messrs. C. G. A. Nix (chairman), J. Cheal, E. A. Bunyard, F. Jordan, W. E. Humphreys, Geo. F. Tinley, F. Bullock, F. Perkins, W. H. Divers, S. B. Dicks, Rev. W. Wilks, and W. Poupard.

A Silver Banksian Medal was awarded to Mr. STREETER, Straffan House Gardens, Kildare, Ireland, for twenty varieties of Apples. The best varieties were Christmas Pearmain, Beauty of Stoke, Striped Braufin, Heavy Morning, Annie Elizabeth and Adams's Pearmain.

A collection, comprising fourteen dishes of Apples, was shown by Sir H. Wilm. Hillforge, Holme Lacy, Hereford.

READING AND DISTRICT GARDENERS.

At the meeting of the above Association, held in the Recreation Club Room, Abbey Hall, on Monday, March 15, Mr. P. L. Stanley, of the Molassine Model Poultry Farm, Twyford, opened a discussion on "Chicken-rearing and Egg Production as it affects Gardeners." A discussion of over an hour's duration followed.

Mr. G. Tovey, The Gardens, Leighton Park, received a First-Class Certificate of Cultural Merit for splendid spathes of Richardias (Arum Lilies).

Obituary.

Chas. W. Cowan.—It is with much regret that we have to announce the death, at the ripe age of 84, of Mr. Charles William Cowan, D.L., J.P., of Loganhouse, Midlothian, which took place on the 18th inst. at Mortonhall House, near Edinburgh, where he had resided for about a year. He was the eldest son of the late Mr. Charles Cowan, M.P. for the city of Edinburgh, and was all his life associated with the paper-making firm of Alex Cowan and Sons, Ltd., which was founded by his great-grandfather in 1779, and of which he was chairman up till a few years ago. Mr. Cowan resided for many years at Valleyfield House, Penicuik, but latterly he took up his residence at Dalhousie Castle, where he gathered together one of the finest collections of Narcissi in the country, and where he produced some splendid effects by naturalisation of the plant in the grounds round the castle. He took a great interest in horticulture generally, and attended all the horticultural shows in Edinburgh. He was one of the oldest members of the Scottish Horticultural Association, and was president in 1899 and 1900. He also held office in the Royal Caledonian Horticultural Society on several occasions, and was one of the oldest members of the Highland and Agricultural Society of Scotland, which he joined in 1860.

MARKETS.

COVENT GARDEN, March 23rd.

Fruit: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Apples (English)		Lemons—	
—Newton Wonder	10 0-14 0	—Naples 300's	18 0-32 0
—Lane's Prince		—Messina 300's	18 0-32 0
Albert, per bus.	8 0-14 0	Oranges—	
—Bramley's Seedling		Murcia 300	42 0-50 0
per bus.	8 0-13 0	Blood 260	1 2-1 4
Bananas, singles	25 0-40 0	Seville 200's	7 6 —
doubles	35 0-40 0	Valencia 300	1 45 0-60 0
Cape Fruit—		240	
—Pears,	9 0-10 0	Nuts—Brazilis(new)	
—Plums,	9 0-10 0	per cwt.	135 0-140 0
—Grapes, white, ..	18 0-20 0	Cob Nuts, per lb.	1 2-1 4
black,	20 0-22 0	Walnuts 25 kilo.	45 0 —
—Gros Colmar	25 0-30 0	Pineapples, each	2 6-7 6
—Almeria per 12 lb.	16 0-20 0		

Vegetables: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English,		Mustard and Cress	
Devon 100's	10 0-12 0	per doz. punnets	1 6-2 0
—Cavillon	4 0-4 6	Mushrooms, per lb.	2 6-3 0
—Lauris	6 0-7 0	Onions, per cwt.	18 0-20 0
Beans, Guernsey,		Parsley, per doz.	
per lb.	2 0-2 6	bunches	2 0-3 0
—Worthing	2 0-3 0	Parsnips, per bag	8 0-10 0
Beets, per bag	8 0-10 0	Potatoes, per cwt.	13 0-18 0
Cabbage, per doz.	2 0-4 0	—Guernsey, per lb.	1 2-1 4
Carrots, per 1/2 bag	4 0-4 6	—Algerian, new,	0 5 1/2-0 6 1/2
Cauliflower, per		Radishes, per doz.	
doz.	3 0-6 0	bunches	2 0-4 0
Celery, per fan,		Rhubarb, forced	
(12 heads)	3 0-4 0	per doz.	1 4-1 8
Chicory,		Seakale per punnet	2 0-3 0
—English, per lb.	0 3-0 6	Spanish Onions	
—Belgian,	0 5-0 6	5 tier	20 0-22 0
Cucumbers, each	0 8-1 3	4 tier	24 0-25 0
Garlic, per lb.	1 6-1 9	Spring Onions, per	
Greens, per bag	2 0-2 6	doz. bunches	3 0-4 0
Endive, per doz.	2 0-4 0	Sprouts, per	
French Lettuce		bag 28 lb.	2 0-3 0
per doz.	1 9-2 3	Tomatoes, Tenerife,	
Herbs, per doz. bun.	4 0-6 0	Best, per bundle	30 0-40 0
Mint, per doz. bun.	5 0-12 0	Turkeys, per bag	7 0-8 0
		Watercress, per doz.	0 9 —

REMARKS.—The volume of business is increasing satisfactorily, the continued open weather having a good effect both on the supply and the demand. Cape Fruits continue to arrive in excellent condition, and the demand remains firm for Pears, Plums and Grapes. English Apples are scarce, and the few good parcels of Lane's Prince Albert, Bramley's Seedling and Newtons that are coming to hand show a sharp advance in price. Forced Strawberries are available at high prices.

Apples from British Columbia are clear, but a further shipment of 4,000 cases is expected in a week or ten days. Canary Tomatoes continue to arrive in a more or less unsatisfactory condition, mainly due to the severe storms in the Canaries and also the undue delay in transit. Chenniblers are now arriving in considerable quantities, and with the present fine weather they are meeting an eager demand at somewhat lower rates. Mushrooms are fairly plentiful and prices remain steady. Forced Beans from Worthing and Guernsey are increasing in supply, and prices are gradually getting more reasonable. Forced Potatoes arrive in better quantity, and the prices are slightly lower. Green vegetables are fairly plentiful, and prices reasonable. Good samples of old Potatoes are very scarce.

Plants in Pots, Etc.: Average Wholesale Prices.

(All 48's per doz. except where otherwise stated.)

s. d. s. d.		s. d. s. d.	
Aralia Sieboldii	10 0-12 0	Cyclamen	24 0-30 0
Asparagus plumosus	12 0-15 0	Erica melanthera,	per doz.
—Sprengeri	12 0-18 0	.. ..	20 0-26 0
Aspidistra, green	48 0-72 0	Gemistas	24 0-30 0
Azalea, each 3 0-	5 0-7 6	Lilium lancifolium	
Cacti, per tray	5 0-6 0	album 8332e/1b	3 6-4 6
12's, 15's	5 0-6 0	Marguerites—white	18 0-24 0
Cinerarias, per doz.	15 0-24 0	—60's	24 0-36 0
—Stallata	24 0-30 0	—60's	15 0-18 0
		—Cocos	24 0-36 0

Ferns and Palms: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Adiantum		Nephrolepis, in	
—caneatum 48's,		variety, 48's	12 0-18 0
per doz.	12 0-15 0	—32's	24 0-36 0
—elegans	15 0-18 0	Pteris, in variety	
Asplenium 48's, per		48's	12 0-21 0
doz.	12 0-18 0	—large 60's	5 0-6 6
—32's	24 0-36 0	—small 60's	4 0-4 6
—nidus 48's	12 0-15 0	72's per tray of	
Cyrtomum 48's	10 0-15 0	15's	3 6-4 0

REMARKS.—Business shows signs of improvement in this department. The newest lines offered are some fine plants of Blue Hydrangeas and Rambler Roses. Some splendid Cyclamen are still on sale.

Out Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Anemone fulgens,		Polargoneum, don-	
per doz. bun.	5 0-6 0	the scarlet, per	
Azalea white, per		doz. bun.	12 0-15 0
doz. bun.	7 0-8 0	Richardia (Aromis),	
Camellias, per doz.	3 0-3 6	per doz. blms.	8 0-12 0
Carnations, per doz.		Roses, per doz.	
blooms, best		blooms—	
American var.	2 6-6 0	—General	2 6-3 0
Daffodils, Single,		—Orphelia	7 0-12 0
per doz. bun.	4 0-6 0	—Rielmond	4 0-6 0
—Barri	4 0-6 0	—Sunburst	8 0-12 0
—Empress	6 0-12 0	—Niphotos	4 0-5 0
—Golden Spur	4 0-5 0	—W. Stevens	6 0-8 0
—Princes	4 0-5 0	Sweet Peas, white	
—Sir Watkin	5 0-6 0	and coloured, per	
—Double Van Zion	2 6-3 0	doz. bun.	10 0-15 0
Freesia, White,		Tulips, White, per	
per doz. bun.	9 0-12 0	doz. bun.	26 0-48 0
Gardenias, per		—Coloured var.	30 0-48 0
box.	12's 10 0-12 0	—Darwin, in	
18's	8 0-9 0	variety, per doz.	
Heather, white,		bun.	30 0-48 0
per doz. bun.	10 0-12 0	Viola, Single	
Hyacinth, large		large, per doz.	
per doz. spikes	1 9-2 0	bun.	6 0-8 0
Iris, Spanish, per bun	4 0-5 0	—Ordinary	3 6-5 0
Lilium lancifolium,		Wallflowers per	
per bunch	21 0-24 0	doz. bun.	6 0-12 0
Lilium speciosum,		French Flowers—	
album per bunch	5 0 —	—Allium, Star of	
—album, per bun.	4 0-5 0	—Etoilehen, per pad	9 0-12 0
Lily of the Valley		—Lilac white, per	
per bunch	2 6 0	doz. spray	6 0 7 0
Narcissus,		—Marguerites yellow	
Grand Primo, per		per doz. bun.	3 0-4 0
doz. bun.	4 0-6 0	—Ranunculus, Carmine,	
Pheasant Eye,		per doz. bun.	6 0-10 0
per doz. bun.	4 0-9 0	—Scarlet	6 0-10 0
Orchids, per doz.		—Stock double	
—Cattleyas	24 0-30 0	white, per pad	10 0-12 0
—Cypripediums		—Violets,	
per doz.	4 0-6 0	—Parma, per bun	5 0-6 0

REMARKS.—Large supplies of Carnations, Daffodils, Lily of the Valley, Roses, and Tulips, are available, and prices are easier. Red Roses, consisting of General Jacqueminot, Liberty and Rielmond, are abundantly supplied. Other prominent sorts are Lady Hillingdon, Orphelia, Prince de Bulgaria, Sunburst, and W. Stevens, and the blooms of these varieties are the finest offered this season. Darwin Tulips are now making a very bright show, the varieties offered are Clara Bolt, Mrs. Farncombe Saunders (mauve), Mrs. Copeland (dark mauve), Inghelcombe Yellow, Lov-lime, and La Candeur. All Liliums remain a limited supply, and prices are firm. Spanish Irises are improving in quality, and some fine blooms are now on sale. Gardenias may now be added to the list of choice flowers. Sweet Peas are getting more numerous, but prices remain firm for the finest blooms. Large supplies continue to arrive from Guernsey and Solly. Daffodils from this quarter show signs of finishing, the weather being most unsuitable for these flowers during the past week. In addition to Daffodils, large quantities of Narcissus ornatus are being received. Large consignments of the above are being received from Cornwall, but they arrive in much better condition. Small consignments of Anemone fulgens, Spanish Iris, and other choice varieties of Narcissus and Daffodils, meet with a ready demand.

TRADE NOTE.

To prevent the introduction of any "seed" Potatoes, save true and pure stocks of immune varieties, into those areas infected with Wart Disease, the Minister of Agriculture has restricted such introduction to those stocks which had been inspected during growth and certified as satisfactory in those respects. The notification of this policy was, however, accompanied by the announcement that should the supplies of certified stocks be found insufficient to meet the demand, the Ministry would be prepared to licence certain non-certified stocks. The results of careful investigation seem to show that the certified stocks of "Golden Wonder" and "Kerr's Pink" are now becoming exhausted, and the Ministry is therefore prepared to grant licences for the introduction into infected areas of non-certified stocks of these two varieties. Applications for licences should be made immediately to the Secretary, Ministry of Agriculture and Fisheries, 72, Victoria Street, S.W.I. In the case of stocks grown in England and Wales, the Potatoes will be examined before licences are granted. In the case of stocks from Scotland, licences will be granted subject to the inspection of the seed upon arrival at its destination, and without prejudice to any action the Ministry may think fit to take as the result of such inspection. Merchants are again reminded that in the case of any sale of certified stocks or of licensed non-certified stocks, the relative certificate or licence number must be given to the customer in the invoice or other written document.

ANSWERS TO CORRESPONDENTS.

BLASTING TREE STUMPS: H. H. Try the Explosives Trades, Ltd., 6, Cavendish Square, London, W.1. This firm is making a speciality of tree-root extraction at the present time and will supply full information.

FLOWERING PLANTS FOR HOUSE DECORATION IN SUMMER: W. H. M. Summer is, in many respects, a difficult time in which to provide good flowering subjects for house decoration. Tuberos-rooted Begonias may be used, but they do not last well. Among fibrous-rooted Begonias, Corbeille de Fea and Wellingtonensis should prove useful. Streptocarpus and Achimenes also prove serviceable, while small plants of Hydrangeas may be had in bloom over a long period and they have the merit of lasting well. Corydalis thalictroides, a plant easily raised from seed, although not showy, has elegant foliage and pale yellow flowers, and lasts well, even in London. Clerodendron fallax, propagated early in the spring, will flower during August. Campanula pyramidalis in blue and white, is very fine, especially for large halls and saloons. Liliums may be grown, but their perfume often proves too strong indoors. Hardy annuals grown in pots are very useful towards the end of May and beginning of June. Schizanthus, Clarkias and Godetias, are all good, and many other annuals may be used with success.

GRAFTING WISTARIA ON LABURNUM: G. B. The Wistaria may be grafted on the Laburnum, though it is not often done, as the resulting plants do not live long. The operation should be done in April, preferably under glass, but it can be done in the open.

HORSE LEECH: H. P. The "worm" sent is a leech, the Horse Leech (*Aulostomum gulo*). This species is very common in fresh water. It does not attack mammals like the medicinal leech, but its food consists of earthworms and small aquatic animals. The egg capsules are laid on land. It is therefore one of the most land-loving forms of leeches, and for this reason doubtless, and owing to its feeding on earthworms, may be attributed the fact that it was turned up when soil was being dug.

Communications Received.—S. A. A.—R. W. R.—H. S. S.—L. A. C.—R. W.—W. F. J. C.—H. T. G.—A. B.—K. W.—J. W.—E. H. J.

THE
Gardeners' Chronicle

No. 1736.—SATURDAY, APRIL 3, 1920.

CONTENTS.

Aceria dealbata .. 173	Mistletoe, hosts of the .. 173
Acaecias for potting .. 169	Moraea iridioides Johansoni .. 165
Alpine garden, the—	.. .. . 165
<i>Erinus alpinus</i> .. 171	Obituary .. 174
<i>Viola calcarata</i> .. 171	Obitid notes and gleanings—
Waldsteinii .. 171	Sophro-Laetio-Cat-
Apple day, a national .. 164	Thya Royalist .. 169
Books, notices of .. 167	Pot plants, conveyance of, by passenger train .. 163
Buds, selection of, for grafting .. 163	Potato crop, the future of the .. 170
Carnations in pots, the cultivation of perpetual-flowering .. 172	Potato, future of the .. 173
Chrysanthemum blooms, popularity of large .. 173	<i>scab</i> of .. 163
Cultural memoranda—	Primrose, blue .. 173
<i>Prunella obconica</i> .. 171	Professional Gardeners' Association .. 164
Droedene, sale of .. 164	Regent's Park, tractor ploughing at .. 164
Desfontainia spinosa .. 173	Rhododendron sutchinense .. 172
Dumries flowers show .. 162	Schizostylis coccinea .. 173
English <i>erists</i> Scottish gardeners .. 174	Societies—
Flowers in season .. 164	Manchester and N. of England Orchid .. 173
Forestry .. 164	Scottish Horticultural .. 171
Home afforestation, commercial aspect of, .. 172	Snow or White Fly .. 173
Fruit register—	Spring flowers .. 164
Apple Cox's Orange Pippin .. 171	Stationmaster, a gardener .. 164
Gardeners' Chronicle seventy-five years ago .. 164	Trees and shrubs—
Hampstead Horticultural Association .. 164	<i>Erica darleyensis</i> .. 165
Horticultural Workers' Union .. 173	<i>Genista sagittalis</i> .. 155
Hybrids, new, list of .. 169	<i>Wistaria multiflora</i> .. 165
Imaw Lum, plant collecting on, .. 168	Vegetables—
Keeble, Dr. F. W. .. 163	Asparagus .. 170
Week's work, the .. 166 167	.. .. . 170

ILLUSTRATIONS.

Moraea iridioides .. 164
Moraea iridioides Johnsonii .. 165
Narcissus John Evelyn .. 167
Odontioda Joiceyi .. 169
Viola calcarata .. 171

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 44.3°

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Tuesday, March 30, 1920, 10 a.m.: Bar, 30.9, temp, 62°. Weather—Dull.

Common Scab of Potatos.

In view of the widespread distribution of Common Scab (*Actinomyces scabies*) and the consequent loss in the value of Potato crops affected by it, the following preliminary report of trials carried out at the University of Leeds by Mr. W. A. Millard, Lecturer in Agricultural Botany, may be of interest and value to Potato growers this season:—Common Scab occurs mainly on light sandy or gravelly soils, an outstanding feature of which is that they are usually poor in organic content and the treatment which has met with most success on such soils consists in adding considerable quantities of green organic matter to them, either shortly before or at the time of planting. Thus, in the experiments carried out at Leeds, the trenches in which the Potatos were to be planted were made both wider and deeper than usual, and, in them, fresh or slightly decayed grass cuttings (dawn mowings are particularly suitable for the purpose) were liberally strewn. The sets were placed on this and the trenches filled in with soil and as much more grass as could conveniently be mixed with it, the object in view being to ensure that the growing crop should be embedded in soil composed largely of the decaying grass. In some cases, more grass was subsequently strewn between the young plants and covered in by earthing up. As a result of this treatment, repeated now for four seasons on soil known to produce Scab, crops have been obtained practically free from the disease and so clean in the skin as

to compare favourably with those grown on peaty soil, where the disease is almost unknown. The control plots meanwhile gave the usual crops of unsightly, scabbed tubers. The quantity of grass applied was, on an average, twenty tons to the acre, weighed green, or roughly one wheelbarrow full to four square yards, but this must be regarded as a maximum dressing and half the amount would probably suffice, except where the outbreaks of Scab are very severe. Again, where time and labour are not factors of paramount importance, a portion of the grass cuttings could conveniently be forked into the soil a month before planting time, the remainder being placed in the trenches in the manner described. In the experiments conducted, no stable manure was used, since it was found that the grass itself possesses a high manurial value. The following mixture of artificials was, however, used:—Sulphate of ammonia and sulphate of potash both at the rate of 2 cwts. per acre, and superphosphate of lime at the rate of 4 cwts. per acre. The soil was of poor quality, but under the action of the grass the Potato haulm grew luxuriantly and the average yield last year was 16 tons per acre. The control plots receiving artificials, but no grass, gave an average yield of eight tons per acre. It is almost unnecessary to point out that in order to obtain the best results from this "green manuring," the sets used should be as free from Scab as possible, and this is of great importance also from the point of view of yield. Experiments show that scabbed sets produce a much smaller crop than clean sets. It is not suggested that treatment of the kind described is applicable to Potato planting on a large scale. In that case, other means must be adopted, such as the ploughing in of a green crop, but, for the smallholder or gardener, an application of grass cuttings is easily and cheaply given, and those who have the misfortune to possess a Scab-producing soil may be glad to know of this simple means of securing a clean crop. It is to be hoped that the University Authorities at Leeds will issue a report giving full particulars of the research that has been carried out on this subject by Mr. Millard.

Selection of Buds for Grafting.

Although in the work of a large fruit-tree nursery there is little time for choosing buds for grafting purposes, yet it is manifestly a subject of practical interest to know whether large buds are better than small buds, and whether buds from a fruitful tree or shoot give results superior to those obtained by the use of buds from other less fruitful trees or shoots. With the object of settling these questions, extensive observations were undertaken* by Mr. Charles C. Crandell, of the University of Illinois, with the result that it appears to be a matter of indifference whether the buds chosen are large or small, or whether they were chosen from one part of the tree or shoot, or another. Needless to say, it is by no means a matter of indifference from what tree the buds are taken; for, as is known to nurserymen, trees of a given variety differ considerably in their rates of growth. Mr. Crandell cites an interesting case. Of two Ben Davis Apple trees of the same age, grown side by side in the nursery, and later in the orchard, and both formed from selected buds of the same tree, one was over 50 per cent. taller than the other, had nearly double the spread. An ex-

planation, not apparently considered by the author, is that the stocks on which the buds were worked were not identical. The work at the East Malling Experiment Station has shown the great differences which exist between Crab stocks, and this difference would be sufficient to account for that shown by the scions.

Results of a more positive nature were obtained by Mr. Crandell from experiments in Apple seed selection. The fruits from which seed was obtained were graded in five sizes, and at the end of the experiment it appeared that the trees from seeds taken from large fruits were rather more vigorous than those from the small fruits, and that the former exhibited more resistance to adverse conditions than did the latter. The number of survivors in either case was, however, too small to justify more than a cautious statement, and it would seem to be a matter of much greater importance for nurserymen to select the suitable types of stock than to spend time in sorting out the "pips."

The vigour of the root system—its depth and the nature of the stem which the stock forms, are of known and great importance in deciding the value of the stock, and we are glad to know that nurserymen in this country are already fully alive to the importance of standardising fruit tree stocks, and of grading stocks suitable for the several types of trees, i.e., standard, half standard, bush, cordon and espalier.

Conveyance of Pot Plants by Passenger Train.

—A meeting will be held by the Royal Horticultural Society, in the Lecture Room at Vincent Square, Westminster, at 4 p.m. on Tuesday, April 13, to discuss the following regulation which the railway companies propose to introduce:—"Plants and flowers in soil other than in truck loads will be only accepted for conveyance by passenger train if packed in substantial crates or wooden boxes admitting of traffic being loaded on the top thereof." All members of the horticultural trades concerned are invited to attend this meeting, and it will greatly facilitate the proceedings if they will kindly send to the secretary, Mr. W. R. Dykes, in writing, before Thursday, April 8, definite statements of the effect so far as they can see, and so far as they are concerned, of the regulation which it is proposed to put into force. These statements should be accompanied, so far as possible, by definite figures and particulars of actual instances. It will also be a help if the members of the trades concerned would send any suggestions they may have for meeting in some measure the difficulties that have arisen. It is hoped that combined representations which can be made as the result of the proposed meeting will induce the authorities to make some substantial concessions, but these will obviously be greater if the Trade for their part will demonstrate their willingness to meet them by making suggestions to facilitate the working of the railway traffic. These details, in writing, are required by Thursday, April 8, because a small committee will then meet to arrange the agenda for April 13.

Dr. F. W. Keeble.—The marriage took place on Saturday, the 27th ult., at the Presbyterian Church, Brynston Square, of Dr. F. W. Keeble, C.B.E., F.R.S., and Mrs. Granville Barker (Miss Lillah McCarthy). Dr Keeble's connection with *The Gardeners' Chronicle*, his work at the Food Production Department of the Ministry of Agriculture, and his directorate of the R.H.S., Wisley Gardens, has brought him closely in touch with British horticulture; his appointment as Sherardian Professor of Botany at the University of Oxford, was recently announced in these pages. Amongst those present at the church were Sir Daniel Hall, who officiated as best man, Mr. and Mrs. Asquith, Sir David and Lady Prain, Sir Alfred Mond and Mr. George Munro, Jr. Considerable public interest was taken in the happy event.

*"Apple Bud Selection—Apple Seedlings from Selected Trees." *Bull.* 211, Univ. of Illinois Agric. Exp. Sta.

Sale of Deepdene.—It is reported that the famous Deepdene mansion at Dorking with 200 acres of gardens and park, has been sold to a company, which intends to convert it into an hotel. The first mansion was built in 1652 by the Hon. Charles Howard, but his son, the tenth Duke of Norfolk, rebuilt it in 1777, while it was altered by Mr. Thomas Hope early in the last century. It owes much of its present form, and particularly the Italian south-west front, to Mr. Beresford Hope, who made a great collection of paintings and statuary. The late Lily Duchess of Marlborough formerly occupied Deepdene, which altogether extends to 4,000 acres. Evelyn records that only three years after it was decided to build the first mansion the famous gardens were already laid out in the deep valley, and, later on, Aubrey lauded the grounds in his extravagant style. "Coningsby" was conceived and largely written at Deepdene, by Lord Beaconsfield, and many of the scenes of his novel are taken from the place and the neighbouring Dorking and Box Hill. Deepdene has long been famous for its rich collections of wonderfully fine Rhododendrons and Azaleas.

A Gardener Stationmaster.—Mr. John Reid, for seven years station agent of the Glasgow and South Western Railway at Sanquhar, has been promoted to a similar post at Mauchline on the same system. Mr. Reid took a great delight in gardening, and the station garden at Sanquhar was always greatly admired by passengers, while he took an active part in local horticultural events. In recognition of his work and the esteem in which he is held, Mr. Reid was presented with a gift of treasury notes from the traders and townfolk, and a similar one from the farmers and country people. Mr. Thomson, Newark, himself an ardent horticulturist, made one of the presentations, and referred to Mr. Reid's horticultural work.

Professional Gardeners' Association.—At a largely attended meeting of professional gardeners, held recently at the Golden Lion Hotel, Leeds, the Professional Gardeners' Association was inaugurated for the purpose of uplifting horticulture, by securing improvement in wages and hours, encouraging co-operation amongst gardeners, and creating a better feeling between employer and employee; by establishing a register to assist gardeners in obtaining suitable situations, recommending efficient and capable men; by assisting members when out of employment, and by forming a Distress Fund for the benefit of those members who are reduced by circumstances. The Association is to be worked on non-compulsion and non-political lines, and will include head-gardeners, single-handed jobbing and under-gardeners. A committee has been elected, with Mr. Capp, the Gardens, Nostell Priory, Wakefield, as general secretary. We understand that a London Branch of the Association is being formed, with Mr. F. Crosby 84, Falkland Road, Horney, as hon. secretary.

Flowers in Season.—Mr. G. H. Dalrymple, Bartley, Hampshire, has forwarded a box of his beautiful new hybrid Freesias, which attracted much attention at the recent meeting of the Royal Horticultural Society. This new race of Freesias constitutes a grand addition to the list of indoor flowering plants available for conservatory decoration in late winter and early spring; moreover, the blooms are so decorative and fragrant that they form valuable material for decorative purposes when cut, and will doubtless be largely grown for the flower trade. Although cut several days before they were placed in water, the spikes soon revived and the flowers remained beautifully fresh for a long time in a warm room. Other growers, including the Rev. Joseph Jacob and Mr. F. Herbert Chapman, have been, and still are, working on the improvement of the Freesia, and all three raisers have gained awards for new varieties. Mr. Dalrymple points out that he is not the raiser of all the varieties he showed on the 23rd ult. He writes:—"Honour to whom honour is due. I think it is only fair to mention that Freesia Robinetta was raised by Mr. C. van Tubergen, of Holland, as

well as some other varieties exhibited in my group. This firm is far and away ahead of any other, I think, as raisers of new Freesias, and as my stock was started from bulbs purchased from them, I feel it is only fair that a word should be written on their behalf. Yellow Prince was, I thought, synonymous with van Tubergen's Buttercup, therefore I named my variety Buttercup. The Committee said no, and so it was renamed by my man, as I had left the hall. But I still stick to my name of Buttercup."

Hampstead Horticultural Association.—This enterprising association has acquired land for fruit growing, and arrangements have been made for those of the 1,000 or so members who wish to take part in fruit culture to obtain expert guidance and practical experience in planting, pruning, gathering and packing, and in the eradication of fungous diseases and insect pests.

Tractor Ploughing at Regent's Park.—A portion of the sports ground at Regent's Park, occupied by the military for the past five years, is being ploughed by a Wallis tractor machine, preparatory to being sown with grass



FIG. 70.—*MORAEA IRIDOIDES*.
(see p. 165.)

seed. Regent's Park has had several narrow escapes from disfigurement, but, happily, it has escaped them all. In the days of Oliver Cromwell, when it was known as Marylebone Fields, it was a favourite hunting-ground, "the situation convenient and game abundant." The area was then much more extensive and well wooded. Various encroachments were made until, in 1812, it was decided to preserve what was left and it was then named Regent's Park, in honour of the Prince Regent, who was so pleased with the idea that he proposed to build a palace in it.

Dumfries Flower Show.—The annual exhibition of the Dumfries and District Horticultural Society will be held in the Drill Hall, Dumfries, on August 27. The shows of the Dumfries Allotment Holders' Association and of the South of Scotland Beekeepers' Association will be combined with that of the Horticultural Society. Arrangements will be made for a stall of flowers, fruit and vegetables for the benefit of the Royal Gardeners' Orphan Fund, a similar stall last year having been successful in assisting the funds of this gardening charity.

Spring Flowers.—A lecture on Spring Flowers, illustrated by lantern slides, will be given by Mr. W. H. Divers, V.M.H., before the Addie-

stone, Chertsey and Ottershaw Gardeners' Mutual Improvement Association, on April 6, at 8 p.m., in the Wesleyan Schoolroom, Addie-stone.

A National Apple Day.—At a conference of the Fruit Growers' Federation, held at Glasgow on March 18, joint methods of enlightening the public on the food value of Apples were discussed, and the suggestion of a National Apple Day found considerable favour. Mention was made of the greatly increased consumption of Bananas and Currants that followed collective advertising, and the conference approved of a fruit propaganda scheme, though the suggestion of a member from Hull, that to encourage better cooking of Apples prizes should be given for Apple tarts, was not seriously considered.

Revision of Wages and Hours in Government Parks and Gardens.—The question of gardeners' hours and pay has been dealt with recently so far as Government parks and Kew are concerned. Journeymen gardeners and garden labourers now receive 55s. per week and 1s. 6d. per hour for overtime. The hours are, summer 6.30 a.m. to 12 noon, with an interval of half an hour for breakfast, and from 1 p.m. to 5 p.m., except on Saturdays, when work finishes at 12 noon. All work after 5 p.m. and on Saturday afternoons is paid for at the overtime rate. In winter, work begins in the parks at 7 a.m., with half an hour for breakfast, an hour for dinner, and ceases at 4 p.m., except on Saturdays, when the day finishes at 12 noon. Owing to the nature of the duties at Kew, work in winter is from 8 a.m. to 12 noon, and 1 p.m. to 4.30 p.m.; Saturday, 7.30 a.m. to 12 noon. Seeing that before the war wages were 24s. per week, and that the cost of living has increased by about 150 per cent., an increase to 60s. would balance matters. The British Gardeners' Association at their annual meeting recently, considered that the minimum wage for gardeners over 21 years of age should be £3 10s. per week, or 15s. per week more than the gardeners at Kew are paid. The wages and hours at Edinburgh and Glasnevin Botanic Gardens are, we believe, the same as at Kew.

The "Gardeners' Chronicle" Seventy-five Years Ago.—*Campanula pyramidalis*.—Twenty years ago it would hardly have been expected that the Horticultural Society would have produced such a revolution in the culture of plants under glass in this country; but by their liberal offers of medals, enterprise and emulation have been excited, industry and skill have been rewarded, employers and employed have enjoyed a mutual satisfaction, and the public, by their splendid exhibitions, have been gratified. But while our tender exotics have been improved, some of our hardy and ornamental plants have been neglected. I allude more particularly to *Campanula pyramidalis*: this plant, when properly treated, will produce a flower stem from 8 to 16 feet in height, regularly branching from the bottom upwards, and forming a pyramid, which, when the blossoms are expanded, is of singular beauty, and when placed in a lobby or entrance hall will continue so for a long period. To have good plants fit for pot-culture, the seed should be sown in March, in pans, and when the plants are of sufficient size they should be pricked out in rich, light soil, where they should remain until they begin to grow in the following spring, when the strongest plants may be selected for potting, as the plants are not intended to flower until they are two years old: they should at first be put in pots just large enough to prevent the roots from being cramped, and to induce a slow but healthy growth. It must be left entirely to the judgment of the grower whether they should receive another shift in the latter end of June or not; at all events, it is not advisable that they should remain all through the winter in a pot larger than an 8-inch pot, the chief object being to have well-ripened fibre or vegetable tissue with highly elaborated sap to resist the severity of the winter. The treatment during the winter months is to plunge the pots in sand or ashes in a frame, or any situation where they can be kept dry. *Tassel, Gard. Chron., April 5, 1845.*

TREES AND SHRUBS.

ERICA DARLEYENSIS.

THE name given above will probably not be familiar to many readers, yet it is a more fitting name for the hardy Heath which originated in the nursery of Messrs. James Smith and Son, Darley Dale, Derbyshire, some years ago, and was distributed as *E. mediterranea hybrida*, and *E. hybrida*. *E. darleyensis* is very distinct from *E. mediterranea*, and *E. hybrida* is an old name belonging to a Cape Heath.

Many present-day growers will probably retain the original name, but whichever one is used none will dispute the value of the subject of this note in the garden and pleasure grounds. Growing from 1 foot to 2 feet in height, the plants flower freely from November to April or May. The presumed parents are *E. mediterranea* and *E. carnea*, the flowers being a rosy red shade. Commencing to flower when small, the plants grow into dense, spreading masses, which are particularly effective in the pleasure grounds, along the front of a shrubbery border, on sloping banks, and in the open woodland. As a dwarf informal edging to shrubbery beds and borders, *E. darleyensis* is worth considering; in fact, being so bright and cheerful-looking in the dull season, it is a Heather one cannot very well plant too freely in extensive pleasure grounds.

Cuttings root readily in late summer and early autumn, while layering and division also form ready methods of propagation. While Heaths in general delight in a peaty soil, *Erica darleyensis* will grow almost, if not quite as well, in a sandy loam with which a fair amount of leaf-mould is incorporated. A. O.

WISTARIA MULTIJUGA

WHILE *Wistaria chinensis* merits all that is said in its favour on page 131, it may be pointed out that *W. multijuga* is more popular with the Japanese than the older kind, and figures largely in their tea gardens and other places of public resort. While the individual racemes of flowers are less showy than those of *W. chinensis*, they are much longer and more slender, so that a specimen in full bloom forms an exceedingly graceful feature. The flowers, too, are not crowded as in *W. chinensis*, and in good examples the racemes will at times attain a yard in length. There is a certain amount of variation to be found in the colour of the flowers, but as a rule they are of a pale lilac tint, tipped with purplish line. Recognised varieties are *alba*, white; *rosa*, pale rose; and *Russelliana*, deeper coloured than those of the type. This *Wistaria* is not so suitable as a wall plant as *W. chinensis*, but is seen to the best advantage when trained on a pergola or in some similar position, where, when laden with its long, pendulous racemes of blossoms, borne in the greatest profusion, it constitutes a feature of great beauty.

I must confess that the species did not appeal very strongly to me when I first saw it in flower in the later 70's of the last century, while on a visit to Messrs. Osborne's nursery at Fulham to see a plant which had but a single raceme. Although a vigorous climber, *W. multijuga* can be treated as a bush, if the growths are spurred back every year. Mr. Bean, in *Trees and Shrubs Hardy in the British Isles*, refers to a plant in the Kew collection that has been grown for nearly 40 years in this way, and is only about nine feet high, but bears an amazing profusion of racemes. W. T.

GENISTA SAGITTALIS.

THE Winged Genista is an excellent subject for planting on rockwork or on low banks.

Not more than six inches or so high, it trails over the rocks or banks and makes a mass of deep green stems and foliage, well supplied in its season—summer—with plenty of golden flowers. It is very distinct in its way, because of its winged stems, expanding into membranes, which gives it a most uncommon appearance. The winged Genista is a native of grassy land on several of the European mountain ranges, and is quite hardy in this country. *G. sagittalis* is not particular as to the compost in which it grows and my plants have done well in poor, stony soil, good loam, and sandy loam. S. Arnott.

MORAEA IRIDIODES JOHNSONII.

THE beautiful *Moraea iridioides* Johnsonii, is the loveliest of all the *Moraeas*. The original *M. iridioides* was figured more than a century ago in *Miller's Dictionary of Plants*. Originally discovered by Mr. R. Moore (the English botanist who gave them his name), the *Moraeas* of the Cape of Good Hope may be divided into two groups, the bulbous, and the rhizomatous, iridioides (see Fig. 70); belonging to the latter, whilst bulbous sorts are occasionally met with in greenhouses.

All the *Moraeas* have suffered neglect by gardeners from the fact that their blossoms, lovely as they are, are remarkably fugitive, scarcely surviving for more than the morning hours. But *M. iridioides* Johnsonii (see Fig. 71), imported from the mountains of Ceylon by Mrs. Johnson, behaves in the

too narrow to meet. Many blossoms are borne on the same branching stem, about 36 inches in height, with strong upright foliage, which is nearly as high as the flower stems. A peculiarity of the plants is that they produce fresh side-branches for two seasons, and consequently they are rarely without a flower if given the temperature they enjoy, *i.e.*, 60°. It should be added, however, that *Moraea iridioides* Johnsonii is so nearly hardy as to survive in a cold greenhouse if kept just free from frost and rather dry in winter. As soon as spring arrives, however, the water supply should be gradually increased until abundance is provided in the heat of summer, when the plant may be placed in the open air.

The first flowers which opened in England in the spring of 1906, were sent to the authorities at Kew Gardens, to the Royal Horticultural Society and to Mr. W. Robinson, who greatly admired them, whilst the Scientific Committee of the

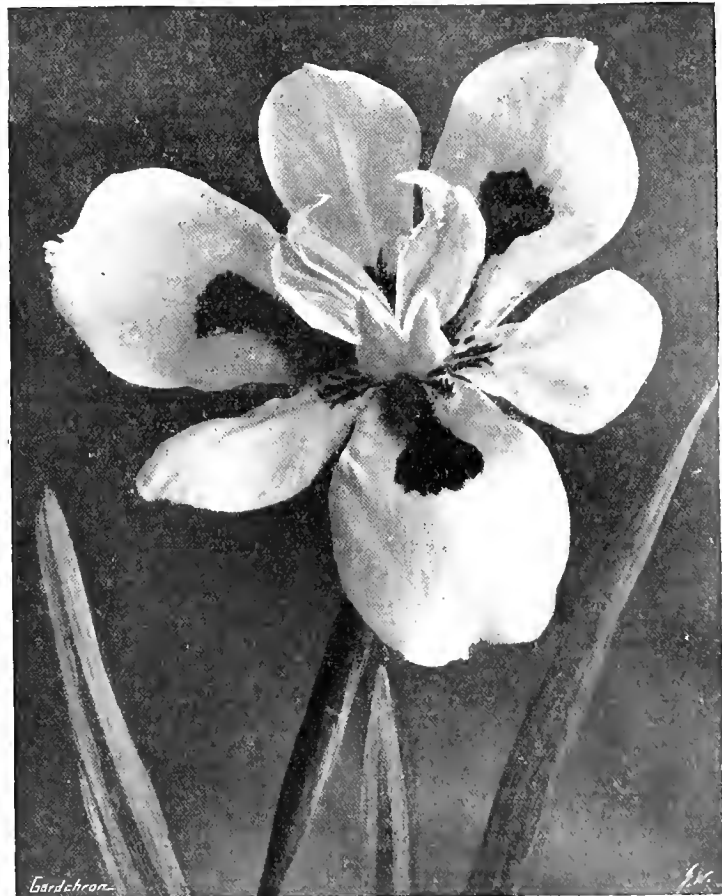


FIG. 71. MORAEA IRIDIODES JOHNSONII.

most satisfactory way; its blossoms are not only double the size and far more brilliantly coloured than those of the type, but they persist for about four days in semi-shade, a little less in full sunshine, the substance of the petals being much thicker than those of the rest of the genus, which are remarkably fragile.

A few seedlings, raised by Mrs. Johnson, were given to the writer under the name of "a rare Ceylon Iris," but the fact that there are no known Irises indigenous to Ceylon, led to the young plants being grown with special care under glass. They eventually produced their beautiful creamy white blooms, blotched with yellow, with the three central "standards" of a rich shade of violet and feathered at the base with crimson-brown markings. The flower is of singular beauty and the various hues are most harmonious.

The diameter of the flower is about 4 inches (twice the size of the type form) and the breadth of the petals is sufficient to cause them to overlap instead of being

R.H.S. pronounced them to be singular instances of the effects of the warm climate and rich soil on the original form of the plant, which was probably taken to Ceylon many years before.

That great authority on Irises, the late Sir Michael Foster, in a letter to the writer, gave it as his opinion that this plant, which had already shown such remarkable powers of improvement, would be likely to continue to add to its size and beauty under careful cultivation and selection. This work has resulted in the way predicted by him. Some of my latest seedlings have produced two, and even three blooms at the same point, of fine size and colour.

The variety Johnsonii is easily raised from seed sown in a greenhouse, and the young plant should be repotted as their roots need more room.

Good sound loam (without animal manure), leaf-mould, and charcoal in small lumps, will suit them, with a little soil added after the first time of potting. Old plants may be divided and repotted, but seedlings form the best specimens. I. L. Richmond.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

The Orchard House.—The majority of the fruit trees are either in flower or just past that stage. Peaches and Nectarines should be grown in a compartment by themselves; the earliest of these fruits are stoning, and very little progress will be noticeable in them for some time to come. Disbudding and pinching of the laterals still require regular attention, especially in the case of vigorous, young trees. Top-dressing and feeding the roots—the chief aids to success in the cultivation of pot fruits—should be continued until the fruits are nearly ripe. Decayed manure, green horse-droppings, and Wakeley's Hop manure may all be successfully used for top-dressing all kinds of pot fruit-trees. Whatever material is used, whether rich top dressings, liquid manure, guano or soot water, a little and often gives the best results, whilst the stimulants should be varied from time to time. Plenty of water is necessary at this stage, for if the roots of pot trees are allowed to become excessively dry the trees never recover from the check. Syringe the trees twice daily in fine weather with soft, tepid water. If a bag of soot is immersed in the water so used, the foliage will be kept free from red spider and other pests. Fumigate the houses when the trees are dry in the evening, or syringe with quassia extract, if greenfly makes its appearance.

Pears and Apples.—Pears are always valuable early in the season and never over-plentiful. The trees give excellent returns for liberal treatment, and the fruits will set freely if growth is allowed to develop slowly in the early stages of forcing. Attend to the disbudding of the shoots and the thinning of the blossom buds where they are too numerous; this will strengthen the remaining flowers. Discontinue overhead syringing when the trees are in bloom, but damp the floors and other bare places, and admit an abundance of fresh air both by day and night when the weather is favourable for venting. Apples require similar treatment, and should have the blossom buds thinned in a similar manner. Pollinate the blooms of all orchard house trees daily, dusting them with a rabbit's tail in the middle of the day when the pollen is dry.

Cherries and Plums.—The earliest of these trees with fruits at the stoning stage should be kept growing steadily after this trying period is passed. The night temperature may be increased to 55°, with a corresponding rise during the day. Syringe the trees and close the house in good time to have an hour or two of sunheat, allowing the temperature to decline to 60° or 55° afterwards with ventilation. Keep a sharp watch for green or black fly, and syringe the trees or fumigate the house directly aphid is detected. Weevils also soon damage both fruit and foliage, and must be sought in the curled leaves and destroyed.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager LADY
NUNBERNOLME, Warter Priory, Yorkshire.

Dwarf Roses.—In cold, exposed districts, where late frosts are prevalent, the date of pruning Roses should be governed each year by the weather experienced in winter. Following a mild February, there is often much top growth early in March, which draws the sap upwards. In such circumstances, it is unwise to prune before the last week in March or the early days of April. When the sap is active, the basal buds "break" immediately the top growth is removed, and if the pruning is performed too soon,

they are ultimately weakened by sharp frosts. To extend the flowering season of Moss Roses, leave one-third of the growths unpruned, cut one-third partly back and the remainder to two eyes. At the present time an application of superphosphates, of not more than 4 ozs. per square yard, will be beneficial to all Roses.

The Spring Garden.—Where frosts have raised the roots of such plants as Polyanthus and Chiranthus Allioni, they should be firmly pressed into the soil by hand. After the plants have been made firm, the soil should be lightly stirred with a small Dutch hoe, which may be used between all species other than bulbous ones. Aged specimens of Forsythia suspensa and F. viridissima, with branches too thickly placed, may be thinned judiciously when in flower, and the shoots used for decorative purposes in the house. A light dusting of soot should be carefully applied between drifts of Iris reticulata to prevent damage by slugs; the same material may be used as a stimulant to St. Bridget Anemones. Cyclamens will be benefited by a small application of steamed bone flour which should be lightly worked into the soil with a hand fork. Afford diluted farmyard liquid manure to Hepaticas as they pass out of flower. Should it be desired to increase these plants, they may be divided now.

Eremurus. In 1919 the growing points of Eremurus were badly damaged by late frosts. This may have been due to moisture on the foliage at the time the temperature fell below freezing point. It is advisable to have in readiness material that will afford the plants some slight protection, such as small Spruce branches, which may be easily placed in position when signs of frost are apparent.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JESSIE, Wenloe
Castle, near Cardiff.

Cauliflowers.—Autumn-sown plants which have been hardened are ready for transference to their permanent quarters. To produce fine heads they should be planted in rich ground, which should be lightly forked before the plants are put in. Use a trowel when planting, taking care to disturb the roots as little as possible and thus obviate a check to the plants. A distance of two feet between the rows and eighteen inches between the plants in the rows is suitable. To hasten their maturity, a few plants of the earliest varieties, such as Snowball and First Crop should be placed under handlights holding five plants each. Arrang should be attended to, and the lights removed on all favourable occasions during the day. If slugs promise to be troublesome, arrange a few handfuls of sifted ashes in the form of a mound around the stems. A sowing of early varieties and Autumn Giant should be made on a warm border; sow also Michaelmas White and Self-protecting Broccoli.

Seakale.—Thongs to produce forcing crowns next season should be planted now. Set them in rows made eighteen inches apart, allowing a space of fifteen inches between each row. The ground for Seakale should be double-dug and a good dressing of well-rotted manure incorporated in the bottom spit. To protect the plants from slugs, arrange a small mound of ashes about each crown when the work of planting is finished.

Onions.—Seedling Onions raised from seed sown early in the New Year and subsequently potted should have their tops supported. The system I adopt is both easy and expeditious, and is as follows:—Thin stakes are split from nine-inch lengths of Bamboos; and two slits are made in each stake, one near the centre and one near the top. The tying material consists of pieces of manilla cord cut into three-inch lengths, which will provide any number of fine strands. Press one end of the material into the slit, pass it round the plant, and insert in the second slit. No knots are required and the string may easily be slipped out to take in new growths when this is needed.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Noddy, Codicote, Welwyn, Hertfordshire.

Black Currants.—So far as my experience goes I know of no variety of Black Currant that is immune to "big bud" disease. I have grown an old local variety for the past eighteen years, and I thought I had a variety capable of withstanding the mite. Yet on looking through my bushes this year I find a few big buds here and there. Where this disease has only just appeared it should be combated by every possible means, and a continual watch kept on other plantations near by. Where old bushes are very badly attacked it would be wise to dig them up and burn them. Young trees, only slightly attacked, should be cleared of all swollen buds by hand-picking, and the removal of the affected buds should be followed by a course of remedial treatment. Mix two pounds of fresh lime with one pound of sulphur, add four ounces of soft soap, and make the whole into a thick paste. Add eight to ten gallons of soft water, and apply the spray with a syringe having a rather coarse nozzle. The mixture should be strained through a muslin bag to prevent the nozzle from being blocked by the grit in the lime. Lime and sulphur may be dusted liberally over and around the bushes. The application should be made in the early morning when the bushes are damp. Whatever means are taken to arrest the mite it must be persevered with. When the spray is used no part of the bush should be left untouched by the specific. The treatment should extend over the next five or six weeks.

Strawberries.—Where Strawberry plants were attacked with mildew last season, and no precautions have been taken to rid the plants of this disease, it may be necessary to spray the plants as soon as they begin to make their new growth. Two or three sprayings now may tend to keep the plants free from this disease, but if allowed to go unchecked until such time as the fruit is set it is a very difficult complaint to contend with. There are several good proprietary mixtures for mildew, and, if applied according to instructions, no harm, but good, will result from their use. Lime and sulphur with soft soap added, as recommended for the Black Currant mite is an excellent spray for mildew. The mixture adheres well to the foliage, and is not easily washed off by heavy rains. But whatever remedy is used the spraying should be thorough, and a coarse and powerful sprayer used so that the under sides of the foliage may be reached.

PLANTS UNDER GLASS.

By JOAN COLTIS, Foreman, Royal Botanic Gardens,
Kew.

Cyclamen.—Young plants of Cyclamen in thumb pots, which have been wintered in an intermediate house, should be ready for re-potting, and when this is done they may be grown in a cooler house, such as a low pit. Stand the pots on a cool base, as a cool, moist atmosphere is essential for the plants during the summer. The compost for this shift should be light and rich, and should contain old mortar rubble.

Chrysanthemum.—The various batches of Chrysanthemums should be potted on as the plants require more root room. Continue to grow them in cool, shallow frames, which should be kept close for a few days until the roots are established in the new soil. Keep a sharp watch for aphid, also leave-mining maggots, which often prove troublesome; both pests may be prevented by frequent sprayings with tobacco water. Secure cuttings to raise small plants which are useful for the conservatory stages and decorative work generally. The several colour varieties of the Caprice du Printemps type are excellent for this purpose, as also are some of the dwarf, compact-growing singles, of the Ladysmith type.

Capsicum.—Where Capsicums are grown for greenhouse decorations the seed should be sown now. The plants require high cultivation; they are very subject to attacks of red spider and

also Begonia mite. The former pest may be kept down by the use of the syringe; and the latter, by Campbell's Sulphur Vaporiser. Spraying with XI-All insecticide will also keep the mite in check.

Vallota.—Plants of Vallota are growing freely, and those that require more root-room should be shifted into larger pots, without disturbing the roots. Great care must be exercised in this respect as the plants resent disturbance at the root, and if doing well it is wise to leave them alone. Specimens in an unsatisfactory condition should, in common with all bulbous subjects, be washed clean at the roots, the latter freed of decaying portions and repotted again when dry. When in good health the Vallota produces large quantities of small bulbs, and as they soon become crowded some of them should be detached and potted singly to increase the stock. This plant requires a light position in an ordinary greenhouse, or a house with a greenhouse temperature. *V. purpurea* is capricious in its requirements, and in many gardens it seems impossible to cultivate it successfully.

Rhododendron.—The Japanese type of Rhododendron includes many beautiful varieties worthy of more extended cultivation, as they can be had in flower, more or less all the year round. Cuttings formed of half-ripened shoots root readily in a close case at this or any other time. The cuttings are best trimmed off at a whorl of leaves, although internodal cuttings also root readily. The plants grow best in an intermediate temperature, although some of the stronger-growing varieties are quite happy in a cool greenhouse, and succeed planted out in a well-drained, shallow bed. Plants in pots should be turned out of their receptacles every spring, and the bulbs reduced slightly to obviate the use of large pots. One of the chief defects of these hybrid Rhododendrons is their straggling, ungainly habit, which may, to a great extent, be corrected by tying down the slender shoots, and this also tends to cause fresh growth to break from the old wood. Other greenhouse Rhododendrons, such as Lady Alice Fitzwilliam, Countess of Haddington Veitchii, and formosum, may all be propagated by cuttings of half-ripened shoots, inserted at any time during the present month.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Cheshire.

Calanthe.—The deciduous species *Calanthe Veitchii*, *C. Harrisii*, *C. vestita rubro-oculata*, *C. v. luteo-oculata*, *C. Wm. Murray*, the late-flowering *C. Regnieri* and several other beautiful hybrids of recent introduction are, with the exception of *C. Regnieri*, in a suitable condition for repotting. The orthodox Orchid house is not essential to the successful cultivation of Calanthes, in fact, in some gardens these plants are grown better than where a general collection of Orchids is included. The plant stove, Cucumber house or similar warm house is admirably suited to Calanthes during their period of active growth, and the warm Orchid house will answer the same purpose. Throughout their season of activity the night temperature should be 60°, but during the daytime, and especially when there is bright sunshine, a few degrees higher may be permitted. Whilst reasonable exposure to the sun's rays is beneficial some protection from strong sunlight is needed from now onwards until the pseudo-bulbs are nearly matured to prevent scorching of the foliage. By judicious shading and ventilation the plants will make strong, healthy growth. Whenever the weather is favourable the bottom ventilators may be left open throughout the night. Admit air through the top ventilators with discretion, and prevent a direct draught passing over the plants. The atmosphere should be kept moist by sprinkling the paths, floors, and stages with clear water, but in dull weather, damping once daily will suffice, and it should always be done with a rising and not a falling temperature. If due attention is paid to ventilation and the correct amount of atmospheric moisture spot disease will rarely trouble the plants.

NOTICES OF BOOKS.

A Handbook of Forestry.*

The title of Mr. A. D. Webster's little book is misleading, for instead of being a "handbook of Forestry," or endeavouring to tell us "all about trees and their timber," it is really a collection of notes upon subjects connected with silviculture, arboriculture, agriculture and park management. Garden and Woodland Notes, Rural Notes, or some similar title would have conveyed a better idea of its scope. The 216 pages contain about 500 of these notes, together with an index, and many of the notes are valuable as reminders, though there is little that is actually new. Some of the notes are fairly complete and convey a good idea of the way in which certain work should be done; others are very meagre and do not stick to the

Required for One Acre," the following subjects mentioned:—Broom, Furze, Grass Seeds for Permanent Pasture, and Rape. Respecting the second point, a good example is given on p. 62, where, under the heading, "Regarding Trees," the author writes, "Frequently it is asked what is satin wood, rosewood or ebony, and to answer these and similar questions, the following list has been prepared." Then follows a list of 21 timbers with common and scientific names. Why these timbers should have been selected from amongst the many commercial timbers is not clear, especially as several of them are of little importance. Unfortunately, the author has not in every case made the correct combinations of scientific and common names, neither is the spelling of the scientific names, in all cases, correct. For instance, the name of Iron Wood is usually used in connection with *Xylia dolabriformis*; it is given in the



FIG. 72.—NARCISSUS JOHN EVELYN: A BICOLOR INCOMPARABILIS VARIETY WITH WHITE PERIANTH AND DEEP YELLOW CROWN. R.H.S. Award of Merit, March 23, 1920. (See p. 161)

point. For instance, on page 45, under "Transplanting the Holly," we read, "The Holly succeeds best when moved in April or May, damp, cloudy weather being preferable for the work. Holly hedges should not be topped until they have attained the desired height." We are left to work out for ourselves the relationship between the two sentences. An attempt has been made to group various subjects under distinct headings, such as Concise Rules in Woodland Management, Notes Regarding Trees, Shrub Notes, Timber, Tree Seeds, Poisonous Trees and Shrubs, etc., but unfortunately the author has, in several cases, included subjects that are quite outside the scope of the chapter headings, whilst in other cases he has not gone deeply enough into the subject to make the notes as valuable as they might otherwise have been. As an instance of the first, we find at p. 97, under the heading of "Tree Seeds," and the sub-heading of "Seeds

work under notice as *Laplacea haematoxylon*, *Satinwood* is given as *Maba guianensis*, whereas the true *Satinwood* is *Chloroxylon Swietenia*, belonging to an entirely different family. The true *Sandal Wood* is *Santalum album*, but in this book the Australian *Sandal Wood* (*Fusanus spicatus*, and misspelt *Fucanus*) is given without the prefix "Australian." In addition to these, other minor mistakes might be mentioned, which seem to point to a hurried revision of the proofs, and these will need correcting in future editions.

The King's National Roll.

This is the title of a publication* of 300 pages containing the names, addresses, and trade descriptions of patriotic employers who had given undertakings to employ disabled men under the National Scheme, to the end of 1919. King George V. and Queen Alexandra head the list; the rest of the names of the signatories to the scheme are arranged in alphabetical order, by counties, making reference easy.

* *A Handbook of Forestry; or, All About Trees and Their Timber*, by A. D. Webster. Published by Wiltton Rider and Son, Ltd., 8, H. Paternoster Row, London, E.C.4. Price 4s. 6d. net.

* *The King's National Roll*. London, His Majesty's Stationery Office, price 4s. 6d. net.

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PLANT COLLECTING ON
IMAW BUM.—I.

IT is an undoubted fact that on granite mountains so great a variety of plants is not found as on limestone. One reason for this is perhaps the far less perfect jointing of the former (besides the absence of stratification), and its tendency to weather into smooth slabs on which no plant can get a grip. But there must be other reasons besides these purely mechanical ones; poverty of lime, for instance.

Thus Imaw Bum, though over 13,000 feet high, situated in a region of ample rainfall well distributed throughout the year; protected by snow for six or seven months out of the twelve; and well connected with great parent ranges on a main line of plant migration, does not rear the alpine flora one might expect. It has, however, an alpine flora, and a good one. But at the same time it is a little disappointing. Owing to the peculiar course of the Ngawhaung River, which flows in a complete U round the end of the range on which the Bum is situated, this peak and its neighbours are isolated from the main Salween-Irawaddy divide; but the range joins up further north, being simply a great spur carved out of the main divide.

Imaw Bum can therefore be attacked from either flank, east or west. Speaking generally, a ridge must be selected for the ascent, the valleys being choked below with dense forest of a semi-tropical nature, especially on the west flank, and above with Bamboo.

In 1914 I attempted to reach the summit of Imaw Bum—perhaps the most conspicuous peak in the Htawgaw Hills—from the east, or Hpinaw, Side. For this purpose I selected a ridge running rather north and south, the crest of which was attained after a very steep climb up its flank.

Path-cutting for four days through Bamboo forest brought us at last to the limit of trees (Rhododendron and Silver Fir), and we had no serious difficulty in achieving the summit ridge, though shortness of food and bad weather prevented us reaching the actual Bum, which is situated at the northern end of a long ridge. However, we found the alpine flora.

The summit flanks of the ridge, particularly that facing south-west, are covered with a carpet of dwarf Rhododendron, including at least nine different species. One of them is *R. euchromum*, discovered by me in 1914; another bears some resemblance to *R. intricatum*. Most of them are probably new. Here, too, *Primula coryphaea* checks the granite sand, occurring in patches between the boulders, and there are no fewer than four species of *Cremnathodium* growing in the little grassy dells, including *C.*

Wardii and *C. gracilimum*. The prettiest of them has nodding flowers, the ray florets drawn out together instead of spreading, so as to form a sort of cone. Both disc and ray florets are nearly colourless, almost glass-like, with the faintest tinge of claret. Another pretty species is a dwarf plant with sulphur-yellow flowers.

On grassy screes and amongst boulders are the rich crimson pokers of a *Polygonum*, and a violet-flowered Labiate, besides many dwarfed shrubs, such as *Juniper*, *Cherry*, *Rhododendron*, two species of *Pyrus*, *Potentilla fruticosa*, and *Spiraea Wardii*, crouching into cavities. Over the cliffs hang down the long tails of *Cassiope myosuroides*.

On the ridge leading to the summit were patches of *Rhododendron euchromum*, with leaves sometimes silvered, sometimes bronzed, beneath, and fleshy, trumpet-shaped corollas of fiery orange or red; a fine species of *Nomocharis* beneath the highest Bamboo belt; and the glorious little *Primula sciophila* of the Bella section. This last has relatively large flowers, brilliant violet in colour, and a big white eye; the throat is stuffed with the usual pompon of white hairs. These were my principal finds on Imaw Bum in 1914, after two attempts to scale its forbidding slopes.

In 1919 I attacked Imaw Bum again, this time from the opposite (west) side. The new maps which had been prepared showed a fairly wide valley cutting far into the range on this side, the stream, in fact, rising from Imaw Bum itself. It was therefore possible to approach much nearer to the peak than had been the case previously, before beginning to climb seriously.

In the lower part of this valley were several villages. From this side, then, the ascent was eventually made along a ridge which swept down from the summit in a wide arc, forming the boundary of the valley on one side. Passing through the lower forest belt, which may be called temperate rain forest, I noted a considerable variety of trees, particularly Oaks of very large size, *Backlandia* scarcely inferior, *Schima*, *Ficus*, *Magnolia*, and *Rhododendron*. Conspicuous amongst the latter are *R. sino-grande*, with its enormous leaves, used by the natives for roofing their jungle huts, and *R. agapetum*, whose brilliant crimson-scarlet flowers may be found from April till August! In fact, it seems to have two distinct flowering periods, spring and summer.

There are a few Lianas, species of *Aristolochia*, *Hydrangea*, *Clematis*, etc. Most of the trees are covered with epiphytic Ferns, Orchids (including a magnificent white-flowered *Vanda*), *Aeschynanthus*, *Agapetes*, *Rhaphidophora*, etc. The undergrowth is mostly supplied by two or three species of Bamboo, one of which is characterised by a ring of downwardly-projecting spikes at each node. There are also small Orchids, *Arisaema*, *Zingiberaceae*, *Iris*, *Impatiens*, *Begonia*, and so on. But the undergrowth is rarely so thick as to be impenetrable, except in the gullies.

At about 8,000 feet a marked change begins to come over the forest. Many of the familiar big trees disappear; *Rhododendrons* become more numerous and varied; Birch and Maples are conspicuous, and Conifers make their appearance. Species of *Panax* with huge leaves, standing in erect circles when young, are now familiar objects. From a distance they look like Palms or tree Ferns.

The next belt traversed is that of Conifers and *Rhododendrons*. On exposed slopes the

only Conifer seen was a Silver Fir, but in the high valleys, and on north slopes, there are, besides, a Larch, the Coffin plank tree (probably *Cupressus*) and a magnificent *Pseudo-tsuga*. This last is fairly well distributed, but both the Larch and the *Cupressus* are very local. Much lower down, *Pinus Khasia* is found on the east side of the range, but not to the west; and altogether the distribution of Conifers is peculiar.

This belt is mainly made up of *Abies*, *Bamboo* and *Rhododendron*. Amongst the last may be noted a fair-sized tree with silvered leaves and large trusses of lemon-yellow flowers, like *R. argenteum*; a shrub with dense trusses of Nutmeg-scented pink flowers and bullate leaves—perhaps *R. bullatum*; another species with crimson-scarlet flowers, like *R. agapetum*, only smaller; and the grand, white trumpets, perforating the hillside, of *R. dendricola*, or *R. crassum*. This last flowers late—the end of June or early July.

Besides these, there is another big tree, with the lemon flowers of *R. argenteum*; but the leaves, instead of being silver beneath, are rusty-red, with a woolly tomentum. Above 11,000 feet this is the only tree *Rhododendron* found, and even that is dwarfed and gnarled. Four other bushy species were seen in this belt on Imaw Bum, making a total of nine.

Between these two main divisions of the forest—the temperate rain forest below, and the Conifer forest above, several minor plant associations and transitional belts are passed through, especially on south facing slopes. There is the shrub belt, for instance, between 8,000 and 9,000 feet. It consists of dwarfed specimens of both the upper rain forest trees and lower Conifer forest trees, with a large number of shrubs such as *Rosa sericea*, *Ribes*, *Rubus* (several species), *Hydrangea*, *Peris*, *Buddleia*, *Rhododendron*, and *Lonicera*. There are also a few lianes such as *Schizandra*, *Smilax* and *Akebia*. In certain places alpine meadow is found, perpetually struggling for supremacy with the encroaching Bamboo. The meadow I have already described in a previous article (see *Gard. Chron.*, Mar. 6, 1920, p. 113). But this is soon passed in continuing the ascent by the ridge, buried in thin Conifer forest.

There is a scanty undergrowth of dwarf plants growing in moss on the ground, or on tree trunks. But wherever a marshy hollow appears tree growth is suspended, and a wilderness of tall herbs springs up in the light. This dwarfness of the undergrowth in the dim forest light, and magic growth in the open, is strange, being the opposite of what we learnt in the laboratory about light retarding growth.

Plants of the undergrowth are an *Oxalis*, a *Utricularia*, several species of ground Orchid, *Impatiens* (of course!—there is no place on the N.E. Frontier where they do not grow), *Viola*, *Acaethopanax*, a tiny little *Rubus* growing like moss, and a few others. The ridge goes up and down, by no means ascending steadily, and the summit seems miles away. However, the ascent proceeds, and *Abies* becomes more common—the ridge it is gnarled and wind-beaten. The tree *Rhododendrons* disappear one by one, their places being taken by much smaller species—thickets of *R. euchromum* show that we really are mounting. At last the trees die out; there is nothing but Bamboo ahead. This is passed, and an open area reached, with a thousand feet of alpine flowers between the climber and the summit. The wind, with gusts of cold, stinging rain, buffets the party and makes us giddy with cold. But what matters? Imaw Bum is conquered. P. Kingdon Ward.

ACACIAS FOR POT CULTURE.

The genus *Acacia* is a very extensive one, most of the species being natives of Australia. In a wild state the majority attain tree-like dimensions, though others may be classed as shrubs. Whilst some produce true leaves, but sparingly, the phyllodes perform the function of the foliage. These phyllodes are very persistent, so that the plants are truly evergreen. The vigorous growing species, of which the beautiful *Acacia dealbata* may be taken as an example, are too robust to be flowered in a satisfactory manner in pots, but there are several amenable to that treatment, and the plants form a very showy feature in the greenhouse during the early months of the year. Unless a lofty house is available, the plants need to be pruned after flowering, in order to keep them within limits. A mixture of loam, peat, and sand, will suit them well, but in the case of established plants, annual repotting is by no means necessary. During the summer the plants may be stood on a firm asan bottom out of doors, and plunged in ashes, Cocoanut-fibre refuse, spent Hops, or some other material. By standing the pots on a firm bed of ashes, worms are prevented from entering them and choking the drainage. When stood out of doors, the plants, if they have not been repotted, will be greatly benefited by occasional waterings with liquid manure and soot water combined, or they may be fed with a concentrated fertiliser. The following are among the best of the species for pot culture:—

ACACIA ARMATA.—This species has long been a popular market plant, as it may be grown successfully in comparatively small pots. The phyllodes are very densely produced, and of a particularly deep green colour, thus serving admirably as a setting to the rich, golden-yellow blossoms which are borne in round heads. The inflorescences are sweetly scented.

ACACIA DRUMMONDII.—This is another generally grown species in which the phyllodes are wanting. The bi-pinnate leaves are somewhat suggestive of those of the Rue in tint, while the flowers are borne in short, bottle-bush-like racemes, which have a partially drooping tendency. The colour of the blossoms is pale yellow. This species is rather more exacting in its cultural requirements than most *Acacias*, and needs an extra amount of peat in the soil. Pretty little specimens that flower freely may be grown in five-inch pots.

ACACIA BASTULATA.—Also known by the name of *cordata*, this species is a very distinct member of the genus. If cut back annually, the plant produces long shoots, after the manner of an *Epacris*, thickly clothed with small triangular, sharp-pointed leaves, from the axils of which the straw-coloured blossoms are profusely borne. Very effective plants may be grown in pots five or six inches in diameter.

ACACIA LINEATA.—This is a compact, rather upright growing species, having its branches clothed with small, narrow phyllodes and bearing fluffy balls of bright yellow flowers in great profusion. The plant requires but little pruning.

ACACIA LONGIFOLIA.—A species of strong growth which needs to be pruned hard every year after flowering. It then produces long shoots, clothed with Willow-like phyllodes, from the axils of which the yellow flowers are freely borne. The blossoms are disposed in somewhat upright racemes from 2 to 3 inches long. Planted out, this species will make large specimens.

ACACIA OBLIQUA (syn. *ovata*).—One of the best of all the *Acacias* for growing in pots. It forms a profusely branched little bush, plentifully clothed with small, roundish phyllodes. The flowers, which are borne in small, globular heads, are bright yellow in colour, and very freely produced.

ACACIA PLATYPTERA.—This is a very distinct species, as it is entirely without leaves or phyllodes, their places being taken by a peculiar wing on opposite sides of the principal shoots. Another distinguishing feature is that the rounded heads of rich, yellow flowers are borne in late autumn and winter. Like *A. Drummondii* this species is more exacting than most

in its cultural requirements, and needs an additional amount of peat in the soil. The plant requires but very little pruning.

ACACIA PULCHELLA.—The slender shoots of this species are somewhat spiny and freely clothed with small, bi-pinnate leaves. The globular heads of golden blossoms are borne in great profusion during the spring. Even when out of bloom the plant is very attractive.

ACACIA RICEANA.—This is a distinct species with a markedly pendulous habit. It forms a delightful pot plant when trained upright at first, and then allowed to grow at will. In this way an exceedingly graceful specimen is produced. The phyllodes are small and narrow, while the flowers are of a creamy tint. It makes a good plant for training on roof rafters.

ACACIA VERGILLATA.—To see this species at its best it needs to be planted out in a prepared bed or border, but even as a pot plant it is very attractive. The phyllodes are small, needle-like, and very freely borne. In the flowering season they are almost entirely hidden by a great profusion of yellow, fragrant blossoms. *J. T.*

ORCHID NOTES AND GLEANINGS.

SOPHRO-LAELIO-CATTELEYA ROYALIST.

This, one of the deepest in colour of its class, resulting from crossing *Sopхро-Cattleya Atreus gloriosa* (*S. grandiflora* × *C. Lawrenceana*) and *L.-C. Geo. Woodhams* (*C. Hardyana* × *L. purpurata*), was shown at the Royal Horticultural Society on March 23, by Messrs. Armstrong and Brown, under the provisional name *Vivid*, a name which had previously been recorded for the cross between *S.-L. Psyche* and *C. Fabia*, made by *J. Ansaldo, Esq.* *Cattleya Lawrenceana* conveys colour well, and *L.-C. Geo. Woodhams*, probably through the combination of *C. Warszewiczii* and *C. Dowiana aurea* in *C. Hardyana*, is well known for intensifying the colour of the varieties crossed with it.

S. L. C. Royalist has much of the form of the *Laelio-Cattleya* parent. The sepals and petals are dark violet-erimson, the lip deep ruby-purple, with small yellow disc, to which yellow lines extend from the base.



FIG. 73.—ODONTIODA JOICEYI.

R.H.S. Award of Merit, March 23, 1920. (See p. 161.)

NEW HYBRIDS.

(Continued from March 27, page 153.)

Name	Parentage	Exhibitor
<i>Cattleya Mont Blanc</i>	<i>labiata alba</i> × <i>O'Brieniana alba</i>	S. Low and Co.
<i>Cattleya Snowdrop</i>	<i>intertexta alba</i> × <i>O'Brieniana alba</i>	S. Gratix, Esq.
<i>Cymbidium Eider</i>	<i>Alexanderi</i> × <i>Lowio-grandiflorum</i>	Sir Geo. L. Holford.
<i>Cymbidium Kittiwake</i>	<i>Gottianum</i> × <i>Dryad</i>	Sir Geo. L. Holford.
<i>Cymbidium Landrail</i>	<i>Dryad</i> × <i>Lowianum</i>	Sir Geo. L. Holford.
<i>Cymbidium Linnet</i>	<i>Alexanderi</i> × <i>Holfordianum</i>	Sir Geo. L. Holford.
<i>Cymbidium Merlin</i>	<i>Dryad</i> × <i>Alexanderi</i>	Sir Geo. L. Holford.
<i>Cymbidium Redstart</i>	<i>Dryad</i> × <i>Fauwelsii</i>	Sir Geo. L. Holford.
<i>Cymbidium Yellow-Hammer</i>	<i>Gottianum</i> × <i>Lowianum</i>	Sir Geo. L. Holford.
<i>Cypripedium Florence Spencer</i> (Chard-var. var.)	<i>Memoria Birminghamiae</i> × <i>Actaeus langleyense</i>	Armstrong and Brown.
<i>Cypripedium Pullin</i>	<i>Acletoades</i> × <i>Demeter</i>	Sir Geo. L. Holford.
<i>Cypripedium Radium</i>	<i>G. F. Moore</i> × <i>Alcibades</i>	P. Smith, Esq.
<i>Laelia-Cattleya Macaw</i>	<i>Luminosa</i> × <i>Pizarro</i>	Sir Geo. L. Holford.
<i>Odontioda Dumbless</i>	<i>Oda, Coronation</i> × <i>Odm. Armstrongiae</i>	Armstrong and Brown.
<i>Odontioda Manora</i>	<i>C. Noctilana</i> × <i>Oda Coronation</i>	Charlesworth and Co.
<i>Odontoglossum Hymen</i>	<i>Lambardianum</i> × <i>Mars</i>	Armstrong and Brown.
<i>Rolfeara Ceres</i>	<i>B.-C. Hene</i> × <i>S.-C. Saxa</i>	Flory and Black.

THE FUTURE OF THE POTATO CROP.*

(Concluded from p. 133.)

Upon the cultivation of the Potato crop I do not propose to touch, for it was dealt with very thoroughly in the admirable paper read before the club by Major D. A. Spence in January, 1917. I should like, however, to remind Potato growers of the importance of planting first-class seed.

I presume that those who regard this crop seriously—and we have all learnt its value during the war—make a practice of procuring Scotch or Irish seed every second or third year, if not oftener, and I should like in this connection to remind you that Ireland is soon likely to be a very serious competitor with Scotland. The Ministry have, I think, acted very wisely in classing Irish seed as Grade (B) equally with Scotch seed. The Irish Board are doing invaluable work in educating the Irish grower as to the importance of keeping his stocks absolutely pure, and their efforts are meeting with considerable success.

The English grower is usually content to grow the produce of his Scotch or Irish seed a second year; when he does so it is well worth his while at the time of lifting the crop to select his seed with care; it is far too often the case that the crop is thrown in a heap in a haphazard way, when those tubers not suitable for culinary purposes are set aside for seed. On the principle that like begets like, good sound tubers weighing from 5 to 4 ozs. should be selected for this purpose, and in the interests of the following year's harvest the earlier the crop can be raised after it has finished growth the better. The difference between two crops grown respectively from ripened and unripened seed is astonishing, and it is this fact which explains the difference between Scotch and Irish seed and that grown in the South of England. In a series of experiments I carried out some years ago I found a difference in favour of the unripened seed equivalent to no less than 1½ ton to 2 tons to the acre, which, at the price of £10 per ton, means a gain to the grower of £15 to £20 to the acre.

To an audience such as this it is hardly necessary for me to refer to the importance of boxing; every practical grower is aware of its value, though it is to be feared there are still many who neglect to adopt this practice. The tubers should be set up in trays in some frost-proof place in January (or at the time of lifting if more convenient), and exposed to as much light as possible. By this means dwarf and strong dark green shoots will be obtained by planting time, instead of the long and thin bleached shoots which are sure to be rubbed off when the seed is stored in a heap. When the time for planting arrives the trays can be carried straight out into the field where they are required. The gain resulting from boxing in the weight of the future crop is admitted by all practical men, while there is less risk of the tubers going wrong than when stored promiscuously. This procedure also has the advantage that it enables the planter to detect at a glance any weak or unhealthy tubers and discard them.

THE FOOD VALUE OF THE POTATO.

I wish, in conclusion, to draw your attention to a subject which has so far been almost entirely neglected in this country, but which I have reason to think will ere long be recognised as of great importance. It will have not only to be studied by the chemist, but given consideration to by the grower if we are to retain the overseas Potato trade, which in years when the crop is a good one is of so much value to the farmer. I refer to the comparative food value of different varieties.

A Food War Committee was appointed by the Royal Society some time back to inquire into the composition of Potatoes grown in the United Kingdom, and they issued their report in April, 1919. This report is worthy of careful study; it introduced the subject in the following remarks:—"The important part now played by Potatoes in

the national dietary makes it desirable that we should possess adequate and reliable information as to the composition and nutritive characteristics of our Potato supplies." The writers consider that the percentage of dry matter should serve as a useful guide in comparing the value of varieties, and in a table give the comparative results from some fifteen varieties, which show a variation from 27.24 dry matter in Golden Wonder, to 20.64 in Lochar.

I venture to think, however, that the work has not at present been carried nearly so far as is desirable in the public interest. It is not merely a question of which British-grown varieties may be the most valuable from the point of view of food content, but whether we in this country are working on the right lines. It is a remarkable fact, with which no doubt many practical growers are acquainted, that the British taste in Potatoes from a culinary point of view is diametrically opposed to that obtaining in France. In the latter country the Potatoes which are most favoured here would only be grown for starch production or the production of alcohol. In a most valuable contribution to this subject by Professor Johnson, Professor of Botany, Royal College of Science for Ireland, the following table is given, showing the starch content, the crude protein content, the palatability factor and the culinary reputation in France and in Ireland of four French and four Irish kinds:—

French Grown.	Starch	Crude Pro-	Palatability	Culinary
	Con-	tein		
	cent.	cent.	Factor.	Reputation
Belle de Fontenoy	41.05	2.77	.25	Very good
Quarantaine de la Halle	13.35	2.47	.18	Good
Saucisse Rouge	12.81	2.1	.16	Passable
Richter's Emperor	19.33	1.64	.08	Inferior for table, good for starch factory (Ireland)
Irish Grown.				
Beauty of Bute	22.0	2.24	.10	Very good
Arran Chief	14.8	2.25	.5	Good
Irish Chief	13.0	2.29	.18	Passable
Champion II.	12.75	3.15	.23	Very bad

Professor Johnson points out that from a study of this table it will be seen that the French criterion of a palatable Potato is exactly the opposite of the Irish, and he proceeds to remark:—

"By preferring a waxy tuber (I should have preferred the term firm, for the French Potato is not exactly waxy) with a high proportion of protein, the Frenchman unconsciously shows his appreciation of the importance of high nutritive ratio. The minimum diet given for the average man doing a moderate day's work is 3½ ozs. protein, 5½ ozs. fat, 17½ ozs. carbohydrate. This gives a nutritive ratio of 1.7. In a well-balanced diet this ratio is obtained by mixture. It is dangerous to try to live (or have to live) on a one-sided diet—e.g., on Potatoes alone. In 1916 Poles, living exclusively on Potatoes, were found to be suffering from dropsy. The more the diet is restricted to the Potato the more desirable it is that it should be a variety relatively rich in protein. The average Potato nutritive value is 1.9. The very good table variety, Belle de Fontenoy, shows the low nutritive value 1.4, while the inferior table variety, Richter's Emperor, shows a ratio 1.12. The limit of safety, unless the consumer is to suffer from protein starvation, is 1.30. Fortunately for the Potato-eating peasant there is, as the American noted, generally a cow somewhere round the corner, redressing the balance by a supply of milk, with a nutritive value of 1.4. It must, however, be remembered that the protein of the Potato is cheaper than that of milk; protein of animal origin being necessarily dearer. The ordinary Irish Potato is less nutritious and more expensive than the French, to the extent to which it contains less protein and more starch."

Professor Johnson adds, "that a tuber relatively rich in protein matter is far more suitable for a poor man than a tuber rich in starch, and that protein matter, weight for weight, may cost the consumer twelve times as much as starch, though as sources of energy and heat they are nearly equal."

I make no apology for quoting at some length from this publication, because I regard it as one of the most useful pieces of work that has yet been done, and it is up to the raiser and the grower alike to try and educate the public to the importance of Potatoes of high feeding value, as well as varieties immune to Wart Disease. Whether these two characteristics of high protein content and immunity to this disease are obtainable in the same Potato is a problem upon which no information is at present obtainable, but a vast field for inquiry in this direction lies open to the experimenter.

There is, however, another aspect from which this question may well be regarded, and that is the matter of the public taste. As a nation we are strongly conservative, and a narrow channel of water only twenty-two miles across has prevented us from discovering that our neighbours on the other side are not only in the habit of eating a vegetable in a more nutritious form than ourselves, but one that is far more pleasant to the taste, and if the former character does not appeal to us, we might at least be expected to have discovered the latter. The yellow-fleshed Potato, with its high protein content, has only to be tried to be appreciated, and I trust that extensive acreages of such kinds may in the future be planted by growers, under official encouragement by the Ministry, to demonstrate to the public the national advantage of their use.

I shall not have covered my subject adequately if I fail to remind you that in foreign countries the Potato is used extensively for purposes other than that of food. On the Continent large acreages are grown for the production of starch and alcohol, with the result that both these commodities are obtained at a very low price. The price of starch in this country to-day is 1s. per lb. (the pre-war price being about 2½d.), whereas a year or two ago the price of Potato starch in the United States was only 5½d. per lb. I believe I am correct in stating that over 80 per cent. of the alcohol employed in Germany is obtained from Potatoes.

Whether it is in the national interest that in a comparatively small country like this land should be devoted to crops for such purposes, is a matter for the consideration of the Government, but it is as well that we should be reminded of the possibilities in connection with this crop.

I have endeavoured to avoid loading this paper with tables of figures, which are seldom studied, though beloved by the statistician. I am conscious that I have treated the subject from a somewhat unusual point of view, but I hope it has not lost its value on that account, and if I have succeeded in however small a degree in inspiring fresh interest in a problem which we all have to face, I shall feel that this contribution to the subject, despite its defects, has not been altogether in vain.

VEGETABLES.

ASPARAGUS.

ASPARAGUS beds that are top-dressed annually with decayed manure and rich compost will continue to produce strong shoots for a number of years, but too frequently this annual dressing is not afforded—or not in sufficient quantity or quality.

Those who have destroyed old Asparagus beds, or lifted three-year-old crowns for forcing, are aware of the mass of fleshy roots made by the plants. Indeed, old beds are quite matted with them—decayed and alive—and as new roots form on the surface of those made the previous season, it proves how very necessary this annual top dressing is. Where the surface dressing is withheld, it is not uncommon to find the crown buds and surface roots fully exposed to the sun, wind and frost. The number of roots formed by seedlings seems almost out of propor-

* A Paper read by Mr. Martin H. F. Sutton, F.L.S., at a meeting of the Farmers' Club on Monday, 2nd February, 1920.

tion to the top growth, and if the soil in the seed bed is suitable, many of the roots will be a foot or more in length. It will thus be seen that an individual plant requires considerable space for the roots to extend to their fullest extent. The general advice is to set the crowns at 18 inches apart each way. Yet in rich grounds the roots from plant to plant will not only meet the first season at this distance, but overlap and become interlaced.

The plants should not be closer than one yard, and as much wider as space will permit. A method of growing this delicious vegetable to the highest state of perfection which can be followed with advantage in most gardens, large and small, is to plant isolated specimens in different positions. A row of plants a yard apart could form a dividing line in the garden, or single plants might be dotted about in odd corners and different parts of the garden.

The herbaceous border will probably contain many less ornamental subjects than the Asparagus, which might be used as a back row plant. In each instance suitable stations should be made of rich compost to receive the plants, and I would suggest it should be set slightly above the ordinary soil level. *Richard Parker, Durrington, Sussex.*

FRUIT REGISTER.

APPLE COX'S ORANGE PIPPIN.

With care in gathering the fruit this variety is often harvested too early—and careful storing, Cox's Orange Pippin Apple is available from early November until the end of March or later. Certain growers experience a difficulty with this Apple owing to the tree's susceptibility to canker. Even in the stiffest of soil this trouble may be overcome by trenching the site for planting three feet deep to provide free drainage. In such soils the trees should be planted on the surface and have their roots slightly mounded up with earth. This method results in the trees settling down to their natural level when the trenched soil subsides. Those who plant this Apple even six inches deep in such soils are sure to be troubled in the future with cankered branches. When the first sign of this malady shows itself pare away all affected bark neatly and coat the wound with gas tar, not Stockholm tar, as the former is much more curative. Half-standard trees, bushes and single cordons of this Apple should be planted in the open, not against a wall. There is no comparison between the firmness of flesh, quantity of juice and flavour of fruit grown on walls and those grown quite in the open. The fruits on half-standard trees receive an abundance of sunlight and air as do those of hush trees when trained with cordon-like branches and not crowded. Ample space for this Apple is an absolute necessity. *E. Molyneux.*

CULTURAL MEMORANDA.

PRIMULA OBCONICA.

This *Primula* has been greatly improved in recent years, and the flowers of the modern race are larger, fuller and more perfect in form than those of the older type, whilst the bristles are much larger. Specimens raised from seed sown in February or March will make serviceable plants by autumn. The seedlings should be pricked off into pans, using for compost a mixture of good fibrous loam, leaf mould and sharp sand. Later they should be potted off singly in 3-inch pots, and when established in these pots grown in a moderately warm house on a shelf near the roof-glass or in a warm frame. If they show signs of flowering early pinch off the bloom and do not allow the roots to suffer from want of water. Syringe the plants on fine, sunny days. The compost for the final potting should consist of good fibrous loam, three parts to one part each of leaf mould and well decayed manure with the addition of a small quantity of charcoal and sharp sand. *H. C. Mason, Brynhyfryd, Neath.*

THE ALPINE GARDEN.

ERINUS ALPINUS.

This pretty little wall plant is an old inhabitant of gardens, having been introduced nearly two hundred years ago. In some parts of this country it has become naturalised on old walls of ruins. In such situations it readily becomes established if seeds are sown in crevices which contain a little soil in which the seed can germinate. The plant soon makes itself at home in the rock garden, reproducing itself freely from self-sown seeds, its favourite situation being on weather worn limestone which is crumbling down and mixing with soil.

E. alpinus is found wild on the Pyrenees, and Alps of Switzerland, and Northern Italy. It varies a good deal in the colour of its flowers, as well as in the hairiness of its foliage. The typical plant has reddish-purple flowers in long racemes, produced throughout the spring and summer. The pure white form (var. *albus*) is quite as free in growth and flower production. Other forms with bright red and rose-coloured flowers may be selected from a batch of seedlings. *W. J.*

In Nyman's *Conspectus florae Europaeae*, *V. gracilis* and *V. heterophylla* are made varieties of this species, but although there is a family resemblance, they are distinct for garden purposes, being of taller growth and more slender habit. *W. J.*

WALDSTEINIA.

The *Waldsteinias* are pretty plants, closely related to *Geum* and *Potentilla*, and are valuable for the rockery or for carpeting under bulbs and other spring flowers. They are also pleasing when suitably planted by themselves, and some are extremely pretty on a retaining wall. They are of very easy culture and may be grown in any reasonably good garden soil, little attention being necessary beyond keeping the trailing species in bounds, which is not at all difficult. The plants are easily increased by division any time between March and October, and some species may be raised from seeds. They thrive well in the shade.

WALDSTEINIA GEOIDES.—This is a small plant and somewhat disappointing, but when it has grown to six inches or more across, which it will do in a year or two, it is by no means to be despised. The individual flowers are small, but numbers are produced together. They are of a



FIG. 74.—*VIOLA CALCARATA* GROWING WILD ON THE ALPS.

VIOLA CALCARATA.

Well named the "Pansy of the Alps," this attractive species in its various forms is found in Alpine pastures spread over the whole of the European Alps. It is a lovely plant, forming tufts of leafy stems about three inches high, bearing large, violet-purple flowers, each with a long spur. The specimen illustrated in Fig. 74 was, with others, growing in profusion in the Turtman Valley, in mountain meadows at an elevation of 7,500 feet. It was found in stony ground amongst boulders, spreading by means of underground stems rambling among the stones, and flowering freely amongst the short grass. This charming plant is easily grown in the rock garden in half-shady situations, or even in full sun provided it receives sufficient moisture at the roots. It should be planted in very gritty soil with thorough drainage, but it must have plenty of water when in full growth. In rich soil the plant makes too much foliage at the expense of flowers. Easy to propagate by means of cuttings inserted in summer, or by division after flowering, it may also be raised from seeds sown as soon as they are ripe. The colours of the flowers vary from violet-purple to pale lilac and pure white. There is also a clear yellow form known as *V. Zeyssii*, which is found in most Eastern Alps of Carinthia.

pleasing yellow, and associate admirably with the hues of the undivided, kidney-shaped leaves. This species is four to six inches in height.

WALDSTEINIA FRAGARIOIDES.—The Strawberry-like *Waldsteinia* is not so choice as certain others, although highly recommended by some. The plant is of a spreading habit, sending out runners, and it also seeds freely, so that it requires to be kept within limits. It is, however, pleasing with its neat, three-lobed leaves and golden flowers, which are developed in drooping sprays.

WALDSTEINIA TRIFOLIA.—The trifoliate *Waldsteinia* is, in my estimation, the best garden plant of the genus. It has remarkably pretty, leathery, shining green leaves, and produces sprays of golden flowers over a considerable time in summer. It makes a charming carpet, and spreads freely enough to be valuable for this purpose. It is, however, not too rampant for keeping in bounds and is charming in almost every respect. I have a carpet of *W. trifolia* on a retaining wall and it is delightful all the year, and especially when in flower.

OTHER *WALDSTEINIAS*. Less well known, although not more recommendable, are *W. lobata* and *W. sibirica*, the former much after the style of *W. trifolia* and the latter with fewer flowers. *S. Arnold.*

THE CULTIVATION OF PERPETUAL-FLOWERING CARNATIONS IN POTS.

(Concluded from p. 156.)

In the southern and midland counties the plants should be placed out of doors at the beginning of June on a firm bed of ashes which has previously been dusted over with soot. Protect the plants from heavy rains with lights, but do not shade them from the direct rays of the sun. Harden the plants carefully before placing them out of doors and pay particular attention to watering them, also occasionally spray the foliage with clear soot-water and quassia extract to keep down insect pests. The plants should all be housed by the first week in September.

The use of fertilisers is much overdone by the majority of growers especially in the autumn and winter, and many failures may be traced to overfeeding and growing the plants in an excessively high temperature. If a sweet compost is prepared, as I have recommended, one or two light applications only of a fertiliser should be given before the turn of the year. Use a slow-acting, organic, specially-prepared manure, such as that manufactured by Messrs. Allwood Bros. I have used this manure in large quantities and the results have been excellent.

In the spring, when the days lengthen, the plants need feeding more frequently. Clear soot-water is an excellent stimulant at all times and the fullest use should be made of it.

VENTILATION AND TEMPERATURES.

In winter keep the temperature of the house in which the growing and flowering plants are housed as near to 50° as possible, with an increase of 5° during the day. Ventilation should be liberal at all times, and a circulation of warm air with gentle warmth from the pipes in damp, cold weather will help the plants to grow strong and thus better able to resist disease. The list of varieties includes sorts of all colours and shades, and new ones showing some improvement are continually being raised. Many novelties have vigour, size, length and strength of stem to recommend them and growers should become familiar with each new variety as it is placed on the market.

Of insect pests and diseases greenfly, red spider, thrips, and "rust" are perhaps the most common, but with careful attention to cultural details these troubles may be obviated. If a plant is found to be suffering from "rust" pick all affected leaves off and burn them. Red spider may be destroyed by using salt water in the proportion of half-an-ounce of coarse salt to one gallon of water. To destroy thrips, which generally attack these Carnations out of doors, spray the plants with clear soot-water and quassia extract, and fumigate them after they are housed. The same methods may be used for the destruction of greenfly.

After the plants are housed pay careful attention to such cultural details as disbudding and tying of the shoots. Dishud the plants at an early stage to obtain fine flowers, and admit an abundance of air, which will help to lengthen the flowering period and bring out the best qualities of the blooms. Endeavour to keep the plants bushy by cutting the flowers low down; leggy plants are never attractive and evidence bad cultivation. Do not crowd the plants, but rearrange them at short intervals; even when not in bloom they may be arranged in an attractive manner. I strongly recommend growing the plants a second year. If the flower stems are severed low down, as advised, very little shortening of the shoots will be necessary. Remove some of the old soil and repot the plants in eight-inch pots in April treating them as advised for one-year-old plants. They will give an abundance of flowers early in the autumn and, if fed judiciously, continue to flower freely.

The various cultural details should be carried out at the proper time and in a workmanlike manner. The grower should realise that the perpetual-flowering Carnation is practically hardy in this country and should be treated accordingly to grow and flower it successfully.

FORESTRY.

COMMERCIAL ASPECT OF HOME AFFORESTATION.*

In pre-war days, when timber could be carried from St. Petersburg or the Gulf of Bothnian ports at as low a rate as it could be conveyed by rail from Ballater (some fifty miles from Aberdeen), the prospect of a suitable return for capital invested in timber production in this country was never a very rosy one. Home timber now had a better chance, but it would be wrong to assume an immediate commercial success. To compete with foreign products we had the difficulties of producing as cheaply, of supplying timber as good in quality, and of delivering in equal dimensions, especially as regarded length.

In Northern Europe timber had grown for long in natural abundance, and labour and river transport were cheap. In time, with afforestation, our peasantry would be experts in the processes of wood production, but transport would be a drawback. With the cost of railway transport raised 50 per cent., and the trouble and expense of trucking and untrucking, unless for very long journeys, road haulage was the only way, the tractor to have steam raised with the waste products of the woods, in the shape of compressed sawdust briquettes by preference. It was also absolutely necessary that the wood should be all cut on the spot, or as near to it as possible, kiln-dried at once, and kept under cover until dispatched. The sap, the great drawback to the Scots Fir, would thereby be saved from becoming black, and the cost of carriage would be much reduced though the goods being dry. Only one Fir, the Caroline Pine, carried more sap than the Scots Fir, and it was dealt with in that way. The greatest drawback and handicap to the dealer in native woods in the past was that our forests were not in such density as to justify the erection of thoroughly equipped sawmills, with accommodation for permanent workers. Under the new authority that might be made possible. Whether, when freights had fallen and Russia was again exporting, we would be able to compete on equal terms, only time could tell; but there could be no doubt that in spite of many drawbacks, the use of native wood had of late years attained to a position of strength from which it would not be easily displaced.

If British Firs or Pines, that is to say, soft woods, were better than those grown in Northern Europe, the matter of even a considerable difference in price would not matter much. The best, of course, would be preferred, especially if it were a native product, but, unfortunately, the contrary was the case. Timber from our home Spruce and Fir trees was too knotty, and the latter also too suppy. Larch should be more extensively planted. It apt to rot at the roots in certain soils, for certain purposes it need fear no competition. The defects of quality ought to be one of the chief studies of the experts in the new Forest Authority. It might be that the Sitka Spruce—it was to be seen at Durris, a few miles from Aberdeen, growing straight in close canopy—was what we wanted, although I should like to see the seed of the five Spruces of Russia experimented with. Something must be done to improve the Scots Fir, or it is hopeless to expect it to be more than a wood for pit or railway sleepers, box-wood, or some of the commonest purposes of trade. Seed from Northern Sweden or Russia, where the red woods grow with almost no sap, is to be preferred. If an early production of bulk is wanted, the Douglas Fir is the tree to select. In its native home, America, it grows magnificent timber; here it is extremely knotty, with the heart wood soft and spongy, and is a wood that no timber-merchant would stock if he could help it. It should never be put down unless in a light, shingly soil, and given plenty of time to grow. As an ornamental tree the Douglas Fir is not surpassed; as a commercial proposition it is a failure, and it is to be hoped that

* Lecture by Sir John Fleming, Dalmeirize, Aberdeenshire, before the members of the Aberdeen University Forestry Society, February 27, 1920.

too much Government money will not be wasted in planting it.

The difficulty in regard to dimensions had as much as anything ruled out the home product from the largest buyers. North European timber averaged 16 to 19 feet, and a sufficiency of long lengths could be got up to 25 feet. Home timber handled by my firm during the war did not average more than 11 to 12 feet, and very few pieces exceeded 15 or 16 feet. The reason was that our trees grew with more taper. Practically, they seemed not to be grown close enough, and yet the trees in the North European forests did not, so far as he had observed, grow any closer. Until that was rectified, the home products would be excluded from many of its best markets.

With the exception of Eastern Ross-shire, hard wood trees, such as the Oak, Ash and Elm, did not grow at all satisfactorily. Evidently the soil was the determining factor. The quality of the hardwood, tree for tree, however, was equal to anything that could be imported, and were they grown closely for trade purposes, instead of widely apart for park adornment, a great market would await home hardwoods in the future. The Forestry Committee or Authority, just appointed, while containing several undoubted experts in the planting and growing of trees, included no one who had ever handled the product of the forests. To be following the advice of the old Scottish laird to his son, "Aye be stickin' in a tree, Jock," will, I expect, be their chief concern; but unless some consideration was given to the product after maturity, the commercial result of afforestation might be anything but successful.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

English versus Scottish Gardeners.—In reference to Mr. Ben H. Martin's statement on p. 42 as to Scotch gardeners' superiority, the average English gardener is equal to the average Scotchman in the profession, but somehow misses the praise. Mr. Martin says it is not that people who apply for Scotch gardeners are prejudiced in their favour, but that they are superior to the English in horticultural work. Not long ago, a friend and I interviewed a lady who had a vacancy for a head gardener. Both of us had the same number of references, had been in the profession the same number of years, and had served in France. The lady read my references first, then asked for my friend's. The moment she saw his name, and before reading one reference through, she exclaimed, "You are Scotch. I am sure you will suit me." Neither do I hold with Mr. Martin's system of training boys, or at least the one he recommends of putting a boy on a fixed course before he qualifies for a journeyman. All lads dislike to look forward from day to day to a set course, but if put with a journeyman, or foreman even, who usually manages to vary his work and avoid monotony, the lad would benefit more by assisting to perform simple operations than always doing the rough and dirty work. I also advocate a young man changing his situation every second year in order that he may see work done in different ways, rather than staying long in one place and thinking there is only one way to do certain work. The more changes the better, and the beginner should always try to get employment under a successful cultivator. Every gardener has his strong point in the cultivation of fruits, flowers, vegetables or decorating, and a youth serving under a good man can usually gain good experience in two years. *Frederic C. King, Lovans Gardens, Milnthorpe*

Rhododendron sutchuenense.—In your issue of March 15 Mr. J. Hutchinson describes the mixture of types in cultivated plants of the so-called *Rhododendron sutchuenense*, dividing them into four distinct forms or species. Some years ago I purchased from Messrs. J. Veitch and Sons at the time of their nursery sale, six plants of *R. sutchuenense*. Three of these flowered this year, in February, and correspond respectively with those described by Mr. Hutchinson as I, II, and IV., the other three plants have not

yet flowered. I do not know from what batch of seed the Messrs. Veitch raised these plants, but they all appear to be of the same age, and in all probability are from one seed packet though possibly the seed may have been gathered from different plants at the time of collecting and labelled *R. suchuenense*. It is curious, however, that one plant of each form should be so distinctly represented in the three that have flowered. *Kenneth McDouall Logan, Stranraer.*

Popularity of Large Chrysanthemum Blooms.—Mr. Godfrey rightly comments (see p. 154) on the trouble and expense of successfully growing the large-flowered types of Chrysanthemums, as compared to the popular single and decorative varieties, and I think it would not be out of place to consider the respective claims of these classes. When huge heads of Japanese blooms were considered to be the last word in Chrysanthemum culture, the smaller-flowering varieties were very much in the minority. Certain people may wonder what has caused public opinion to veer round so greatly in favour of the latter; but while the size and shape of the large blooms were, practically speaking, the limit of development and further improvement could only take the form of new colours and shades, in the single and decorative sections there was, and still is, a wide field of improvement besides colour open to the skill of the raiser. Tastes have changed too, for whereas a decade or so ago the fashion in house and conservatory decoration called for stately and imposing masses and formal groups, the present-day demand is almost invariably in the direction of light and graceful decorations of dwarfier style. Much valuable time was occupied in the growing season by the stopping and training of the large-flowered varieties, and large and lofty structures were an indispensable adjunct to the successful flowering of the plants. Then there was the anxiety arising from possible attacks of mildew and damping of the petals, while the necessity for a big stock of large-sized pots and a considerable depletion of the loam-stack were other items to be reckoned with. In the case of the smaller types of Chrysanthemums, not one-half of these considerations are involved: they mature with little attention beyond ordinary routine cultivation; they occupy much less stage-space and much smaller pots; they may be successfully flowered in any ordinary greenhouse, are not nearly so liable to diseases, and undoubtedly give a much more generous return in blooms of a highly decorative value. Mr. Godfrey states that he sees no hope for the return to popularity of the Japanese or Incurved types of Chrysanthemums, and the majority of growers will no doubt agree with him. The day of the single and decorative Chrysanthemum is with us, and will not readily pass away. *J. E. Palmer.*

Hosts of the Mistletoe.—I have not noticed that any of your correspondents have referred to the Mistletoe being found on the Hazel. Years ago—I cannot recollect the date—I found it growing on *Corylus* in the Hendre Park, and referred to the fact in your pages. The Mistletoe thrived for some years, eventually becoming a large bush, but subsequently died owing to rabbits killing the Hazel, while the ground was covered with snow, by eating the bark. If my memory serves me rightly, the late Mr. Rust, while at Eridge Castle Gardens, referred in the pages of the *Gard. Chron.* to having found Mistletoe upon the *Azalea*. The Mistletoe, I believe, but rarely found growing in Cornwall—at any rate near the sea—but I recollect the late Mr. Bacon, when gardener at Duporth, St. Austell, showing me, with manifest gratification, a plant of Mistletoe which he had induced to grow on an Apple tree. *Thos. Coomber, The Hendre Gardens, Monmouth.*

Snowy or White Fly.—The following will be found an effective remedy for this most troublesome pest, if commenced early, either in advance of, or very soon after, its appearance:—(1) Stand about the house a few saucers containing formalin (undiluted) to evaporate; set up out of the reach of domestic animals. (This is a good

method for keeping down the common house fly in dwelling houses.) (2) Spray the plants with a solution of formaldehyde, 1 part in 60 or 70 of water. A third remedy is to use, as a spray, "thymo-cresol," which is very effective for the destruction of this pest. *J. S.*

The Future of the Potato.—I have read with considerable interest the articles appearing in the *Gard. Chron.*, by Mr. Martin H. F. Sutton, on the Future of the Potato. In 1903, in a small village in North Staffordshire, almost every garden was infested with what (at that time) was almost an unknown Potato disease; this afterwards proved to be Wait Disease. However, one of the cottagers had the variety Snowdrop growing in his garden, and, much to his surprise and delight, this variety not only produced good crops, but the tubers were found to be clean and free from the dreaded disease. As the villagers had been used to having good crops of Potatoes previous to the disease making its appearance, they were much dismayed on lifting their crops to find scarcely anything but masses of fungus adhering to the tubers. To persons in humble circumstances, and many with large families, this meant a considerable loss. Consequently they eagerly purchased seed of the variety that had proved immune, and in every instance it proved resistant to the dreaded disease. I believe I am correct in stating that this was one of the earliest discoveries made of the fact that certain varieties would resist the disease, and much anterior to the date mentioned by Mr. G. C. Gough. Science had nothing to do with the discovery; it was practical experience. Up to the present time no cure for the disease has been discovered, but in all probability practical experiments will, in the future, find some remedy for this disastrous malady. *J. W. G.*

Acacia dealbata and Blue Primroses.—Enormous quantities of flowering sprays of *Acacia dealbata* (*Mimosa*) are sold in florist's shops. Most of these flowers come from the Riviera, and it may be of interest to record that a good tree is now in flower in one of the gardens above the famed Rock Walk at Torquay. It is the finest tree I have noticed in this country apart from those in the Tresco Abbey gardens, in the Isles of Scilly. A friend has brought me a bunch of single Primroses showing a remarkable variety of good, clear colours. The blues are all good, from pale blue to indigo; one of the best is of rich Plum colour, while the reds fairly vie with florist's forms of *Primula sinensis*. These remind me of the double Primroses now so rarely seen. For some reason they die out in certain gardens, and on this point the late Mr. A. Perry once told me that there is nothing they like so much as a good piece of kitchen-garden ground. *R. Irwin Lynch, Torquay.*

Desfontainea spinosa (see p. 75).—I was very pleased to see a note on this plant, which deserves to be grown more extensively in this country. The writer of the article, in common with a host of other plant lovers, does not believe that the species can withstand cold winds and frost. This is a great mistake. The plant is grown extensively at Keswick in Cumberland, where it thrives well and flowers magnificently. This place, which is supposed to be the wettest town in England, also gets as much frost as any district. Yet the best specimen is in St. John's churchyard, which is about 200 feet above the lake and 550 feet above sea level. The shrub is planted in a westerly aspect and is exposed to the worst winds and storms. It is stunted in growth, but the wealth of bloom every year is magnificent. This specimen flowers much better than plants in sheltered positions. *R. R. Hayes, Ambleside, Westmorland.*

Horticultural Workers' Union (Late B.G.A.).—I believe it would be a good thing if gardeners joined the Horticultural Workers' Union (late B.G.A.) en masse. As Mr. Hartless suggests, the employers would then form an association of their own, and it would be possible to form a Whitley Council to settle wages and hours. Our profession is one of the oldest, but it is the

lowest paid. The medical profession have not forgotten to raise their charges. *F. G. Wade, late 1st Suffolk.*

Schizostylis coccinea.—The statement made on p. 143 that "the best method of planting" the Kaffir Lily "is in clumps" does not accord with my experience. Immeasurably superior to it, assuming that the finest spikes are desired, is that of singling the strongest plants and affording them correct treatment. Clumps invariably contain much weakly growth, which, incapable of flowering, preclude the full development of the larger plants, whose good flowering, as a consequence, also suffers. Planting this and kindred subjects in clumps is a method that should have been banished long ago, since the results accruing therefrom are usually of an indifferent character, with a meagre floral display. Clump-planting, too, is one of the drawbacks of having too much material at disposal—a plague of cheapness or abundance. A rare and choice variety is usually treated rationally, so grown, indeed, that full development of each plant raised is possible. Clump-planting, on the contrary, whether it concerns the subject of this note, a herbaceous *Phlox*, *Michaelmas Daisy*, *Pansy* or *Montbretia*, militates against complete success, and is no longer tolerated by those whose desire is to achieve the best results with everything they grow. The way to achieve the best flowering results with the Kaffir Lily has already been stated, and if gardeners would but apply the same method—that of singling the plants—to the weaker portions, a stock of flowering plants would soon be raised. Few plants are more valued for cutting in autumn; none more accommodating or amenable to the will of the cultivator. An outstanding cultural error in connection with it is, that of planting on warm, sunny borders, at the foot of plant-house walls and like places. In this connection it should be remembered that, as a permanent subject for the open, this South African plant is of practically little use to the majority of British gardeners. Hence the need for cultivating it on special lines. These, in conjunction with singling the plants, should include the planting in rich, cool, or even moist soils, conditions which the average gardener has not, so far, sufficiently recognised as all but essential to complete success. That the plant delights in such treatment there is no gainsaying, and, as the time is ripe for planting it out, the moment is also opportune for those who wish to depart from the orthodox ways and try the experiment. *E. H. Jenkins.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 5.—*Present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, A. Coningsby, J. Cypber, J. Evans, J. Howes, A. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, E. W. Thompson, J. Thrower, H. Arthur (secretary) and Mrs. Slingsby (visitor).

Awards.

FIRST CLASS CERTIFICATES.

Cattleya Lady Rowena var. *White Swan*, and *Dendrobium Sir Frederick Moore magnificum*, from S. GRATRIX, Esq.; *Cypripedium Memoria F. M. Ogilvie* var. *Bux* (*Pyramus* × *Curtmanii*), a Gold Medal was also awarded; and *Dendrobium Fendleyanum album*, from P. SMITH, Esq.; *Odontoda Red Cross Brackenburt* var., from Dr. CRAVEN MOORE; and *Dendrobium Austinii Bolholt* var., from Capt. W. HORRIDGE.

AWARDS OF MERIT.

Odontoplossum Parsifal, O. Gipsy Queen, *Dendrobium nobile Hercules*, D. Melpomene splendissimum, D. Lady Jellieor (Salteri × Rolfe), and *Lyasts Skinneri rubella superba*,

from S. GRATRIX, Esq.; *Odontioda Madeline Christabel*, from Mrs. SLINGSBY; *Cypripedium Seraphina* var. *Marcel* (Lord Ossulston seraphicum × Beckmannii), from the Rev. J. CROMBLEHOLME; *Cottleya Harrisoniana The Grange* var., from Messrs. A. J. KEELING AND SONS.

AWARDS OF APPRECIATION.

Odontioda Sir Douglas Haig (Odm. per-cultum × Oda. Cooksoniae), from S. GRATRIX, Esq.; and *Odontoglossum Pluto*, from Col. Sir JOHN RUTHERFORD, M.P.

CULTURAL CERTIFICATE.

To Mrs. SLINGSBY, for *Odontioda Madeline Christabel*.

GROUPS.

S. GRATRIX, Esq., Whalley Range (gr. Mr. J. Howes); Capt. W. HORRIDGE, Bury (gr. Mr. Coningsby); and Messrs. CYPHER AND SONS, Cheltenham, were each awarded a Silver Medal for groups.

MARCH 18.—*Present*: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, Fred Sandet, W. Shackleton, E. W. Thompson, and H. Arthur (secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Cattleya Cowanae alba, var. *Jeanette*, *C. Trianae alba* var. *Mary Regina*, *C. Lady Boucra The Bride*, *Laelio-Cattleya Beatrice West Point* var. (L. C. callistoglossa × C. Schrödera), and *Dendrobium Elwesii*, from S. GRATRIX, Esq.; *Odontoglossum Doris majesticum* (Ossulstonii × crispum) and *O. St. George* (eximium × Alexandrae), from P. SMITH, Esq.; *Cymbidium Cattianum superbum*, from the Rev. J. CROMBLEHOLME.

AWARDS OF MERIT.

Odontoglossum St. Peter (amabile × Rolfeae), *O. Armainvillierense* var. *Mary*, *O. crispum-Solon*, *O. crispum Bosauund*, *Laelio-Cattleya General Allenby* (E. C. Lucasiana × C. Fabia), and *Brasso-Laelio-Cattleya Lua* (B. C. Mary Beatrice × L. C. G. S. Ball), from S. GRATRIX, Esq.; *Cymbidium Alexandri amabile*, from the Rev. J. CROMBLEHOLME; and *Odontoglossum Memoria Nurse Cavell*, from Messrs. SANDERS.

AWARDS OF APPRECIATION (FIRST CLASS).

Odontioda Colinge var. *rubra* (Copation × crispum) and *Odontoglossum Laurentia Blacium* (Jasper × Olympia), from P. SMITH, Esq.

CULTURAL CERTIFICATES.

To Mr. J. HOWES, for *Cattleya Trianae alba* var. *Mary Regina*; to Mr. J. SANDWELL, for *Cypripedium Tom Worsley*.

GROUPS.

S. GRATRIX, Esq., Whalley Range (gr. Mr. J. Howes); T. WORSLEY, Esq., Haslingden (gr. Mr. J. Sandwell); and Messrs. CYPHER AND SONS, Cheltenham, were awarded Silver Medals for groups of Orchids.

SCOTTISH HORTICULTURAL

Miss Burton presided at the monthly meeting of this Society held on the 2nd ult.

It was unanimously agreed to rescind the resolution adopted at the annual business meeting to hold a flower, fruit, vegetable and Potato exhibition this year, and to abandon the holding of a show for this year.

Mr. David Armstrong, Kirknewton House-Gardens, Midlothian, read a paper entitled "In and Around the Garden."

Obituary.

Dr. P. Andrea Saccardo.—The death is announced of Dr. Saccardo, who was for so long associated with the Royal Botanical Gardens, Padua, the service of which he joined in 1866

as Assistant Director. He became Director in 1878 and held that post till the end of his official career. Although Dr. Saccardo's name is associated primarily with his systematic work on Fungi, it will also be remembered both for his work in the gardens of Padua and his historical writings on Italian botanists and their work.

Dr. C. Gordon Hewitt.—The death—from pneumonia following influenza—of Dr. Gordon Hewitt, at the early age of 35, is a severe loss to entomological science and to horticulture. Dr. Hewitt laid the foundations of a high reputation in this country when he conducted investigations into the habits of the house fly and also into the life history of the Large Larch Saw-fly, which was the cause of much damage among the Larch plantations of the Manchester Corporation at Thirlmere. Educated at the University of Manchester, he became the first lecturer in Economic Entomology at that University. In 1909 he was appointed Entomologist to the Dominion of Canada, and in his new and larger sphere added largely to his reputation as an enthusiastic and accurate investigator. With these characteristics he combined a sound judgment, which was displayed in all matters affecting legislation against dangerous insect pests. Dr. Hewitt enjoyed the respect and affection of a large circle of friends and colleagues, by whom his untimely death is deeply deplored.

ANSWERS TO CORRESPONDENTS.

ACETYLENE REFUSE: T. S. Spent carbide of calcium from the generator of an acetylene lamp or gas plant has a manurial value. It is, however, too powerful to apply immediately it is taken from the generator. It should be placed first in some vacant corner of the garden, and left until nearly dry; it can then be applied with advantage to vacant land in the autumn or spring, and dug into the ground.

BEANS UNSATISFACTORY: H. W. H. We can detect no evidence of organic disease in the plants, and since the seeds have been kept in the damp soil they have germinated and made healthy seedlings. The trouble is probably due to wrong cultural treatment. For instance, you may have kept the atmosphere too close and damp and the temperature of the house too low, which alone would be responsible for the failure of the plants. Beans should be forced in a brisk, warm atmosphere and the plants should be fully exposed to the light. A suitable place is a shelf near to the roof glass, but it would be necessary to water the plants with extra care and syringe them in fine weather in such a dry place.

BIG BUD MITE: W. J. D. Experiments carried out at Long Ashton suggest that a mixture consisting of 10 per cent soap and 5 per cent crude carbolic acid, will control Big Bud Mite on Black Currants, if used as a spray on three occasions, i.e., in December, January and February. Mr. G. M. Taylor (see p. 157, March 29, 1919), states that black soap and compound quassa extract are both fatal to the mite if sprayed on the infested bushes once a week from the middle or end of March (according to the mildness of the weather) until the first week in June.

BLUE HYDRANGEAS: O. M. Q. It is stated that sulphate of iron and alum in solution, applied to the roots, will cause Hydrangea flowers to develop a blue colour. Ammonia alum applied copiously twice a week, at a strength of ½ oz. in one gallon of water, is said to produce satisfactory results. The plants should not be grown in full exposure to sunshine, or the blue colour will be blotchy.

DIGGING: Smoker. The amount of land a man can dig in one day depends upon two things, i.e., the kind and condition of the soil, and the skill and physical fitness of the man. Given a free-working soil and suitable conditions of weather, a capable man may dig from 10 rods

to 12 rods per day, but if the soil is very heavy, 8 rods would constitute a good day's work. A skilled man should dig a quarter of an acre of land in from four to six days, according to circumstances.

ENKIANTHUS CAMPANULATUS: H. A note on this plant was published in *Gard. Chron.*, August 23, 1913, p. 132.

FERNS FROM SPORES: W. B. The propagation of the common kinds of exotic ferns from spores presents no great difficulty. A warm house is essential, such as a stove or close pit, but a moist atmosphere is as essential as warmth. The spores should be sown on the surface of carefully-levelled, sterilised soil, in pans or pots; the soil should be moist when sowing is done and the pans should be at once covered with sheets of glass and shaded with paper. Germination is frequently rapid, and at first the soil is covered with the green prothallia, on which later the tiny, primary fronds appear. Soon after the latter stage is reached the sporplings should be pricked off into pans of soil, to be subsequently potted in small pots.

GARDENING ENCYCLOPAEDIA: O. M. Q. The most important horticultural encyclopaedias, including Nicholson's *Dictionary of Gardening*, are out of print. The new *American Standard Cyclopaedia of Horticulture*, in six volumes, published by Macmillan, is a reliable and exhaustive work on horticulture, but the cultural matter is written from the American growers' point of view. The new edition of *Johnson's Gardener's Dictionary*, published by Routledge, might be suitable for your purpose.

MEDICINAL HERBS: W. W. Write to Mrs. Grieve, School of Medicinal Herb Growing, Chalfont St. Peters, Buckinghamshire.

NAMES OF PLANTS: F. V. H. The White Heath is *Erica arborea*, and the pink one *E. mediterranea hybrida*. Both these plants are propagated by layering. The other plant is *Prunus Davidiana* var. *alba*.—*Hafolanus*. (1) *Rhododendron Thomsonii*, very near the type, but paler in colour; (2) *R. fulgens*; (3) *R. Campbelliae*; (4) *R. campanulatum* var. *Wallichii*; (5) *R. campanulatum*; (6 and 7) *R. arboreum* × *campanulatum*. These two are interesting, showing great diversity of foliage, but very near in colour and shape of flowers.—*Vin*. A Dog's Tooth Violet: species not recognised, but probably *Erythronium Dens Canis*.—*Reader*. *Sequoia sempervirens*.—*H. T.* *Brunfelsia pauciflora*.—*W. M.* The long leaf is *Caricula recurvata*: the blue flower is *Brunfelsia pauciflora*.—*B. and. W.* *Pernettya mucronata*.—*G. B.* 1, *Rhododendron dauricum* var. *atrovirens*; 2, *Leucothoe Catesbaei*; 3, *Prunus cerasifera* var.—*G. C.* *Saxifraga oppositifolia*.

PEACH LEAVES DROPPING: W. W. The margins of the leaves are shrivelled and the tissue at that part dead, pointing to some check to the tree, caused, most probably, by improper watering of the roots, which may have received either an excess or insufficiency of moisture.

TOMATO PLANTS: J. H. C. The disease is known as damping off, and is caused by a fungus. The plants have been kept too damp and in a close atmosphere. Stand the seed-pan on a dry shelf near the roof-glass.

TRICHOBAENA AND TELLIMA: T. J. H. *Trichobena* is a genus of Gramineae, or grass family, and is now included in *Panicum*. Several species are in cultivation. *Tellima* belongs to the Saxifragaceae. The only species in cultivation is *T. grandiflora*, a handsome perennial, with palmately-lobed leaves and bearing greenish flowers in April.

Communications Received.—R. C. H.—W. J. T.—E. S.—S.—W. M.—C. H.—S. C.—S. C. T.—M. B.—A. S.—H. H. M.—S. L.—A. B.—R. W. T.—C. T.—J. H.

THE
Gardeners' Chronicle

No. 1737.—SATURDAY, APRIL 10, 1920.

CONTENTS.

Acacia dealbata .. 185	Obituary—	
Ammonia, effect of, on .. 176	Barthlt, Edmund .. 186	
Apple Altrivorn .. 186	Downie, Mrs. .. 186	
Beans, runner .. 182	Peters, Augustin .. 186	
Books, notices of—	André .. 186	
Fossil Plants .. 177	Onion Fly maggot .. 185	
Calceolarias, heriaceous .. 181	Orchid notes and gleanings—	
Celsias for the flower border .. 179	Cymbidium Diana var. concolor .. 183	
Chrysanthemums, choice, in France .. 176	Cynorchis .. 183	
Chrysanthemum, Japanese, the future of the .. 185	Odontocidium Epiphorum .. 183	
Cultural memoranda—	Pleione Pricei .. 183	
Propagation by cuttings .. 177	Spathoglottis .. 183	
Easter holidays, the .. 176	Pavonia Delavayii .. 185	
Egypt, Cotton cultivation in .. 176	Peaches, disbudding and thinning .. 182	
"Gardeners' Chronicle" seventy-five years ago .. 176	Potato spraying .. 182	
Iris, hybridising bearded .. 181	Potato crops and leaf curl of Potatoes .. 176	
Larch canker .. 175	Plants, new or noteworthy—	
L'Horticulture Française .. 176	Chomatis Pavoniana .. 177	
Lilies in 1919 .. 180	Speed limit in the Royal parks .. 176	
Linarias .. 184	Sugar Beet industry in England .. 176	
Mistletoe, hosts of the National Union of Horticultural Workers .. 185	Trade notes .. 186	
	Trees and shrubs—	
	Birch, the .. 183	
	Camellia reticulata .. 183	
	Loropetalum chinense .. 183	
	Tulips of Florence, the .. 181	
	Week's work, the .. 178, 179	

ILLUSTRATIONS.

Celsia erecta .. 179
Chomatis Pavoniana .. 177
Lily, a new Chinese (Farmer's No. 316) .. 180A
Peach shoot disbudded .. 182
Peters, Augustin André .. 186
Pleione Pricei .. 183

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.17°

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, April 7, 1920, 10 a.m.: Bar, 29.75, temp. 57°. Weather—Bright.

Larch Canker.

For nearly one hundred years after its introduction into this country, the Common Larch was planted generally only as an ornamental tree, and it was not until 1730 that, owing to the enterprise of successive Dukes of Atholl, it was planted extensively for timber production. As its qualities became better known, the Larch was more and more planted, and it became one of the chief hopes of British forestry. But in course of time its one frailty—susceptibility to disease—became more and more apparent until, at the present time, it looks as though the experience of German foresters would be confirmed and the Larch would cease to be planted generally except in company with other trees. Of the diseases to which the Larch is subject, Larch Canker is perhaps the most serious, although the various heart-rots which attack this tree also do severe damage. So long ago as 1850 the Rev. M. J. Berkeley published in these pages his discovery and diagnosis of Larch Canker, and his description deserves to be read to-day as a model of penetrating and accurate diagnosis. Continental writers—Willkomm, 1867; Hertig, 1880; and others, have made further contributions to our knowledge of Larch Canker, and have demonstrated that, as Berkeley stated, the Canker is due to a fungus, and they have named it *Dasycephala calycina*, in lieu of Berkeley's name of *Peziza calycina*. They have also shown that it is probably a wound parasite, and yet, in spite of the attention which it has received at the hands of practical foresters and mycologists, the fungus is

now so widely spread that there is scarcely a plantation which is free from it.

In these distressing and ominous circumstances Mr. Hiley has devoted himself during the past few years to a comprehensive investigation of Canker and other fungous diseases of the Larch with the object of discovering means of, at all events, mitigating the evils wrought by them. The results of his researches are now published in book form* and there is no one who is at pains to read what is in fact a masterly presentation of a most difficult subject but will congratulate Mr. Hiley and the Oxford School of Forestry on the excellence of the work. It is clearly and simply written, direct, without dogmatism, and the subject is treated in so philosophical a spirit as to make this book an introduction to the study of fungous diseases, which we can commend wholeheartedly to every gardener and fruit-grower as well as to foresters in general. Since Larch Canker is not one of those diseases which a tree must "take" if the pathogenic agent is present, but rather a disease which depends for its success on the external environment, and consequently on the state of health and vigour of the tree, Mr. Hiley has found himself obliged to pay special attention to the predisposing conditions and to the phases of the grim struggle which goes on between the Canker and the tree which it attacks: for in the investigation of these conditions and of that struggle lies the best hope of discovering methods of growing Larch in plantations which will favour the tree in its struggle against the Canker-fungus.

In pursuit of this enquiry Mr. Hiley has reached the conclusion that one of the most general modes of entrance of the fungus is through the dead lateral branches. In support of this view—which has been put forward independently by Mr. A. C. Forbes (see *Gardeners' Chronicle*, Nov. 15, 1902, and Feb. 13, 1915) and by Mr. P. V. Laidlaw—the author points out that Canker may often be found at the part of the trunk corresponding to the insertion of a branch. Furthermore, as the age of Cankers testifies, they occur oftenest when the tree is from two to eight years old, and it is between these years that the small branches at the base of the trunk naturally die.

The mode of entrance of the fungus is interesting. Having obtained access to the dead branches, *Dasycephala calycina* is able to excrete a poison which kills the tissues in its neighbourhood: into those tissues it is then free to enter. The tree responds to the menace by putting on a defensive armour of cork. If the corky sheath is completed in time the parasite is cut off from the deeper and more vital tissues—as a pearl is cut off from the oyster—but if not then the fungus gradually penetrates into the bast and cambium. Once there, it proceeds by the method of poisoning previous to invasion, and, as a consequence, the cambium not yet invaded is unable to develop normal wood and that, of course, which is invaded is destroyed and able to develop no wood at all. Since, moreover, the activity of the fungus is greatest between one season's growth and the next and since the unaffected cambium makes more wood than in an affected tree, three results follow: (1) that a flat concave depression is found on the destroyed side—this is a Canker; (2) the successive wood layers at the edge of the Canker tend to overlap or underlap one another; (3) the hole of the tree often takes

on a bulge at the level of a Canker and in the side opposite thereto.

On Mr. Hiley's theory it should be possible, as the author points out, to check the formation of Cankers by removing the lower branches of trees before they die. Since it is part of the theory that the fungus must gain access to the dead before it is able to attack the quick tissues, it follows that if branches are cut off near the trunk, clean wounds will not be a source of danger, and this fact appears to be borne out by experience in Bagley Wood, where Larches grow as nurses to Decidars, and where the side branches of the Larches were pruned the trees failed to contract Canker.

In view of the devastation caused by the disease, it is difficult to believe that the cost of cutting off side branches would not be more than met by the increased value of the timber, but although that be the most important point for the practical forester, it need not be considered here.

There remain, however, to be taken into account the conditions under which Larch is planted: for an unfavourable condition by reducing the vigour of the tree may check its power of walling itself in by corky layers and hence lay it open to attack by the disease.

Planted in relatively low ground, the Larch, which breaks into leaf early, may be more liable to checks from spring frosts than is the case when it grows in a more Alpine situation. Nevertheless, as the author points out, Larch is by no means free from Canker in its native habitat, and he records cases at 5,000 feet in the South Tyrol where Canker is common.

Soil conditions are perhaps even more important, for Larch is remarkable in its rapid growth. In youth it is a surface rooter and in maturity a deep-rooted tree. Hence poorly aerated ground will check its early growth, and ground uncultivated to a sufficient depth will be unfavourable to its maturer years.

The frequently greater success of Larch in mixed woods is, as Forbes has observed, probably due to the soil preparation affected by deep-rooting companions of the Larch.

In gardening parlance we may declare that if Larch can be kept growing without a check it will grow away from disease, but—and there is the rub—it is apparently impossible to tell in advance whether a soil will or will not suit Larch, although it is stated that a soil that will grow Birch will grow Larch.

It is interesting to note that the resistance of Japanese Larch to Canker does not appear to be due to an actual immunity such as that possessed by certain varieties of Potato to Wart Disease, and it is also interesting to learn by inference, from the book how little appears to be the amount of investigation which has been made into the varietal peculiarities of Larch. It is possibly in this latter direction that the means of combating the disease may be found, although in that case the outlook for owners of Larch plantations is not very bright. We trust that this record of investigation will not mark the end of Mr. Hiley's search for preventive measures calculated to aid the Larch in resisting disease. It is an admirable beginning and doubtless the Forestry Commission will see to it that means are provided for the continuation of these investigations until a complete solution of the problem is reached.

Change in the Price of the Gardeners' Chronicle.—The change in price of the *Gard. Chron.*, from 4d. to 6d., as announced in preceding issues, commences with the present number. As already pointed out, the change

* *The Fungal Diseases of the Common Larch*, by W. E. Hiley, M.A. School of Forestry, Oxford Clarendon Press. Price 2s. 6d. net.

is entirely due to the greatly enhanced costs of production, and particularly of paper and printing.

Lecture on Narcissus Disease.—A lecture entitled "Further Investigations in Narcissus Disease" will be delivered by Mr. J. K. Ramsbottom on the evening of the 13th inst. in the lecture room of the Royal Horticultural Society's Hall, Vincent Square, Westminster. At the R.H.S. fortnightly meeting held on the same day a competitive Daffodil show will be held. The lecture will be preceded by a dinner under the auspices of the Horticultural Club to which non-members are invited. The dinner will commence at 6.30 p.m. and the lecture, which will be illustrated by lantern slides, will be given at 7.45 p.m. Those wishing to be present at the dinner, the cost of which is 7s. 6d., are requested to communicate with Mr. G. F. Tinley, Hon. Secretary of the Horticultural Club, 41, Wellington Street, Strand, W.C.2.

Honours for Horticulturists.—Botanists and horticulturists alike will be delighted to learn that Prof. Isaac Bayley Balfour, Professor of Botany, University of Edinburgh, and Regius Keeper of the Royal Botanic Gardens, Edinburgh, has received the honour of a Knight Commander of the Order of the British Empire. A similar honour has been granted to W. W. Berry, Esq., a member of the Agricultural Advisory Council; S. F. Harmer, Esq., F.R.S., Director of the Natural History Department of the British Museum; and Lawrence Weaver, Esq., Commercial Secretary to the Board of Agriculture. The honour of C.B.E. has been granted to R. E. Robbins, Esq., J.P., a well-known market gardener in Middlesex and a prominent member of the Agricultural Wages Board. The honour of Officer of the Order of the British Empire has been conferred upon Major H. C. Corlette, Food Production Department, Ministry of Agriculture; W. G. Lohjot, Esq., Vice-president of the Chamber of Horticulture, a clever market gardener at Hounslow, who has undertaken special work in connection with War Pensions; and Lieut. de Barri Crawshaw, Sevenoaks, who acted as Red Cross Transport Officer during the war.

Value of Wild White Clover for Pastures.—Wild White Clover is indigenous on grass lands throughout this country, being found on the best fattening pastures and frequently on quite poor types of grass land. If present on a field, even in minute quantities, it responds freely to basic slag and rapidly increases in amount under the influence of this manure. The great value of wild White Clover in the formation of pastures is due largely to the rapidity with which it forms a sward, and thus keeps down weeds; to its beneficial effect on the grasses associated with it; and on the fertility of the land for subsequent arable crops when the turf is broken and the residues are ploughed in. Seed of wild White Clover should be included in all mixtures for leys of three or more years' duration; it hastens the development of a close base, encourages Rough-stalked Meadow Grass—a nutritious plant which remains green throughout the winter—keeps down weeds, and makes for fertility. The results of experiments reported from the North Wales University College show that wild White Clover is superior to White Dutch Clover.

Speed Limit in the Royal Parks.—In reply to a question in the House of Commons, Sir A. Mould, the First Commissioner of Works, said that the speed limit of 12 miles per hour for vehicles was imposed in 1910. The desirability of abolishing it had been carefully considered, and the regulation has been withdrawn. The ordinary speed restrictions now applied and would be strictly enforced in all the Royal Parks.

Potato Crops and Leaf Curl of Potatoes.—Although from ten to fourteen tons of Potatoes per acre is no uncommon crop in various parts of the country, the average return is only six. To some extent this wide variation is due to climatic and manurial influences, but in many cases light crops are due to the use of inferior seed. It is only natural that such seed should grow slowly and develop spindly sprouts and dwarf plants. For the grower who makes use

of obviously diseased and blemished seed there is no excuse, but it is unfortunately impossible to detect seed affected by the malady known as "Potato Leaf Curl," one of the "deterioration" Potato diseases, which can seriously reduce the crop. This complaint is more common in the drier and warmer parts of the country and is specially prevalent where mature seed, obtained from fully ripened plants, is used. As the malady is hereditary, it is of the utmost importance to avoid sowing seed from dwarfed plants, or even from healthy-looking plants in plots or fields in which the Potato leaf curl is common. Where immature Potatoes are used for seed each year, the trouble is practically never seen. Growers will find that the planting of good seed Potatoes, obtained from the more northerly parts of the country, will constitute the best insurance against the occurrence of Leaf Curl in their crops. This subject is fully dealt with in the Ministry of Agriculture's leaflet, No. 164.

L'Horticulture Francaise.—This excellent French trade journal, after a period of inaction due to war troubles, has been revived. We have received an issue for each of the months January, February and March, 1920. British nurserymen interested in continental horticulture and commerce will find our contemporary full of information, well edited and conducted.

Effect of Ammonia on Wireworms.—Certain observations at the Rothamsted Experimental Station have shown that ammonia (not sulphate of ammonia, but the base itself), is distinctly harmful to wireworms. This substance is produced in soils where liquid manure is applied and where sheep are folded on the land. It may be pointed out that there is no evidence that ammonia is liberated from organic manures in sufficient quantity at any one time to injure wireworms, and in no case is the material as unstable as urea, which is present in the excrements of sheep and in liquid manure.

Choice Chrysanthemums in France.—In the current number of *Le Chrysanthème* we see that the Paris Chrysanthemum Committee has made a special recommendation of these Chrysanthemums which have been most appreciated in the last season's exhibits, or have been a success amongst the French growers. They are Mrs. Gilbert Drabble, Mrs. R. C. Pulling, Capt. Fox, Mrs. J. Gibson, Undaunted, and Queen Mary. We may well enquire where are the French novelties? Evidently M. Ph. Rivoire's recent lament was well founded. We notice, also, in the same issue, that M. Reiser is compiling a Catalogue of all new Chrysanthemums put into commerce between 1914 and 1920. The Official Catalogue of the French Chrysanthemum Society is something like that of its English prototype—somewhat out of date. The membership of the French Society seems to be improving gradually; it now numbers 664.

Cotton Cultivation in Egypt.—Apparently the irrigated area in Egypt does not suffice for the increased production of Cotton required to meet the present great demand, consequently there is a tendency on the part of certain growers to destroy their cereal crops in order to plant Cotton and so obtain a share of the current prices, which are almost tenfold those obtaining in 1914. Needless to say, owing to the need of increased food production, strong measures are being taken to frustrate these attempts.

The Easter Holidays.—The keen appreciation by the public of parks and open spaces under municipal or Government control is always strongly evidenced at Easter and other public holidays. This Easter, despite the fact that the sky was clouded and showers threatened at any moment, such places as Kew Gardens, Hampton Court, Epping Forest and Hampstead Heath were visited by enormous numbers of people. Hyde Park, Battersea Park and other parks of the metropolis were filled with happy holiday folk, and in this precious season there were plenty of early flowers for them to enjoy, whilst few could remember the trees and shrubs being so far advanced in growth at a similarly early date. The development of public parks and gardens is a sign of the times, and it is recognised that they provide one of the finest amenities to any large town. It is to be hoped that the many

public places of this nature still occupied by the military will speedily be handed back for their legitimate purposes, as, apart from the incongruous appearance of the temporary buildings, the space occupied by them is considerable, preventing the people from enjoying the parks to the full, whilst hindering the park authorities in their work. The countryside was very beautiful during Easter, as it always is in early spring, and the easy facilities for road travelling by bicycle and motorcar tempted many thousands of city workers to visit unfrequented lanes and by-ways, where they could enjoy the beauties of Nature far from the madding crowd. The outskirts of towns and villages were alive with busy workers on gardens and allotments, and it seems as though the habit of gardening, learned by many for the first time in the strenuous years of war, will long continue as a peace hobby, for there seems very little slackening of interest in allotment gardening generally. The time seems opportune to strengthen the existing legislation regarding allotments. In many places the present Act regarding permanent allotments is unworkable, partly because of apathetic councils, or of the high cost of purchase or lease, or of a fear of stopping the development of land for building purposes.

Hampton Court Vine.—Those who wish to see the famous Great Vine at Hampton Court must in future pay a fee of one penny. This is not altogether an innovation, but in a measure a return to a former state of affairs, for some time up to 1832, during the reign of Queen Victoria, a similar charge was made, though in this case the proceeds went to the keeper of the Priory Gardens.

Allotments at Merton, Surrey.—All the available portion of the Whatley Estate has now been laid out as allotments and "over-subscribed" for. The demand was so great that it was considered necessary to sub-divide a number of original ten-rod plots, so as to satisfy as large a number of applicants as possible. It has been decided to charge a rent of eighteen-pence per rod for the first twelve months, but this does not include the provision of a water supply. The fortunate applicants will be given possession of their plots almost immediately, so that they may raise summer crops of vegetables this year.

Chamber of Horticulture.—The offices of the Chamber of Horticulture have been removed from 11, Adam St., Adelphi, W.C.2, and are now situate at 18, Bedford Square, W.C.1, where all future communications should be addressed. Telephone number and telegraphic address will be advised later.

"The Gardeners' Chronicle" Seventy-Five Years Ago: Cheaper Glass. It has been the misfortune of the glass manufacturers to have had a very injudicious advocate in Mr. Spooner, and to his ill-advised speech last Monday in the House of Commons on the import duties, the alarm that has sprung up is, we think, to be traced. The honourable member for Birmingham begged the House not to diminish the import duties on glass for one year. "He was satisfied"—we quote from the *Times*—"that the right honourable gentleman was giving a great boon to the manufacturers and to the public; but by acting precipitately they would destroy that boon, and introduce a large quantity of bad glass at a very low price." So that, according to Mr. Spooner, the object of the repeal of the glass duties is, in the first instance, to benefit the manufacturer, and after that to do something for the public. But then he would not let that something be in the form of very low price glass for fear it should be of bad quality; from which it would seem that the advantage Mr. Spooner would permit us to enjoy is that of buying glass of excellent quality at a high price. But we cannot believe these are the sentiments of the glass manufacturers. On the contrary, we have some reason to believe that the tariff of prices agreed to by them after the important decision of the House of Commons that the amount of import duty should be immediately reduced to 1½d. per lb. on window glass, will be a fair one. *Gard. Chron., April 12, 1845.*

CULTURAL MEMORANDA.

PROPAGATION BY CUTTINGS.

MR. IRWIN LYNCH has added further interest to the subject of propagation by his note on p. 143, while affording a valuable hint by his reference to the influence of restricted growth in the case of certain plants. Mr. Lynch rightly states, too, that these and like points must be known to nursery propagators, though they do not get into print. One of the most successful of such men that I have ever known was Mr. T. Brown, who fifty years ago was indoor foreman to Robert Parker at Tooting. Doubtless Mr. Lynch knew him well. He was of the old school of propagators, and, living at a time when New Holland and other hard-wooded plants were popular greenhouse subjects, had problems to solve that do not arise in modern plant propagation. Brown was particularly successful with *Ipomoea Horsfalliae*, and it will interest Mr. Lynch to know that the stock plants from which cuttings were taken were grown on the restricted plan. That is to say, the plants were grown in pots of 12 inches diameter, standing on the greenhouse stage, the growths trained along the putlin near the glass. Here, in conjunction with a moderately low temperature, meagre growth resulted; yet it was always to these plants that Brown resorted for his cuttings, while ignoring those developed on the planted-out specimens in a warmer structure. But the cool, hardly-grown cuttings of restricted growth were always taken to the warmer house to be rooted, and the measure of success certainly justified the means adopted. *Dipladenias* were treated on similar lines, and in fact the system was applied to a variety of subjects.

Most gardeners realise how futile it is to use, for propagating purposes, cuttings of gross or unusually vigorous growth. In all probability employing the internodal cutting will solve not a few problems in the case of the more difficult subjects and prove a time-saving method also.

Among hardy plants, too, there are certain subjects which cannot be rooted in any haphazard sort of way. For example, I have known a whole frameful of heel cuttings, the product of the flowering stems of *Lycnis vespertina* fl. pl. to be inserted and accorded cold-frame treatment without one of them rooting, while every basal cutting stripped off by the heel in spring and inserted without further trouble will root in a month, rather less if placed in a dung frame with slight warmth. No hardy plant—save *Onosma* probably—gave the propagator more trouble than this *Lycnis*, and it must be approximately 30 years since the late Rev. Woolley Dod thanked me, on behalf of hardy plant growers, for divulging the "secret" in *Gard. Chron.*

In these pages, too, I gave, several years ago, the particulars of how to increase the *Onosmas* from cuttings—most desirable rock garden subjects, the propagation of which had baffled almost everybody. The "secret" again was the heel cutting, which, as I told the Wisley students in an address on New Year's Day last, is the key to solving the problem of propagating all herbaceous and alpine plants having hollow stems.

Probably very few growers have rooted cuttings of *Orphalodes Luciliae*. I rooted my first batch of the plant in the spring of 1875, every shoot striking, heel cuttings being employed. For such things the "heel" is essential; for many others it is most helpful. An experience with *Euphorbia Myrsinites* may be interesting. Top-growth cuttings callused, grew and remained healthy for upwards of a year, but never rooted, while three-inch long basal cuttings taken with a heel rooted in less than a month when planted beside them a year later in the same frame. In like manner heel cuttings of the tropical *E. jacquinaeflora* are infinitely superior and quicker rooting than those of any other type, practically 100 per cent. of the former striking. Formerly I rooted the plant by the hundreds, and in every instance only heel cuttings were employed. *E. H. Jenkins.*

NEW OR NOTEWORTHY PLANTS.

CLEMATIS PAVOLINIANA.

THE plant shown in the accompanying illustration (Fig. 75) gained an Award of Merit at the Royal Horticultural Society's meeting on Tuesday, March 23, as *C. Meyeniana*. It has been variously considered to be a variety of *C. Meyeniana* Walp. or a distinct species under the name of *C. Pavoliniana*. True *Clematis Meyeniana** was first described in 1843 from specimens gathered by Meyen, on the north-west coast of Lantau Island, near Hong-Kong. Although specimens from many other and far distant parts of China were subsequently added, which apparently extended the distribution of the species.



FIG. 75.—CLEMATIS PAVOLINIANA.
R.H.S. Award of Merit, March 23, 1920,
as *C. Meyeniana* (see p. 160).

it is probable that the typical form of it does not occur further north than the extreme south of Yunnan. A northern representative of *C. Meyeniana* is *C. Pavoliniana*, Pampanini, which is found in a broad belt of China from Szechuan to Chekiang and Fokien. True *C. Meyeniana* was figured in 1905 in the *Bot. Mag.*, t. 7897, its chief characteristics being its large panicle or thyrse of numerous flowers, with the sepals about as long as the stamens. *C. Pavoliniana*, on the other hand, has few-flowered inflorescences, often only three, and rarely more than seven flowers to each, whilst the sepals are distinctly longer than the stamens. A figure of this species appeared in the *Bot. Mag.* in April 1916, t. 8655. *J. H.*

* See *Kew Bulletin*, 1916, p. 41

NOTICES OF BOOKS.

Conifers and their Earliest History.

MANY volumes dealing with the living Conifers have been published, but in Professor Seward's *Fossil Plants*, Vol. IV,* for the first time we get anything approaching a full record of the known groups and their complete history.

The modern botanist and the gardener may be surprised to discover how comparatively few of the total of over 500 pages of text are allotted to the forms still alive. The greater part of the Gymnosperms are extinct, and thus fossils which range in age from the Upper Devonian to the Tertiary bulk largely in this history.

Although the ancient history of the group may add nothing to the gardener's knowledge of how to keep alive his rare and sensitive Conifers, it should add greatly to the interest with which he views them. Often the gardener is to-day consciously repeating what nature was doing some millions of years ago. For instance, such genera with restricted areas in which they are native, as *Ginkgo*, *Cryptomeria* and *Sequoia* (the first two with only one species each, the third with but two) are to-day planted and cared for, and thus acclimatised in this country, although they come respectively from the Far East and from North America. But in the Tertiary epochs and in the Cretaceous (however wide the margin one allows for the uncertainty of geological age, this cannot be less than four or five million years ago), these genera grew as native and uncultivated forest trees in the area which is now Great Britain.

Such facts as these may well give rise to interesting speculations as to the reasons for the extinction and transmigration of genera from one continent to another, and which permit a species or genus of once almost world-wide distribution to shrink until it is native only in a small and restricted area, until, as in the present day, man interferes with Nature's unaided arrangement of life and widely rehabilitates a group which had almost lost its hold on this earth.

Professor Seward's book is planned primarily for the scientific student, and illustrates the internal anatomy and microscopic structure both of the modern plants and of those parts of the fossil representatives which are available; but throughout the book, illustrating the recent forms, are photographs of parts of the plant or of interesting groups of growing individuals which should appeal to lovers of existing trees.

For those of a controversial bent of mind, the discussion over the origin of the Abietineae should afford a very interesting opportunity for debate. The evidence given in this book by Professor Seward is sufficient to convert anyone with an open mind to the original and well-established views that the Abietineae have arisen more recently than the Araucarineae.

Professor Seward (p. 162) says: "The determination of fossil Conifers is one of the most difficult tasks of the Palaeobotanist." As he then most interestingly demonstrates, this is largely due to the way in which the small leaved Conifers externally resemble each other, although belonging to widely different genera; while sometimes even Angiosperms simulate Coniferous twigs. An entertaining exercise might well be devised for those who handle the living plants to show how deceptively the different genera simulate each other when only a small portion of foliage twig is available as evidence. The need for a minute knowledge of the internal anatomy of the groups then becomes apparent, and in this book such data are for the first time made readily available, and we get a comprehensive view of the entire group of Conifers from the date of their origin in the very remote past up to the present day.

We can heartily recommend this volume to the attention of those who take a serious interest in plant history in general and Conifers in particular.

* *Fossil Plants: A Text-Book for Students of Botany and Geology*, by A. C. Seward, Volume IV. *Ginkgoales, Coniferales, Gnetales*; with 190 illustrations. Cambridge University Press, 1919. Demy 8vo. Pp. xvi, 541. Price £1.8s. net.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Thinning the Fruits.—This operation has an important bearing on the size and colour of the fruits; when colour is imperfect the quality is generally second-rate. Overcropping in the case of such fruits as Grapes, Peaches, Melons and Figs results in small, flavourless fruits deficient in colour, whilst it is the most frequent cause of the dropping of Peaches at stoning time and after. Bad culture is in some cases the reason why forced Fig trees cast their fruits, but overcropping is more often the cause. The fruits enumerated above all need to be thinned judiciously, and moderate cropping will also preserve the health and vigour of the trees. Postponement of the work will result in a waste of the tree's energies, but, on the other hand, very light cropping is equally bad in the case of vigorous trees. Those with long experience know the value of early and careful thinning; it is the young beginner who is afraid to sacrifice some of the crop.

Cucumbers.—The spring-sown plants will soon be in full bearing, and they require attention every other day in pinching, and tying the shoots and thinning the fruits. Nothing is more injurious to the crop than to neglect to regulate and thin the young shoots and remove all crooked and other surplus fruits as this becomes necessary. More moisture and frequent light top-dressings of rich, warm compost will be necessary for the roots as the days lengthen and the sun increases in power. As the weather improves, pits or frames intended for Cucumbers should be cleansed and made ready for the reception of the plants. In the meantime, sow fresh seeds in small pots to have young plants in readiness when required.

Strawberries.—As soon as the berries have been picked, select clean, healthy plants and remove them to a cool house or other place of shelter. If this is done and careful attention is given to watering the roots until such time as the plants get hardened, they may be planted out to fruit next season. Attend to the thinning of the berries and feeding of the roots of successful plants. Support the trusses of fruits to prevent them becoming injured and keep them clear of manure water. Pay regular attention to watering, especially on bright days with drying winds, or the plants will soon suffer. Keep a sharp watch for green fly on the latest plants set out in frames, as aphides soon injure the fruits.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq., Castleford, Chepstow.

Dendrobium.—The spring-flowering Dendrobiums include *D. nobile*, *D. Wardianum*, *D. aureum* and a host of useful hybrids; at this season many have finished flowering, and are in a fit condition for repotting or top-dressing. In many establishments a house or division is set apart for Dendrobiums, and, where a general collection of Orchids is grown, the practice is to be recommended, for *Schomburgkia*, *Catasetum*, *Mormodes*, *Thunia*, and *Cycloches* will succeed in the same structure. If such quarters are not available the plants may be placed in a warm house or ordinary plant stove during their period of active growth.

Repotting Dendrobiums.—The work of repotting or top-dressing Dendrobiums may be done when the new growths are two or three inches long, and roots appear at their bases. It will be noticed that all the plants will not be ready for fresh soil at the same time, therefore it is advisable to make an examination weekly until the whole batch has received attention. Strong, healthy examples may be repotted without disturbance at the roots, breaking the pot or pan if necessary, and providing another recep-

table two sizes larger. Other plants, particularly those with a large number of back pseudo-bulbs and showing signs of deterioration will need more attention. In all probability the soil will be in a sour, exhausted condition, and the roots decayed. Such plants should be turned out of their pots, the soil removed, dead roots cut away, and the number of back pseudo-bulbs reduced to two or three behind each growing point. As a rule, a much smaller pot will accommodate these plants. If it is decided to grow these Orchids on the stage, ordinary flower-pots prove the most useful receptacles, but for suspending from the roof rafters, pans should be chosen and a wire handle fixed before the plants are placed therein. Both the pots and pans should be clean and half-filled with broken potsherds for drainage.

Compost for Dendrobiums.—The rooting medium should consist of *Osmunda* or A1 fibre and chopped Sphagnum moss in equal parts; cut the fibre into moderately fine portions, and remove the dust by means of a coarse sieve. Add a generous sprinkling of finely crushed crocks. In repotting make the soil firm, and arrange it on a level with the rim of the pot. See that the pseudo-bulbs are secure in the pan, and, if necessary, tie them to the wires of the pans, or to neat, thin stakes. A few plants will probably not need repotting for another year, while a top dressing will suffice for others. The latter is a practice that I do not recommend on a large scale, but there are a few instances where it is beneficial, especially for those Orchids that do not recover quickly after being disturbed at the roots.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenloe Castle, near Cardiff.

Asparagus.—Asparagus should be planted on raised beds that have been previously prepared. For preference, select one-year-old crowns, as these take more kindly to replanting than those that are older. Remove three inches of the surface soil to the sides of the bed, and, in positions eighteen inches apart in the rows (which also should be eighteen inches apart) place small mounds of soil, in which the roots are to be placed. Spread out the roots and cover them with soil as the work proceeds, to prevent them becoming dry through exposure to the air. As soon as the plants are in position, replace the top soil, covering the crowns to a depth of three inches. If it is intended to raise the plants from seeds, place a few seeds in a clump, the same distance apart, as recommended for the plants. Thin the seedlings to a single plant at each station when they have grown six inches high. The established Asparagus beds should be raked over and the spaces between the plants lightly forked. Dressing the bed with salt should be deferred until later, as this has a tendency to make the ground cold and thus retard growth.

Celery.—Another sowing of Celery for late supplies should be made in pans and the seed germinated in a temperature of 50°. Earlier plants that have been pricked off should be removed to a cool position. Celery trenches should be prepared in readiness for planting, and a thorough dressing of rotten manure incorporated in the bottom. The excavated soil should be broken up during the operation, and the ridges cropped with early and successional Lettuces.

Seed Sowing.—Sow seed of Cauliflowers, early Broccoli, Kales, Savoys, Brussel Sprouts and Leeks to provide plants for the main planting. Make the seed-bed on a well manured border, in an open position, and rake the surface soil to a fine tilth. Sow the seed thinly in shallow drills made 15 inches apart, a distance which will permit of hoeing and weeding. Protection from birds is usually necessary, and is best provided by the use of nets spread over a light framework erected a short distance above the bed.

Peas.—Continue to plant out Peas that were forwarded under glass, and sow varieties for successional cropping. These and future sowings should be grown in deeply-worked ground, so that they may be able to withstand periods of drought which may occur in summer.

PLANTS UNDER GLASS.

By JOHN COITTS, Foreman, Royal Botanic Gardens, Kew.

Veronica Hulkeana.—This, the most beautiful of the shrubby Veronicas, is hardy in the West when planted against a wall; in other parts of the country it requires the shelter of a cool house, where it makes a very graceful and beautiful subject when well grown. It is easily propagated at this season by means of cuttings, and, if given perfectly cool treatment, its cultivation presents no difficulty during the first year. Large specimens often give trouble, for when obviously healthy, they die suddenly without any apparent cause. This is not due to pot culture as large plants go off in the same way when growing in the open.

Buddleia asiatica and B. officinalis.—Both these plants may be rooted from cuttings inserted during March or early April. Both species are very fragrant, winter-flowering subjects, the latter having honey-scented, heliotrope-coloured flowers. *B. asiatica* is the more desirable and more useful plant of the two; its greyish foliage, elegant habit, and long, slender sprays of deliciously fragrant flowers all combine to make it a very desirable subject for conservatory decoration. Considering that it was introduced in 1874 it is surprising that it is not more generally cultivated.

Euphorbia jacquiniæflora.—Cuttings of this species may be taken from plants started a few weeks ago. Young shoots, about three inches long, make the best cuttings, although the old stems may be cut into short lengths and rooted. It is a good plan to put three cuttings in a single pot and repot them when rooted without unnecessary disturbance. This *Euphorbia* is by no means an easy subject under pot culture, and very few cultivators grow it successfully. In the immediate neighbourhood of London it is hardly possible to grow it well, as one night's fog will strip it of both flowers and foliage. It is, however, so beautiful as to be worth extra trouble in its cultivation. It requires careful watering at all times, and a stove temperature during the growing period. When growth is completed it may be grown in a lower temperature, but care is required in this respect or the plants will lose all their lower leaves. It succeeds best when planted out in a raised bed and the shoots trained up under the roof-glass. Where required in quantity for supplying cut blooms this is the best way to grow it, cutting the plants hard back every spring.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Hardy Annuals.—Advantage should be taken, when the ground is comparatively dry, to make preparation for the sowing of seeds. The soil, having been pulverised by the action of frost, may now be raked to a fine, even tilth. Ground that has not become weathered, or is naturally heavy, may be made more workable by the addition of burnt ash which has been stored in a dry place. Annuals of from 12 to 18 inches in height are best arranged in somewhat long, irregular drifts which may be intersected here and there by both shorter and taller kinds according to position. The seeds should be sown thinly and it is advisable to pay early attention to the thinning of the seedlings to obtain vigorous plants. With regard to such annuals as *Godetia*, *Clarkia*, *Dimorphotheca* and *Phacelia*, the flowers of which are of somewhat short duration, discretion must be used as to the date of sowing the seeds. Varieties of *Candytuft* will give a second crop of flowers if the first flower-heads are removed directly the inflorescence fades. *Mignonette*, *Chrysantheum*, *Calendula* and *Larkspurs* are amongst those enjoying a fairly long season of blooming and should be sown at an early date. In some localities it is advantageous to raise *Larkspurs* under glass and grow them in small pots previous to transferring them to the border. *Salvia Horminum* may be sown in the border, but the season of its coloured bracts should be

extended by raising plants in gentle warmth and ultimately planting them in groups. Hardy annuals are greatly benefited by a light application of superphosphate, which should be applied when the plants are making headway, and carefully hoed into the soil. Annuals worthy of special notice are—*Godetia* Sunset, *Lavatera* Loveliness, *Clarkia* Salmon-Scarlet, *Chrysanthemum* Coronet, *Eschscholzia* The Geisha, *Larkspur* Rosy Scarlet, and *Rudbeckia* Golden Sunset.

Lawns.—In some establishments the lawns have not been mown during the past few years. To have them in good order by early summer, it is necessary to commence renovation at an early date. Firstly, the rough grass should be mown closely with a scythe, or, if the site is very extensive, a field mower may be employed. The turf should then be pressed with a heavy roller to level the surface. As soon as the ground is fairly even, the lawn mower may be used, with the blades set high for the first mowing, and afterwards low, to get the grass quite short. A bush-harrow, which is easily made by lacing a hurdle with Quick branches should be trailed to and fro to clean the grass and distribute worm-casts. The harrowing may be followed by an application of sulphate of ammonia, at the rate of about 1 oz. per square yard, to stimulate the grass. Daily attention to rolling is essential during the next few weeks, where tennis grounds are required for fast play. If Plantains are present in the grass they may be destroyed by placing sulphate of ammonia on the crowns.

Vallota.—Imported bulbs of *Vallota* may still be planted at the foot of a south wall, in favoured localities. The border must have free drainage and the soil should be light and gritty. Lime, in the form of coarse mortar-rubble, should be mixed with the soil. Plant the bulbs six inches deep and surround them with coarse sand before pressing the soil firmly about them. Afford the plants protection from frosts and excessive wet during the winter.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CHEN, Esq., J.P.,
The Nole, Codicote, Welwyn, Hertfordshire.

Aphis or Green Fly—Green fly will soon become a source of trouble to the fruit grower, as all kinds of fruit trees are subject to attacks by this pest. Plums, Peaches, Nectarines and Cherries, are specially subject to attacks. Where the pest is found, the trees should be immediately sprayed with quassia extract or some other approved insecticide. At this season of the year, when the young growths are tender, two or three weak applications are preferable to one strong one. If the weather is mild, spraying is best done in the evening, but if cold nights prevail, spraying should take place sufficiently early in the day to allow the trees to become dry by evening.

Fruit Prospects.—The past winter has been a mild one, and as early as February fruit trees were making rapid progress. Apricot trees were in bloom by the end of the month, and by the end of March, they had set a good crop of fruit. Peach and Nectarine trees followed early in March, and it is some years since I have seen them bloom so freely. Plums and Cherries on walls and in the open garden are flowering splendidly. Pears on walls (certain varieties) appear to be flowering less freely than usual, but bush and standard Pear trees are very promising. Apple trees promise well, and if the weather is kind, there should be a bountiful crop of fruits. Damsons are blooming freely, and small bush fruits are very forward. Birds have not taken their usual toll of the buds of these kinds of fruits. Strawberries are now making good growth, and as the crowns look plump and healthy, they should flower well. It is too early to predict what the fruit crops will be, but at present the promise is a good one. Everything is so early that it is hardly possible for crops to escape some damage by late spring frosts, therefore, in cold exposed situations, and in low lying gardens where there is danger from late frosts, every effort should be made to protect the fruit blossom.

CELSIAS FOR THE FLOWER BORDER.

The *Celsia* most generally cultivated is *C. Arcturus*, which is seen more often in the greenhouse than in the flower garden. It is a valuable border plant, however, and is easily grown as a tender annual if the seeds are sown in heat in February, the seedlings pricked out when large enough, and planted out of doors in May. This species require liberal treatment in order that the plants may continue flowering until the end of the season, and it is important that the central or primary spike be removed before it has quite finished flowering, otherwise the secondary spikes fail to grow so strongly as they do when the plant is relieved of the central inflorescence. *C. Arcturus* was first known as a

The *Celsia* that has invariably attracted the most attention here, however, is *C. coronandelina*, a species that produces spikes 6 to 8 feet in height, and continues flowering for a very long time. I never have need to propagate this species, because self-sown seedlings fit to transplant in autumn and spring are usually to be found, but for a beginning I recommend sowing the seeds in June. It is the only species that visitors ask for seeds of, and when this happens with any plant it may be concluded that it is well worth growing. It is a curious fact that cultivation in the stove is recommended for *C. coronandelina*, yet it is much hardier than either of the other species mentioned, and quite distinct in habit from both. It was first cultivated towards the end of the 18th century in Grimwood's Nursery in Mile End Road.



FIG. 76.—*CELSIA CRETICA* FLOWERING IN A BED OUT OF DOORS.

Verbascum, and is an old greenhouse plant sometimes grown extensively for conservatory decoration, as at Kew.

Another old species is *C. cretica*, a somewhat coarse growing plant, but nevertheless very effective in autumn in beds or large borders (Fig. 76). I have always grown this as an annual, but the seeds need to be sown in January and the seedlings grown in a warm house for at least three months, otherwise the weaker plants fail to flower. Unlike *C. Arcturus*, *C. cretica* succeeds in poor soil, and usually produces but one spike before being ruined by frost. It was cultivated at Chelsea by Philip Miller in 1752, who describes it in *Edu.* 6 of his *Gardeners' Dictionary* as a *Blattaria*. Under certain conditions, *C. cretica* makes a good pot plant suitable for grouping.

C. cretica, *C. Arcturus* and *C. coronandelina* are all yellow-flowered, but there is another very pleasing species with white flowers, named *C. pontica*, which is almost a weed here. It reproduces itself as freely from seeds as the Foxglove, and, like the latter, it has to be reduced in numbers to keep it within bounds. During late years it has been confined to a rockery, and as it is of neat habit and quite unobtrusive even when in a mass, it may be recommended as a decorative plant of some value. To commence, the seeds should be sown on a border in summer, and have treatment similar to the last mentioned. It is perfectly hardy, which neither *C. Arcturus* nor *C. cretica* is, hence the reason for raising stock of these last two in heat each spring. *R. P. Brotherton, Tynningham Gardens, Prestonkirk.*

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LILIES IN 1919.

IN our uncertain climate the seasons that leave the grower of Lilies content are few and far between; they are like shining spires of gold towering above the mists in which memory wraps the conventional summers of the British Isles.

Eight years have come and gone since the writer had to chronicle such a remarkable season as that of 1919, and the interval has been filled with a heterogeneous assortment of summers, in all of which there was too much grey on the face of the sky for the sun loving genus with which we have to deal.

And who, twelve months ago, could have dared to hope that the depressing series was about to be broken. At that time, the calendar notwithstanding, winter was still in full swing, and March had put up a record so black that one had to go back nearly 40 years to find the like of it.

It would be hard to find more convincing evidence of the mutability of our insular climate than the extraordinary contrast between the first quarter of this year and last. Twelve months ago, vegetation lagged behind to such a degree that one had to hunt industriously for the welcome signs of active Lily life that usually catch the observant eye before February has run its course. What this means will be better understood when it is asserted that the season is an exceptionally backward one which does not find many of the early Lilies more or less knee high at the beginning of the vernal equinox. It was as well they did not put out into the world at the usual time last year, for had they done so, there must have been a slaughter of the innocents when April and the winter came to an end simultaneously in a blizzard of severity almost unequalled for the time of the year.

After a winter as prolonged and unpleasant as one can remember, the earth seemed like some great giant recovering from a long illness. There was no sudden joyous transformation such as early May often brings about, but a tedious, slow and gradual recovery; nor, for a while, were we allowed even one of those exquisite days of early spring of which there have already been so many this year, when the lark soars far, far out of human sight and the life-giving sun weaves his magic spell over young and old alike, the while the soft wind, laden with the scent of spring, murmurs the joyful hymn, old as the hills, but ever new.

It was characteristic of the inscrutable instability of our climate that, having deluged the earth for four months to a degree that must have made sailors wish to take to the boats, Providence should have turned off the tap, appropriately enough, with the coming of May, and ushered in a drought which, but for the water-logged state of the ground, must have brought disaster to all but low-lying gardens. A dry spell of four weeks that ensued entirely changed the aspect of affairs, and initiated a season

which, if by no means the peer of 1911, will linger long and pleasantly in the memory of the amateur of Lilies.

Looking back over the period of the war, during which the little colony of Lilies whereon these annual notes are based, had to shift for itself, it is easy to see how much better some species have come through the trial than others. But it is not so easy to offer a satisfying explanation of this, and no doubt several factors should be taken into account. If gardeners know anything for certain, it is that though there are exceptions, Lilies as a genus are sun loving plants; and observation has shown that a

hold, it only remains for the grower to watch for its reappearance in the same spot year after year. And let nothing induce him to move or interfere with a Lily that is flourishing, for that way lies retribution and regret.

When June comes in, Lilies begin to flower, and it is a curious fact that no matter how precocious or laggard a season may be for plant life in general, there is but a trifling variation—a few days at the most—in the date on which the first Lily in the garden unfolds its petals.

That is not to say that the same species always comes into bloom before the others—though, for the matter of that, *L. pyrenaicum* is usually first in the race—but that by about the end of the first week of June one or other of the early flowering group will be in evidence.

As all know, other bulbous plants vary a good deal in the dates of their flowering, but it is not so with Lilies as a family, and no matter how exceptionally backward they may seem to be, let us say, at the beginning of April, one may safely take long odds that the first week in June will find one or other in flower. Conversely, a mild open season will not see them in bloom any sooner, though the plants will have been making rapid growth during the first quarter of the year.

The outstanding feature of a wonderful season was the satisfactory progress made by the trumpet Lily (316), found by Mr. Farrer in the course of his first expedition to Western China. The photographs (Figs. 77 and 78) of this Lily growing in the garden of Myddelton House leave no room for doubt that it is a fine plant. When it is added that under Mr. Bowles's fostering hands this Lily is quick of growth, not difficult to manage, and, so far as it is possible to judge at present, blessed with that priceless virtue, a tough constitution, it will be realised that Mr. Farrer has not explored Kansu for nothing.

He saw but two specimens of the Lily, which he at first thought might be a form of *L. longiflorum*, in cottage gardens just outside Siku, each sending up fine spikes of 4.5 feet, laden with gigantic flowers and ultimately each rearing aloft a stiff candelabrum of seed-pods. The foliage appeared to be finer and more abundant than in most types of *L. longiflorum*, approaching more in its whole style that of *L. regale*. We shall doubtless hear more of this remarkable plant before long, for it produces seed in abundance, and as gardening folk have reason to know, there are no more generous hands than those that have raised this species with such signal success.

But this is not the only Lily to the credit of Mr. Farrer's first expedition (1914), and though in port and flower the other—No. 183—is at the opposite end of the scale to the Eulirion (316), it is none the less attractive.

Mr. Farrer found the "Marble Martagon," as he christened it, in August of 1914, when exploring the Tao-ho district of Kansu, where, by the way, *L. tenuifolium* was scattered promiscuously about the hillside, finding a footing too on cottage roofs. "It (183) haunts cool mountain slopes and river banks amid the coppice. . . . It attains some fifteen inches in height and carries one, two or three pendant Martagon flowers of a cold ivory or paper-white, waxy in texture and speckled rather unnecessarily with maroon along the inner margins of the segments. The flowers are larger and fatter than those of *L. tenuifolium*, and I find it an attractive beauty, as it hangs glacial and pure amid the scrub."

Mr. Farrer at first hazarded the view that this Lily might possibly prove to be *L. Davidii*.



FIG. 77.—GROUP OF A NEW LILY FROM CHINA (FARRER'S NO. 316); ILLUSTRATING HABIT OF GROWTH AND FLOWERING; HEIGHT ABOUT 6 FT.

wet winter always takes toll of a certain number of bulbs. When a dull and gloomy summer is followed by copious winter rains, one would expect the result to be disastrous, but it is not necessarily so, and there is the outstanding fact that in the case of nearly every species, difficult as well as easy, there are individual plants which through some accident of location, maybe the proximity of some congenial influence, or a constitutional trait, seem to be unaffected by climatic conditions fatal to many, and go on year after year like sentinels of their clan. And if one or two behave like this, why not all?

It is in the permanent establishment of the plants that the enthusiast's difficulty primarily lies, but once any particular Lily has taken

on which, by the way, so far as is known, no living European has ever set eyes, and though his account of the "Marble Matagon" left one conscious of some uncertainty as to the identity of it, there was a sporting chance that Mr. Farrer might have lighted on the elusive species named after the famous naturalist.

All doubt on the point was set at rest however in the course of last summer, when the Lily bloomed in the Botanic Garden at Edinburgh, and later, in Mr. Frederick Stern's garden at Highdown. In due course a specimen of the plants raised by Mr. Stern was sent to the herbarium at Kew, where it was diagnosed as a new species and named after the discoverer.

That L. Farreri is very closely akin to L. Duchartrei admits of no doubt to those who know them both, and it is possible that when further material makes an extended critical examination feasible, it may be considered judicious to regard L. Farreri as a form of Duchartrei's Lily. But whether that prove to be the case or not, L. Farreri is a welcome addition to the not over-long list of *calcephilar* in the genus, and gives promises of being an easy Lily to manage.

One by one the Lilies of Western China and Tibet are finding their way to this country, and what is more to the point, into cultivation in our gardens. We have still to make acquaintance with several of the species enumerated by Franchet, and though the possibilities of the Chinese flora seems almost limitless, it is hardly likely that there can be any further epoch-making discovery in the case of *Lilium*. And we may well be content, for within comparatively recent times and without taking Mr. Farrer's Kansu Lily (316) into account, China has added five fine species to the none too lengthy list of Lilies that make no considerable draft on the cultivator's skill.

Each of the sections into which the genus is divided is represented. Matagons predominate, as indeed they generally do where Lilies congregate, but the Eulirion group, in which the country is especially rich, follows hard on their heels. The *Cardiocrinum*—giants of the race but specifically few in number—have admitted a new-comer to their ranks in L. mirabile; the *Archelirion* and *Isolirion* sections, too, have their representatives. Beyond all these there is the *Notholirion* group, in which are found plants of extraordinary interest and beauty.

All the five Lilies referred to above—L. Henryi, L. mirabile, L. regale, L. Thayerae and L. Willmottiae—are good garden plants with strong constitutions, and all except the *Cardiocrinum*—naturally, a leisurely Lily—possess the inestimable advantage of coming rapidly to maturity when raised from seed.

Apart from these there are several remarkably fine species which, if they cannot safely be left to inexperienced hands, amply repay the modicum of care necessary to ensure their well-being. These include L. leucanthum, L. sulphureum, L. Sargentiae and several allied forms.

Beyond these, again, there are familiar old species, L. apertum, L. Brownii, L. callosum, L. Delavayii, L. Duchartrei, L. giganteum, L. nepalense, L. tenuifolium, L. tigrinum and others, the whole forming a generic picture no other country in the world can approach.

All those who pay any serious attention to Lilies are aware that the natural location and distribution of L. Brownii has always been shrouded in mystery, and it might have come from the moon for all any of the recognised authorities have known of its habitat. It has come with something of a shock therefore to find that all the time it has been growing at our door, as it were, for some years ago it transpired that the species is native to the Hong Kong district. The discovery—for such it undoubtedly is—is due to Mr. W. J. Tutcher,* Superintendent of the Forestry Department at Hong Kong, and the accuracy of his diagnosis has been proved by the flowering of plants raised from seed Mr. Tutcher was good enough to send to the writer a few years since. *A. Grove, March 25, 1920.*

* *Kew Bull. Mis. Inf.*

THE TULIPS OF FLORENCE.

SOME very interesting species of Tulips grow wild in the neighbourhood of Florence, and their origin has been a matter of discussion among botanists. Some of these species have their limited area of growth in proximity to old gardens, and it is probable that they have spread from these. For instance, in the immediate proximity of the Guicciardini Corsi Salviani Gardens, at Sesto Fiorentino, established in the seventeenth century, I have noted since my childhood a small area of growth of Tulipa *praecox* and another of T. *Oculus-solis*, and it is evident that their dissemination is in the direction of the plough's work from the limit of the gardens.

The best of these species I have collected and grown. They are T. *strangulata* (isabellina, nigro-maculata and vario-picta varieties), T. *praecox*, T. *Oculus-solis*, T. *Clusiana*, T. *sylvestris* and T. *Bonarotiana*.

Some twenty years ago I had a mind to make some crosses between these Tulips and other exotic species and varieties, with a design to raise a class of Italian Tulips, and I chose the former as seed parents. The results were good, and I think that it will be useful to the

with the whiteness of the whole flower. These varieties were the best I have ever raised and seen.

T. *praecox*, belonging to the *criobulbae* section, crosses well with the species and varieties of other groups. Less easy is it to work with T. *Oculus-solis*. T. *sylvestris* fruits easily, its small capsules being filled with the smallest seeds I have noted in the Florentine species I have grown.

From T. *praecox*, fertilised with the pollen of some fine species, such as T. *Kaufmanniana*, T. *Forsteriana*, T. *ingens*, and T. *Tubergiana*, I raised a large number of seedlings but I could not flower them. They were dispersed and lost, together with my entire collection of about twenty thousand bulbs. *Dr. Attilio Ragionieri, Castello, near Florence, Italy.*

HERBACEOUS CALCEOLARIAS.

THE herbaceous *Calceolaria* is a beautiful greenhouse annual, and the flowers exhibit a wide range of colour, the tones including every shade but blue, and plants may be had in flower from mid-April to mid-June. The plant may be

propagated from seed sown from April to August. There are two important matters to observe in the cultivation of herbaceous *Calceolarias*. The first is to grow the plants in cool conditions all through the year, and the temperature should not exceed 50°; secondly, they must be kept clear of aphides, which multiply so rapidly that they quickly reduce the vigour of healthy plants and effectively mar the prospect of success. This troublesome pest is easily eradicated by fumigating, or, a liquid insecticide may be used.

The seeds are very small and are difficult to sow evenly, but if they are mixed with a little flour it will be an easy matter to distribute them with some regularity. It is unnecessary to cover the seeds with soil or sand, but they should be kept dark and moist until they germinate. As soon as the seedlings can be conveniently handled they should be transferred to suitable receptacles. Watering is the chief care at this stage. Too much, too little, or an over-vigorous application of moisture are equally harmful. The plants should be shaded from the direct rays of the sun by tiffany or lattice blinds during the summer.

When the plants have reached a suitable size they should be transferred singly to sixty-sized pots. Make the soil around them moderately firm, which will favour sturdy growth. Allow the plants plenty of space, for crowding them results in attenuated growth that is not sufficiently strong to resist the effects of fogs and damp in winter.

In August or September *Calceolarias* should be potted into four-and-a-half inch pots, and a rich compost should be employed, containing a fair quantity of charcoal. As the plants recover from the disturbance of re-potting, they may be pinched to cause lateral shoots to develop.

Calceolarias should be transferred to their flowering pots in February, those from seven inches to nine inches in diameter being suitable according to the size of the individual plant. Equal portions of loam and leaf-mould, mixed with half a part of cow-manure and sand to keep the compost open, constitute a suitable rooting-medium.

If the present genial weather continues, the plants will make rapid progress and soon need staking. *Geo. H. Copley, N.D.Hort., Horton Park, Bradford, Yorks.*

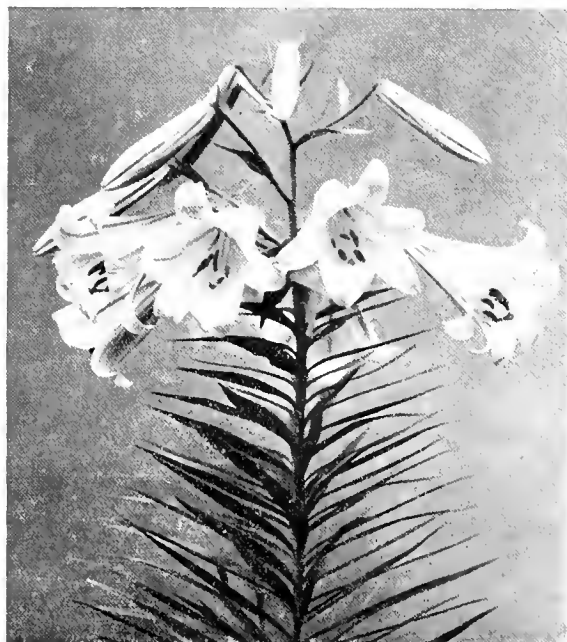


FIG. 78.—A WELL-BALANCED INFLORESCENCE OF MR. FARRER'S NEW LILY (NO. 316).

breeders of these beautiful plants to record them.

I had the best results from T. *strangulata*. The self-pale yellow variety, *isabellina*, fertilised with the pollen of light Darwin, cottage and French varieties, gave me, among a multitude of finely-coloured forms, some cream or white, long-stemmed, large-flowered, round-petalled varieties, like the Darwin type. It is worthy of note that two of these had pluriflorous (3-4) stems, both the parents being single-stemmed varieties.

T. *strangulata isabellina* fertilised with the pollen of a Parrot Tulip produced a very abundant progeny of forms with regular flowers, only one having a Parrot-like, pale cream and white-coloured flower.

But even better results I obtained from T. *s. nigro-maculata*. There are several forms of that variety, the basal macule running from the yellow, more or less streaked or suffused with dark violet, to the uniform dark violet or black. I chose the darkest maculated ones for my experiments. Among the numerous progeny from the fertilisation of these with the pollen of the best Darwin and Cottage varieties, I found a few forms with very large, round-petalled, white or pale-cream flowers, and a large, black or very dark-violet basal macule, strikingly contrasting

DISBUDDING AND THINNING PEACHES.

THE disbudding of Peaches and Nectarines growing on walls in the open will soon be a necessary operation. It is a cultural detail of the highest importance, because in a large measure next season's crop depends upon the way it is carried out. When in good health Peach and Nectarine trees freely produce young shoots from the growths made last year, and on which this season's crop will have just set. If all the growths were allowed to remain, most of them would fail to ripen through lack of air and sunlight. It need scarcely be pointed out that in the absence of ripened wood there would be few blooms next season, while the effect of an excess of growth would be so great as to practically ruin the trees for some time to come. Hence the necessity for a timely removal of all shoots likely to interfere with the full development of those to be retained, and from which next year's fruit crop is expected.

When disbudding, the usual method is to retain the best shoot springing from nearest the base, the centre one, and one at the end on most of the fruiting branches (see Fig. 79). Discretion must, however, be exercised, inasmuch as it is almost impossible to cover the wall spaces at disposal by adhering to hard and fast rules. For instance, the length and strength of the branches bearing fruit vary, and there may be space to be filled on one side or the other. The general health of the tree must also be taken into account.

Although trees growing in the open are not dependent, like those under glass, on a free system of ventilation to ripen the young wood, it does not alter the case against crowding. Free access of light, air and sunshine must be allowed to all parts of the trees, and this must be kept in mind when disbudding, although not until well on into the season will the grower be justified in concluding that his work in this direction is completed. When the young shoots are being tied in, some of the weaker growths will be best pinched back or cut out entirely, while there will be no use for the laterals that spring from the stronger shoots. Whether the work of disbudding is to extend over a period of three or four weeks, or be completed in one operation at the earliest date possible, is another matter that rests with the grower. This much, however, may be said, that trees which are in a weak or backward condition, or have every appearance of carrying abundant crops, are naturally helped by the early removal of all immature growths not likely to be of use.

In order to secure fruits of a fair size, it is necessary to practise thinning at an early stage in their development. Here again the deciding factor is the trees themselves. It is foolish to overtax the resources of trees that have been transplanted recently, or that from any cause are not in the best of health and vigour. A specimen in the habit of growing strongly is more fitted to be cropped to the utmost limit than is the case with one showing but average cropping capacity. On the latter type one fruit to every square foot of space may be sufficient, but in the former there is no reason why a tree should not carry one to every 9 or 10 ins. In regard to the removal of the surplus fruits, there is no advantage gained in leaving too many to be removed after they have stoned. Where slight protection is given the blossom there is usually a good set, and in order to prevent the trees suffering from the strain of stoning too many unnecessary fruits, the bulk of the thinning should be done as soon as it can be seen which fruits are making the best progress. This is not a difficult matter, as there are always some fruits that lag behind others. Of course, there is something to be said for not being too anxious to get the operation finished, especially where the grower is aware that his trees are liable to cast many fruits during the stoning period, or where they have only recently come under his care. Nevertheless, with trees growing in the open it is wise not to allow them to waste their energies in stoning an excess of unnecessary fruit, otherwise there is always the danger of losing many by overtaxing the strength of the trees. *F. Townsend.*

VEGETABLES.

RUNNER BEANS.

SCARCELY any other vegetable better repays good cultivation than the Runner Bean, and every effort should be made towards this end. Under the best conditions of culture not only will the individual Beans be finer and better flavoured, but the plants will continue to yield much longer and produce a heavier crop. Choose land that has been trenched and well manured early in winter, and allowed to remain in a rough condition on the surface. Make trenches about two feet wide and fork well-decayed farmyard manure into the bottom spit; replace two-thirds of the excavated soil and level the remainder along each side of the trench.

About the middle or end of March, according to the locality, the seed should be sown in well drained boxes in a compost formed of one part loam, one part leaf-mould and two parts old soil from the potting shed. Sow the seed about two or three inches apart, selecting the plumpest specimens, and press



FIG. 79.—PEACH SHOOT DISBUDDED AT POINTS A, B, AND C.

them in the soil edgways, about an inch deep. Place the boxes in a warm frame, or in a viney just started, and water them freely. They will soon germinate. As soon as the first pair of leaves is formed, remove the boxes to a cold frame and keep it close for a day or two, afterwards admitting plenty of air in warm weather.

In the meantime, the ground the plants are to occupy should be forked over, made firm and dusted lightly with wood ash and soot. Runner Beans are highly susceptible to injury by frost, and, if planted out in late April or early May, means must be taken to protect them. There is nothing gained by setting the plants out too early in the colder parts of the country, because in cold, wet weather they may turn yellow and die. Much depends on soil and locality. At planting time remove the boxes to the site of the rows and carefully lift each plant with a trowel. Place them about one foot apart, and allow the same space between the next rows, thus making a double row in each trench or station. These two rows should not be closer than eight or ten feet from the next pair, and should preferably run north to south, thus allowing the plants to receive the maximum amount of sunshine. When each row is planted water the plants and dust them with soot to ward off slugs. If the soot does not suffice to keep away slugs place sifted coal ash around each plant. It is a good plan to place the stakes in position directly the Beans are planted, as the stakes will afford protection from frost and cold winds. The form of support to be used is a matter of choice. Some growers

prefer tall Pea sticks; others choose poles, placing one to each plant. Either method is suitable, but the supports should be of good length, as Runner Beans under good cultivation often grow ten or twelve feet high, and even more. It is a good plan to place stout poles at each end of the row and others at intervals along each side to carry a strand of wire about six feet from the ground to which to tie the stakes. This not only gives the rows a neat appearance, but makes the stakes rigid, enabling them to support the heavy growth in autumn, when strong winds prevail.

The ground around Runner Bean plants should be frequently stirred with the Dutch hoe. In dry weather copious waterings will be beneficial, and syringing the plants overhead in the afternoons will keep them healthy and clean. A copious watering with diluted liquid manure, or a sprinkling of a concentrated fertiliser on the surface of the soil when the weather is showery will help the plants to develop fine pods. Water from a pond or large tank that is open to the sun is the best to use; on no account use hard, cold water, as this is frequently the cause of the flowers dropping. It is not advisable to allow the plants to make too much top-growth; much finer Beans are obtained if the growths and shoots are carefully regulated, and the Beans also thinned to two or three at a bunch. The pods should be picked for use before the seed can be felt inside, otherwise they will be tough and flavourless. The plants should at no time be allowed to get dry at the roots, but if the ground has been well cultivated there is not much fear of drought, and a light mulch of stable litter placed down and also between the rows will save much labour in watering. *B. W. Thatcher, Carlton Park Gardens, Market Harborough.*

POTATO SPRAYING.

OWING to the unusual freedom of the Potato crop last year from late blight disease, there is a danger that many growers may neglect to take precautions against a possible outbreak of disease during the coming season. As this is the time of the year when the wise gardener makes arrangements for future operations, a word of warning may be timely.

Practically all large and up-to-date Potato growers now regard spraying as the most profitable form of insurance against epidemics of blight; but many of the smaller growers are as yet unconverted and either do not spray, or only take panic measures to combat the disease when it is too late to save the crop.

It has now been established beyond all doubt that timely and systematic spraying of Potatoes prevents serious damage by blight and materially increases the weight of crop, and although in many cases spraying appears to be ineffective, good reasons can usually be found for such failures or negative results.

One of the chief causes of poor results from spraying has been the difficulty of correctly preparing Bordeaux or Burgundy mixture from the raw chemicals; it is a slow and exacting process, and mistakes are easily made. The alternative is to use one of the excellent ready-made articles which are now on the market, such as "Blighty." This is a preparation I have used with excellent results, and have never known it to fail. It is prepared from copper sulphate of guaranteed purity, it dissolves readily, is perfectly safe to use, and is practically fool-proof, the addition of water being all that is required. Compared with the old and tedious method of weighing and mixing copper sulphate and soda, such a preparation is a boon to Potato growers.

When spraying it is necessary to cover the under as well as the upper surface of the leaves with a fine, mist-like spray. It is a mistake to spray on any given date, such as the third or fourth week in June. The time to spray is the first dry day after a wet period during late June or July. The preparation named adheres to the foliage, and a heavy shower an hour after spraying has no effect in removing it. *M.*

TREES AND SHRUBS.

LOROPETALUM CHINENSE.

THIS shrub is a near relative of the Witch Hazels (*Hamamelis*), and, like the Asiatic members of the genus, flowers during the early months of the year. It is, however, evergreen, the twiggy branches being clothed with oval shaped leaves, from one to two inches long, and rough in texture. The most conspicuous portion of the flower consists of four strap-shaped, pure white petals, longer than those of the *Hamamelis*. The flowers are abundantly produced, being disposed six or eight together at the tips of the branches and in the axils of the uppermost leaves. This *Loropetalum* is too tender for general outdoor cultivation in this country, but forms a delightful feature when grown in pots and flowered under glass. Its uncommon appearance, veiled as it were with little strips of white ribbon, renders it additionally attractive. A compost with a proportion of peat in the soil is suitable. If grown altogether in pots, the plants may be plunged out of doors during the summer, taking care that they do not suffer from want of water, while if the pots are well furnished with roots an occasional stimulant will be beneficial. *Loropetalum chinense* is, as implied by its specific name, a native of China, and was introduced in 1880 by Maries when collecting in that country on behalf of Messrs. J. Veitch and Sons. It has also, I believe, been reported from the Khasia Hills. Flowering specimens were shown at the meeting of the Royal Horticultural Society on March 13, 1894, when a First-Class Certificate was awarded the species. W. T.

CAMELLIA RETICULATA

THE handsome *Camellia reticulata* has a somewhat loose habit of growth, and in this respect differs from most other members of the family. It is a good subject for training against a wall, and if given the benefit of such a position, one is able to enjoy the beauty of the plant, whereas planted in the open it is not sufficiently hardy to prove a success, except in very favoured localities.

The flowers are of a delightfully deep, yet soft rose colour, semi-double, and fully six inches across, the petals being prettily waved. A plant carrying a dozen or more fully expanded flowers is a beautiful object to possess and enjoy. *C. reticulata* grows well here (Buckinghamshire) on a south wall with no other protection than such a position affords, and has suffered in no way from severe weather during the last eight years. As it is a really fine subject and well worth the necessary wall space, I wonder why many garden walls are covered with poor subjects when such gems as this are available. D. Wilmshurst, *Tree Heath*.

THE BIRCH AS A STREET TREE.

THE Birch (*Betula alba*) may not have been generally recommended as a street tree (see p. 122), but it is grown as one in the village of Kew. It is also grown in miniature front gardens both on the Surrey and Middlesex side of the Thames, where the Birches might be regarded as street trees, since they overhang the side pavement. I have for many years regarded it as a very handsome tree for such limited spaces, as it does not darken the windows to any great extent. There are two distinct forms of the species, and both are quite common in gardens at the front or back of the houses in the northern parts of Surrey. In one the slender branches grow erect or at various angles, but straight. In the other all the leading branches assume a great length, and, being very slender, droop on all sides like water from a spray fountain. I have seen this named *B. alba pendula* in a botanical work, but it is quite different from the trees so named in nurseries, including *B. a. pendula Youngii* (or Young's Weeping). The tree I refer to is not a weeper, but as an ornamental tree I consider it superior. When the Birch gets attacked by the mite, *Eriophyes rufus*, in the form that affects the buds only, the tree is not so handsome. Besides the Cornish Elm, the Guernsey or Jersey Elm (*Ulmus Wheatleyi*) is equally as suitable for narrow streets. J. F.

ORCHID NOTES AND GLEANINGS.

CYMBIDIUM DIANA VAR. CONCOLOR.

THE recurrence of albino characters in hybrids is well shown by flowers of a colourless form of *C. Diana*, raised between the distinctly coloured *C. Pauwelsii* (insigne × *Lowianum concolor*) and *C. eburneo-Lowianum concolor* (eburneum × *Lowianum*) sent by Mr. W. E. Walker, gardener to G. Hamilton-Smith, Esq., Northside, Leigh Woods, Bristol, who also sends flowers of the parents for comparison. In *C. Diana* var. *concolor*, the whole of the red and rose markings of *C. Pauwelsii* disappear, the flower being entirely greenish-white, with whiter lip. It is interesting also to note that in the albino variety, a decided relapse in form towards the white *C. eburneum*, with its characteristic prominent yellow crest on the lip, is evident.

PLEIONE PRICEI.

THE granting of an Award of Merit to *Pleione Pricei* by the R.H.S. Orchid Committee on March 23 (see p. 161) is a matter of special interest to Orchid growers, because the exhibitor of the plant was also the discoverer of the species. Mr. W. R. Price discovered *P. Pricei* (Fig. 80, in *Formosa*) while visiting that island with Mr.

Oncidium-like *Odontoglossum Edwardii* would probably meet the case and *Odm. Epicasta* was selected, with satisfactory results. *Odontoglossum Epiphorum* has the slender, branched inflorescence of some of the *Odm. Edwardii* crosses, but with larger flowers of thinner substance. The sepals and petals, which are nearly equal and well expanded, are rose-pink with white margins. The lip is intermediate in form: it is coloured bluish white with claret blotches.

SPATHOGLOTTIS.

As the species of *Spathoglottis* start into growth the soil should be shaken from around the tubers and the latter repotted in a similar mixture to that usually used for *Thunias*. Fairly deep pans should be filled one-third of their depth with broken crocks, for drainage. *S. aurea*, *S. Lobbii* and *S. aureo-Vicillardii* should be grown in the warmest Orchid house, but *S. Fortunei*, *S. Petri* and *S. Vicillardii* will succeed in a slightly lower temperature. A liberal supply of water is needed throughout the growing period, but watering should be gradually reduced after the growth has finished and the bulbs have reached maturity, and entirely withheld for a few weeks when the foliage has decayed. During the growing season the undersides of the leaves should be examined fre-



FIG. 80.—PLEIONE PRICEI. Award of Merit R.H.S., March 23. (See p. 161.)

H. J. Elwes. In 1914, Mr. Price sent pseudo-bulbs to Kew and these flowered in the following spring. At first the species was considered to be *P. formosana*, but Mr. Rolfe decided it was a new and distinct species. The flowers have rosy-lilac or lilac sepals and petals, and a whitish convolute, wide mouthed lip that is marked with pale brown and has showy yellow keels. A further attraction is the deep fringing of the mouth of the labellum. The leaves are immature at flowering time, but when fully developed they may be 9 inches long and 1½ inch wide. *P. Pricei* succeeds in a tropical house when treated similarly to *P. Hookeriana*. C.

ODONTODIDIUM EPIPHORUM.

THIS very pretty new hybrid raised by Messrs. Charlesworth and Co., between *Odontoglossum Epicasta* (Clyte × *crispum*) and the rare and beautiful *Oncidium corynephorum*, has recently flowered and is another instance of the good results of progressive hybridisation with an object. In 1908 Messrs. Charlesworth flowered their *Odm. Clytie* (*Edwardii* × *Pescatorei*), and in 1912 their *Odm. Epicasta*. When considering a subject to cross with the remarkable *Oncidium corynephorum*, it was thought that one of a strain with the more

quently and sponged with tepid water if red spider appears, as it sometimes does in the hottest months of the year. T. B.

CYNORCHIS.

THE terrestrial *Cynorchises* should be repotted just as growth begins, for if the work is deferred a week or two it is impossible to provide new soil without injury to the roots. Fibrous loam, and peat, with a sprinkling of crushed crocks, provide a suitable rooting medium, and pans filled one-third of their depth with material for drainage are the best receptacles. The species from Madagascar—*C. grandiflora*, *C. Lowiana* and *C. purpurascens*, with the hybrid *C. kewensis*—should be grown in a warm house, but the dwarf, white, South African *C. compacta*, should be placed in the cool division. This species flowers during the winter and needs repotting soon. For a few weeks after being disturbed the tubers will need very little direct watering, but the surroundings should be kept moist by syringing between the pots daily. Once the pans are filled with roots, a liberal supply of water must be maintained until the leaves are fully grown, after which the plants gradually go to rest and the tubers should then be kept rather dry. B

HYBRIDISING BEARDED IRISES.

MISS STURTEVANT and myself working on Irises from the same point of view as Mr. Bliss, also make no claim to scientific accuracy, but we find certain of our records not fully in accord with his results (see p. 76), or at least susceptible of a different interpretation.

Upon the question of amoena-variegata, or neglecta-squandens relationship, we can say but little, because from almost the first the newer phenotype neglectas, such as Oriflamme, Sheldford Clieftain, and others, have been used for crossing and the progeny tends to show in, at least, certain cases, fairly typical neglectas as the genetic constitution becomes more complex.

In one case, Ignitia \times striata, apparently a case of pure amoena \times variegata, one out of six was lavender with veined falls, not unlike Albatross, which I should class as a neglecta form. This seems counter to the experience of Mr. Bliss, but one isolated example is insufficient. Amoenas have not proved of much interest, and what few we have appeared in both F_1 and F_2 , from a cross on Dr. Bernice (squalens var.); the record on the tag was defaced, but the pollen parent was probably Ignitia in the F_1 generation, which gave one with white standards and another so faintly flushed as to be classed as an amoena. Ann Leslie self-crossed, has given a wide range of colours, but a very few amoenas; in fact amoena forms are unusual, except in carefully developed strains, and, as in the case of variegatas, it seems particularly difficult to produce varieties of a height and size that are comparable to those developed in other colours. This is in accord with Mr. Bliss, but it seems possible that a neglecta of recent origin, with no taint of yellow, might produce a flower with white standards and dark falls, though I believe that to get that attractive, velvety quality, a leaven of variegata will be necessary.

In regard to the plicata group, I have more facts to support my belief that they are not due to a similar recessive factor. I present in contrast the results of two similar crosses, viz., Oriflamme \times Count de St. Clair (plicata), and Oriflamme \times Jeanne d'Arc; the pollen parent in both cases is a plicata, with a very delicate picotee margin, pink and blue-toned lavender respectively. The first gave four plicatas, and nothing more, the second nine lavender selfs or bicolors, but no plicatas. This latter might be attributed to error or to parthenogenesis. Mr. Bliss explains the first by supposing that Oriflamme has plicata heritage, but if so it destroys his argument in the second cross, which accords with his statement that "When crossed with pallida or variegata (or any other varieties not carrying plicata), the plicata type disappears entirely." Neither phenotypically, nor in a number of other crosses, is there any suggestion of this being the case. Again, from Mme. Chereau \times Jeanne d'Arc, both plicatas, no plicatas resulted, and, still more curiously, in a cross of Anne Leslie \times Archevêque, neither plicatas, two out of thirty-six seedlings are apparently plicata varieties. Archevêque and Oriflamme are both Vilmorin introductions and it would be of interest to know whether plicata was present in their pedigrees.

Any one of these cases may be easily explained as from inaccurate data, but it is asking a good deal to consider all of them as coincidences when they happen not to be in accord with the results obtained by another breeder.

As in other lines of Iris breeding, one cannot depend upon a certain variety to give similar results even when crossed with phenotypes, and to me the theory of cumulative factors seems necessary. Venation seems to be a simple Mendelian dominant, but in regard to colour and its disposition in other ways a more complex explanation is needed.

Before closing, I wish to refer again to the suggestion that there is a close relationship between a certain type of intensely coloured pallidas, both red and blue-toned, and plicatas. In one case, from Mme. Chereau, crossed with what I might call a plicata pallida, there were

six plicatas and the seventh was a very deep plum-coloured self. This was repeated in a similar cross. Rather in the same line is a F_2 generation, with apparently but one plicata in the background, that gives almost invariably plicatas and delicate pink-toned selfs—the intensity of colour of the parent is gone, but in F_3 we still find this dominance of plicata and pink-toned selfs. Just where the connection lies I cannot determine, but it seems possible that there are two distinct cases of association, one of plicata and unusual intensity of colour, and the other of plicata and "red pallida." Both in dilution. As I go over the plicatas in my mind, it seems to me that the intermediate tones are many and unusual; I must try it out among the flowering plants. In all this I have not considered the plicata pattern, except in connection with a white ground; it is present already on lavender grounds of many hues, on blended grounds, and with the possible exception of a combination of clear yellow and white it may be expected in every hue.

I should state that the conclusion of the article by Mr. Bliss had not reached me when I wrote the foregoing remarks. Robert S. Sturtevant, Wellesley Farm, Mass., U.S.A.

LINARIAS.

The genus *Linaria* is a large one and includes some 150 species. They are usually herbs and have a wide distribution in nature, being found both in the Old and the New World. The flowers are solitary and axillary, or the upper ones often in spikes or racemes.

But for their inveterate habit of spreading too rampantly, the Toadflaxes would occupy a much more important position in the garden than they do at present. Certain numbers of the species are also too weedy and ineffective to possess much horticultural value, but a sufficient proportion will be found to be worthy of inclusion in numerous places. A proper amount of consideration should, therefore, be given to selecting situations for them, always keeping in view their wandering and spreading tendency. A large proportion of the *Linarias* which are catalogued are of insufficient merit to call for notice, but those dealt with below will be found excellent for the positions suggested in the border, rockery, or wall garden.

The cultivation of the plants is generally easy, and they require only a light, loamy soil, or a heavy one lightened by the addition of leaf soil or peat, and sand or grit. Taking them alphabetically, we have the following:—

LINARIA AEGYPTIACA.—This is one of the gems of the smaller species, and a beautiful plant for growing in the crevices of cool walls, chinks of the rocks, garden steps or paved pathways. The plant keeps closely to the ground, has tiny leaves and wonderfully big flowers (for the size of the plant), of a delicate, pale violet. This species is a true perennial, but it sometimes dies in extremely wet winters.

LINARIA ALPINA.—*L. alpina*, the Alpine Toadflax, is a delightful plant in every respect, but although a perennial, is generally short lived, yet its seedling is usually so free that it reproduces itself in this way without the necessity of replacing the parent by sowing seeds. This exquisite Toadflax hardly calls for any description, as its delightful glaucous stems and leaves are familiar to most gardeners, as well as the violet, orange marked, long-spurred flowers.

There are several varieties, including *alba*, and *rosea*, also a few pale violet ones, less beautiful than the typical form with its rich colouring. This Alpine *Linaria* loves the moraine or dry slope on rockwork and should have plenty of sunshine. It is raised readily from seeds—the best way of propagating this Toadflax, except in the case of the white and rose varieties, which must be increased from cuttings. In favourable spots this plant seeds and gives natural seedlings freely year after year.

LINARIA ANTICARIA.—Generally offered as an annual, this little species is as good a perennial as the Alpine Toadflax, if planted in very dry soil, and it will produce self-sown seedlings varying from the parent. It is not, however, a showy plant, but one which needs close inspection to reveal its quiet beauty. The flowers are of various ground colours, ranging from white, through bluish and pink, to purple and palest yellow to buff, and all prettily veined with deep purple and decorated with an orange lip. It loves a dry, sunny part of the rock garden, and is free from the spreading tendency of certain species.

LINARIA CYMBALARIA.—Our native creeping Toadflax, or Kenilworth Ivy, is a most beautiful plant, but if left to itself becomes too aggressive. It has interesting leaves and produces the small, pale purple or violet flowers in plenty. There is a white variety, *alba*. The plant is a charming subject growing on a cool wall, where it will insinuate its seeds into any chinks in the most ingenious way. It is a perennial and barely rises above the ground.

LINARIA DALMATICA.—This, with its superior variety *macedonica*, will be found useful and effective in the border. The plant grows about two to three feet high and has glaucous leaves and spikes of large yellow and orange flowers. It is a hardy perennial and will grow in any border, but has the failing of spreading at the root and thus becoming troublesome in certain places. It is, however, perhaps the finest of the tall Toadflaxes, especially in its variety *macedonica*.

LINARIA HEPATICIFOLIA.—But for its free way of sending out its runners the Hepatic-leaved Toadflax would be more popular in gardens. Yet it is so pretty, with its creeping branches set with prettily marbled leaves and small lilac flowers, that it is not to be despised, especially in rough stone steps, crevices of walls or rockwork. The plant is perennial, hardy, and cheap to buy or easy to raise from seeds.

LINARIA ORIGANIFOLIA.—Growing from nine to twelve or fourteen inches high, with pretty violet-coloured flowers, this bushy plant is a perennial, but not always long lived, dying off in some winters, especially old specimens. This species is easily raised from seeds or cuttings.

LINARIA PALLIDA.—In this we have a creeping species with wonderfully large, fragrant flowers of bright lavender colour, so that the name of pallida hardly does justice to its charms. It creeps about a good deal and is better suited for the chinks and crannies of the wall or rocky than anywhere else. *L. pallida* is a hardy perennial. This plant is admirably adapted for wild parts of the garden and appears to advantage on old banks and ruins where it is moist.

LINARIA TRIORNITHOPORA.—According to some growers, this species is about six inches high, but I have seen it considerably taller—about a foot in height. It is a doubtful perennial with me, although classed as one. The heads of flowers are bright purple, and of peculiar form, the name, which means three birds on a branch, being appropriate. In most gardens, this Toadflax should be treated as a biennial.

LINARIA VULGARIS.—The common Toadflax would deserve more consideration were it not a plant which spreads too much at the roots. The yellow and orange flowers are very attractive above the glaucous foliage. Its form, *L. vulgaris* Pelora, is both singular and pretty, representing the successful effort of an irregular flower to become regular. This has not been done at the expense of beauty, and the variety is an attractive and good border or low rock-work plant. It likes stony soil and will flourish in the roughest conditions when exposed to full sunshine.

Other dwarf *Linarias* which may be mentioned are *L. glacialis*, violet; *L. glauca*, yellow; *L. petraea*, pale violet; *L. pilosa*, resembling the latter; and *L. villosa*, light violet.

The other tall species, such as *L. purpurea* and *L. pelisseriana*, are hardly worth growing, and those mentioned may be called the cream of the race. They may, in most cases, be raised from seeds or propagated by division. S. Arnott.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Paeonia Delavayii.—In the leader on the Paeony in America (p. 151), Mr. Wister is quoted as referring to *P. Delavayii* as a Chinese herbaceous species, with small, single, reddish-chocolate flowers, not decorative, but probably of value for breeding purposes. It will no doubt have been obvious to those who know their Paeonies, that there must be some misunderstanding in regard to this, for if ever a true arborescent Paeony exists, it is *P. Delavayii*. It is understood to be a variable plant and that no doubt is the reason Mr. Wister thinks so lightly of the decorative value of the flowers. A well grown specimen of the best form, and five feet high, is a fine object. Mr. Forrest's views on the relationship of *P. Delavayii* and *P. lutea* have already been expressed in the columns of the *Gard. Chron.*, and now that he is happily restored to health, he may perhaps be able to throw some further light on the point. *A. Grove.*

Hosts of the Mistletoe (see pp. 9, 20, 44, 56, 69, 80, 108, 123 and 145).—*H. H. D.* has asked whether any reader of the *Gard. Chron.* can give an instance of Mistletoe growing on the Elm. In answer to his enquiry, I have much pleasure in stating that in Chalfont Park, Chalfont St. Peter, Buckinghamshire, Mistletoe is growing on the English Elm (*Ulmus campestris*). It is a medium-sized plant and established about five years. This is the only instance I know of Mistletoe growing upon the Elm. *G. Barrell, Chalfont Park Gardens.*

—In order to see if the Mistletoe I referred to at Leatherhead had disappeared (see p. 145), I walked seventeen miles on March 31. I found the Mistletoe where I recorded it in 1899, but discovered that I was confronted with a difficulty in identifying the trees upon which it is growing. The observation was made from the Brighton Road, at the south side of Leatherhead, where a very high wall prevented me from seeing the whole of the trees. They are numerous, very tall, crowded and not in character, so that I am still in doubt about their identity, but will attempt it again when they come into leaf. I certainly wrote Elms when I made the note, and that may have led me into error; but I hope it has not caused much inconvenience to anyone. I counted eighteen good sized pieces of Mistletoe on this clump of trees. They may be seen from other points, especially from the low bridge over the Mole, at the foot of the hill. *J. F.*

Acacia dealbata.—I read with interest the short note by Mr. Lynch in reference to this tree flowering at Torquay (see p. 173). As the winter has been remarkably mild, Acacias have flowered profusely in the west country, and the flowers have been of first rate quality in this district. *Acacia dealbata* grows luxuriantly in these gardens, the silvery, fern-like foliage and beautiful habit, making it quite a surprise feature to tourists and other visitors from colder districts. The flower sprays are eagerly sought after by florists, especially when at their best about the middle of February. I have observed that the tree flowers fairly well if spring frosts do not exceed 8°, but if there are severer frosts, the buds drop wholesale. The largest tree in these gardens, growing in the open shrubbery, is about 35 to 40 feet high, and about the same in width; the trunk 3 feet from the ground is 4 feet 6 inches in circumference. Is there another specimen equal to this in the British Isles? *J. J. Gribble, Penlee Gardens, Penzance.*

Onion Fly Maggot.—Many years ago, when I obtained my first appointment as head gardener and bailiff on a small estate in Shropshire, we had a lot of trouble with maggot in Onions, Carrots and Parsley. A cottager living close by gave me his preventive method, as follows: "Draw the drills to twice the ordinary depth, sow the seed after the drills have been half filled with a mixture of stale soot and wood ash, and cover the seed with a similar mixture.

Then, when the seedlings are about two inches high, dust them with soot while wet with dew. If the soot gets washed off, dust again, and continue as necessary until the young plants are about the size of a lead pencil." Here, we always place a border of Parsley around our Onion bed, not so much as a preventive measure against maggot, but to economise space and improve the appearance of the bed. If seeds are sown thinly, no thinning of the seedlings is necessary. *John Ertle, Chief Horticultural Instructor, Kingswood Training School.*

—I read with considerable interest *C. H. O.'s* letter in the *Gard. Chron.* of the 27th ult., and I hasten to state that for the past two seasons I have been fairly free from the Onion Fly among spring-sown Onions. Directly the formation of the bulbs commences I earth them up, that is, I cover the bulbs entirely with soil, and I have had very good results from this practice. I may also state that I treat Turnips in the same way, and the crop has never suffered from the Turnip beetle. I think if your correspondent would try this method the results would be satisfactory. *C. H. Rees.*

—I have found spraying with paraffin emulsion a successful method of preventing attacks of the Onion Fly. The spray should be applied at intervals during April and May and the beginning of June, the frequency depending upon the rainfall. The method of raising plants in frames and transplanting them during April has much to recommend it, and since following this practice I have never been troubled with Onion fly. *S. J. C. Lyndhurst.*

National Union of Horticultural Workers.

—As a member of the original selection committee of the British Gardeners' Association, I venture to claim a small share of your space to deal with the points raised by Mr. A. J. Hartless (see p. 159). By the overwhelming vote of the members, the name of the organisation has been altered to the National Union of Horticultural Workers (late B.G.A.). The old name appeared to be exclusive, and often was interpreted to mean only private gardeners, and, seeing that the Union admits to membership all men and women employed in horticulture, the new title is a correct one. At the inception of the organisation in 1904, it was definitely stated that it was to include not only private gardeners but also those employed in public parks and in nurseries, and before 1914 a section had been formed to include garden labourers, because if the garden labourer was to remain unorganised he would be a menace to the skilled gardener; moreover, there was a difficulty in defining a garden labourer. When the National Standard of Hours and Wages was published last year it gave both employer and employed some guide as to what was just and fair. That it had faults nobody denies, and the members, through their branches, have decided to remedy some of these faults by endeavouring to raise the minimum wage from £3 to £3 10s., and the various grades proportionately. Personally, I should be pleased to learn of any other trade, with the exception of the agricultural workers, who have failed to secure 50s. a week. Only last week some of the agricultural workers in Lancashire secured 60s. a week. There has been no hesitancy in producing the new scale, and there is no disagreement on the principle by the present Executive; the delay has been caused by the difficulty of meeting. The names of the members of the Executive Council and their position was submitted to the membership; there was no secrecy. The organisation is perfectly democratic, and realises that because a man may not have reached the position of head gardener in a large establishment he is not thereby disqualified from office. In the past we have looked too much to the men in secure and good positions to raise the status and remuneration of those in lower positions in horticulture. If head gardeners think they can serve themselves by forming an association on the old lines, let them do so; I can well imagine the progress they will make. The old B.G.A. tried to improve

its membership by lectures, etc., and many a branch became little better than a mutual improvement society; the newer organisation, in addition, is determined that the members shall share in the general advance gained by other workers, and does not apologise in the least for taking such a keen interest in wages and hours, for they are the main factors in the workers' life. I do not think Mr. Hartless wishes to infer that the members who were left to carry on while the others were in the Services, or making munitions, took advantage of the absence of their comrades. The fact is that only by a desperate effort and much sacrifice was the Association kept going, and not until the members, by ballot, decided to make it a registered trade union was there a turn towards the more prosperous and influential position it now occupies. The old B.G.A. was not constituted on the lines of either the legal or medical associations, but more on those of the National Union of Teachers. It is foolish to think of a gardener as anything but a wage-earner; he is in a different category altogether to members of the legal or medical professions, and the sooner we cease flattering ourselves in that way the better for us all. Mr. Hartless suggests that membership is not so large as in pre-war days. This is mere guessing on his part. The membership to-day is an actual membership and not a record of those whose names have appeared on the books. Mr. Hartless's advice "to join *en masse* and get a voice in the affairs" is good. *Thos. H. Candler, Bournville, Birmingham.*

—I find myself in agreement with most of the remarks of Mr. A. J. Hartless on p. 159, and especially when he states the scale of wages advocated is far from what it should be. I cannot agree with him, however, when he states that workers in other trades at the age of 21 are not getting 50s. per week. I know a lad who, when he left school, entered the gardening profession, but, being dissatisfied with the low rate of pay, he decided to apply to a railway company for a job as engine cleaner, with the result that he was appointed to a vacancy about two months ago, at the commencing wage of 55s. per week. Where is there an employer in the horticultural trade who would have offered him 55s. for his three years' experience, however much of a genius he might have been? It is quite true, as one of your correspondents said some time ago, other workers "are all laughing at us." Take my own case. My wages at present are 50s. per week. Out of this I have to pay 6s. for rent and provide for a wife, and five children under fourteen years of age. Contrast this with the painters now at work on my employer's house and earning £5 10s. to £6 per week for practically the same number of hours that I work. Surely there ought to be some legislation whereby all workers get a living wage. I cannot get the necessities of life any cheaper than the miner or the railwayman. I hold no brief for the B.G.A., and neither do I know anything of its doings. *A. F. B.*

The Future of the Japanese Chrysanthemum.

—The opinion has been expressed that the popularity of large Japanese Chrysanthemums is rapidly passing in favour of smaller-flowered decorative and single varieties. Without wishing to depreciate the charms and usefulness of the latter, or to deny that there is an ever-increasing demand by the general public for kinds that will yield abundant quantities of cut blooms for decorative purposes, I maintain that large exhibition flowers still hold their own in popular estimation, not only as examples of high cultural skill, but as useful material for the decoration of large rooms and halls where an imposing effect is desired. The point of view from which I am writing, however, concerns the interest taken in big blooms by gardeners and amateurs. Although during the war period many were obliged to discontinue the cultivation of Chrysanthemums in any form whatever, it is fair to assume they never lost their former interest in, or love for, them, and they looked forward to the time when war would cease, and they might resume the cultivation of old favourites. With the advent of peace, the revival of

industry, and the release of men from the Services and other occupations connected with the war, there came an awakening interest in horticulture generally. Enquiries began to be made for stock, as most growers had lost their plants, and in the spring of 1919 so great was the demand for plants of Japanese exhibition Chrysanthemums (as well as other sections) that stocks held by nurserymen were soon depleted and many enthusiasts were disappointed in obtaining stock that season. This demand is a good test of the popularity of the Japanese Chrysanthemums, and I am in a position to say that the demand in 1920 is almost unprecedented. Good varieties are sought after by all classes of growers, from the head gardener of a big estate down to the miner in the Black Country with his own humble greenhouse. Also, the authorities in public parks are again taking up the cultivation of large, showy Chrysanthemums. Chrysanthemum societies are reviving, and some few have managed to hold an annual show all through the war. In this connection it may be said that the National Chrysanthemum Society set a good example by praiseworthy efforts on the part of its officers and members in keeping alive interest in the flower. Others might be mentioned: one amateur society in North London was successful in holding a small annual show each year through the war, although without the inducement of a prize list. Foreign societies are awakening after an enforced rest, and British-raised Chrysanthemums are in request in many parts of the world. Here is the opportunity of those specialists who have not wholly relaxed their efforts during the past five years in raising new varieties. In conclusion, I am convinced we have not heard the last word in regard to large Chrysanthemums: varieties will improve in form and beauty, even if they do not gain in size. *C. D.*

Apple Alfriston.—As the culprit who sent specimens of Alfriston Apples to the R.H.S., I offer a few facts in defence of the variety, which *Northern Grower* (see p. 160) condemns as a cumberer of the ground. *Northern Grower's* remarks concerning the wisdom and knowledge of the R.H.S. Fruit Committee I need not discuss, as I imagine the members are quite competent to defend themselves against the attacks of anonymous or other writers. Possibly *Northern Grower* has overlooked the fact that in its *Book of Arrangements* the Royal Horticultural Society specially asked that late-keeping varieties of Apples and Pears should be sent to that particular meeting (March 23), and in response thereto, I sent a dish of Alfriston, one of Sandlin Duchess and another of an unknown seedling. I had no idea that the age of a variety was a reason for withholding an Award! It is frequently stated that the value of anything is the price it will make in the open market: judged by this standard, Alfriston is worthy of the Award of Merit it received, for I am acquainted with some shrewd, practical market growers, both in the counties of Worcester and Middlesex, who grow the variety Alfriston on a large scale. As further proof of value, I have only to mention that during the month of March Alfriston Apples fetched 42s. per cwt. under the hammer in the Worcester public market, and were bought by Birmingham dealers. No other variety realised that price, although Newton Wonder, King Edward and others were offered. Of course, these growers "pocket the brass and say nowt." Whether Alfriston fails in Scotland, or even very much nearer the recognised border line of north and south, is quite immaterial, as no Apple succeeds equally everywhere. Doubtless the craze for colour in cooking Apples has kept Alfriston somewhat in the background, but, as there now appears to be a growing demand for large, green, cooking Apples, Alfriston may yet regain its proper position. Alfriston travels well to market, and this cannot be said of all late varieties, marketed when fit and ripe. Needless to say, although I have been a member of the Fruit Committee for very many years, I took no part in the making of the award criticised by *Northern Grower*. *W. Crump, Oakridge, Malvern Link.*

Obituary.

Mrs. Downie.—We regret to announce the death of Mrs. Downie, widow of the late Mr. John Downie, nursery and seedsman, Edinburgh. Mrs. Downie died at her home, 2, Downie Terrace, Murrayfield, Edinburgh, on March 30.

Augustin André Peeters.—It is with extreme regret that we announce the death, on March 25, of M. A. A. Peeters, of Ancienne Chaussée de Meysse, Laeken, Brussels, one of the oldest and most successful of Belgian horticulturists, in his 86th year. M. Peeters, like his son and successor, M. François Peeters, was well known to British horticulturists, and especially Orchidists. During his long life he was a hard worker and an upright man in every sense of the word. Before taking up the cultivation of Orchids he was a clever grower of Roses, Azaleas and other popular flowers. He was for a long time Vice-President of the Belgian Council of Horticulture, and filled other important posts. He was a famous exhibitor of Orchids and new plants; at the Ghent Quinquennial Exhibition in 1903 he secured the R.H.S. Gold Medal for the best display of Orchids. His name is perpetuated in *Eulophiella Peetersiana* and other fine Orchids.



THE LATE M. AUGUSTIN-ANDRÉ PEETERS.

Edmund Bartlett.—We regret to announce the death of this well-known West Country horticulturist, which occurred at Exeter on March 29, in his 75th year. Mr. E. Bartlett was trained in the leading gardens of Devonshire, and at a relatively early age was appointed gardener at Orleigh Court, an important North Devon charge. Soon he was asked to supervise the whole estate. Orleigh Court was famed as having been the favourite seat of Sir Walter Raleigh, where he was visited by Queen Elizabeth. On the death of the owner, Mr. Bartlett contemplated settling in New Zealand, but, for family reasons, abandoned the idea and accepted the post of gardener and manager to Lady Hotham at Knightleys, Exeter, where he soon became identified with county horticulture. He was a most successful exhibitor at the city and county shows, particularly with Roses, Chrysanthemums, Poinsettias, dinner table plants and miscellaneous groups of plants. It is the busy man who finds time to do things, and the late Mr. Bartlett was for very many years an active member of the Committee of the Devon and Exeter Horticultural Society and manager of its shows. He was largely instrumental in the formation of the Exeter and District Gardeners' Mutual Improvement Association, before which he read papers on various subjects. On his retirement, he was elected a Guardian of the Poor of Exeter and he represented Belmont Ward for 17 years, being returned unopposed at each election—a record in the annals of Exeter. A man of fine presence and unswerving sincerity in thought and speech, Mr. Bartlett was admired and esteemed by all he came into contact with,

and, in his civic work, was widely known as a warm champion of the deserving poor and also a keen advocate of economy. Mr. Bartlett leaves a widow, two sons and four daughters to mourn their loss. His eldest son, Harold, died at Onitsha, West Africa, in 1890. He was one of Kew's most promising student-gardeners and one of the pioneers of cultivation in Nigeria; but, unfortunately, met the fate that too often falls to the pioneer in the tropics. His second son, Mr. A. C. Bartlett, also an old Kewite, was for a dozen years or so in charge of the famous pinetum and gardens at Pencarrow, North Cornwall, and is now a Consulting Horticulturist at Kew, and a frequent contributor to our pages. The third son is in the service of the Exeter City Council. At the funeral, on April 2, the large gathering assembled to pay their last respects included Mr. Andrew Hope (Messrs. Robert Veitch and Son) and Mr. Fred Luxton, Alexandra Nurseries, Exeter.

TRADE NOTES.

A STRIKE took place on March 29 of the members of the Shop Assistants' Union employed in the nursery and seed trade in Aberdeen. The demand was for advanced wages, a week of 48 hours and pay for overtime. The terms asked were: Assistants, 16 years of age, £1 4s., rising annually until at the age of 25 the wage is £3 15s.; first hands to be paid £4 10s.; second hands, £4 1s.; and packers and porters, £3 5s.

THE Edinburgh Nurserymen's and Gardeners' Trade Association announce that the charge for jobbing is increased from April 1. The new charge is at the rate of 1s. 6d. per hour.

ANSWERS TO CORRESPONDENTS.

CALCIUM-CARBIDE REFUSE: *G. J.* As stated on p. 174, the calcium-carbide refuse from the generator of an acetylene gas plant is of value in the garden, when it has become dry. Where lime cannot be obtained, the calcium-carbide refuse should be stored under a roofed but otherwise open shed, so that it may dry and be ready for use as needed.

CHIOSYA LEAVES SILVERED: *W. L.*—No doubt the weather is responsible for the discolouration of the leaves; probably frost followed by sun. There is, of course, a superficial resemblance to Silver Leaf, but this disease is not present, as evidenced by the fact that where one leaf has been protected by another it is partly green. Microscopically the discolouration is quite different and not due to the presence of air spaces, as in Silver Leaf, but to the absolute disorganisation of all the chlorophyll granules.

NAMES OF FRUITS: *F. W. M.* The round Apple is Munchall Crab, and the other one Sturmer Pippin.

NAMES OF PLANTS: *J. P.* 1, Azalea Raphael de Smet; 2, *A. coccoea speciosa*.—*A. J. B.*: 1, *Veronica speciosa* var.; 2, *Akebia quinata*; 3, *Olearia Traversii*; 4, *Cotoneaster frigidus*; 5, *Cassinia fulvida*; 6, send when in flower; 7, *Myrtus communis*.—*R. G. I.*: 1, *Escallonia macrantha*; 2, *Ceanothus Veitchianus*; 3, *Pieris (Andromeda) formosa*; 4, *P. floribunda*; 5, *P. japonica*; 6, *Ilex cornuta*.

VOLUMES OF THE "GARDENERS' CHRONICLE": *J. L.* A small, irregular set of volumes, especially when certain numbers are missing, is not likely to realise a high price, unless certain volumes are needed by someone to complete a set. Booksellers are always on the look-out for volumes to complete library sets. An advertisement in this journal may possibly bring you a purchaser.

Communications Received.—A. C. B.—W. McC.—L. W. N.—H. H. M.—H. A. de G.—W. T.—W. S. W.—J. C. W.—C. S.—J. S. G.—C. S.—H. M.—W. I.—W. H. M.

THE
Gardeners' Chronicle

No. 1738.—SATURDAY, APRIL 17, 1920.

CONTENTS.

Agricultural Wages Board .. 187	<i>Orehis latifolia</i> and <i>O. foliosa</i> .. 191
Alpine garden, the— <i>Silene acaulis</i> .. 193	<i>Sophro-Jadjo-Cat-tiya</i> Brilliant .. 191
American proposed National Orchid Society for .. 187	Ormskirk Potato show and conference .. 187
Azaleas, Kurume .. 194	Plants, indoor .. 193
Beet-sugar factory at Kellham .. 188	<i>Campanda Vidalii</i> .. 193
Birds and birds .. 196	<i>Cobunyas</i> .. 193
<i>Chrysanthemum</i> , the, in China .. 188	<i>Pelargoniums</i> , scarlet, for winter blooming .. 193
Disabled men, country estate for .. 187	Priory, gift of a, for the public use .. 188
Food kitchens in the London parks .. 188	<i>Rhododendrons</i> , Japanese .. 195
Fruit garden, the market .. 189	<i>Sarracenia</i> .. 195
Gardeners' legacies to <i>Gardeners' Chronicle</i> seventy-five years ago .. 188	<i>Shakespeare's</i> garden, plants for .. 188
Gardening and food production .. 188	Societies—
Hardy flower border— <i>Corydalis tuberosa</i> .. 189	Royal Horticultural and Arboricultural, of Ireland .. 198
Lettuce, the .. 192	Royal Horticultural Horticultural Club .. 198
Local authorities and allotments .. 187	Spring garden, the .. 195
Obituary—	Sugar for jam-making .. 187
W. J. Tutcher .. 198	Surveyors' Institution, the .. 188
Orchid notes and gleanings—	Trees and shrubs—
<i>Eulophiella Eliza-bethae</i> .. 191	<i>Prunus cerasifera</i> .. 191
Hybrids new .. 191	<i>Pissardi</i> .. 191
<i>Laelio-Cattleya Ceci-don</i> .. 191	<i>Trochodendron aralioides</i> .. 196
<i>Laelio-Cattleya Hill-don</i> .. 191	<i>Verhema chamaedry-olha</i> .. 196
	Week's work, the .. 190, 191
	Wimbledon Common .. 188
	Wisley, ex-soldiers at .. 187
	the rock garden at .. 188

ILLUSTRATIONS.

Lettuces <i>Gloriosa</i> and Large Parisian .. 192
<i>Corydalis thalictroides</i> .. 189
<i>Orehis latifolia</i> and <i>O. foliosa</i> .. 191
<i>Prunus cerasifera</i> <i>Pissardi</i> .. 194 & 195
<i>Silene acaulis</i> growing in its natural habitat .. 193

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.3°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, April 14, 1920, 10 a.m.; Bar, 29.5; temp. 57°. Weather Showery.

Sugar For Jam Making. THE recent official announcement with regard to the amount of sugar that will be allotted to private households for the purposes of jam making has occasioned great disappointment, especially amongst those who grow fruit. The Food Controller has sanctioned an allowance of 2 lb. per head for each member of those households which have applied for sugar for jam making, and those who grow their own fruit will receive 1 lb. of sugar for every 8 lb. of fruit they may grow. The amount is totally inadequate, and if the present promise of a bountiful fruit harvest is fulfilled there is sure to be a waste of much valuable food, as sugar will not be available to preserve the surplus. There is a shortage of almost every commodity and especially of foodstuffs, but there is apparently an abundance of sugar for the making of confectionery and the delicacies of the pastry-cook, in which sugar is very extensively used. In our opinion the value of jam to the community is greater than either sweets or pastries, and its use as a substitute for butter is now general, especially for children. It is commonly urged that children need sugar in excess of adults, and that sweets should be plentiful for that reason, but we doubt if the children are the chief customers of the confectionery shops, whilst, if it be a case of sweets *versus* jam,

we are of opinion that the latter is far more wholesome, of greater utility and equally enjoyed by the youngsters. After inviting the public to fill in forms stating the quantity of sugar required for preserving hard and soft fruits respectively, and enquiring how much fruit the applicant estimated would be grown in his or her garden, it is not surprising that much grumbling is heard at the meagre amount allowed, while another grievance is the price. When the forms were sent in no hint was given by the authorities that there would be an increase on the price—about 8½ per lb.—then ruling, yet the very considerable advance to 1s. 2d. per lb. is to be made for preserving sugar. This in itself will deter many from claiming even the moderate amount they may be entitled to, for it would make the jam so dear as to be beyond their reach, and they will have to rely on the professional jam maker, who will, apparently, receive an adequate amount of sugar for his purpose. However, with all our grumbling, the sugar may not materialise unless great pressure is brought to bear on the authorities, and maybe not even then, but, in view of the success of the Royal Horticultural Society in helping to secure a supply of sugar for jam making in 1918, it is to be hoped that this powerful society will exert its influence to the utmost to secure a more reasonable ration for the home jam maker during the present year. As the Council pointed out on the last occasion, anyone possessing a good fruit and vegetable garden can, if enabled to make the best use of it, so far reduce his demands upon the public food supply that it will be only necessary to encroach upon it so far as meat, bread and salt are concerned. It would be interesting to know the experience of those who have tried sugar substitutes, such as saccharin or glucose, or have used a special recipe for fruit preserving with less sugar than is commonly employed. Amongst our readers there are doubtless many who are acquainted with economical methods of fruit preserving, other than by canning or bottling. These latter methods are very useful and perfectly simple, but the sugar is still required when the fruit is used, although in these cases it may be drawn from the usual meagre weekly ration. Thanks to the activities of the Food Production Department, the methods of fruit preserving by canning and bottling are now widely known by those who grow fruit for home use, and their practice enables the family to have fruit at its disposal all the year round.

Ex Soldiers at Wisley.—The garden staff at the Royal Horticultural Society's Gardens, Wisley, has recently been augmented by twenty-four discharged soldiers, who are learning gardening under the Government scheme of training for ex-Service men. The men receive no wages but are given a maintenance allowance by the Government, which is defraying all the expenses.

Ormskirk Potato Show and Conference.—The date of the Ormskirk Potato Show and Conference has been fixed for Wednesday and Thursday, 27th and 28th October, 1920.

Agricultural Wages Board.—A readjustment of the arrangements for carrying on the business of the Agricultural Wages Board has been made by the Ministry of Agriculture with the sanction of the Treasury. Sir Henry Rew, who has recently retired from the Civil Service will, as deputy chairman, be in charge of the office and of the general administration of the Board. The increasing importance and magnitude of the Board's functions and the desirability of more

direct supervision of the work of securing strict compliance with the Orders of the Board, have rendered it advisable to divide the secretarial duties. In future, Mr. E. W. Moss-Blundell will be in immediate charge of the outdoor staff as Chief Inspector, while Mr. Russell H. Stanley will act as Secretary to the Board and will be in immediate charge of the indoor staff, the post of assistant secretary, hitherto held by him, being abolished. Both the Secretary and the Chief Inspector will be equally responsible to the Deputy Chairman for the duties assigned to them.

Carriage of Pot Plants by Passenger Train.—At a largely attended meeting of the Trade, held at the Royal Horticultural Hall, on April 15, under the presidency of Lord Lambourne, a very strong protest was made against the proposal of the railway companies to cease the conveyance of pot plants by passenger train on and after July 1 next. Numerous arguments were put forward in support of the traders' point of view, and these were embodied in a general resolution which will be forwarded to the Railway Clearing House and followed up, if necessary, by a deputation from the R.H.S., the Chamber of Horticulture, the Horticultural Trades' Association, and the British Florists' Federation.

Local Authorities and Allotments.—With a view to secure satisfactory amendments to the Land Settlement (Facilities) Act of 1919, the National Union of Allotment Holders has appointed a committee to fully consider the whole question of allotment legislation, as the Union is of opinion the Act is not working favourably. It is understood that the Ministry of Agriculture is calling for a return from allotment authorities showing the acreage acquired, amount of land required and number of allotments provided under the Allotments Acts.

Wakefield and Northern Tulip Society.—Chiefly as a result of a lecture given by Mr. C. W. Needham before the members of the Wakefield Paxton Society, a sum of £17 was raised for the purpose of providing a Silver Cup as the first prize for nine florists' Tulips on the occasion of the Wakefield and Northern Tulip Society's exhibition in 1920. This exhibition will be held on May 29 at the Brunswick Hotel, Borough Market, Wakefield, and the competition for the Silver Cup will be open to all England. Other classes are provided, and schedules may be obtained from Mr. I. Hewitt, the secretary, Kemp's Bridge, Alverthorpe Road, Wakefield.

Country Estate for Disabled Men.—The Village Centres Council for the Curative Treatment and Training of Disabled Ex-Service Men have purchased an estate of 1,027 acres in a very healthy district near Andover, Hampshire. By the generous help of the Red Cross, who gave £15,000, a complete medical block, with all the most up-to-date methods of healing, has been established. Instruction is given in horticulture, farming, forestry, woodcraft, joinery, poultry rearing, electrical fitting, basket-making, carpentry and joinery, boot and shoe repairing, cooking, &c. At present there are 150 men, and if the money necessary to erect more cottages was forthcoming, the Centre could easily deal with 500. The Council's offices are 51, Lincoln's Inn Fields, Holborn, W.C.2.

Legacies to Gardeners.—Sir Edward Walter Greene, Bart., of Nether Hall, Pakenham, Suffolk, who died on February 27, left a legacy of £300 to his gardener. Mr. Alfred Parsons, R.A., President of the Royal Water Colour Society, who died on January 16, left £200 and one year's wages to his gardener, Mr. John Green. Mrs. Fanny Harding Seddon, of Deerhurst Priory, Clifton Down, Bristol, formerly of Waltham House, Stoke Bishop, Bristol, widow, who died on November 23, bequeathed £200 and £50 a year to her gardener.

National Orchid Society for America.—American Orchid growers and fanciers have contemplated the formation of a National Orchid

Society for some time past, and with the intention of arriving at a decision these who have been moving in the matter called a meeting of interested persons for March 25, on the occasion of the Orchid show held at the Horticultural Hall, Boston. If the meeting was as representative as the promoters of the movement anticipated we shall soon have the pleasure of stating that the American National Orchid Society is an accomplished fact. We may point out that one Orchid specialist in the United States believes Orchids can be grown so successfully from seed in America as to satisfy all demands in that country. The programme of the Conference held in connection with the Boston show is as follows:—Basis of Orchid Classification, by Mr. Oakes Ames; Geographical Distribution of Orchids, by Mr. E. H. Wilson; History of Orchid Cultivation in the United States, by Mr. W. A. Manda; Collecting Orchids, by Mr. John E. Lager; and History of Orchids in England, by Mr. G. P. Anson, formerly with Messrs. Low and Co., of Clapton, and Messrs. Charlesworth and Co., of Hayward's Heath.

The Surveyors' Institution.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, the 19th inst., when a Paper will be read, entitled, "Some Problems connected with Agricultural Policy," by Mr. Charles Browning Fisher, C.B.E. The chair will be taken at 8 o'clock.

Gift of a Priory for the Public Use.—The old English mansion known as Ware Priory, with its grounds, has been presented to the people of Ware by the owner, Mrs. Croft, mother of Brigadier-General Page Croft, M.P. During the war the Priory was lent as a convalescent home for wounded men. It will in future be used as the offices for the Urban District Council. Mrs. Croft intends that the grounds should be used for giving rest and recreation to the inhabitants of Ware.

Establishment of a British Beet Sugar Factory.—The Nottinghamshire Sugar Beet growing farm at Kelham embraces some 50 acres of land, and it is expected that the factory will begin work early in 1921. The plant has been ordered from a French firm at Lille, which has had great experience in designing machinery for sugar manufacturing. It will be one of the largest and most up-to-date in existence.

Food Kitchens in the London Parks and Kew Gardens.—The Royal Parks refreshment rooms are now open and are again being managed by the National Kitchen Division of the Ministry of Food. The refreshment rooms are at Kew Gardens, Hyde Park, Kensington Gardens and Regent's Park, and hot and cold lunches, teas, and night refreshments are being served, as last year.

New Public Park on the Gunnersbury Estate.—Ealing Council has bought from the executors of the late Mr. Leopold de Rothschild, for £500 per acre, several acres of the Gunnersbury estate for the purposes of a park and pleasure grounds. About three acres will be taken over by the Middlesex County Council for use as allotments.

Gardening and Food Production.—On April 13 Sir A. Daniel Hall, Chief Scientific Adviser to the Minister of Agriculture, commenced a series of three Chadwick Public Lectures on Gardening and Food Production, in the Lecture Hall, Royal Sanitary Institute, Buckingham Palace Road, London, S.W. The title of the first lecture was "The National Food Supply—How far can we be self-supporting." The other lectures will be on April 20, "Food Production in Gardens and Allotments"; April 27, "Social and Hygienic Conditions respecting Gardens and Allotments." Admission is free.

Shakespeare's Garden.—The appeal of the Trustees and Guardians of Shakespeare's Birth-place, etc., issued three months ago, for gifts of Elizabethan plants and flowers, wherewith to stock his "Great Garden" at Stratford-upon-Avon, has had a very gratifying response. The King and Queen, Queen Alexandra and the Prince of Wales, have graciously interested them-

selves in the project, and have given practical support by valuable contributions of old-fashioned Roses and other flowers. From the gardens of all the Royal Palaces which were known to Shakespeare, ample parcels of the same sorts of flowers as grew in them when he visited them, have been forwarded to Stratford-upon-Avon. Thus, from Greenwich, as well as from Frogmore and from Hampton Court, consignments of plants have reached Shakespeare's Garden; contributions have also been received from the gardens at Wilton, Cobham Hall, Glamis Castle, Cawdor Castle, Charlecote, Knowle, Esher Place, and Burghley House. Most of the plants needful to furnish Shakespeare's garden in the style of his own time have been forthcoming in sufficient quantities, but there are some important kinds still needed. These are:—Box, dwarf Box, both the ordinary and the "Gilded variety"; Thrift; Thyme, the golden and glaucous, as well as the wild; and Santolina, known under its old English name of "Lavender Cotton." Of these, thousands of plants are needed. Similarly of Finks, "Screaked Gillyflowers"; "Spoke Lavender"; and of Pansies—"Love in Idleness,"—pale and dark "purple with Love's wound," while of "Eglantine"—Sweet Briar—a few scores would be very welcome.

The Rock Garden at Wisley.—Visitors to the R.H.S. Gardens at Wisley will find the rock garden especially interesting just now. Amongst the great wealth of beautiful alpinists in bloom we specially noticed, on a recent visit, a colony of the fine red Saxifrage Beauty of Letchworth, another of *Viola gracilis* Mrs. Bowles, and a mass of plants of *Primula juliae*; this last is a very dwarf species and rises very little above the level of the soil, but it is exceedingly floriferous. Lower down the rock garden were many pretty plants of Bowles's Black *Viola*, and in damp spots *Primula rosea* was flowering in profusion. The Pulmonarias were contributing delightful blue tones, and of these there were charming patches of the dwarf *P. Mawsonii*. Near the stream, at the foot of the rock-garden, the *Gummers* had just been divested of their protective covering, and they attracted special notice, for their unfolding leaves are beautiful, and the huge and numerous inflorescences very attractive. Two interesting shrubs were in flower on the rockery, *i.e.*, *Osmanthus Delavayi* and *Viburnum Carlesii*. The former plant is represented by a splendid specimen, freely covered with bunches of its fragrant, white, tubular blossoms. *Viburnum Carlesii* was equally good. Just beyond the rock-garden, in the wood, the blood-red trusses of *Rhododendron Thomsonii* arrested attention, and the strong shoots of *Lilium giganteum* were equally conspicuous.

The Chrysanthemum in China.—Referring to the article under the above heading, in our issue for December 14, 1918, we note that our contributor, Mr. Harman Payne, is giving the first instalment of the original French text of the paper, which he discovered in the old work entitled *Mémoires concernant l'histoire . . . des Chinois*, published by the Jesuit Missionaries in Peking in 1778, in *Le Chrysanthème*. There is no doubt that the reproduction of this old-time contribution to the literature of the famous flower from the Far East, in its entirety, will be keenly appreciated by those members of the French Chrysanthemum Society who are interested in the history and literature of that flower.

Wimbledon Common.—The news that it is not intended to place the famous windmill on Wimbledon Common in working order has been received with regret by a large number of persons who have become attached to this well-known landmark. But it is a relief to learn that the four great sails will be replaced in due time. Time had rendered them unsafe, and the Board of Conservators, when taking them down, decided that "while the need of house-room for great masses of our fellow-countrymen is urgent, no labour ought to be diverted, even to things of beauty." In addition to this laudable sentiment, the fact remains that the Board has no power to

spend money from the rates for such a purpose. The sails under consideration are not the original set, but were erected to replace them by public subscription, and it is confidently felt that when the time comes there will be a ready response to a similar appeal. Wimbledon Common and Heath, unlike those huge North London open spaces—Hampstead Heath and Epping Forest—are maintained and preserved by the immediate inhabitants, whereas Hampstead Heath comes under the authority of the London County Council, and the Forest is maintained by the City Corporation. To meet the necessary expenditure connected with Wimbledon Common a rate is levied by the Board of Conservators on all householders assessed at £35 and upwards residing within three-quarters of a mile of the Common, and the rate is twice as great for those occupying houses within half-a-mile as for the residents in the outer zone. This is one result of the great fight of some 50 years ago against encroachment of the public rights, when the 1871 Act of Parliament settled the rival claims of the Lord of the Manor and the commoners. The historic Caesar's Camp is not a part of the Common and it has long been generally recognised as private property, though some contend it was not originally so. The destruction of the famous "Rounds," some 40 years ago, is still remembered with deep regret by many of the older lovers of Wimbledon Common. Like many other old camps in the country, it had a circle of gnarled old Oak trees, which soon after shared the fate of the "Rounds." The "John Evelyn Club," formed many years ago, still continues its good work at Wimbledon. It was instituted primarily for the defence and promotion of the picturesque amenities of the district and as an educative centre for fostering the taste for nature. It holds monthly meetings and arranges occasional visits to other places of interest.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Heath Edgings for Walks.*—I tried this to some extent last spring, and it has succeeded so well and is so much admired that I design edging the greater part of my flower garden walks with it this season. It looks much better than anything else I have seen. Indeed, Heath, the general covering of our native hills, although common, deserves a place in any nobleman's garden. While in bloom it forms a fine contrast with other plants of more delicate habits in the flower border, and the fine, dark green colour which it retains during winter makes it remarkably well suited for edgings. My method of managing it is as follows:—I cut the Heath up in turfs from a moor, free from Grasses or other weeds, and which had been burnt, as it is termed here, about three or four years previously, so that the plants are thick and young, and bear transplanting well. Young Heath of the above age will average about 5 inches in height. The turfs are cut up into convenient sizes, say from 3 to 4 feet in length, from 3 to 4 inches in breadth, and about 3 inches in depth, for the sake of taking the roots properly up; then take out a trench about 9 inches in width and 8 inches in depth, close by the side of the gravel in the walks; fill this trench with heath mould from any dry moor (being best when of a sandy nature) to within 3 inches of the surface of the gravel walk, so that when the turf is laid its surface may correspond with that of the gravel of the walk, making the mould pretty firm before laying down the turf, lest the latter should sink when rains come. When the turf is laid down, apply the line on both sides and pare off any irregularities with an edging iron or knife; fill up the trench on both sides with the same kind of mould as that below the turf, pressing it firmly in; thus you have the Heath planted in its native soil in which its roots may extend themselves for several years; give the whole now a watering, spread a little gravel over the mould close to the turf on the side next to the walk, and a small portion of garden mould over the heath-mould on the border side, and the work is finished. All the keeping that Heath requires is to prune it with a pair of shears once a year, in September, after the blooming season is over. *Muirfold Grange, Gard. Chron., April 19, 1845.*

THE MARKET FRUIT GARDEN.

Up to the end of March no harm had come to the fruit bloom in spite of its earliness. The only severe frosts registered at my place were 11° and 8° on the nights of the 7th and 8th, and these were too early to do any damage. After that the weather became delightfully mild and spring-like, with plenty of sunshine, light breezes, and gentle showers, mostly at night or in the early morning. Under these genial influences Plums burst into bloom quickly, the earliest by the 15th, and the later blooms opened before the close of the month, by which time the petals had begun to fall from the earliest flowers. The first of the Pear and Cherry blooms opened on the 23rd; and by the end of the month early-blooming Apples were already showing the pink buds, which must open early in April. What a contrast to last year, when no fruit bloom of any kind was seen in March, and only the two earliest-blooming Plums were fully open when the blizzard came at the end of April. Thus the present spring is about six weeks earlier than last, and a fortnight or three weeks before the normal.

GREAT SHOW OF BLOOM.

The display of bloom on Plums is tremendous. Black Diamond, Monarch, President, Early Rivers and Czar could hardly have shown more. Victoria is only moderate, as was to be expected after last year's enormous crop of this variety. As already mentioned, some varieties of Plums have already dropped their petals, so these should now be reasonably safe from frost. Atmospheric conditions seem to have been ideal for pollination, and the bees have been very busy amongst the blossoms. Pears and Cherries are also blooming profusely, but these, of course, are by no means out of danger of frost yet. Apples promise a good show of bloom, though considerably less than last year.

INSECT PESTS.

So far fruit trees are remarkably free from insect pests. Careful examination of hundreds of Apple bloom trusses at the end of last month discovered a good many Apple suckers, though fewer than usual, numerous thrips (*Euthrips pyri*), and a few Winter Moth caterpillars; but only two aphides were found after prolonged search. There is, of course, plenty of time for aphides to appear in force, as they do not normally hatch until April, but one would expect them early in such a season. I do not doubt that insect pests will soon be far more numerous, but it is certainly a great advantage to have the trees growing well in advance of them as they are this year. It is during periods where vegetation is checked that pests do most harm, and healthy trees always seem to escape the worst infestations.

DOUBLE-WORKED APPLES.

Mr. R. P. Brotherston's remarks on double-worked or top-grafted Apples (*Gardeners' Chronicle*, March 20) are very interesting. He states that when one variety is grafted on to another it is always less prolific than if worked direct on to one of the usual stocks. He has found, for instance, that even such a prolific variety as James Grieve, when grafted on free-fruicking kinds such as Lord Grosvenor, Ecklinville and Lord Suffield, yields only about one-third its normal crop, but always finer fruit. It would be interesting to learn whether other growers have had the same experience. My own top-grafted trees certainly yield light crops of very fine fruit, but this is to be expected, as they have been in bearing only two or three years. If it can be established that top-grafting gives lighter crops and larger fruit the knowledge could be put to valuable use, as the plan could be followed with varieties that are liable to over-production and small fruits. Possibly it might prove to be a corrective of the annoying, alternate-year bearing habit which is characteristic of some varieties and which cannot in all cases be prevented by severe thinning of the crops.

STORED APPLES.

Only those growers whose stored Apples kept sound until March gained any advantage from storing this season, as the price did not rise till then above that ruling at the time of gathering the crop. Even then there was not much advance, and sound samples were not plentiful, so there is no doubt that most growers stored at a loss. With me Newton Wonder has, as usual, kept best. It was still sound at the end of March, though some of the larger fruits were beginning to go brown around the core. This is a grand market variety, and well worth planting more extensively. It has a splendid colour and is always clean and free from scab, whilst the tree is free growing and healthy. Another variety that kept very well is Barnack Beauty, which cropped with me for the first time last year. I was hoping that this would prove to be a good late dessert Apple, but I am very much disappointed with its quality. The flavour after storing is quite disagreeable, and one wonders why such a poor variety remains in cultivation. *Market Grower.*

recent exceptionally mild winter it has never been out of flower.

C. tuberosa has been long known in gardens, having been introduced, according to Nicholson's *Dictionary of Gardening*, so long ago as 1596. Not only is it one of the oldest, but it is one of the most useful and attractive members of the genus, the earliness of its flowering giving it an additional value. In ordinary seasons it frequently opens its first flowers in February. On March 6 a large group on one of the rockeries here was in full flower.

Although of such ancient introduction, or perhaps because of it, the plant would appear to be anything but common in gardens. Very few of the many who visit these gardens appear to be acquainted with this *Corydalis*. I remember a few years ago one of the leading gardeners in Scotland telling me it was becoming a rare plant in that country. Incidentally, I had the pleasure of adding it to his collection. As the specific name denotes, the roots are tuberous; they are also hollow. Throughout its whole season of growth from the time when it begins to push its shiny, bronze-coloured stems through the soil in



FIG. 81.—CORYDALIS THALICTRIFOLIA.

HARDY FLOWER BORDER.

CORYDALIS TUBEROSA (SYN. C. CAVA).

The genus *Corydalis* includes many interesting and beautiful plants, all marked by a delicacy and elegance of foliage hardly equalled by any other group of plants—Ferns excepted—and some have very attractive flowers. The introduction of such valuable species as *C. cheilanthifolia* and *C. thalictrifolia* (see Fig. 81) some years ago from China—the latter, unfortunately, not quite hardy—has served to reawaken the interest in and direct the attention of gardeners to the usefulness of this genus.

C. cheilanthifolia is a particularly delightful plant quite capable of taking care of itself, and in spite of the delicate appearance of its foliage seems to bear with impunity, in the South at any rate, the severest weather. During the

early days of the year, until the foliage dies away in late spring, it is an attractive little plant. It has two leaves, biternate and delicately cut into cuneated segments. The flowers are purple in colour and borne on racemes from 6 inches to 12 inches high. The variety *albiflora* is similar, except for the pure white flowers, and I is, to my mind, an even more beautiful plant than the type. Both increase readily by means of self-sown seed.

In common with most of the species, *C. tuberosa* seems indifferent as to soil and situation. Specimens I planted a few years ago in a shady position amongst hardy Ferns are spreading rapidly, and, in company with other early, spring-flowering plants, serve to make bright what would otherwise be a somewhat dull part of the garden. The species thrives equally well, however, in soil filled with Elm tree roots on an exposed part of the rockery. *J. D. H., Bath*

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNSCORNHOLME, Warton Priory, Yorkshire.

Garden Design.—Formality is not altogether pleasing in flower gardening, but there are instances where, owing both to architecture and the surrounding ground, formal flower beds are more or less a necessity. Frivolous designs, not suitable to the position and ground at command, are an eyesore; moreover, to keep them in order entails much laborious work. Before deciding on any particular plan, it is advisable to come to a decision as to the plants which will be required to furnish the beds. It is hardly to be expected, owing to the present day cost and shortage of working materials, that tender plants will be used so extensively as formerly. This in itself, is more of a blessing than otherwise, as it will further the interests of hardy plants considerably. Where permanent edgings are required to beds in the formal garden, choose natural stone wherever practicable. This will permit of such plants as Dianthus and Alyssum spreading over the edge here and there and adding a pleasing feature. Topiary is an unnatural art, but well tended specimens sometimes give an air of distinction in places where precision predominates. Unless of the very best workmanship and material, statuary should be entirely eliminated. Old Italian oil jars are pleasing receptacles for such subjects as Myrtle and *Plumbago capensis*. Stone seats are useless from a utility standpoint unless they are provided with light, wooden, lattice work frames to fit the slab.

Scented Plants.—Exquisite colour and natural form are essentials of good flower gardening, but if fragrance is lacking the charm is only momentary. The wise planter will carefully study the most suitable positions for the fragrant plants, the perfume of which pervades the air as the morning dew evaporates; also those whose scent is predominant at midday and evening respectively. The Tobacco plant is valuable planted beneath a sunny breakfast room window. Accommodation should be made behind seats, where practicable, for the night scented Stock, whilst Southernwood may be planted in the vicinity of shelters, where one is likely to take refuge from showers. The garden proper may be made fragrant in summer with Heliotrope, Carnations, Stocks and scented-leaved Pelargoniums. Delicious scents cause one to linger and admire the garden beautiful.

Tropaecolum.—Dwarf, annual species of *Tropaecolum* grow too freely in rich soils and produce insufficient flowers. To obviate this the seeds should be sown in small pots at the present time and the plants ultimately planted out with the pots intact.

Ajuga.—The variety *Brockbankii* is a pleasing addition to the family of *Ajuga*. The numerous flower stems, which stand erect, are clothed with rich, dark blue flowers. The plant will not thrive in such moist conditions as suits *A. reptans*, and it produces no creeping shoots, but it may be increased by division now; plenty of sharp grit should be added to heavy soil before planting the small clumps.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs JENNER, Wenboe Castle, near Cardiff.

Potatoes.—The planting of Potatoes should be proceeded with, as it is advisable to get this work finished before the end of April in order that the plants may be as forward as possible by the early part of July, at which time spraying should be commenced. Second-early varieties should be allowed a space of 2 feet 3 inches between the rows and 15 inches between the sets; late varieties should be grown 2 feet 6

inches between the rows, whilst in the case of robust growers, such as Great Scot, allow 3 feet between the rows and put the seed tubers 18 inches apart. A depth of 4 inches is a suitable one for all sections. Any refuse of a light nature, containing humus, may with advantage be used in the drills or trenches at the time of planting, and soot used in the same manner is an excellent fertiliser. Any surplus sets of either early or second-early varieties should be allowed to remain in the trays and be kept in a light, airy place. If these are planted any time previous to the middle of July, as ground becomes vacant, they will prove a remunerative crop.

Parsley.—Transplant early-sown Parsley in rows made fifteen inches apart, allowing a space of one foot between the plants in the rows. Make a further sowing of Parsley in the open to meet future requirements.

Beet.—Sow seed of Beet in drills made fifteen inches apart. A few seeds of Globe Beet should be placed at six-inch intervals in the rows, increasing the distance to nine inches for the long-rooted types. Extra fine roots may be grown by making special stations with a crowbar, as in the case of Parsnips, increasing the distance apart to 12 inches.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Propagating Dendrobiums.—To be successful with *Dendrobiums*, a stock of young, healthy plants should be maintained, and each year a few pseudo-bulbs removed at the time of re-potting should be cut up for propagating purposes. They should be cut into portions two or three inches long, and several may be placed around the edge of a small pot filled with clean sand and chopped Sphagnum-moss. Place the pots in a propagating case, or in a moist, shaded corner of a warm house. When roots have formed, repot the plants, using similar soil to that recommended for the older plants. Grow the plants in a warm, moist house, and expose them to more light directly they are established. For a few weeks after re-potting *Dendrobiums* afford them water sparingly, but keep the atmosphere moist, and the stages immediately below the plants damp. A minimum temperature of 60° to 65° should be maintained, but these figures may be exceeded during the day, especially with sun-heat. Damp the house thoroughly early in the afternoons, and close the ventilators. If the weather is mild the bottom ventilators may be opened an inch or two about six o'clock, and be allowed to remain open throughout the night. When closing the houses, "summer time" must be taken into consideration. As the growths elongate and root action becomes vigorous, apply water more frequently, and spray the plants daily overhead. Shade will be necessary during the hottest part of the day, but this should not be too dense, or growth will be weak and more liable to damp off.

Chysis.—These interesting Orchids are either in flower or pushing up their spikes together with the new growth. When the scapes are removed any plants that need fresh soil may be given attention. Fill the pots one-third of their depth with drainage and use a compost of *Osmunda*-fibre with a moderate sprinkling of Sphagnum-moss. Some growers add a little fibrous loam, and if proper attention is given to watering equally good results are obtained by the use of this material. During the growing period the plants should be placed in a light position in the warm house, and if stage room is required for other plants the *Chysis* may be suspended from the roof rafters. Keep the roots well supplied with water until the pseudo-bulbs are fully developed, but afterwards they need only enough moisture to prevent undue shrivelling of the stems. When the plants are at rest remove them to a cooler house where the atmosphere is not heavily charged with moisture. The principal species are *C. aurea*, *C. bractescens*, *C. laevis* and *C. Limninghii*, while the hybrids are *C. Sedemii* and *C. Chelsonii*.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pot Figs.—The earliest forced Figs in pots need plenty of warm, diluted liquid manure and other stimulants, as the pots become filled with roots. Plenty of atmospheric moisture is also necessary during the flowering stage and through the period of the fruits' last swelling, as the amount of ventilation and fire-heat is increased. Remove all weak growths and pinch all strong shoots, as exposure to sun and light is essential to obtain colour and flavour in the fruits. The night temperature should be 65° with a little ventilation, and 75° to 80° on bright days. Early permanent trees will be approaching the flowering stage, and little progress will be noticeable until that is over, but as soon as the fruits begin to swell, again increase the night temperature by 5°, with a corresponding rise during the day. Thin the fruits where this is necessary and prevent crowding of the shoots, for it is very necessary that light and air should reach all part of the trees. See that trees with their roots in confined areas are not allowed to suffer for lack of water; in the case of old trees, weak liquid manure may be used at every alternate watering. The latest trees, in cold houses, will require more water. The fruits should be thinned as they increase in size.

Early Vines.—In very early vineries the Grapes are safely past the stoning stage and commencing to swell again. This is the stage when the vines feel the effects of overcropping, but there is no danger from this if the vines continue to develop healthy laterals; in the case of pot vines with roots in a confined area, the growths may be very weak, and yet the foliage may be healthy and the Grapes will finish well. It is too late at this stage to remove superfluous bunches, but some relief may be given the vines by the removal of berries which show signs of crowding. This should be the last time the bunches are touched. See that all ties are sound and not made too tightly. As every new leaf at this stage assists the roots and black Grapes colour best when the vines are furnished with healthy foliage, a few laterals should be allowed to grow so long as space can be found for them. The roots of pot vines should be stimulated with rich top-dressings and warm diluted liquid manure, guano and soot water; these materials should also be applied on a slightly reduced scale, to the roots of early permanent vines. When the Grapes are approaching ripeness, withhold stimulants and use clear water only. At this stage, the amount of atmospheric moisture should be reduced and plenty of fresh air admitted whenever the weather favours a free use of the ventilators. Always keep a sharp watch on the foliage in warm, dry corners. If the variety *Madresfield Court* is grown in pots see that the roots are well supplied with water before the berries have attained their full size, as a check from cold draughts followed by a flush of water, often results in the loss of some of the finest berries; the same remarks apply to this Grape planted in permanent borders.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nade, Codicote, Welwyn, Hertfordshire.

Disbudding of Peaches and Nectarines.—Owing to the very mild weather, Peaches and Nectarines are very forward and disbudding of these trees will now require attention. The work should be done gradually and the operation should also be governed by the condition of the weather; should the weather turn colder it will be wise to proceed slowly. Perhaps the best time to commence disbudding these trees is when the fruits are swelling freely but, in every case, the operator must be guided by the condition of the trees. Those in a healthy, vigorous condition may be disbudded forthwith, but in the case of those breaking weakly, or any that have received a check through root pruning, the work should be deferred until such time as the roots and

sap are more active. In no case is it wise to remove too many shoots at one time, as this would cause a check to the trees and be detrimental to the swelling of the fruits.

Apricots.—These trees also require disbudding, but not so severely as in the case of Peaches. The first shoots removed should be those that are badly placed, growing behind the branches, or likely to crowd the trees. In this case also the disbudding should be done gradually; an interval of several days should elapse before the work is continued. Many of the shoots should be stopped within a short time to form fruit spurs for next season. As a general rule, three shoots on one spur will be sufficient. Where these trees have been protected from frost they have set far too many fruits, and some should be removed. Remove the protecting material as soon as it is safe to do so.

Peach-Leaf Curl.—Keep a sharp watch for this disease, and if it is detected, treat the trees as advised in my remarks on p. 140.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens, Kew.

Cytisus fragrans.—This Broom has for many years been a popular market plant, its delicate fragrance making it a general favourite. As the plants pass out of flower they should be trimmed, and such as require it should be re-potted. *Cytisus fragrans* may be readily propagated at this time from cuttings formed of half-ripened shoots, which root readily in a close case. Plants may also be raised from seeds, and seedlings show a considerable variation in habit and leaf character, many being of a freer and more graceful habit than those raised from cuttings. These seedlings make excellent stocks upon which to graft the beautiful, silvery-leaved variety elegans, which cannot be propagated from cuttings.

Cytisus stenopetalus.—This Canary Island Broom is worthy of more extended cultivation. It is a stouter-growing plant than the former, and makes a good standard; it is also later in flowering, thus forming a succession to *C. fragrans*.

Cytisus filipes.—The slender growing *Cytisus filipes*, also from the Canaries, is best raised from seeds, and is seen to most advantage when grown as a standard, having slender growth and sprays of small, white flowers.

Celosia cristata and var. pyramidalis.—Seed of *Celosia cristata* should be sown now to raise plants for summer flowering; next month will be soon enough to sow where the plants are required for autumn blooming. Plants raised from seed sown a fortnight ago should be ready for pricking off into light, rich soil. Celosias require rich soil in which they may develop rapidly, and should never suffer check from lack of sufficient root space in their young stages. One of the essentials in the successful cultivation of Celosias is to secure a good strain, for no amount of careful cultivation will produce good combs or plumes if the strain is a poor one. The plants are very subject to attacks of red spider and *Begonia mite*. Red spider may be destroyed by using the syringe, and the mite by sulphur vaporising, as already advised.

Salvia.—*Salvia splendens*, *S. rutilans*, *S. azurea* var. *grandiflora*, *S. involucrata* var. *Bethellii*, *S. Heerii*, *S. leucantha* and *S. rubescens* are all useful subjects for the greenhouse during autumn and winter; but in the immediate neighbourhood of London they are very uncertain, for one night's fog is sufficient to strip them of every flower. They are all readily propagated at this time by means of young, soft cuttings, which, when rooted, should be potted on as they require it. Stand the plants out of doors in the summer, and afford them the same treatment as for *Chrysanthemums*. They may with advantage be planted out for the summer, lifting and potting them the autumn.

ORCHID NOTES AND GLEANINGS.

ORCHIS LATIFOLIA AND O. FOLIOSA.

THE Marsh Orchis (*O. latifolia*) is one of the finest of our native Orchids, and is usually found growing wild in moist meadows; its flowering season is from May to July. It is extremely variable in habit, ranging from one foot to three feet in height. In some forms the leaves are quite green, whilst in others they have the dark spots of *O. maculata*. These two species cross freely, so that one might select a range of forms quite connecting the two. In the typical plant the rich purple flowers are produced in long spikes, while in the variety *incarnata* the flowers are of a flesh-pink shade.

The Madeira Orchis (*O. foliosa*) is by some authorities considered to be only a form of *O. latifolia*. It differs in having shining green, arching leaves, instead of the more or less erect ones of *latifolia*, while the rosy-purple flowers are produced in broader spikes.

The accompanying illustration (see Fig. 82) shows a group of these Orchids in a flourishing condition; the Madeira Orchis is the one with the broader inflorescences.

They both flourish in moist, heavy loam, and

extending to the broad margin, which, like the side lobes, is reddish purple. The column is pale rose and the anther cap white. In a clear light the scarlet of *Sophronitis grandiflora* can be detected, and it plays a satisfactory part in deepening the tints imparted by the other parents.

EULOPHIELLA ELIZABETHAE.

IN the pretty group shown by H. T. Pitt, Esq., of Rosslyn, Stamford Hill (gr. Mr. Thurgood), at the meeting of the Royal Horticultural Society on Tuesday last, an outstanding plant was a specimen of this beautiful, wax-like Orchid which had been in the collection about a quarter of a century. It was one of the original importation from Madagascar, which came with such a flourish of trumpets and sensational records of adventures many years ago. The plant is now very rare in gardens, and Mr. Pitt is to be congratulated on retaining this and many other now rare species in cultivation.

NEW HYBRIDS.

FLOWERS of two very promising hybrids are sent by Frederick J. Hanbury, Esq., Brockhurst, East Grinstead, in whose garden, now famous for its many pretty hybrids, they were raised.



FIG. 82.—ORCHIS LATIFOLIA AND O. FOLIOSA.

if left undisturbed soon form large tufts, each of which sends up several strong stems. The best time to take up and divide the groups of tubers for the purpose of increase is after the stems have died down. W. I.

SOPHRO-LAELIO-CATTLEYA BRILLIANT.

THE first flower of this very handsome hybrid, raised between *S. L.-C. blechleyflora* var. *vivicans* (*L.-C. blechleyensis* × *S. grandiflora*) and *C. Empress Frederick* (*Dowiana* × *Mossiae*) is sent by the raisers, Messrs. Stuart Low and Co., Jarvisbrook, Sussex. It demonstrates a fine advance in imparting the rich and vivid colouring of the *Sophronitis grandiflora* cross to the larger and broadly proportioned *Cattleya*, whose outlines are maintained, although the first flower of the small seedling plant is not so large as that of the *Cattleya* parent, a feature which maturity may alter. The sepals and petals are glowing reddish purple, with darker veining, the petals being broad and wavy at the edges. The base and centre of the lip are chrome yellow, with distinct claret-red lines,

LAELIO-CATTLEYA HILDOM.—This is a very bright and finely-coloured hybrid, raised between *L.-C. Hilda* (*C. Lawrenceana* × *L. Boothiana*) and *L.-C. Dominiana* (*C. Dowiana* × *L. purpurata*), and the analysis of the flower gives, in the shape, a good indication of *C. Dowiana*, but in colour *C. Lawrenceana* predominates. The sepals and petals are of that bright purplish-rose colour seen in the best forms of *C. Lawrenceana*, and the maroon-purple tint of the lip follows that species. The base of the lip has light yellow lines; the flower is fragrant.

LAELIO-CATTLEYA CECIDOM (*Cecilia* var. *Louis Chalor* × *L.-C. Dominiana* (*C. Dowiana* × *L. purpurata*)) follows a very common course in cases where *C. Dowiana* is one of the ancestors, and results in a fine flower with pure white sepals and petals, the yellow in *C. Dowiana* eliminating the cyanic tints in the other parents. The lip, however, compromises, and results in a showy organ intermediate in tint, light violet with yellow base and gradually shading lines of yellow to white on the front. The column is white, the most constant feature in mixed hybrids.

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THE LETTUCE.

THE early history of the Lettuce (*Lactuca sativa*) is involved in considerable obscurity, but there exists in the writings of Herodotus, Virgil, Pliny, Columella, and others, reliable evidence that the plant was known and used by the ancient Greeks and Romans in much the same manner as it is used by us to-day.

How many varieties were in existence in those bygone days we do not clearly know, but coming down nearer to our own times we find that Gerarde, in 1597, mentions the following six varieties:—*Lactuca sativa*, Garden Lettuce; *L. crispa*, Curled Lettuce; *L. crispa altera*, Small Curled Lettuce; *L. Saubaudica crispa*, Savoie Lettuce; *L. capitata*, Cabbage Lettuce; and *L. intybaca*, Lombard Lettuce.

It is interesting to note the remarks of Gerarde on the uses of the plant. He states, "Lettuce maketh a pleasant sallade, being eaten rawe with vineger, oile and a little salt; but if it be boiled, it is sooner digested and nourisheth more." I shall have occasion to refer again to this latter remark. Dodoens, whose *Histoire des Plantes* was translated from low Dutch (German) into French by Charles de l'Escluse in 1557, mentions two classes the curled and the heading, and states that Pliny referred to the first as *Lactuca crispa* and the second as *Lactuca Laconica*, whilst Columella referred to the curled variety as *Lactuca Ceciliiana*. It is worthy of note that neither of these writers makes any mention of a Cos variety, but Miller, in an edition of his *Gardeners' Dictionary*, published in 1757, has a list of fifteen varieties, including five Cos or upright sorts, which were cultivated for kitchen use in his day. The names of these may be interesting to readers of *The Gardeners' Chronicle*. (1) *L.* Common or Garden; (2) *L.* Cabbage; (3) *L.* Cilicia; (4) *L.* Dutch Brown; (5) *L.* Aleppo; (6) *L.* Imperial; (7) *L.* Green Capuchin; (8) *L.* Versailles, or Upright White Cos; (9) *L.* Black Cos; (10) *L.* White Cos; (11) *L.* Red Capuchin; (12) *L.* Roman; (13) *L.* Prince; (14) *L.* Royal; (15) *L.* Egyptian Cos. In describing these he remarks, "The most valuable of all the sorts of Lettuce in England are the Egyptian Green Cos and the Versailles, or White Cos, the Cilicia and Black Cos, though some people are very fond of the Royal and Imperial Lettuces; but they seldom sell so well in the London markets, nor are they generally esteemed. Since the White Cos had been commonly cultivated it had obtained the preference of all other sorts until the Egyptian Green Cos was introduced, which is so much sweeter and tenderer than the White Cos that it is by all good judges esteemed the best sort of Lettuce yet known. This sort will endure the cold of our ordinary winters."

At the close of a century and a half the Versailles Cos, the Egyptian Green Cos and the

Green Capuchin, or Drumhead Cabbage, varieties are practically all that remain in cultivation.

Difference of opinion exists regarding the origin of the Cabbage and Cos Lettuces, some writers holding that they are the produce of quite distinct parents and that the name Cos was given to that particular section because it was first introduced from the island of that name.

Mr. F. J. Chittenden, however, points out that "although the extreme forms are very different from one another, all gradations between them

article of food in his day. It is a pity that cooked Lettuce is not more frequently seen on our tables now, for with very simple preparation it may be made a very pleasant and healthful dish.

We may now leave the old Lettuces and their growers to their fate, and turn our attention for a short time to the newer, and in many respects more preferable varieties that are now available. The Wisley Trials of Winter Lettuces in 1917-18, when one hundred and fifteen samples were sown, and the more complete trial in 1919, when about two hundred and eighty samples were tested, afford ample material for forming a fairly sound judgment on the relative merits and demerits of such varieties as were submitted for trial.

Dealing first with the trials in 1919 of summer and early autumn sorts, it should be stated that the trials were inspected on several occasions by members of the Fruit and Vegetable Committee of the R.H.S., and various recommendations for awards were made. It is, however, important to observe that awards were not given to varieties as such; they were given to strains, an award being given to the truest strain. At the same time it is quite fair to assume that the committee would not have recommended a worthless variety for an award however true the strain might have been. I shall, therefore, be quite safe in following the able, comprehensive, and lucid report prepared by the director, Mr. F. J. Chittenden, which he has kindly permitted me to make use of in preparing this article. The Lettuces have been divided into non-heading or cutting varieties, cabbage varieties, cabbage varieties which form a head, semi-Cos varieties and Cos varieties, each group being further subdivided as seemed convenient and necessary.

Taking the sections in the order given, the cutting and bunching varieties first claim attention. The chief merit of this section is the abundance of leafage which the plants furnish and which is very highly esteemed in hot countries where quantity is the first consideration. The Simpson Lettuces, both white seeded and black seeded, justly received the Highly Commended award of the Royal Horticultural Society at the recent trials. The latter is the best for hot climates and light soils. The number of times it has been re-named is good evidence of its popularity and value.

American Gathering will please both grower and eater if a little colour in the salad is not objected to. Golden Beauty (H.C.) is a more long-standing form of the white-seeded Simpson.

Taking next the "Heading Summer Cabbage Lettuces," the number of varieties available is legion, and the awards were consequently more numerous. It is only possible for me to deal with a few of the most reliable varieties. Mr. Chittenden has rightly divided this section into two groups—those with distinctly crisp leaves, somewhat like the Cos Lettuce, brittle and usually glossy on the veins, and those with the inner leaves scarcely crisp but rather buttery in texture. Taking the crisp varieties first, the accompanying illustration of Large Parisian (Fig. 83) accurately depicts the general form. The heads are very large but not spreading widely; foliage blistered and not much crumpled, hearts fairly firm, of good quality, and mild; very slow in running to seed. This variety was exhibited under seven different names, of which Iceberg is perhaps the most popular. In the early sixties of the last century, it was grown by an Exeter gardener named Heriman, who introduced it to the firm of Beck, Henderson and Child, who



FIG. 83.—CABBAGE LETTUCE LARGE PARISIAN.

are to be found, and there is little doubt but that all have been derived from one original wild plant, in all probability *Lactuca scariola*, a native of Central Europe and Asia." On this point I may add that Dodoens states that Crescencius, an Italian botanist who flourished in the 13th century, refers to a *Lactuca Romana*, i.e. Roman Lettuce, and this has been supposed to refer to the Cos section, and to have originated the French name *Laitue Romaine*. It is noteworthy that Miller does not class Roman Lettuce as a



FIG. 84.—CABBAGE LETTUCE GLORIOSA.

Cos variety, but speaks of it as cabbaging very early. Reference as to the methods of using the Lettuce may not be out of place. In Miller's time they were apparently used for salads and soups, for which purpose they were grown both in the forcing house and in the open, but he does not mention their being served as a green Vegetable like Cabbage and Spinach. Reference to the quotation from Gerarde's *Herball* given above shows that cooked Lettuce was well known and appreciated as a valuable

named it *Herriman's Hardy*, but outside of the Exeter district it was very little known. It is identical with a Continental variety named *Lübbach Ice*, and it was under this name that Mr. Burpee obtained it and renamed it *Iceberg*. The demand for it under this name is world wide. The Fruit and Vegetable Committee justly gave an Award of Merit to the seven strains, of which *Crystal Palace*, *Holborn Standard* and *Supreme* are the best known.

The next type has dark, dull green foliage with paler margins, and is best represented by *Webbs' Wonderful* (H.C.). Five different selections of it were sown under different names, three of which were Highly Commended. Under the name of *New York* (P. Henderson) the demand is simply marvellous, and from all parts of the civilised world. It is worthy of note that the *New York* as originally sent out was identical with the old *Neapolitan*, which, away from the Neapolitan district, has almost disappeared, having been superseded by the lighter coloured form long known as *Webbs' Wonderful*. It is one of the largest Lettuces in existence, but is never coarse.

(To be concluded.)

INDOOR PLANTS.

CAMPANULA VIDALII.

The genus *Campanula* is a very extensive one, and some of the species resemble each other very closely, but there is no danger of confounding *Campanula Vidalii* with any of the rest. Though in the south-west of England, and in other particularly favoured spots, it will pass most winters without injury, *Campanula Vidalii* must, in most parts of the country, be regarded as a subject for the greenhouse or conservatory rather than for the open ground. Its value for the embellishment of glass houses is enhanced by the fact that it is, as a rule, at its best during July and August, when many of the summer flowering plants of the greenhouse are past their best. A notable feature of this species is that it forms a distinct, woody stem from which develop several wide-spreading branches that need to be supported with a neat stick in order to ensure a shapely specimen. The leaves are narrow, about three inches long, stout in texture, and of a deep shining green. As the branches elongate, the flowers are produced on the upper portion, sometimes as many as a score of blossoms, or even more, on a single shoot.

The individual flowers of *C. Vidalii* are about a couple of inches in length, rather narrowly bell-shaped, with a curious contraction in the middle. They are white, with a distinct orange ring near the base of the interior. They are of a markedly thick, wax-like texture, and retain their freshness for a considerable time. *Campanula Vidalii* is a native of the Azores, where it was discovered by Captain Vidal, R.N., after whom it is named. A well-grown plant will reach a height of two feet to three feet. Cuttings of the young shoots may be struck, but they do not form roots very readily. This is however, of small moment, as seeds are readily produced, from which young plants may be raised in quantity. I have tried crossing this species with other *Campanulas*, but always without success; neither have I heard of any hybrid having been raised from it. W. T.

SCARLET PELARGONIUMS FOR WINTER BLOOMING.

In my opinion, nothing can compare, in summer, with a good bed of *Paul Crampel Pelargonium*, yet few realise the other uses to which this well-known plant may be put. During the last few months of the year a batch of *Pelargoniums* of different varieties is very interesting, but how much more striking is a batch of 50 or 100 plants of the *Paul Crampel* variety, staged to the best advantage! Select plants that were propagated in March from cuttings, and place them in a warm pit or greenhouse, and, after they are well rooted, they should be potted singly in 4-inch pots. At a later stage they may be accom-

modated in a cooler glasshouse until they are ready for their final shift into 6 in. pots. They should be potted in a compost of loam and good leaf-mould, mixed with a light sprinkling of bone meal. Free drainage is essential. The plants should be grown in a cold frame and watered regularly and carefully, using liquid manure occasionally. The flower buds should be kept pinched off until about three weeks before housing the plants. If cuttings are taken and treated as above, the result will be a dazzling mass of scarlet in the plant house during October, November and well on into December. Wm. Clarke, *Copley Gardens, Thornton Hough, Birkenhead*.

COLUMNNEAS.

There are several species and hybrids of *Columnnea* in cultivation which are worthy of more extended cultivation. *C. glabra* and *C. glabra* var. *major*, *C. Schiedeana*, *C. Verstediana*, *C. magnifica*, *C. Lemoinei* and *C.*

portance of efficient drainage, and a free, open compost. *Aeschynanthus*, at one time more popular than at present, should now be propagated and grown on under the same conditions. Foreman.

THE ALPINE GARDEN.

SILENE ACAULIS.

The "Moss Campion," or "Cushion Pink," is one of the most charming members of a genus which contains a large number of attractive plants. In the Lake District and on some of the Scotch mountains, as well as on Snowdon in Wales, this delightful plant is found growing wild, forming dense cushions of foliage, covered with rosy pink flowers. The specimen illustrated in Fig. 85 was growing wild in rough, stony ground on the Turtman moraine



[Photograph by R. A. Matby

FIG. 85.—SILENE ACAULIS GROWING WILD ON THE TURTMAN MORAINÉ, 8,000 FEET.

Banksii are all worth cultivating as greenhouse plants. The newer *C. magnifica* is especially good, as it is happy under ordinary greenhouse treatment, and remains in flower for at least three months. *C. Verstediana* and *C. Banksii*, both of a drooping habit, are especially suited for growing in baskets; basket cultivation also suits them from the cultural point of view, as in nature they are more or less epiphytes. And this gives the clue to their successful cultivation in pots, e.g., ample drainage and open, lumpy compost, consisting of good fibrous loam and peat, with the addition of silver sand and charcoal. *Columnneas* all root readily from cuttings at this season in a close case, roots developing freely from all parts of the stem.

With the exception of *C. magnifica*, which is best given cool treatment, all the others need an intermediate temperature, but, in common with many such subjects, they will submit to a lower temperature when in flower. During the plants' season of active growth they need ample supplies of water at the roots, hence the im-

in the Valais, at an elevation of 8,000 ft., in June. It was a very large tuft, measuring more than one foot in diameter at its widest part. Other tufts of various sizes, equally densely flowered, were growing in profusion all over the place, making a very attractive display of colour with their masses of pretty pink blooms.

There are several varieties of *S. acaulis* in cultivation, including *alba* with pure white flowers, and *aurea*, which has tufts of leaves of a golden yellow hue. Generally speaking, the flowers of *S. acaulis* are produced close to the foliage, with hardly any stem, but there is a stronger and larger-flowered variety called *elongata*, which has the darker-coloured flowers on short stems raised well above the tuft. Another name for the last is *grandiflora*. *S. acaulis* var. *flore pleno* is a double-flowered form that has the advantage of being more lasting than the single ones. All are easy to cultivate in this country, although they do not always flower freely. A sunny position in moist, gritty soil is all that they require. W. L.

TREES AND SHRUBS.

PRUNUS CERASIFERA PISSARDII

PRUNUS CERASIFERA PISSARDII (SYD. P. *c. atropurpurea* and *P. Pissardii*) seems to have excelled itself this year in its profuse flowering. At Aldenham we have many specimens in various parts of the grounds, and for some time past they have presented beautiful and striking features, being covered with their pale, rose-tinted blossoms, the illustration in Fig. 86 showing how freely they are produced.

Not the least important merit of the tree for gardens is its beautifully coloured foliage, which renders it valuable for ornamental purposes in the garden; the colour is aptly described by Mr. W. J. Bean, in his classical work on trees and shrubs, as from the

We also grow it at Aldenham under quite different conditions. Some years ago we planted a large, angular shaped bed, with dwarf plants in the centre, edged around by a wide band of variegated Cornus, the centre plants being of *P. c. Pissardii*. The trees are clipped three or four times during the summer and the bed gives a very pleasing and unique appearance, as the clipping causes the young growths to continually present themselves in very bright colours, the *Prunus* often being taken for an *Iresine*, which it much resembles when so treated.

Prunus cerasifera Pissardii was at one time considered to be a form of *P. divaricata*. It was first described in *Revue Horticole*, 1881, p. 190, by E. A. Carrière, who states that it originated at Tauris, an important town in Persia. M. Pissard, gardener to the Shah of Persia, sent specimens to France and it was named by M. Paillet in honour of the intro-

KURUME AZALEAS.

An exhibit of new Azaleas by the Arnold Arboretum, Harvard University, at the March exhibition of the Massachusetts Horticultural Society excited great interest. These plants, about 120 in number in more than fifty named varieties, were found by Mr. E. H. Wilson in a garden at Kurume, a town on the southern island of Kyushu, Japan, in 1918. They were secured for the Arboretum after long negotiations and at very considerable expense, and were sent to the United States.

At the Panama-Pacific Exposition, San Francisco, in 1915, a gold medal was awarded to a collection of 30 plants of these Azaleas in 12 varieties; these plants were afterwards sold. No other exhibit of these Azaleas, which botanists now consider forms of *Azalea obtusa*, has been made in America or Europe. In 1916, at Mr. Wilson's suggestion, Mr. John S. Ames, of North Easton, procured a number of small plants of these Azaleas from the Yokohama Nursery Company; they arrived in the spring of 1917, and this was the first importation of Kurume Azaleas into the Eastern States. These plants have grown well and flowered profusely, and their beauty and charm is the delight of their owner and his friends.

This race of lovely Azaleas is remarkable for the abundance of its flowers and the lustre and purity of their colours. The flowers vary from pink to rose, cerise, lavender, mauve to magenta, salmon, vermilion, bright-red to deep scarlet and to purest white. Many of them have a petaloid calyx and hose-in-hose flowers. In such flowers the stamens, which are always five, and the pistil are perfect, and there is no malformation as in ordinary double-flowers. The anthers, which are light to dark, varying with the colour of the corolla, add not a little to the pleasing appearance of the flowers.

It seems incredible that after more than three-quarters of a century of intercourse with Japan the occidental nations should not have known before Mr. Wilson's journeys in that country all about this beautiful race of garden plants which has been developed to perfection by the flower-loving Japanese. This is, however, the case in regard to the Kurume Azaleas. It is true that one kind, named "Hinodogiri," has been introduced into America in quantity for several years past, and has become quite a favourite, especially in the Pacific States. It is also true that an old inhabitant of gardens—*Azalea amoena*—with its magenta-coloured flowers, and the red flowered *Azalea obtusa*, belong to the Kurume group, but these are not the best kinds, and there are hundreds of varieties. In Bailey's *Standard Cyclopaedia of Horticulture*, V. (1916), the above three kinds are mentioned, and the existence of others is briefly hinted at. In this country these Kurume Azaleas appear to be no better known than in America. Bean, in his *Trees and Shrubs Hardy in the British Isles*, published in 1914, makes no mention of them; Millais, in his *Monograph of the Genus Rhododendron*, published in 1917, says a few complimentary words about them, and lists about a dozen under "Japanese *R. indicum* or *R. indicum-amoenum* hybrids."

Mr. Wilson, to whom we are indebted for most of this information, informs us* that it was during the Arnold Arboretum Expedition to Japan in 1914 that he first became acquainted with these Kurume Azaleas when visiting at Htagaya, a few miles north of Tokyo, the garden of a Mr. Oishi, who specialised in these flowers. The plants were very small, but Wilson was allowed to make a complete collection of dried specimens for the herbarium of the Arnold Arboretum. Curiously enough, in and around Tokyo itself Wilson found that the *Azaleas amoena*, *obtusa* and *Hinodogiri* were commonly grown, but no others of the group.

On the Arnold Arboretum Expedition in 1917-19 it was determined to make a full investigation of these Azaleas, to visit the city where they have originated, and the mountain on which the wild parents were reported to grow. Opportunity came in 1918, and, to Wilson's

*Bulletin of the Massachusetts Hort. Soc. No. 5, 1920.



FIG. 86.—FLOWERING SHOOT OF *PRUNUS CERASIFERA PISSARDII*.

young growth stage "tender ruby-red, changing later to claret, finally to a dull, heavy purple." The photograph from which the illustration in Fig. 87 was reproduced was taken on March 12, 1920, in these gardens. It will be observed that the tree has been carefully trained by pruning, and the brilliancy of its various beautiful shades of colour seems to be enhanced by this operation. The trees are pruned fairly hard, and this does not lessen the crop of flowers, but rather the contrary.

There are other varieties of this "Cherry Plum" in cultivation, the best being *P. c. Blireiana*, and its double form, and *P. c. Moseri*, which also has a variety "flore pleno," but for general utility there is little doubt that *Prunus cerasifera Pissardii* is pre-eminent. In recent years the species has been extensively planted in small suburban gardens as it does not make a very large tree when fully developed.

In some towns it is used as a street tree.

ducer. This *Prunus* has become one of the most popular trees for the decorative garden.

Unfortunately *P. c. Pissardii* does not fruit very freely in this country owing doubtless to two causes, viz. (1) its early flowering, which causes it to run the risk of damage from spring frosts, and (2) bullfinches are very partial to the buds, although fortunately this year, here at any rate, these birds have given but very little trouble. Many consider that the bullfinch lives solely on small insects, but even if this is the case, and I doubt the suggestion, the bird certainly detracts from its value in destroying pests, by the incredible amount of damage it does to fruit trees and many beautiful flowering shrubs. Though a great lover of the bullfinch and other birds, I am convinced that one cannot have both birds and fruits in gardens, as is evidenced by the destruction caused to *P. c. Pissardii* and other trees in past years by these birds. Edwin Beckett, Aldenham House Gardens, Elstree.

great good fortune he had as companion Mr. H. Suzuki, the head of the Yokobama Nursery Company and a most important personage in Japanese horticulture. The city of Kurume is on the island of Kyushu, and some 800 miles south by west from Tokyo. They arrived there on May 3rd, to find the Azaleas in full perfection of bloom. "I went prepared," says Mr. Wilson, "to see a display of blossoms, but the entrancing beauty of myriads of delicately coloured flowers covering a multitude of shaped-grown plants surpassed my most sanguine expectations. The gardens of Messrs. Akashi and Kuwano, the two leading specialists, were veritable fairylands, and I gasped with astonishment when I realised that garden-lovers of America and Europe knew virtually nothing of this wealth of beauty. Most of the plants were trained into low standards, each about 20 inches high, with a flattened or convex crown some 18 inches through, and were monuments to the patience and cultural skill of the Japanese gardener. Other shapes there were, but this was the favourite and most effective. The flowers, each about half to three-quarters of an inch across, and borne on clusters of from two to several at the end of every twig, were in such profusion as to almost completely hide the leaves. If a fault could be found it was that the flowers were too numerous."

Specialists in Kurume recognise some two hundred and fifty sorts, and each has a name, but the distinguishing points are often too slight for the uninitiated to appreciate. More than fifty kinds are quite distinct one from the other, though for practical purposes they may be reduced to about twenty five. Messrs. Akashi and Kuwano selected as the very best the following six: "Takasago" (pure pink, hose-in-hose), "Azuma-kagami" (deep pink), "Kirin" (deep rose, shading to silvery rose), "Kumonouye" (pure salmon), "Kurainohina" (vermillion, hose-in-hose), "Kurenouyuki" (white, hose-in-hose).

(To be concluded.)

THE SPRING GARDEN.

SPRING flowers have been favoured with exceptionally mild weather this season, and they have contributed and are continuing to contribute a glorious display in the garden. Whilst the floral display is at its best careful note should be made of the various subjects as to their individual merits, also the future removal and replacement of worn-out shrubs and perennial species should be determined.

A plan should be drawn up denoting the position, variety and number of spring bedding plants required for next season's display. This will facilitate future work and save much after thought. It is advisable to grow novelties in the reserve garden the first season so as to become acquainted with them and thereby eliminate all risk of disappointment. A well-enriched shady border should soon be in readiness to receive single crowns of Daisy and Polyanthus. Varieties of Viola and Aubrietia may be divided into small portions and planted forthwith, or, if cuttings are required, they may be planted as lifted and should ultimately be cut over with a sharp knife. Afford the plants copious waterings during dry weather. Myosotis may be planted around Currant bushes, the soil lightly stirred, and the plants left to produce self-sown seedlings. Cuttings of Arabis and Alyssum saxatile may be inserted in a frame facing north. The higher ground of groves may be carpeted with Hepatica and the display extended with Snowdrops and Blue-bells, which should be planted towards the moister areas with King-cups and other moisture-loving plants. Laburnum, Cherry, Prunus, Crab, Forsythia and Daphne Mezereum are amongst subjects which should not be overlooked, and Violet, Primrose, Lily of the Valley, Cyclamen, Crocus and Scilla may be used in conjunction with these trees. Alpine Strawberries growing on a sunny sheltered bank are a distinctive feature in the informal spring garden. Erysimum Golden Gem and Cheiranthus Allionii are worthy of extended cultivation. *L. S.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

Sarracenias.—Time was when the strange and interesting Sarracenias were more generally grown than they are now. In the early 'eighties of the last century collections were kept by different nurserymen, notably by Messrs. Veitch and Sons and Mr. William Bull, both of Chelsea. In the nursery of the last-named a house was given up entirely to their culture. In more recent times Sarracenias were shown by the late Mr. A. J. Bruce, of Chorlton-cum-Hardy, but now it is questionable whether a good collection could be obtained. Though the species are but few, numbers of hybrids were raised when Sarracenias were in the height of their popularity. As a rule the most striking feature of this class of plants is their singular pitchers, but the flowers also attract by reason of their uncommon appearance.

autumn and winter alike, it was a pleasure to enter the house devoted to their culture, as some attractive kinds were always in flower. The varieties in cultivation up to the dispersal of the Veitchian collection were numerous, but it is questionable if many of them are obtainable now. I know of no firm that has taken up their culture as Messrs. Veitch did, and if there is one I should like to hear of it, as I have been asked where the varieties are procurable. The Javanese Rhododendrons are often referred to as greenhouse Rhododendrons, but generally they require a temperature above that of an ordinary greenhouse. One of the hardiest is the first of that group to be raised, namely, Princess Royal, the result of a cross between the white *R. jasminiflorum* and the orange *R. javanicum*. Strange as it may appear the blossoms of *R. Princess Royal* are pink. With regard to the propagation of these varieties from internodal cuttings, I have found it more satisfactory to make a long slanting cut



FIG. 87.—*PRUNUS CERASIFERA PISSARDII*, A FINE SPECIMEN TREE AT ALDENHAM HOUSE GARDENS, ELSTREE (see p. 194).

The drooping petals of *Sarracenia rubra* are of a deep red colour, and, in addition, have a sweet Violet-like perfume. On the contrary, the yellow blossoms of *S. flava* have an unpleasant odour, while the crimson flowers of *S. Drummondii* are almost scentless. In order to encourage leaf growth it is often the practice to remove the flower spikes as soon as they are sufficiently developed, but the blossoms are so quaint and interesting that it seems a pity to destroy them. Most of the Sarracenias will succeed in an ordinary greenhouse temperature, potted in a mixture of peat, live Sphagnum-moss and sand. They need plenty of atmospheric moisture, as well as a good supply of water at the roots. *W.*

Javanese Rhododendrons.—The Javanese Rhododendrons certainly merit all that is stated in their favour on page 167, particularly with reference to their continuity of flowering. This quality was in the olden days very evident at Messrs. J. Veitch and Sons' nursery in King's Road, Chelsea, where practically all the varieties in cultivation were raised. Spring, summer,

than to sever the shoot straight across. The slanting cut gives a greater surface for the production of roots. *T.*

Larch Canker.—In the leading article (p. 175) little stress is laid on the condition and nature of the soil in regard to the inception of canker in Larch. My experience here with 400,000 Larch trees leads me to believe that the soil is the all-important factor in determining whether the trees will be affected with canker or not. Much of the soil here is a stiff loam mixed with flint, from one foot to eighteen inches in depth; then comes a hard, pan-like subsoil of a very tenacious character, not quite clay, but a near approach to it. This subsoil is, in my opinion, the main cause of canker. This assertion is borne out by experience; where the soil was trenched two feet deep the trees made excellent growth without any sign of canker. Within fifty yards of the same site, in similar soil, it is difficult to find a tree free from canker. In the unprepared soil, the newly-planted trees make extraordinary growth, from three feet to

four feet in a season, until the roots have penetrated to the subsoil, which is usually after ten to fifteen years. When the roots reach the subsoil, they receive a check owing to the stagnant moisture retained by the hard, pan-like strata. An outbreak of canker follows. In such soil a thorough preparation is imperative, or failure is a certainty, even if deep-rooted trees are planted with the Larch, because the former have not time to affect the drainage as suggested. At one time there was a general idea that canker was caused by the careless removal of the dead boughs, thus causing injury to the bark and providing a lodgment for canker germs. My attention was once drawn to this theory of the cause of canker in evidence given before a commission of enquiry. I was then able to prove there was much more disease above the trimmed parts of the stems than below. In fact, where the trees on the outer rows were not trimmed there was much more canker than upon those with branches removed. When Larch succeeds in soil of a gravelly nature, with a naturally-drained subsoil, it should prove that the rooting conditions have an important bearing on the success of a plantation. Not more than half a mile from where I write, where the objectionable hard, pan-like subsoil does not exist, but where the soil is light loam to a much greater depth, canker in Larch is unknown. *E. Molyneux, Bishop's Waltham.*

Verbena chamaedryfolia.—I find this beautiful plant—perhaps the most brilliant of the scarlet Verbenas—to be at least half-hardy. Last winter four plants in different parts of my rockeries (all the plants I have) withstood a temperature of 22° in the Stevenson screen, which would be equivalent to 19° on the grass, close to which two of them are growing. I have reason to believe that a plant withstood a temperature of 16 degrees of frost in the winter of 1917-18. None of the plants had the slightest protection. The creeping habit of *V. chamaedryfolia* makes it a most desirable rockery plant. *Alfred O. Walker, Ucombe Place.*

Trochodendron aralioides.—As this species seems to be a scarce shrub in this country, and as I have had my plant nearly 20 years and this is the first time it has flowered, I send the flower on the chance of it being of interest. The figure in the *Bot. Mag.*, t. 7375, has the inflorescence enlarged beyond recognition, and out of all proportion to the leaves. *T. aralioides* is a very degenerate member of the Magnoliaceae. *Alfred O. Walker, Ucombe Place, near Maidstone.*

[*Trochodendron aralioides* is a native of the Japanese islands of Yezo and Nippon, where it inhabits the moist alpine woods. The inflorescence received from Mr. Walker is very small as compared with the one figured in *Bot. Mag.*, t. 7375, and which appeared in the Coombe Wood Nursery in April, 1894.—Eds.]

Birds and Buds.—On page 134, your correspondent, H. Teatherton, reproaches Mr. Boyes, p. 95, for attributing bud-eating to sparrows, and at the same time he himself makes similar accusations against tits and chaffinches. Is it possible that the diet of the different species of birds varies with the locality? I have watched birds in relation to bud destruction here for more than twelve years, but I have never seen any birds, except the bullfinch, attack fruit-buds. Chaffinches, tits and goldfinches abound here, and are always to be seen pecking around the buds and along the branches of fruit trees, doubtless feeding on the Winter Moth, insect eggs, American Blight and aphides, but I have never seen a bud fall to the ground while the birds are thus engaged. On the contrary, proof of the beneficial work of birds in gardens was forthcoming after the severe winter of 1916-17, when thousands of small birds perished. For two seasons after this, American Blight increased alarmingly. As this insect visitation synchronised with a great shortage of labour owing to the war, it was impossible to take effective steps to combat it. In the spring of 1918 birds again became numerous, and the pest decreased amazingly. *T. E. Tomalin.*

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 13.—The Royal Horticultural Hall was filled from one end to the other on this date, and the exhibits were interesting as well as extensive. The attendance was very large on this occasion, indeed, during the afternoon there was such a crush that locomotion was difficult. A great attraction was the Daffodil show, but Rhododendrons, Carnations, hardy flowers and Orchids were well shown. Two Gold Medals were awarded on this occasion, to Messrs. Barr and Son and F. H. Lowinsky, Esq., respectively. The Peter Barr Memorial Cup was awarded by the Narcissus Committee to Mr. J. Duncan Pearson for good work done in connection with Daffodils.

Floral Committee.

Present: Messrs. H. B. May (in the chair), John Green, John Heal, J. W. Moorman, Geo. Harrow, C. R. Fielder, Thos. Stevenson, W. Howe, J. Dickson, Chas. Dixon, Arthur Turner, W. P. Thomson, W. Cuthbertson, E. H. Jenkins, W. G. Baker, H. Cowley, C. Williams, Jas. Hudson, H. A. Darlington, A. Ireland, R. W. Wallace, G. Reuthe, H. J. Jones and A. G. Jackman

FIRST-CLASS CERTIFICATE.

Cornus Nuttallii.—A very handsome tree or small shrub that is particularly attractive when flowering freely. The flower heads are fully three inches across, the creamy-white bracts being the chief feature, surrounding a central boss of tiny flowers that are rosy until they expand, when they are yellowish. Shown by J. OSBORNE, Esq. (gr. Mr. W. A. Cook), Dryham, Weybridge.

AWARDS OF MERIT.

Primula margarita Linda Pope.—A charming little Primula, almost of Auricula type in habit. The leaves are broad, green and deeply toothed along the margins. The flowers, borne in a fair-sized truss, are a deep Lavender-blue shade, with white eye. Shown by Dr. McWATT, Duns, Berwick.

Rhododendron Richard Gill.—A large-flowered, loose-trussed variety; the broadly campanulate flowers are of a rich and deep rose colour, flushed on the outside with rose-red. The foliage is neat and suggests *R. Thomsoni*, which was one of the parents, *R. Fortunei* being the other. Shown by Messrs. R. GILL AND SON.

Auricula Bookham Blue.—A glorious Auricula with very large, deep, purple-blue flowers, having a well-defined, creamy-coloured eye. One plant carried a splendid truss of fourteen flowers. Shown by Mr. JAS. DOUGLAS.

Phyllodae (?) nipponica.—A dainty little plant of Heather-like appearance, freely furnished with narrow, stiff leaves, half an inch long and whitish beneath. The flowers, borne towards the ends of the little branches, are white, bell-shaped and semi-pendulous. Shown by Mr. G. REUTHE.

Phyllodae alutica.—A very dwarf, shrubby plant and not so Heath-like as *P. nipponica*. The stiff, short leaves appear all round the stems and are set closely together. At the apex of the branches the greenish-white, urn-shaped flowers depend from slender, inch-long pedicels. Shown by Mr. G. REUTHE.

Cardamine pratensis lilacina plena.—A showy variety of a popular native plant. The flower spikes are six inches long and in the mass look like miniature Stocks. The flowers are not very double, and their colour is light lavender. A very beautiful and effective plant. Shown by Messrs. B. LADHAMS.

Daphne Cneorum alba.—This is a delightful little shrub and differs only the popular rose-coloured type in having white flowers. Shown by Messrs. R. TUCKER AND SONS.

Carnation Wivelsfield Clarit.—This splendid perpetual-flowering Carnation has rich and deep claret-red colouring. It has been described on several occasions in these pages. Shown by Messrs. ALLWOOD BROS.

Rhododendron Donna Florenza.—This variety was included in the large group exhibited by F. H. LOWINSKY, Esq., Sunningdale (gr. Mr. G.

Dribble). This and the three following are all crosses of *R. Downcast* and *R. Aucklandii* superbum. The truss is lax, of large size, and composed of large, deep rose-pink coloured blooms, slightly spotted in the interior.

R. Don Ernesti.—A variety similar to the foregoing, with rose-pink blooms of a lighter colour in the centre. The handsome truss of large individual blooms is very conspicuous.

R. Donna Anita.—This variety has a smaller and more compact truss than those already described. The flowers are very pale-pink.

R. The Don.—This variety is similar to Donna Florenza; the colour is deep rose, slightly paler in the centre and fading with age. The truss is very big and of imposing appearance.

[Owing to pressure on our space the notices of Groups will be given in our next issue.—Eds.]

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. sec.), R. A. Rolfe, Frederick J. Hanbury, J. Wilson Potter, Stuart H. Low, J. Charlesworth, S. W. Flory, Arthur Dye and J. Cypher.

AWARDS.

FIRST-CLASS CERTIFICATE.

Brasso-Cattleya Gattton Lily var. Triumph (B.C. Digbyano-Mendellii × C. Trianae albens), from Sir JEREMIAH COLMAN, Bart., Gattton Park, Surrey (gr. Mr. J. Collier). The third of a most satisfactory batch raised at Gattton Park to receive an Award, and in point of size, form and purity of its white tint, the best. The only colour was the primrose-yellow base of the lip.

AWARDS OF MERIT.

Odontoglossum Joy Uro-skinneri × eximium, from C. J. LUCAS, Esq., Warnham Court, Horsham (gr. Mr. Duncan). A very pretty hybrid, with a close resemblance to *O. Uro-skinneri*, but on a larger scale. The flowers are white, densely spotted with dark purple. It had previously secured for the raiser a Certificate of Appreciation.

Odontioda Leon Perrin (Oda. Sanderæ × Odm. eximium), from Messrs. FLORY AND BLACK, Slough. One of the finest advances of the bright red *Cochlioda* crosses towards the large size and form of the favourite *Odontoglossums*. Colour deep red, with lighter markings on the lip and margin.

Laelio-Cattleya Eunice var. Snowdon (C. rhocensis alba × L. anceps alba), from Messrs. J. and A. McBEAN. Flowers borne on elongated scape as in *L. anceps*, but as large as those of the *Cattleya* parent; pure white, with pale-yellow disc to the lip.

CULTURAL COMMENTATION.

To Mr. H. HADDON, Orchid grower to Mrs. Bischoffshim, The Warren House, Stanmore (gr. Mr. Taylor), for a most remarkable specimen of *Dendrobium Brymerianum*, a compact plant with 22 spikes, bearing together 60 flowers, and certainly the most profusely-flowered specimen of this fine, yellow-bearded *Dendrobium* yet seen.

GROUPS.

Sir JEREMIAH COLMAN, Bart., Gattton Park, Surrey (gr. Mr. J. Collier), was awarded a Silver Flora Medal for one of the best representative groups of varieties of *Lycaste Skinneri* yet shown, and comprising the large pure white *L. Skinneri alba grandiflora*, with a dozen pure white flowers; *Lycaste S. alba magnifica*, with equally pure white flowers, but broader in all its parts; the charming, delicately-tinted *L. S. Gattton Park* variety and varying tints of the same species up to the dark maroon-lipped forms. Some fine white *Brasso-Cattleyas* were also shown.

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, and Jarvisbrook, Sussex, were awarded a Silver Flora Medal for a most varied and interesting group, in which their love for rare species and sterling advances in hybrids was well demonstrated. The centre was of the now rare, large yellow *Oncidium Marshallianum*, with very handsome *Odontoglossums* and *Odontiodas*. Remarkable above other good things in the group were

Cattleya Cappei alba (Schröderae × Trianae), the best pure white of its class; *Sophræo-Cattleya* *Atrous gloriosa*, good and deep in colour; other scarlet *Sophræonitis* crosses, and some very handsome *Laelio-Cattleyas*.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Banksian Medal for a selection of good hybrid *Odontoglossums* and *Odontiodas*, with several pretty seedlings. Fine features were made by the hybrid *Miltonias*, including *M. Venus*, good *M. Bleuana*, and other *Miltonias*. *Odontoglossum Promerens* var. *xanthotes* had a fine spike of snow-white flowers with lemon-yellow spotting, and hybrids of *Odm. Jasper* showed the characteristic uniform spotting of the parent.

Messrs. CHARLESWORTH AND CO., Hayward's Heath, were awarded a Silver Flora Medal for a pretty group, in which one of the best plants was a finely-coloured *Sophræo-Laelio-Cattleya His Majesty* (S.-L.-C. Marathon × C. Trianae), in size a close approach to C. Trianae and with rich colouring. The favourite L.-C. G. S. Ball, with its bright yellow flowers; rich scarlet *Odontiodas* and multi-coloured *Odontoglossums* made a very attractive show.

Messrs. J. and A. McBEAN, Cooksbridge, secured a Silver Banksian Medal for a group of very good *Odontoglossums*, *Odontiodas* and other showy hybrids, including the very interesting *Odontoglossum Eugenia* (*cordatum* × *crispum*) and some brilliant deep-red *Oncidioda Cooksoniae*.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group of interesting species and hybrids.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), received a Silver Flora Medal for a very pleasing group replete in the pretty species and hybrids to which he has been constant throughout the many years of his experience as an Orchid enthusiast. *Eulophiella Elizabethae*, some typical forms of *Odontoglossum Pescatorei*, and other varieties were taken for the afternoon Lecture by Dr. Rendle. Forms of *Miltonia* and hybrids, and hybrid *Odontoglossums* were good.

Mr. HARRY DIXON, Spencer Park Nursery, Wandsworth Common, was awarded a Silver Banksian Medal for a pretty group, in which a grand form of typical white *Odontoglossum crispum* effectively outclassed the hybrids.

Messrs. FLORY AND BLACK, Slough, showed a very interesting selection of hybrids, for which a Silver Banksian Medal was awarded.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a group of hybrids and rare species, including *Maxillaria Sanderæ* and other sterling old-time favourites.

OTHER EXHIBITS.

Sir H. S. LEON, Bart., Blechley Park, Bucks (gr. Mr. Field), showed a fine plant of the natural hybrid *Cymbidium Cooperi*.

Dr. MICHAEL LACROZE, Bryndir, Roehampton (Orchid grower Mr. Taylor), showed a grand form of *Odontoglossum venustum*; and *Odm. Gloria* (*Jasper* × *Raymond Crawshay*), both with their first flowers, which were fine in colour and size.

R. G. THWAITES, Esq., Christchurch Road, Streatham, showed a selection of novelties, which will be recorded in a subsequent issue.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles (in the chair), W. F. M. Copeland, Arthur R. Goodwin, G. Renthe, H. V. Warrender, H. Backhouse, J. D. Pearson, P. R. Barr, C. Bourne, F. H. Chapman, W. Ponpart, W. B. Cranfield, H. G. Hawker, Reginald Cory, John Jones, Geo. Churcher, F. Barchard, W. R. Dykes, W. A. Watts, Mrs. Backhouse, Miss Willmott, Revs. J. Jacob, Rollo Meyer and C. T. Digby, and C. H. Curtis (hon. sec.).

Narcissus Orange Glory.—A brilliant yellow trumpet Daffodil, the colour suffused with an orange tint. The flowers are not large, but they are elegant and the form suggests that *N. cyclamineus* was an ancestor. Shown by Messrs. BARR AND SONS.

Narcissus John Masefield.—A fine *Poeticus* variety, with pure white and finely-formed

perianth, and bright red eye. Shown by Messrs. J. B. PEARSON AND SONS.

Narcissus Firetail.—A very effective variety that was entered as belonging to Section IX., which is the *Poeticus* group, but its colouring seems to place it outside the company of the poets. It is a lovely *Narcissus*, shapely, and the soft sulphur yellow perianth sets off the brilliant crimson-red of the crown. Shown by Messrs. H. CHAPMAN.

GROUPS.

The many trade displays of *Narcissus* contributed largely to the success of the meeting. Whilst practically all the various sections of the flower were represented, it was those with brilliant coronas of the *Incomparabilis* and *Barrii* sections that won most admiration, though the many greatly improved *Poeticus* *Narcissi* were also especially good.

Messrs. BARR AND SONS arranged a splendid group in which, appropriately enough, the brilliant cupped *Barrii* and many *Incomparabilis* varieties were prominent. We especially noted of these Major Spurrell, Ruby, Pyrrha, Nannie, Nunon, Red Chief and Zenith as being excellent examples of these fascinating *Narcissi*. The double flowers of Sulphur Phoenix found many admirers, as also did the many other splendid standard sorts of all types. Many seedlings of great promise showed that progress in the Daffodil is being continued (Gold Medal).

THE DONARD NURSERY Co. filled a large stretch of space under the wall. Very bright colour was supplied by such sorts as Dragon, Croesus, Lucifer and Marshlight of *Barrii* type, while several *Poeticus* seedlings were also of more than average merit. Particularly good Trumpet varieties were Lady Margaret Boscawen, Noble, King Alfred and Magog (Silver-gilt Flora Medal).

Messrs. SUTTON AND SONS instituted a welcome improvement on the bare style of exhibiting *Narcissus* by the liberal use of sprays of *Berberis aquifolium*, *Asparagus Sprengeri*, *A. plumosus nanus* and fine trails of *Smilax*. The disposal of the vases was also delightfully unconventional. By these means the Reading firm displayed to the full the great decorative value of the best *Narcissi* (Silver-gilt Flora Medal).

Mrs. BACKHOUSE, Sutton Court, Hereford, showed many gorgeous seedlings. They were mostly of the *Incomparabilis* type, with most brilliant coronas and represented a great advance on the majority of standard varieties. These unnamed sorts were characterised by broad, brilliant coronas and great substance of perianth (Silver-gilt Flora Medal).

Mr. G. L. WILSON, Broughshane, Antrim, brought a collection of his Irish seedlings, among which a medium ivory-white Trumpet was very fascinating. Moira O'Neill, the only named bloom, was particularly good (Silver-gilt Grenfell Medal).

Messrs. R. H. BATH, Ltd., displayed many good *Narcissi*, with strong spikes of Crown Imperial, the dwarfier, quaint *Fritillaria Meleagris*, grape Hyacinths and a group of *Violas* (Silver Banksian Medal).

Messrs. J. CARTER AND Co had a group of Darwin Tulips, backed by brilliant Japanese Maples, which made a bright show. The chief Tulips were Mr. Farncombe Sanders, Margaret and Pride of Haarlem (Silver Grenfell Medal).

In Messrs. R. SYDENHAM'S, Ltd., group, *Poeticus* varieties, such as Virgil, Horace, Epic, Laureate and Ben Jonson, were prominent (Bronze Flora Medal).

Messrs. J. R. PEARSON, Ltd., staged a small, but choice, collection, including Saint Hario, Heroine, and Evangeline of the chaste Leedsii class, and Ben Alder, Weardale Perfection and Great Tom among large Trumpets (Silver Banksian Medal).

The Rev. G. H. ENGLEHEART contributed his customary "not for competition" collection. On the present occasion it consisted of some two dozen *Poeticus* seedlings of great excellence.

Fruit and Vegetable Committee.

Present: Messrs. A. H. Pearson (in the chair), J. Cheal, G. P. Berry, H. S. Rivers, G. F.

Tinley, P. A. Tuckett, Owen Thomas, S. B. Dicks, F. Jordan, A. Bullock, W. Humphreys, Ed. Beckett, A. W. Metcalfe, J. C. Allgrove and W. H. Divers.

Messrs. SUTTON AND SONS, Reading, were awarded a Silver Knightian Medal for a collection of eighteen dishes of vegetables representing twelve varieties. The quality was superb and the method of staging excellent. The outstanding vegetables were the Broccoli; heads of the variety Satisfactory were magnificent, and there were almost equally good ones of Safeguard, Lettuces, Matchless and Golden Ball; Cabbages, Flower of Spring, Favourite and Harbinger; Cucumber, Sutton's Market; Mushrooms, Radishes and Cress were all of outstanding merit.

A seedling Apple, named The Rhydd Seedling, was shown by Mr. ERNEST HILLS, Rhydd Nurseries, Hanley Castle, Worcester. The fruits possess considerable merit for a late variety and the flavour is good. The skin is flushed with red over the greater part of its surface, and there are red markings at the base. The flesh is greenish and juicy. It is a promising variety for market purposes.

COMPETITIVE DAFFODIL CLASSES.

When the exceptional earliness of the spring is considered, together with the almost insuperable obstacles to special flower growing of the past five years, the excellence of this year's show becomes more remarkable. The quality was, in nearly all cases, very high, and the competition keener than might have been expected.

In the open classes, there was no exhibit of 46 varieties representing the different divisions, but there were three of 12 Trumpet varieties, and the best was by Mr. G. L. WILSON, Broughshane, Co. Antrim, who had praiseworthy blooms of Moira O'Neill (sulphur-yellow trumpet), a primrose-coloured seedling, and Monarch; 2nd, THE DONARD NURSERY COMPANY, Newcastle, Co. Down, who included two magnificent seedlings; 3rd, Mr. J. MALLENDER, Bawtry, Yorkshire.

The only exhibits of 12 *Incomparabilis* varieties was by the DONARD NURSERY COMPANY, and their collection deservedly received the 1st prize. The vases of Lady Moore, Croesus and a seedling were splendid.

Messrs. F. H. CHAPMAN, Ltd., were alone in the class for 12 *Barrii* varieties and were awarded the 1st prize for a splendid collection of high quality. Torsa, Crater and Horizon were extremely fine.

Two exhibits were forthcoming in the class for nine varieties of the *Poeticus* type, but one, unfortunately, was disqualified, though it would not have affected the first prize collection from Messrs. F. H. CHAPMAN, Ltd., who showed mostly seedlings of high merit.

AMATEURS' CLASSES.

The first class in this section was for 24 varieties of Trumpet, *Incomparabilis*, *Barrii*, Leedsii, or *Poeticus* varieties, and the 1st prize was won by Dr. N. Y. LOWER, Presteign, Radnor, with a collection very representative of the different types and of very good quality. The vases of Miss Willmott, Seville, Firetail, Dosoris, Heroine and Dragon were excellent; 2nd, Rev. THOS. BUNCOMBE, Black Torrington, N. Devon, who also showed a very representative collection of great merit; 3rd, Mr. H. R. DARLINGTON, Park House, Potters Bar.

The Rev. THOS. BUNCOMBE was placed 1st for six Trumpet varieties, three stems of each; 2nd with (a) six *Incomparabilis*, (b) six *Barrii*, (c) six *Poeticus*, and (d) six varieties of all or any of the foregoing. Mr. H. R. DARLINGTON was awarded 2nd prizes for (a) six Trumpets, (b) six Leedsii, (c) six *Triandrus* hybrids, (d) six *Tazetta* hybrids, and (e) six double varieties.

In section 3 of the Amateurs' Classes, the premier prize, offered for 12 fairly representative varieties, three stems of each, was won by GEO. CHURCHER, Esq., Alverstoke, with an excellent collection; 2nd, W. B. CRANFIELD, Esq., Enfield Chase. Mr. CHURCHER was also awarded 1st prize for three varieties of *Poeticus*, and the

2nd for three varieties fairly representative of five specified divisions; while Mr. CRANFIELD was 2nd with three varieties of Leedsii and Poeticus varieties.

NEW VARIETIES.

Various classes were arranged for varieties either recently introduced or not yet in commerce, and these enabled the enthusiasts to judge of their merits. Many good sorts were shown and generally the competition was quite satisfactory.

There was a gratifying competition in the class for 12 varieties, introduced into commerce since 1915. The 1st prize was won by Dr. N. Y. LOWER, Presteign, Radnor, with a very fresh and good collection. Many of the blooms were shown under seedling numbers; of the named sorts, Beauty of Radnor, pale apricot Leedsii, and Harpagon, brilliant Barrii, were particularly good; 2nd, Wm. WELCHMAN, Esq., Upwell, Wisbech, who showed fine blooms of Hereward, Tranquility, Meliades, Emperor of India and Lord Lister. Dr. Lower was awarded the Engleheart Cup for his 1st prize collection in this interesting class.

The best six varieties not in commerce were shown by Mr. W. B. CRANFIELD, whose chief blooms were Venetia, a pure white Leedsii, and Longbow (Poeticus); 2nd, Rev. THOS. BUNCOMBE.

THE DONARD NURSERY Co. had the best three varieties not in commerce, of which Leontes and Irish Pearl (giant Incomparabilis) were excellent; 2nd, W. F. MITCHELL, Esq., Leek Wootton, Warwick.

In the class requiring nine blooms each of three new varieties not in commerce, Messrs. F. H. CHAPMAN, Ltd., were awarded 1st prize for splendid vases of Rosamond, Eye, Marmion, Valetta, Mrs. Grant and Bolero.

The best vase of one variety was that of Harvest Moon, a beautiful, soft, self-yellow Trumpet, by THE DONARD NURSERY Co.

Mr. W. F. M. COPELAND was placed 1st for nine varieties, one stem of each; and Mr. W. WELCHMAN was similarly successful in the class for 12 varieties, one stem of each.

Dr. LOWER won 1st prizes for six varieties, one stem of each, and three varieties, three stems of each, showing in both classes very fresh and good blooms.

Mr. W. B. CRANFIELD was awarded the 1st prize for a collection of 36 varieties, three stems of each, fairly representing the different divisions. The Barn Silver Daffodil Vase was awarded to this very creditable exhibit.

ROYAL HORTICULTURAL AND ARBORICULTURAL SOCIETY OF IRELAND.

THE spring show of the Society, held by kind permission of Earl Iveagh, K.P., in the covered yard of his lordship's Dublin residence, proved a pleasant function, for although entries were comparatively few, the quality of the exhibits was high.

The winner in the premier class for 30 varieties of Daffodils distinct, embracing all sections, was Mr. J. LIONEL RICHARDSON, Prospect House, Waterford, who won the Lord Ardillan Challenge Cup. His varieties (three stems to a vase) were Van Waveren's Giant, Lord Kitchener, Michael, Great Warley, H. C. Bowles, Noble, Sunrise, Lord Roberts, Bernardino, Mrs. R. Sydenham, Whitewell, Cosack, Croesus, Black Prince, Bacarolle, Ruby, White Knight, Caedmon, Victory, Kingcup, Ivorine, Muriel, Herod, and seven fine, unnamed seedlings. Mrs. BUTLER, Prieststown House, Prieststown, Meath, was second. For eighteen varieties distinct, Mr. C. W. PARR, Ballivor, Athboy, Co. Meath, was the only competitor. For twelve distinct large Trumpets, Mr. J. LIONEL RICHARDSON was first and Mrs. BUTLER second. For twelve distinct medium cupped sorts, Mr. J. L. RICHARDSON led, and for twelve distinct small cupped varieties he was also chief prize winner. Mr. C. W. PARR won first prize for six distinct Trumpet kinds, and Mrs. BUTLER for six varieties with medium cups, Mr. C. W.

PARR being second. For six distinct small-cupped varieties, Mrs. BUTLER and Mr. C. W. PARR were the prize winners, and Mr. J. L. RICHARDSON led with six vases of N. poeticus.

One hundred distinct varieties were shown by Mr. RICHARDSON, not for competition, including seedlings of his own raising, and for which he was unanimously awarded the Society's Gold Medal. Three of the seedlings were voted F.C.C.s by the R.H.S.I. Council, two receiving A.M.s.

Mrs. GEEFF, Curragh Grange, won the cup offered for twelve pans of alpanes, distinct. For a collection of hardy cut flowers, shrubs not excluded, from the open, Captain RIALI, D.L. (gr. Mr. T. Webster), Old Conna, Bray, was first with a fine group in which Rhododendron arboreum, R. Falconeri and R. Thomsonii were conspicuous, other good things being a fine vase of Dendromecon rigidum and Grevillea rosmarnifolia; Sir STANLEY H. COCHRANE, Bart. (gr. Mr. G. Bower), Woodbrook, Bray, second. For the smaller collection of twelve kinds, Mr. W. ROBERTSON (gr. Mr. C. Kempton), Hermitage, Dundrum, Co. Dublin, won first prize, and for a collection of twelve hardy shrub flowers, Capt RIALI was chief prize winner.

In the classes for pot plants, the Lord Ardillan Challenge Cup for six Roses was won, with good, clean specimens, by Major KELLY (gr. Mr. J. McDermott), Montrose, Donnybrook; Mr. W. ROBERTSON was chief prize-winner for Primula obconica; Sir S. H. COCHRANE for Azalea mollis; and Mr. F. V. WESTBY (gr. Mr. F. Simmons) for Dentzias, with huge specimens, finely flowered; Mr. W. ROBERTSON for herbaceous Calceolarias; and Mr. W. ROBERTSON for Arum Lilies. For a collection of bulbous or tuberous rooted plants grown in pots or pans, staged on a space 8 feet by 4 feet, Sir S. H. COCHRANE won first prize, as he also did in the class for Hyacinths.

Fruit was conspicuously good, and the principal awards were won by Capt. RIALI, Dr. R. T. HARRIS, Lord CLONCERRY (gr. Mr. W. Hall), LYONS, HAZLEHATCH AND Co., Kildare, Mr. W. ROBERTSON and Major KELLY.

In the vegetable classes, Mr. J. M. TONER, Kingstown; Lord CLONCERRY; Mr. HOWARD GUINNESS (gr. Mr. R. Morgan), Chesterfield, Blackrock, Co. Dublin; Sir S. H. COCHRANE; Mrs. TISDALL (gr. Mr. J. Dougherty), Charlesfort, Kells, Co. Meath; Col. CLAUDE CANE (gr. Mr. A. Horton), St. Wolstan's, Celbridge, Co. Kildare; Miss CUNNINGHAM (gr. Mr. J. McLindon), Trinity Hall, Rathmines, Dublin; and Mr. C. WISDOM HELY won the principal awards.

The only trade exhibit was from Messrs. HOGG AND ROBERTSON, Dublin, who had a fine stand of Tulips, including some of the best of the Darwin sorts, and other bulbous spring flowers, for which a Gold Medal was awarded.

HORTICULTURAL CLUB

APRIL 15.—The monthly dinner of the Horticultural Club, held on Tuesday last, in the R.H.S. Hall, Vincent Square, Westminster, was followed by a lecture—under the joint auspices of the Club and the Royal Horticultural Society—by Mr. J. K. Ramsbottom, on "Further Investigations in Narcissus Disease." There were fifty present at the dinner and about sixty at the lecture. Mr. Ramsbottom's remarks were followed with keen interest, the majority of those present being raisers and growers of Narcissi. Mr. W. B. Cranfield presided at both the dinner and the lecture. We hope to publish an account of the lecture in full in subsequent issues.

Obituary.

W. J. Tutcher.—Just as these pages were being passed for the press, intimation reached us of the sudden and untimely death of Mr. W. J. Tutcher, Superintendent of the Hong Kong Botanic Gardens. Mr. and Mrs. Tutcher were proposing to leave Hong Kong about a fortnight hence, for a long holiday in England and Scotland.

ANSWERS TO CORRESPONDENTS.

APPLE BADDAMORE: S. Your variety would appear to be incorrectly named, as we find no Apple named Baddamore either in *Hogg's Fruit Manual* or in *British Apples*. If you can give us further information with regard to the variety, we may be able to help you in connection with the other points raised.

CHRISTMAS ROSES DISEASED: M. F. H. The black spots on the leaves are due to the presence of a fungus, a species of *Phyllosticta*. The plants should be sprayed with Bordeaux mixture or lime-sulphur, before the leaves are attacked.

FRUIT CULTIVATION FOR AMATEURS: H. C. F. A suitable book for your requirements is *Fruit and its Cultivation*, and it can be obtained from our Publishing Department, price 7s., post free.

FRUIT FARMING: W. A. Your best plan will be to apply to the Horticultural Instructor in the county in which you desire to obtain employment.

FRUIT SPOT ON APPLES: W. F. M. C. The disease is known as "Fruit Spot." It is probable that several fungi are associated with it, but the disease has not yet been fully worked out by scientific investigators. The conditions of storing are the most important factors concerned in the development of the disease. Only sound fruit should be stored and the store-room should be kept perfectly clean.

HODDAY'S RHUBARB: G. L. We believe that Hodday's Giant Rhubarb was put into cultivation by Messrs. Wm. Cutbush and Sons, of Hightgate.

LAPAGERIA GROWTHS WILTING: E. J. C. No disease is present in the growths submitted, and we think the cause of the trouble may be found in some error of cultivation, possibly over-watering, which has reacted upon the roots, and consequently the growths have wilted during sunshine. The rooting medium should be thoroughly examined and the drainage put into perfect order. It may be necessary to provide fresh soil of a more open texture.

NAMES OF PLANTS: 1. G. 1 and 3, *Erica carnea*; 2, *E. mediterranea hybrida*; 4, send when in flower; 5, *Erica mediterranea*; 6, *Erica Tetralix*; 7, *Azara microphylla*; we cannot undertake to name florists' varieties of Daffodils and Rhododendrons.—C. E. B.: The giant Morel, *Morchella esculenta*.—C. S.: 1, *Chlorophytum elatum variegatum*; 2, *Mesembryanthemum muricatum*; 3, *Sempervivum*, probably *arborescens*; 4, *S. arachnoides*; 5, *Crassula lycopodioides*; 6, *C. Bolusii*.

PELARGONIUMS DISEASED: J. H. The Pelargoniums are suffering from the botrytis form of some parasitic fungus. Cut away and burn the affected parts, spray the plants with a solution of sulphide of potassium, and pay special attention to cultural details and cleanliness.

PRICE OF ELM TIMBER: J. T. For Elm Trees of fair size and good quality, the price, standing, varies from 1s. to 1s. 3d. per cubic foot; felled, 1s. 6d. to 1s. 10d.; and put on rail 2s. to 2s. 2d. per foot. The price largely depends on the site of the plantation, conditions of roads, and distance from the railway station. A quantity of prime Elm timber sold recently in the neighbourhood of London at 2s. per cubic foot, the timber being put free on the railway by the seller.

SCHIZANTHUS FAILING: W. E. B. On two of the plants received the outer tissues of the "collar" show signs of some injury; possibly some strong fertiliser has been used as a surface dressing. The other plants show no signs of disease or injury, and the roots appear to be quite healthy.

Communications Received.—A. O.—G. W. D.—E. J. C.—R. S. S.—S. L.—C. W.—L. C.—E. F.—A. G.—S. L.—T. C.—F. K. W.—J. P. C.—J. D. R.—J. C. A.—W. J. B.—T. H.—E. S. C.—G. B.

THE

Gardeners' Chronicle

No. 1739.—SATURDAY, APRIL 24, 1920.

CONTENTS.

Alpine garden the— Galanthus nivalis Perfection .. 202 Polygala Vayredae .. 203 Primula leucophylla .. 203 Symphytum caesecens 203 Synthyris reniformis 203 American Apple trade .. 199 American Orchid Association .. 200 Antwerp, horticultural exhibition at .. 199 Birmingham, new park and open space for .. 200 Datura sanguinea .. 208 Edinburgh's bowling greens, the cost of .. 199 English versus Scottish gardeners .. 208 Farmer, Mr. Reginald's exploration in Asia .. 204 Florists' flowers .. 207 Verbena .. 207 Freesia names and the R.H.S. Floral Committee .. 208 Fruit garden, the market .. 206 Fruit register— Apple Alstriton .. 201 Fungus, the adjectival form of the word .. 209 Gardener, honour for a "Gardeners' Chronicle" seventy-five years ago .. 200	Journal of the R.H.S. Gardeners' Club .. 199 Irises, bog .. 200 Land settlement .. 200 Lettuce, the .. 201 Long Ashton, cider tasting day at .. 199 Narcissus, further investigations on the col-worm disease of .. 205 Obituary— Loder, Sir Edmund Giles .. 210 Snell, John .. 210 Rhododendron Edgeworthii .. 208 Societies— Reading and District Gardeners .. 204 Royal Horticultural .. 209 United Horticultural Benefit and Provident .. 209 Sugar beet industry in England .. 199 Trades notes .. 209 Trees and shrubs— Azalea, Kurume .. 205 Rhapitthamnus cyanocarpus .. 204 Rhododendron moulpinense .. 205 Sophora tetraptera .. 204 Futcher, the late Mr. W. J. .. 208 Week's work, the .. 202 Wilson, the late Dr. J. H., memorial to .. 199
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ILLUSTRATIONS.

Crematodermis a white flowered .. 204 Daffodil bulb badly infested with eelworm .. 207 Eelworm, head of an adult .. 205 Eelworms in a quiescent stage .. 206 Hare, Mr. F. E., portrait of .. 209 Lettuces California Cream and Yellow Seeded Butter .. 201 Narcissus bulbs, sections of healthy and diseased .. 208 Rhododendron moulpinense .. 205 Synthyris reniformis .. 203

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.34°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, April 21, 10 a.m.: Bar. 29.5, temp. 49°. Weather—Dull.

The care with which statistical information is obtained, and tabulated and distributed in the United States is illustrated by a statement concerning the American export trade in Apples, prepared by the Statistical Division of the Bureau of Foreign and Domestic Commerce and published in the *National Nurseryman*. The figures are interesting as indicating the extent and value of the American export trade in Apples, but they should also cause British fruit growers to consider ways and means whereby at least some reduction may be made in the large sum paid annually to a country which does not admit horticultural produce from the United Kingdom. The United States is not merely a great fruit exporting country, it is also one of the greatest fruit consuming countries in the world, and yet during the year 1910 it exported £25,558,079 worth of all kinds of fruit. Of this amount Apples, fresh and dried, but exclusive of those canned and preserved, were valued at £3,871,064. The export of dried Apples to the United Kingdom during the year under consideration totalled 5,748,424 pounds, with a value of £157,301, while fresh Apples arrived in this country, from America, to the extent of 1,209,855 barrels and the value of £1,091,097. With the one exception of Sweden, the United Kingdom had the largest account with America for these imports. Turning to the export of fresh Apples, there is cause for

thoughtfulness in the fact that the United Kingdom, in which fruit can be so well grown, should import 1,050,000 more barrels of American Apples than any other country, and this in a year when the home Apple crop was a good one. The United Kingdom was the chief foreign market for fresh American Apples in 1919, Canada coming second. We learn that war did not seriously interfere with the exportation of fresh Apples from the United States to Great Britain, but rather stimulated the demand for the American product. During the five fiscal years, 1914 to 1918, the United Kingdom took 60 per cent. of the quantity and 59 per cent. of the value of the total exports of fresh American Apples, and during the years 1910 to 1914 we imported an average of 65.8 per cent. of such exports, Canada following with 14.3 per cent., Germany 10.1 per cent., and all other countries 0.8 per cent. Australian Apples are marketed from May to August, and the great bulk of the English crop from September to November, consequently the American exports are naturally largest from November to May, when the new crop is available, and at the most opportune time for a profitable market abroad. Next to the United Kingdom, Canada, Argentina, Brazil and Australia were the best markets during the war for American fresh Apples. Exports to Cuba, Argentina and Brazil increased in value, and the Netherlands, Norway, Sweden, West Indies, Hong Kong and the Philippines also purchased considerable quantities during the same period. It is of interest to observe that whereas the average price per barrel of fresh American Apples was 15s. 10d. in 1913, it had risen to £1 15s. 2½d. in 1919. Scientific and intensive cultural methods, improved facilities for storage, distribution and handling of commercial Apples, and the modern machinery and factory methods for evaporating, desiccating, canning and preserving, have all tended to greatly increase in recent times the proportion of Apples entering into the American commercial crop, as compared with the total production. Many Apples still go to waste in non-commercial orchards throughout the United States, although large quantities are canned or otherwise used in the home in making jams, jellies, marmalades, cider, vinegar and mince-meat, besides the fresh fruits stored for home consumption in the winter. Notwithstanding this vast trade in Apples and the increased domestic demand due to growth of population, American growers hope, by the further elimination of waste, by improved methods of marketing and distribution, and better cultural methods, to provide not only for their home requirements, "but to greatly extend the market for American Apples abroad."

Cider Tasting Day at Long Ashton.—May 6 has been fixed as the Annual Tasting Day at the National Fruit and Cider Institute, Long Ashton, Bristol. The business will commence at noon.

Memorial to the Late J. H. Wilson.—It is proposed to raise a memorial to the late Dr. J. H. Wilson, lecturer on Agriculture at St. Andrews University, and well known for his services to horticulture as well as to agriculture. Members of the East of Fife Farmers' Club have subscribed £40 towards this memorial, and appointed a committee which will co-operate with others in furthering the scheme. It is suggested that the memorial should take the form of a prize in connection with the new Plant-Raising Station.

Cost of Edinburgh's Bowling Greens.—The Edinburgh Municipal bowling greens, pavilions and other accessories cost £13,219, and no charge

is made on the players in respect of this capital outlay. The upkeep expenditure in 1906 was £1,202, and the income £802. In 1914 the expenditure was £1,040, with an income of £887. In 1919 the expenses amounted to £1,952 and the income to only £556. The Council propose to increase the charges to the players.

Journal of the R.H.S. Gardens Club.—This publication records the doings of the past and present members of the R.H.S. garden staff, on somewhat similar lines to the *Kew Guild Journal*. The volume for 1919 is No. XII. of the series, and the club is to be congratulated in having been able to issue the booklet during the whole period of the war, under the able editorship of Mr. John Fraser, whose association with the old Chiswick gardens dates from 1880. Mr. Fraser himself contributes an article on Surrey Mints, in which his extensive knowledge of the British Flora is evident. His remarks are made from personal observations of the plants in the field, and he gives an interesting account of the Mint-growing industry at Mitcham, for the distillation of the essential oil, together with observations on garden Mints, of which he states there are no fewer than eight types, including *Mentha viridis*, *M. gentilis*, *M. rubra*, *M. sylvestris*, *M. gracilis* var. *Cardiaca*, and three hybrids between *M. rotundifolia* and *M. viridis*. Very many of the younger members of the Club took part in the war, and we regret to learn that nineteen made the supreme sacrifice. It is from those members who joined the forces that most of the literary matter is contributed, about such places as Suez, Rableben, France and Manchuria. Notes on the various clubs, the appointments of old students, The School of Horticulture, the debating society and other "domestic" matters are of especial interest to the ever lengthening list of old members who are scattered in all parts of the world.

Sugar Beet Industry in England.—Much interest is being taken in the cultivation of Sugar Beet and the possibilities of the establishment of a Beet sugar industry in England as a result of the high price of sugar, the adverse rate of exchange and the insistent demand for increased production of essential food-stuffs. As already announced, a Beet sugar factory is to be erected on the Kelham Estate in Nottinghamshire, but there is little likelihood of the factory being completed this year. The Government is financially interested in this enterprise and has agreed to take up an equal number of shares as the public, up to a maximum value of £250,000, in the company ("Home-Grown Sugar, Limited"), which has been formed to control the enterprise. The Treasury has a financial representative on the directorate of the Company. The nominal capital is to be £1,000,000; £500,000 will be issued, and shares to the value of £250,000 have been subscribed by the general public. Communications with regard to the scheme should be addressed to the Secretary, Home-Grown Sugar, Limited, 15, Victoria Street, London, S.W.1.

Horticultural Exhibition at Antwerp.—A short time ago the Ministry of Agriculture approached the Chamber of Horticulture with a view to making arrangements for a prominent display of British horticultural products at the great Antwerp Exhibition which is to be held in the Parc des Rossignols, from May 1 to October 21. The Chamber appointed an Exhibition's Committee to deal with the matter, particularly in connection with a series of horticultural exhibitions which will be a prominent feature of the Antwerp fêtes. The exhibition will be opened on May 1 by the King of the Belgians, and on that occasion there will be an international horticultural display continuing over nine days and, at present, effort is being concentrated upon this initial event. In the centre of the exhibition's grounds a large floral hall has been erected and the whole of the central space has been allocated to British horticultural exhibits. For the first exhibition, Roses, Carnations, Orchids and Alpines are particularly desired, also fruit and vegetables, and contributions of these have been promised by Messrs. Geo. Munro, Ltd., W. E.

Wallace and Son, Stuart H. Low and Co., W. H. Page, Milton Hutchings, Alex. Dickson and Sons, E. Stevens, C. Engelmann, T. J. Ponpart, and the Guernsey Growers' Association. Further offers are reaching the offices of the Chamber of Horticulture daily, and the Exhibition's Committee hope that those who are willing to exhibit and uphold the prestige of British horticulture will communicate with the Chamber, 18, Bedford Square, W.C.1, intimating their desire to do so, at the earliest possible moment. The Exhibition's Committee is making all arrangements for the transport of the exhibits and their return, if necessary, to the London depot, so that no costs will fall upon the exhibitors other than that of delivering their exhibits at the London depot. Mr. Geo. Monro, Jun., of Messrs. Geo. Monro, Ltd., has very kindly consented to receive the exhibits at 4, Tavistock Street, Covent Garden, during Thursday, April 29, and the horticultural section of the Antwerp Exhibition is generously providing the Committee with the necessary Palms, Ferns, staging and all requisite labour in connection with the preliminary arrangements, ready for the staging of the exhibits by the British Committee, the members of which are Messrs. Geo. Monro, Junr., J. S. Branton, C. H. Curtis, Robert H. Page, W. E. Wallace, J. H. Jolis, and Laurence Cook. The British Florists' Federation and the Horticultural Trades Association are co-operating with the Chamber of Horticulture and representatives of these bodies will, after this exhibition, proceed to Ghent to attend the International Horticultural Commercial Conference, over which Mr. Arthur de Smet will preside.

An American Orchid Association.—On page 187 we referred to the proposal of American Orchid growers to form a National Orchid Society for America. The Association was formally inaugurated at a meeting held in the Horticultural Hall, Boston, on March 25. Mr. Roland was elected temporary chairman, Mr. Craig, temporary secretary, and Mr. Loveless, temporary treasurer. The chairman appointed a committee of three to nominate a committee of fifteen to form the executive committee. As many of those named on the executive committee were not present, it was decided not to issue the list until acceptances had been received. This committee of fifteen, together with the officers, will constitute the management. About thirty of those present enrolled as charter members in the organisation.

New Park and Public Space for Birmingham.—Birmingham has recently added two large areas to the public parks and pleasure resorts of the city. On Wednesday, March 24, an area of land totalling 76 acres, 1 rood, 33 poles, known as Pype Hayes Park, was dedicated to the public use, and on March 27 the Right Hon. the Lord Mayor, Alderman W. A. Cadbury, formally opened the extensive area known as Cotton Hill and Woods, Lickey Hills, which was purchased by the Corporation in February last for £19,000. Pype Hayes Park is situated in Chester Road, Erdington, midway between Castle Bromwich and Chester Road railway station, and almost wholly within the city boundary. The mansion was for many generations the home of the Bagot family. The hall was built by Sir Harvey Bagot—an officer in the Army of Charles I., and was later occupied by his son, who acted as Governor of Leitchfield during the siege of that city and was killed on the field of Naseby. In 1915 the then Lord Mayor—Alderman Sir David Brooks, on behalf of the committee, undertook negotiations with the estate agents acting for the vendors—Bagot's trustees—with a view to the acquisition of this property, with the result the Corporation purchased the whole of the estate, including the Hall, Lodge, Farm buildings, and two cottages, at a cost of £16,000, including timber. The acquisition of this property will enable the Parks Committee to provide Football and Cricket Pitches, Tennis Courts and Bowling Greens, which will, to a reasonable extent, replace the Castle Bromwich Playing Fields for that area; the several outbuildings will be utilised for the purposes of tea rooms, dressing rooms, etc. The Cotton Hill estate includes

hills known as Lickey Warren, Cotton Hill, and Pinfold's Wood, also a strip of land 42 feet wide from a point opposite the Burnt Green Railway Station to Fiery Hill Road, which will, in future, form a road for more convenient access to the hills. The buildings that were erected by H.M. Government at the end of Warren Lane for a gun-testing station will be utilised for additional refreshment accommodation. A further valuable addition, 128 acres in extent, including the old "Rose and Crown," was presented to the Corporation by Messrs. Edward Cadbury and George Cadbury, junr., in March, 1920, and the Common Good Trust. It is hoped that this may be opened to the public at an early date.

Honour for a Gardener.—We learn with very great pleasure that Mr. Francis Edward Hare, gardener to J. P. Dugdale, Esq., K.C., Blyth Hall, Coleshill, Warwickshire, has been made a Member of the Order of the British Empire, for distinguished services rendered under the Red Cross during the past ten years. He joined the Red Cross movement in 1909, and was appointed organising secretary for the Coleshill district. Not only did he assist neighbouring divisions by lectures and demonstrations, but



MR. F. E. HARE, M.B.E.

he raised a large amount of money for the Red Cross Society. In 1913 Mr. Hare was appointed to the command of the V.A.D., Warwick, No. 17, and on the outbreak of war he organised four auxiliary hospitals in the division, and was placed in command of the Guards' Hospital, Coleshill, which he managed with great success. Mr. Hare holds most of the honours and certificates obtainable from the Red Cross Society; he has won the R.H.S. Gold Medal and First-Class Certificate in Horticulture, and has been in charge of the Blyth Hall garden for thirteen years.

Ex Service Men at Wisley.—Mr. F. J. Chittenden, Director of the R.H.S. Gardens, Wisley, points out that our note on p. 187 suggests that the Government is paying the cost of training the ex-Service men at Wisley, whereas the Royal Horticultural Society is undertaking the whole cost of training these men, but not their maintenance.

Allotments.—Sir Daniel Hall, chief scientific adviser to the Ministry of Agriculture, in the second of the Chadwick lectures given at the Royal Sanitary Institute on the 20th inst, dealt with gardens and allotments. It was estimated, he said, that in 1918, at least 1,400,000 allotments were being cultivated in the country, while returns which had not yet been completely tabulated seemed to indicate that the number today was about a million. Of the 141,000 acres included in the returns, more than 86,000 acres were still provided by private owners and less than half of the land by public authorities. He stated that the ordinary 10-rod allotment should yield produce which if purchased in the ordinary retail market would cost about £9. Something like £3 must be deducted for the cost of land, manure, seed, and tools. There thus remained a substantial economic contribution to the household budget and a marked saving in the national food bill.

Weed Killer.—The poisonous properties of weed killers, the basis of which is usually arsenic, was exemplified by a case of poisoning in the Haslemere district, where some sixty persons were seized with severe vomiting and internal pains after drinking tea. It was found that a barrel of moist sugar had become contaminated in transit with weed killer, which had escaped from a tin. Those who employ weed killer in gardens cannot be too careful in storing it in a place beyond the reach of children and domestic animals.

The "Gardeners' Chronicle" Seventy-Five Years Ago.—*Pelargonium.*—It may interest the amateur to know how difficult it is to obtain a really fine seedling *Pelargonium*. Edmund Foster, Esq., grows annually about 2,000; Rev. J. Garth, several hundreds; Captain Thurtle, about 1,000; Mr. Lyne, many hundreds; Mr. Beck, as many; Mr. Cock, 200; and Messrs. Catling and Gaines, several hundreds each; besides many more private growers whose numbers I am not acquainted with. And it is a remarkable thing that, with but few exceptions, the character of the flowers of each raiser is so different that the experienced eye is able at once to distinguish them. Another singular circumstance is that some of the finest and most desirable varieties have never been the parents of anything equal to themselves. I have repeatedly tried to obtain something fine from Sylph, Matilda, Erectum, and Queen of the Fairies, and have never succeeded. Sylph burns upon the edge of the spot; Matilda wants greater breadth in the same point; Erectum is too small; and Queen of the Fairies is always cramped, wants expansion, and is seen so in every collection. Yet, with all their faults, some, if not all, of these are to be found at every exhibition, and this is, after all, the greatest test of the value of a flower. When true, how finer flower is there than Favourite? but it sports to such a degree that no exhibitor can afford to risk its growth. *Veritas, Gard. Chron., April 26, 1845.*

Publications Received: *Journal of the Department of Agriculture, Director of Agriculture Melbourne, Australia, 3d.* *Agricultural Gazette of New South Wales, Wm. Applegate Gullick, Government Printer, Sydney, 4d.* *Tropical Fowl Mite in the United States, H. P. Wood, United States Department of Agriculture, Washington, D.C.* *Broad Bean Weevil, Roy. E. Campbell, United States Department of Agriculture, Washington, D.C.* *The Fowl Tick, F. C. Bishop, United States Department of Agriculture, Annual Report, National Auricular and Primula Society, Hon. Secretary, J. Parsons, The Nook, Woodley, Reading.* *The Service Handbook, by Capt. H. H. C. Baird, 11, Regent Street, London, S.W.1, 1s. net.* *Improvement of grass-land, Ministry of Agriculture and Fisheries, 3, St. James's Square, London, S.W.1.* *Food of the People, National Farmers' Union, 45, Bedford Square, London, W.C.1, 2d.* *Sweet Peas and Antirrhinums, William Cuthbertson, James Clarke and Co., 13, Fleet Street, London, E.C., 2s. 3d. and 3s.* *Revista de Agricultura, Secretaria de E. de Agricultura E Inmigracion, Santo Domingo, R. D.* *Sutton's Farmers' Yearbook, Sutton & Sons, Reading.* *Journal of the Royal Society of Arts, G. Bell & Sons, Ltd., York House, Portugal Street, W.C.2.* *Transactions of the Royal Scottish Arboricultural Society, Douglas and Foulis, Castle Street, Edinburgh, 3s. net.* *New Zealand Plants and Their Story, L. Cockayne, Marcus F. Marks, Government Printer, Wellington, New Zealand. Price 7s. 6d. and 5s.* *Pigs and Piggeries, Union of South Africa Department of Agriculture, Librarian, Department of Agriculture, Pretoria, South Africa. Price 3d.* *Journal of the Board of Agriculture of British Guiana, Vol. XIII.* *The Daily Chronicle, Limited, Georgetown. Price 1d.* *Report of the Agricultural Department, St. Lucia, Imperial Department of Agriculture for the West Indies. Price 9d.* *European Frit Fly in North America, J. M. Aldrich, Government Printing Office, Washington.*

THE LETTUCE.

(Concluded from p. 193.)

Of lighter coloured, crisp Lettuces, Drumhead, formerly known as Capuchin, is too well known to need description. It is essentially an allotment holders' variety. Denver Market is of a still lighter shade, but produces much finer hearts and is very slow to run to seed. It did not secure an award, although Harbinger Forcing gained the H.C.

Giant Bossin, known also as The Favourite, and Golden Giant Bossin, may be strongly recommended to those in the South who desire a large, solid, crisp and slightly bitter variety. Next in order we have the smooth heading or buttery texture, a very numerous class containing many of the most popular varieties at present in cultivation.

Early Paris Market and Georges head the list with Awards of Merit; both sorts are of medium size and of medium green colour, tinged with red, somewhat in the style of the old Grand Admiral, but rather earlier. May King, H.C. (a German name for the French *Reine de Mai*) and Tender and True (Barr and Sons) (A.M.) are practically identical. (The name Tender and True had previously been applied by Messrs. Hurst and Sons to a Lettuce of the Simpson type.)

Trocadero or Big Boston is a larger, later and hardier variety of the same general type, and is especially valuable for market work.

Of the plain green varieties, Sans Rivale is interesting and reliable for all purposes, but Market Favourite (A.M.) is undoubtedly the best of this type. Chavigne, which failed to secure an award, is nevertheless a most desirable variety, especially for a small garden. New Summer is also passed over in the awards, but for size, appearance, and quality, it is hard to beat. It is so late in running up that it should be named "The Shugard."

All the foregoing sorts have white seed. In turning our attention to the black seeded section we are dealing with a class not quite so numerous, but containing some of the most popular varieties of the day. All the Year Round (H.C.) deserves the first place, for it is a veritable "fail-me-never," suitable for the table of prince or peasant. Like all black-seeded varieties, it is liable to vary slightly under different conditions; efforts have been made to perpetuate some of these variations, but with very indifferent success. Six at least of these were included in the trials, and some of them gained awards.

The original variety was introduced into this country from Holland in 1862, under the name of Beck's Hardy White Dutch. Richard Dean soon afterwards gave it its present much more attractive and appropriate name.

Two distinct Lettuces were sent in under the name of Continuity, but those who have once grown the very dark type sent out by Messrs. Daniels will not care for the lighter coloured form, which runs to seed much more quickly and is of very indifferent quality. It is probably a poor-coloured sport from All the Year Round.

Of the "Tom Thumb" type, only Commodore Nutt secured an award; the other offspring of the Laitue Gotte are serviceable for forcing and intensive culture, but are too small for general use.

The list of varieties with yellow seed is a very short one, but the Yellow-seeded Butter (see Fig. 89) justly gained an Award of Merit. It is a plain green variety, of medium size, compact, with firm heart, of good quality, and slow to run. A much larger growing variety, which was not included in the trials, is the Laitue Montignon, better known in Britain as Sutton's Giant. It is of a dull green colour, spotted freely with brown, and grows to an enormous size. For very hot climates it has no equal. About 1912, in the grounds of a well known French grower, some plants produced black seeds and others white seeds. The first year the

black seed produced a very mixed lot, identical in form with the parent variety, but of three different colours. Further tests gave the same results, so the culture was discontinued; the white-seeded sport produced plants of a rather more compact habit, and a paler and more pleasing colour, and has been perpetuated.

A few remarks on the yellow-leaved section will bring my review of the Cabbage varieties

to such perfection by Alex. Dancer, of Fulham, has now practically disappeared. Its place is being taken by Lobjoit's Green Cos (H.C.), which may be grown quite easily under bell glasses or in frames. This is a French variety, of a greyish-green colour, and is well adapted both for private and market gardens. The synonyms are legion.

What are termed White Cos Lettuces are mostly of varying shades of pale green, differing very little from each other. Trianon is large and early; Alexandra (H.C.) and Beauty of Versailles (Award of Merit) are slightly darker main-crop varieties; St. Albans, All Heart and Chesnay Cos bring up the rear; the old Paris White is most probably the parent of them all.

The principal black-seeded Cos Lettuces are Egyptian Dark Green, Paris Green and Ballon (Award of Merit), the last under one or other of its many names is perhaps the largest Lettuce in cultivation. It is pleasing in colour and quality, and very slow to run to seed.

The Brown Bath Cos and the Red Winter Cos, together with the Winter Cabbage varieties, need to be dealt with in a separate article.

In a necessarily brief article it is practically impossible to deal with each variety individually, and many meritorious Lettuces have passed unnoticed. Some of these owe their existence to local conditions, some give better results in one district than another and many owe their existence to the practice of renaming, which is often done to call special attention to the merits of certain varieties the culture of which it was desired to stimulate. D.



FIG. 88.—CABBAGE LETTUCE CALIFORNIA CREAM.

to a close. Buttercup, Golden Gem, Golden Ball, Golden Queen and Lemon Queen all so much resemble the Laitue Gotte Doree, or Laitue Citron, as to be practically indistinguishable therefrom. They are rather small, with firm hearts of fair quality, bitter and tender. They must be used immediately they are ready, otherwise they soon assume a very wilted appearance.

Cos Lettuces are not quite so extensively grown as the Cabbage varieties, and the list is not so lengthy or bewildering.

Mr. Chittenden has divided them into two sections, viz., the Cos proper and the semi-Cos. Plants of the latter almost bury themselves in the ground, hence they are known in France as



FIG. 89.—CABBAGE LETTUCE YELLOW-SEEDED BUTTER.

Ground Cos, or Pomme en terre. A white-seeded variety named Winter Density gained the Award of Merit, and thoroughly deserved it. For summer use the Laitue Romaine Succine, or Little Gem Cos, a rather larger plant of the same type, cannot be too strongly recommended.

The Cos Lettuces proper are easily divided into summer and winter types: the former is the section most generally cultivated. Of the white-seeded varieties the old, narrow-leaved, self-folding London White Cos, which was brought

FRUIT REGISTER.

APPLE ALFRISTON.

I was greatly interested in Mr. W. Crump's reply to my criticism of the Award of Merit recently given to Alfriston Apple (see p. 186). I never condemned age, but age without merit is intolerable. I repeat that Alfriston is a member of the ground—as we know and value Apples to-day—and I cannot imagine any experienced market grower devoting space to such a variety as the one under discussion. It is well, perhaps, to refer Mr. Crump to the National Apple and Pear Conference held at Chiswick in 1888, under the auspices of the Royal Horticultural Society. I have chosen this conference as an example because I took it to be the greatest of all the Apple conferences that have yet been held in this country, and the report of it is probably the most exhaustive that has ever been published. In that connection Vol. X. of the *Journal of the Royal Horticultural Society* contains selections and notes from practically every fruit grower of any standing in Great Britain. Alfriston, at that time, must have been over forty years in commerce, and the reference to the selections of trade and other growers as reported in the *Journal*, shows exactly how little this particular sort was appreciated in those days. It is, in fact, seen in its proper perspective, and to-day it would fare even worse if a plibiscite were taken of experienced fruit growers. Under the heading "Worcestershire" in that report, I find a return from Mr. William Crump, Madresfield Gardens, Malvern. He states that about 160 kinds of Apples are grown, and in his selection of twenty-four varieties most suitable for culture in his district, named in order of succession, no mention is made of Alfriston. Again, in the same report, none of his colleagues in the same county returns Alfriston as a desirable variety. At the 1885 Conference it also finds no place in the selection of suitable sorts made at that time by three of the leading growers in Worcestershire. The old opinions are thoroughly sound and time has confirmed them. I often turn over the list of Apples certified by the Royal Horticultural Society, and as I do so I wonder why some of the awards were given. It is an illuminating experience, and it illustrates the necessity of a thorough trial of Apples before one can assess their merits. *Northern Fruit Grower.*

The Week's Work.

PLANTS UNDER GLASS.

By JOHN CURTIS, Foreman, Royal Botanic Gardens, Kew.

Winter-Flowering Plants.—Cuttings of the beautiful, winter-flowering *Thysacanthus rutilans* should now be inserted; young shoots will root readily in a warm propagating case. This month is an important one as regards the propagation of many winter-flowering plants including *Eranthemum*, *Plumbago rosea* and its variety *superba*, *Jacobinias*, notably *J. chrysocephala* and *J. coccinea*. The *Eranthemum* and *Plumbago* are rather difficult subjects to cultivate; strong growths are essential to successful flowering, hence the plants should not be stopped more than once. I find it best to secure cuttings with two growths, cutting them at the internodes, as they root readily from internodal cuttings, and then grow them on without stopping; large specimens may be produced by growing three plants in a pot. Other subjects that should be propagated during the present month are *Erlangea tomentosa*, *Peristrophe speciosa* and *Lindenbergia grandiflora*. April is, perhaps, the best month in many respects for the propagation of all sorts of stove plants. Most of them will root readily now from young, fresh growth, and the plants have all the season wherein to make good specimens before the winter.

Reinwardtia (*Linum*) trigyna and *R. tetragyna*.—These are two useful yellow-flowering plants for winter. They are best propagated towards the end of April, from cuttings made of strong shoots, which root readily in a close case with slight bottom heat. The plants should be pinched frequently to make bushy specimens, and potted on as they require it. Well-grown plants should be flowered in six-inch pots. These *Reinwardtias* are easily grown in a cool house, or in frames, but are very subject to attacks of red spider, which must be prevented by a frequent and vigorous use of the syringe.

***Humea elegans*.**—Well-grown plants of *Humea* should now be ready for their final shift into ten-inch pots; this is the most critical stage in the cultivation of this plant, and great care should be exercised in repotting, and in watering, until the roots are established in the fresh soil.

Balsam.—Seeds of *Balsams* should now be sown. In their earlier stages *Balsams* require very prompt attention, for if allowed to become drawn through crowding they might as well be thrown away.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weybridge Castle, near Cardiff.

Runner Beans.—No vegetable more repays better for generous treatment, in increased production and quality, than the Runner Bean. To have pods early in July, the seeds should now be germinated in a temperature of 50°, placing them closely together in boxes containing one inch of soil and lightly covering them. The seedlings will soon appear and the strongest should be selected and potted singly in five-inch pots. The plants should be grown in the same temperature until the shoots are three inches high, when they should be removed to a warm frame where the lights may be removed on fine days, but protection should be given on cold nights. When the shoot is nine inches high, pinch out the top to obtain two growths arising from near the seed leaves. These will provide the main shoots and all future leads and laterals should be removed as they appear. Plants receiving this treatment require plenty of room; and each row should consist of double lines eighteen inches apart, with a distance of two feet three inches between each plant, allowing seven feet between the next double row. Prize-

winner and Exhibition are two good varieties. The ground the rows are to occupy should be prepared by taking out a deep trench and thoroughly incorporating well-decayed manure and a sprinkling of bone-meal with the soil when refilling the trench.

Onions.—After careful hardening, Onions that were sown early in the year, are ready for transplanting. The soil which has previously been prepared for them should be raked for a final time and made firm and level. The seedlings intended to form the main crop should be planted four inches apart; and varieties such as *Crimson* and *Silver Globe*, nine inches apart in the rows, a distance of fifteen inches being allowed between the rows. When removing plants from frames or boxes, it is more important to have the roots intact than to have the soil adhering to them. In planting, use a large trowel, pushing it straight down; and then draw the handle forward. This will leave a cavity large enough to allow the roots being shaken down perpendicularly; and on removing the trowel the soil may be firmly pressed up to the plant with the hand. Large varieties intended for exhibition should be grown in rows made sixteen inches apart with a distance of fourteen inches between the plants in the rows. After every six rows leave a space of two feet to permit of hoeing and weeding without risk of injury to the top growth. Plant from boxes as advised above; and for those in pots, make a hole just large enough to take the ball of soil, and plant firmly. Remove all stakes and ties at this time, otherwise considerable damage to the top growth will be caused by the wind. Water the plants as each row is completed, and a week after planting exhibition Onions, use nitrate of soda in solution at the rate of half an ounce to the gallon of water and apply this fertiliser on two other occasions at ten days' interval.

Dutch Hoeing.—Considerable benefit to all crops is derived by the frequent use of the Dutch Hoe and the ground should be stirred with this tool immediately the seedlings are forward enough to denote the position of the rows.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nods, Codicote, Welwyn, Hertfordshire.

Black Fly.—Cherries are subject to this pest, and the trees should be carefully watched for its appearance, which is indicated by the curling of the leaves. Should the trees be in bloom when black fly is noticeable, Tobacco powder may be used, dusting the affected parts several times until the insects have been destroyed. After the fruits have set, the trees may be syringed with a well-prepared nicotine wash. In cases of severe infestations the nicotine wash is best applied when the foliage is dry. The following day the trees should be well syringed with clear tepid water.

Gooseberries.—Many of the shoots in the centres of Gooseberry bushes should be pinched or disbudded to leave ample space for gathering the fruits. Keep a close watch for caterpillars, and if there is any doubt about this pest, spray the bushes with *Quassia* extract, or some other suitable insecticide. The bushes should be syringed the following day with clear water. Whatever specific is used, the berries should not be used for cooking for several days after its application.

General Remarks.—At the time of writing the weather has been unfavourable for the spraying of fruit trees and where the work has been delayed from this cause the trees should be sprayed immediately the blossom has fallen and the fruit set. Aphides are amongst the worst pests that attack Apple trees and should be combated vigorously. If allowed to spread unchecked, the pest will not only militate against the swelling of this season's fruit, but may so affect the tree as to spoil the crop the following season. This pest should never be allowed to protect itself in curling leaves, as it is then very difficult to eradicate.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Cattleya and Allied Genera.—*Cattleya* and the allied genera, *Laelia* and *Brassavola*, have given us, by crossing, *Laelio-Cattleya*, *Brasso-Laelio*, *Brasso-Cattleya*, and *Brasso-Catlaelia*. Collectively they probably constitute the most important group of Orchids under cultivation, and in a representative collection plants are in flower all the year. In view of their parentage, season of flowering, and the period in which they make their growth, a few of the plants require repotting at intervals during the whole year. Even in winter, I should never hesitate to repot an Orchid of the above group if it needed attention. A house or division is best set apart for *Cattleya* and its allies, in fact, in some collections, several houses are devoted to these delightful plants. A house of the span roofed type is best, and it should contain sufficient hot-water pipes to maintain the requisite temperature without having to keep them excessively hot. As a general rule the night temperature should fluctuate between 55° and 60°, with a rise of 5° or so by mid-day. During the summer a higher temperature will cause no harm to the plants. Plenty of light is necessary to build up stout pseudo-bulbs of firm texture, capable of producing flower spikes of good quality. Although light is so essential, full exposure to the rays of the sun is not desirable, and the blinds should be lowered before the leaves get too warm, and they should be drawn up again directly it can be done with safety. Such work will vary with different localities; plants growing in the open country will need more shade than those in gardens near smoky towns. The house should be provided with both top and bottom ventilators, the latter on both sides, and in line with the hot water pipes. Such an arrangement will permit the lower ventilators to be open more or less throughout the year, except in frosty weather or when strong, drying winds are blowing. Air should be admitted through the top ventilators much more sparingly, and always on the leeward side of the house. The atmosphere should be kept moist by sprinkling water over the floors and stages, but the season, and condition of the plants must be considered in this respect. The greatest amount of atmospheric moisture is required during the summer and when the plants are making their growth. A difference of opinion exists regarding the compost, but for general purposes, *Osmunda*, or *Al* fibre, cut into moderately fine portions is to be recommended. Good quality peat, if obtainable, is not to be despised, if mixed with a small portion of chopped *Sphagnum* moss and finely crushed crocks. Choose clean pots and fill them one-third of their depth with drainage material. The plants should be repotted when roots develop from the base of the new growth and the operation should be performed before they grow very long. Remove all decayed soil, dead roots, and useless back pseudo-bulbs; three pseudo-bulbs behind each lead or growing point are ample. Make the compost fairly firm, and arrange it level with the rim of the receptacle.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Successional Vineries.—Where the vines are in various stages of growth, let every cultural operation be performed at the proper time. When disbudding is completed, the shoots grow apace and in a few days are fit for divesting of their superfluous bunches, stopping and tying. It is better to draw the shoots down by degrees than to attempt tying them in their permanent positions at one operation, for they are easily broken, and those of strong-growing, late varieties easily pulled out. Thinning of the bunches must be attended to, also the removal of all superfluous bunches if not before, certainly immediately after the berries are set. Use the scissors early and endeavour to get rid of all small, stoneless berries at the first

operation. Late vines, which are earlier than usual, may be gently forced with fire-heat. The temperature may be 55° on cold nights, and 65° to 70° by day, and 75° to 80° on closing the vinery with sun heat and moisture. As soon as the bunches are prominent, a rise of 5° may be allowed at night, with a further rise, to 65° when the vines are in flower. A constant circulation of moderately dry, warm air is essential to the berries setting and the temperature during the flowering stage may range from 65° to 68° with 10° or 15° higher by day when the sun is bright. In the case of all kinds of Grapes, it is wise to pollinate the flowers; Muscats and other shy-setting varieties should always be given this attention. In vineries where the vines are in flower, sufficient fire heat should be used to raise the temperature to the above figures with a free circulation of air. Damp the floors daily in favourable weather, as the first attacks of red spider are often traced to neglect in this matter at this stage. After the bunches are set, give the vines one good syringing with tepid, soft water, and gradually allow the temperature to fall a few degrees on cold nights. Give careful attention to watering the border and vent tilting the house at this season, as the tender foliage is easily injured by currents of cold air.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warton Priory, Yorkshire.

Iris Kaempferi.—Afford plantations of Japanese Iris a top-dressing of well-rotted manure and lightly fork it in. If division of these Irises is contemplated, deeply worked, well-enriched soil, free from lime, should be prepared in readiness to receive the clumps. Tritonias are effective bulbous plants which may be grown between varieties of Iris Kaempferi. They extend the flowering season after the Irises have finished flowering and so prolong the effectiveness of the beds. From the moist soil favoured by the Iris it is imperative to lift the Tritonias each autumn, store the bulbs in a cool, dry place and replant them early in spring.

Magnolia.—Spring is undoubtedly the best season in which to plant Magnolias. As soon as growth commences, the planting should be done as carefully and expeditiously as possible. If the roots are bruised at the time of lifting, they will rot quickly and the loss of the tree may follow. Protection from drying winds should be afforded newly planted trees, and for this purpose wattle hurdles will prove useful. Frequent sprayings with soft water and a protective shade from the midday sun will prevent the wood from shrivelling. Hybrid forms of Magnolia conspicua, such as M. Lennei and M. Soulangeana, may be transferred from pots to the open ground at this season. In cold, exposed northern districts, the plants will not flower until June and should be given a very sheltered, favoured position in a sunny aspect. The seeds of all Magnolia species only retain their vitality for a short period; therefore the seeds, when procurable, should be sown as soon as they are ripe.

Bocconia cordata.—The sucker-like growths of the Plume Poppy are now growing quickly and to obtain the best results they should be thinned, leaving only a few of the strongest to each clump. A mulching of well-rotted farm-yard manure should be applied to the soil at an early date. Under such treatment the plants may be expected to attain a height of 12 feet and will need carefully supporting to prevent damage from strong winds.

Stakes.—In all but very sheltered localities, square stakes are preferable for supporting tall plants. Round, smooth stakes are easily loosened and displaced by strong winds, whereas those cut square remain firm in position for a considerable period. Standard plants, such as Heliotrope, may be supported by thin iron stakes to which a foot is attached, after the manner of iron fence supports. The stakes should be painted green.

THE ALPINE GARDEN.

SYNTHYRIS RENIFORMIS.

AMONG the many interesting alpine plants on the rock garden of Mr. W. R. Lysaght, Castleford, Chepstow, is *Synthyris reniformis*. The accompanying photograph (see Fig. 90), taken by Mrs. Lysaght, shows the freedom with which the plant flowers. This Alpine is in bloom at a period when the rock garden is none too gay. The first flowers opened at the end of January, and the display continued for several weeks. The blooms are about ¼ inch in length, pale violet in colour, and produced in great profusion, while small plants push up a large number of scapes six inches long. The foliage is also attractive, and its deeply-toothed margins are shown in the photograph.

S. reniformis is of easy culture, and probably any position would suit it, but, seeing that it flowers so early in the year, a shaded spot should not be selected. Here, at Castleford, it thrives in a cool, loamy soil, in a situation where it receives the full rays of the sun for the greater part of the day.



FIG. 90.—SYNTHYRIS RENIFORMIS; FLOWERS PALE VIOLET

This Scrophulariad is a native of North West America, and was introduced about 1835, yet it is rarely seen in gardens, and I fail to find it listed in many catalogues. T. W. Brisson, *Castleford Gardens, Chepstow*.

GALANTHUS NIVALIS PERFECTION.

THIS Snowdrop was sent me a number of years ago by the late Mr. James Allen. It is a variety of *G. nivalis* with large and good flowers, but its distinguishing feature—the one, probably, which gave rise to the name of "Perfection," is the grace of the poise of the flower on the long pedicels, the blooms giving a most graceful effect as they sway with almost every breeze. There are, I consider, more shapely flowers among the selected seedlings of *Galanthus nivalis*, but those of *G. Perfection* are large and beautiful enough to please, while the distinguishing feature alluded to renders the whole effect of the plant particularly pleasing. It is, by the way, dwarfed than some of the other varieties of *G. nivalis*, although taller and more robust than the ordinary form.

PRIMULA LEUCOPHYLLA.

P. leucophylla is not so fine a garden plant as several other hardy Primulas, but it is interesting to the specialist. I have grown the plant in my garden for a few years, and I saw a good specimen recently in the Royal

Botanic Gardens, Edinburgh. It is of the Oxlip habit, and has a number of pale yellow flowers on stems nine or ten inches high. It gives a greater number of blooms than does the Oxlip, and would, I think, look well in some parts of the wild garden.

Primula leucophylla is a limestone plant, and the type occurs in the Caucasus and the Eastern Carpathian Mountains. The Edinburgh plant seems to be a better variety than the one in my garden, and it is possible that it may be the variety *P. leucophylla Ruprechtii*. It is certainly not the other form recorded—*P. leucophylla longipes*, which is a poorer plant in respect of flowers.

SYMPHYTUM CANESCENS.

AN eminent horticultural writer has declared that no Comfrey is in place in the rock garden; but surely this is rather a sweeping assertion to make. At least, this is what one considers after seeing *Symphytum canescens* in bloom in April in the grand rock garden of the Royal Botanic Gardens, Edinburgh. The size of the garden and its bold masses of stone render many plants suitable there which would be out

of place in smaller gardens. However, *S. canescens* can stand on its own merits, and a little group was quite pleasing in these botanic gardens. The plant grows about a foot high and has many pretty, drooping, yellow flowers of wax-like appearance in good bunches. The foliage is a trifle coarse, as is the manner of most Comfrees, but the general appearance of this *Symphytum* is so good that it is worth cultivating, especially in view of its early flowering. It has been aptly likened to the Golden Drop, *Onosma taurica*, but the individual flowers are shorter. *S. Arnott*.

POLYGALA VAYREDAE.

THIS dwarf species is a native of Catalonia, in Spain, and I first noted it in 1905, which is given as the year of its introduction. The plant is only three or four inches high, sub-shrubby and evergreen, so that it is closely related to *P. Chamaeluxis*. The leaves are narrower and linear, while the flowers are of a deep purple or reddish purple, with a small yellow keel. It is, therefore, quite distinct from the better known species, and well worth cultivation in pots by those who grow collections of alpine plants. Growth is rather slow, and pot culture would ensure that the plant does not get overgrown by more rampant neighbours. The species was exhibited at the meeting of the Royal Horticultural Society on the 15th inst. *J. P.*

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MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

17.—THE RIDGE.

IMMEDIATELY above the camp, a wild water-gully tears its way starkly down between dark banks of precipice from the ridge overhead, and fades away at last below in a tumble of boulders and gravel that testifies to the fury of last year's rains. It was by this stern stair that we determined to attack the arête, and seldom have I confronted a steeper task, or more disreputably rotten rock. Everything one touched came away in one's hand; everything on which one attempted to tread gave way beneath one's feet, and crashed reverberating downwards in a shattering avalanche of stone towards the camp below. The first treasure was a Gaultheria, creeping quite prostrate on the mossy silt above the stream-course. Its flower I do not know, but the fruit, by itself, surpasses many a flower, for the calyx swells to the size of a large marble, and develops to a five lobed "blossom" of the most glorious, bloomy lapis lazuli blue, with a waxy white inside, in the middle of which, like a stigma, sits the pyriform capsule. This is not a common plant, but it loves mossy boulders in the zone of the high Alpine woodland, and has a counterpart, too, in an erect growing little cousin, with fine bronze-purple foliage, which often covers big stretches on the open Alp, on sandy slopes, and has flesh fruits of pure, snow white, which make a fine effect when tumbled about in a heap with the azure balls of the other.

Above the region of this begin the cliffs, and on them, also, the advance guard of the high Alpine flora. The herald of these is a very lovely and dainty little *Cremanthodium* (see Fig. 91), with pure white flowers, touched on the reverse with rose, that pass, as they fade, to deeper and deeper tones of dull crimson, depending more and more bell-like on their stems as they do so. This plant loves damp, cool rocks, ledges and chinks, and on the highest elevations abounds all over the moister, finer lawns of the Alp. Quite different is its successor, which I saw from afar as I toiled up out of the perilous stone-slide of the gully, into the equally steep grassy dell that climbed above it. Here there were already all the *Hpawshi* plants, even to the pink *Anemone*. But I could heed none of these; for, high ahead of me, hung certain moony globes of whiteness, hovering singly over the long grass from which their stems emerged. For one wild leap of optimism, I foresaw a new, one-flowered, snowy *Poppy* of the *Primulina* group; then, in an equally wild reaction of pessimism, only some pallid *Garlic*. But it proved, when I got there, panting, neither so good as my hope, nor so bad as my fear. It was a white *Cremanthodium*, of noble port and aspect, with globular-looking pendulous flowers,

that, indeed, from afar, made no such bad mimicry of a *Meconopsis*, but that these also die off to a crimson, claret colour. Its fifteen inches of unadorned stature, unfit it, perhaps, for the choicest corners of the rock-garden, but in others it will make a fine effect. And I have a further hope; for there are many of these upland beauties here, tall and stalwart, but too large for association with *Primula Allionii*, which should look as lush and lovely at home as out here, if only their owners will plant them out all together, rather sparsely, in a rich, sunny slope, to reproduce the same gorgeous hayfields that are here combined with the *Cremanthodium*, the *Polygonum*, the golden *Anemone*, the Red Lily and a whole host of handsome etceteras.

One candidate for these hypothetic hayfields gave me another acute pang of disappointment, as soon as I had readjusted my views about the *Cremanthodium*, for now, through the glasses, I espied, far above me, a large Citron-yellow *Primula* of the *Nivalis* group, in a dell of the grass. Up towards it I plunged, scouting all notion of its being the same as the *P. "Smithiana"*, we had already found on *Hpawshi* Bum. Yet no other did it prove to be; not a *Nivalis* at all, but a *sikkimensis*. My only consolation was that it seemed here to be both larger and paler and finer than anything I could manage to



FIG. 91. MR. FARRER'S EXPLORATION: A WHITE-FLOWERED *CREMANTHODIUM* SP.

remember of its previous appearances; and it makes a noble contrast with the dark sapphire-blue *Iris* with which it here shares the Alpine marshes and moister folds of the open fell. Neither, however, ascends to the actual ridge, where the gales sweep fiercely to and fro, across the slopes of short, springy lawn, cushioned with a tiny golden *Potentilla*, that grows in ferny tassocks close over the grass and along the rims of boulders. Up here, too, *Rhododendrons* are also to seek; none climb so high, except the dwarf Alpine species, and of these almost all flower is over. But the rosy *Chamaecistoid* one is now doing its best to provide substitutes, for, on many of the young shoots the terminal leaves turn so floral as to give startling proof that every flower is indeed but promoted foliage after all. Here, quite a number of sprays end in a sham "flower," large, and trumpet shaped, fleshy textured, and of vivid scarlet, yet a mere prodigy, built out of transmogrified leaves, though often an apparently perfect bloom in all detail, and sometimes even a hose in hose one with a conspicuously developed "calyx." I notice attempts at such developments in several of the high Alpine *Rhododendrons* of this region; yet in no other is there such perfect achievement, while even in this, all gradations of the change

may be observed, from mere scarlet leaves, and swollen fleshy abortions, up to the complete illusory splendour of the "flower."

Primulas are nearly over up here, and so are the early *Gentians*, while the later ones are not yet out by the beginning of August. Of the earlier, the most striking is a member of the big *purpurea* group. This, like *purpurea* and *punctata* and their kind, is dotted over the open Alp, in clumps of foliage, like theirs, so closely resembling *Veratrum*, that here also I was at first deceived into believing that only a *Veratrum* was before me, for the flower-spikes are not numerous for the number of plants. They are a foot or eighteen inches high, displaying from each axil two or three very large flowers of a clear, pale, straw-yellow; big pendent trumpets, so deeply cloven as to look as if they had five true petals. Quite dissimilar from this is the other *Gentian* that decorates these high Alps in August. As I saw this on the frontier ridge, I did not think much of it. It occurred only in single specimens, with one or two flowers, like a feeble, screwed up *acaulis* that never seemed to open. Perking up here and there on turf stony places, it made no effect, and had a very annual appearance. But one day I happened on a little marshy, stony dip in the high Alps, which completely changed my views, for it was crammed full of the *Gentian*, growing densely in such wide masses as to be obviously perennial; and, though not a flower of all those thousands was open, so brilliant was the blue of their assembled tubes that the marsh was as solid a sheet of azure as if it had been filled with *G. verna* or *G. acaulis* at their best. As it ripens, of course, the enveloping throat fades dull; but this *Gentian* does not seed, like so many of my finds in China, in that irritating "up-and-out" style, of a sudden gaping at the tip of the capsule. On the contrary, it makes a decent normal tri-valved capsule, after the good old fashion of our European *Gentians*; and, as the pod matures, it develops a definite little footstalk of its own, inside the withered, baggy sheath that was once the flower. *Reginald Farrer.*

TREES AND SHRUBS.

RHAPHITHAMNUS CYANOCARPUS.

IS common with many other subjects, this evergreen shrub is flowering earlier than usual, and also more freely than I have seen it before; due, no doubt, to last season's perfect summer.

This shrub is somewhat rare in gardens. The general appearance of a bush with its small, neat, closely-set, rich green leaves, colouring at the tips of the growths, nearly akin to the flowers, merits its inclusion in any collection where there is a chance of its success. The bluish-lilac flowers, closely set amongst the rich green foliage, give a shade of colouring that is rare amongst early-flowering, or, for that matter, any shrub. During the period of blossoming, from the opening stages of the dark blue buds to the paler and fully opened, small, tubular flowers, the plant is very attractive, and also later when carrying its roundish-berried fruits.

Here the bush seems to succeed in shade as well as in the open, where it is planted as a lawn specimen, and is thoroughly hardy.

SOPHORA TETRAPTERA.

WHETHER last season's remarkable summer has caused, or that the young tree in question has attained its majority, I do not know, but for the first time it is carrying a profusion of flowers and creating a fine display.

This particular specimen grows as an isolated lawn plant, and being of standard shape, the flowers show to additional advantage. They

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, and March 20.

hang in clusters of five or seven blooms in each and are of a rich canary-yellow colour, each flower being about two inches long. This plant is also known as *Edwardia microphylla*; it is to my mind a much more desirable subject than *E. grandiflora*, the weeping growths and graceful foliage with the small pinnate leaves borne the year round giving it a decorative effect.

Wind is its greatest enemy, and for that reason it is best planted in a sheltered but open spot. *E. B. Fota.*

KURUME AZALEAS.

(Concluded from p. 195.)

MESSRS. WILSON AND SUZUKI visited all the principal gardens and spent several hours in that of Mr. Kijuro Akashi, who for more than forty years has assiduously devoted himself to the development of these Azaleas, and has raised from seeds and perpetuated by cuttings nearly all the forms in cultivation. In his garden is the finest of all collections, and the loving pride with which this grand old gardener pointed out the particular merits of this or that pet can be appreciated only by those whose lives have been passed in close companionship with plants. In this garden Messrs. Wilson and Suzuki made a selection of forty-three of the best sorts; and later this was increased to fifty-two kinds.

On April 24, 1919, this collection was unpacked at the Arnold Arboretum and all the plants found to be alive, and, considering the length of their journey, in good condition. For this thanks are due to the skillful packers of the Yokohama Nursery Company, to whom the task was entrusted. Making the selection was much easier than persuading Mr. Akashi to part with his plants, though, with true old-time Japanese politeness, he offered any or all that he had. He loved his plants, and one fully understands his sadness when the time to part with them actually came.

Mr. Akashi kindly furnished Mr. Wilson with details of the history of these Azaleas so far as is known. They were originated by a Japanese gentleman named Motozo Sakamoto, who lived in the city of Kurume about one hundred years ago. The parents came from sacred Kirishima-yama (a volcanic mountain in South Kyushu, still active), but whether brought from there by Mr. Sakamoto or given to him by some pilgrim is uncertain. At any rate, Sakamoto cultivated several varieties and raised and selected seedlings, including one he named "Azuma-kagami" from which it is claimed have descended all the pink-coloured forms. After his death, Sakamoto's collection passed into the hands of Mr. K. Akashi. The original plant of "Azuma-kagami" is still healthy. Mr. Wilson photographed it, but failed to purchase it, though he tried hard to do so. Mr. Akashi showed a gold medal awarded to him for the exhibit of thirty plants in a dozen kinds of Kurume Azaleas at the Panama-Pacific Exposition, San Francisco, in 1915. The plants were afterwards sold, and Mr. Akashi's pride in the gold medal seemed a little saddened when he thought of the loss of those thirty plants.

It was determined next to visit Mt. Kirishima, the place tradition says the parents came from. Mr. Wilson had visited this mountain early in March, 1914, and remembered that an Azalea grew there, for he had gathered leafless specimens. A night was spent near the base of Mt. Kirishima, and starting early next morning an altitude of 1,000 metres where forest abruptly give place to grassland was soon reached; above this the mountain slopes were dotted with blossoming Azalea bushes in great number.

Of these beautiful plants, Mr. Wilson wrote: "They grow in volcanic soil on wind-swept grassy slopes and among rocks. In size the bushes are from nearly prostrate to a yard high, and hardly two had flowers of the same shade of colour. We gathered specimens of forms with pink, salmon, mauve to rich magenta-coloured flowers; at a little higher altitude red-flowered forms, and among these was an occasional white one. Much variation is found in the size and shape of the flowers and leaves; the anthers also vary in colour. With the variety of forms on the mountain we could accept as true the story of the origin of the Kurume Azaleas, as given by Mr. K. Akashi

and reiterated by others, for seedlings raised from a species with such multi-coloured flowers could easily give rise to all the colours in the garden forms of this group, as it is known today."

On the return journey the nursery district round Osaka, where are grown most of the plants exported from Japan, was visited. The growers there are now taking up these Kurume Azaleas, but the variety is limited, the plants indifferently grown and the names usually changed. Fittingly enough it is in the town from whence they derive their names that they have been developed to their present-day perfection, and so high is the standard of beauty that it is difficult to imagine how it can be improved upon. As to their suitability for outdoor gar-

and has made itself at home in loam of a character not usually considered suitable for the genus.

This particular specimen is not so leafy as many, but it is a floriferous little plant, and there is a good deal to be said for a dwarf *Rhododendron* that will grow 2½ feet in six years under such conditions, and flower so bravely at a time when Nature is not usually in her most genial mood.

The petals of the flowers of *R. moupinense* are thick and waxy, approaching those of a *Camellia* in substance, but none the less, a shower of sleet or cold rain will soon reduce them to pulp. What more easy than to arrange a sheet of window glass about a couple of feet square over an isolated plant such as that

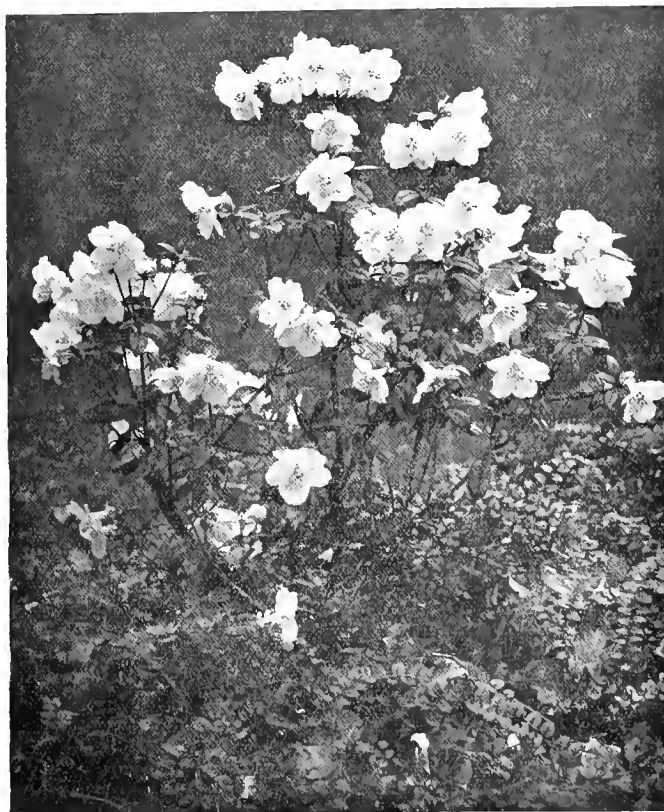


FIG. 92.—RHODODENDRON MOUPINENSE: FLOWERS WHITE, SUFFUSED WITH ROSE PINK

dens, there is every reason to believe that they will thrive wherever *Azalea amoena* has proved perfectly hardy in the open.

RHODODENDRON MOUPINENSE.

MANY years have passed since this species first made its debut at Vincent Square under the aegis of Miss Willmott, who had raised plants from seed received from Mr. E. H. Wilson in the course of his second expedition to Western China. At that time it took the form of a bushy little shrub no more than the span of a hand in height, with a few white flowers, and the ultimate possibilities of the species were not then realised. Nor, for the matter of that, are they fully known yet, for plants six to seven years old have added three or four inches to their stature every year and may ultimately outgrow the wild plants Wilson came across on Mount Omei in 1908. He found the species grew as much as four feet high and was often epiphytic on evergreen Oaks.

The Abbé David, who originally discovered this *Rhododendron* in Moupin towards the end of last century, observed the semi epiphytic character of the species and noticed that it sometimes grew on the decayed trunks of trees. That it is not a true epiphyte and will grow under diverse conditions is obvious from the illustration of a specimen (see Fig. 92) that commenced life seven years ago as a tiny seedling

figured in the photograph, and this done, one may enjoy the flowers for several weeks.

R. moupinense blooms at a time of year when, in normal circumstances, there are no winged insects in the air, and those interested in the minutiae of plant life may wonder how, in the absence of bees and moths, fructification can be effected in the case of a flower in which the stigma protrudes quite half an inch from the anthers. In point of fact, examination showed that in the case of the plant illustrated, pollen had reached the stigma of two flowers only, and this was probably due to the unconscious effort of a friendly robin brushing past the petals.

As is the case in many Chinese *Rhododendrons* there are colour variations in the flowers of *R. moupinense*. In David's type specimen the petals are white, spotted with purple, in others they are white without a trace of colour, while in others, again, the white ground of the petals is strongly suffused with deep rose-pink. The latter is a most desirable form and is the one shown in the photograph.

Unlike several of the Western Chinese species *R. moupinense* does not take kindly to chalk though it will tolerate a moderate percentage in the ground. But this is perhaps no more than one would expect with the particular species. In the writer's experience it stands the sun better than a good many of the Chinese *Rhododendrons*, and is altogether hardy. *A. Greer*

THE MARKET FRUIT GARDEN.

DEAD WOOD IN PLUMS.

THE early season has facilitated the carrying out of the Silver-leaf Order. The compulsory cutting out of dead wood was not begun until March and by then the trees were either in bud or full bloom, and it was easy to distinguish the dead branches and shoots. This is much more difficult whilst the trees are completely dormant. A surprising amount of this dead stuff was removed from some of the older trees, and they look all the better in consequence. This is almost all the pruning that old Plum trees require, but few would suspect the amount of dead wood in trees that appear to be in good order until it is actually looked for.

DRESSING WOUNDS ON TREES

Various dressings are used by different growers for wounds on fruit trees, the most common being gas tar, Stockholm tar, copper sulphate solution, and paint made from white lead and linseed oil. My pruners are always provided with a pot of Stockholm tar with which large wounds made by sawing off branches or otherwise are painted. A lot of tar is used when pruning badly-cankered Apple trees, the diseased spots being cleansed with the knife and then tarred. One feels that freshly-made wounds ought to be covered with some protective dressing to prevent infection by fungous diseases, but I am not at all sure that Stockholm tar is effective. Messrs. Brooks and Bailey, in their well-known Silver-leaf investigations, successfully inoculated Plum trees with the fungus *Stereum purpureum* through dressings of gas tar and Stockholm tar that had been applied two or three months before. The stems of the trees were sawn through and the cut surface painted with tar. Two or three months later spores of the fungus were caused to fall on the tarred surface, under the protection of a glass tube, and the result was the appearance of Silver-leaf disease on branches arising a few inches below the point of inoculation. Apparently, therefore, a dressing of tar, after a few weeks exposure to the weather, does not afford complete protection against inoculation by the fungus causing Silver-leaf. This makes one doubt whether it is protective against other fungi, such as canker and brown rot. Canker wounds, pared clean with the knife, generally heal over nicely after tarring, but then so they do, as a rule, if not tarred. In bad cases the canker often extends after treatment whether the wound is tarred or not, but this, of course, is from mycelium already in the wood, and does not mean reinfestation from outside.

A simple solution of copper sulphate is highly recommended for painting wounds by some growers. This, no doubt, protects the wound for a time, as there is no better fungicide, but the chemical, being soluble, must wash off before long.

On a small scale I am trying a dressing recommended by one of the correspondents of the Ministry of Agriculture for use against American blight. For this purpose it is excellent, and, as it contains sulphur, it should serve as a fungicide in addition. The ingredients are three parts, by weight, of flowers of sulphur and 37 parts, by weight, of vegetable oil. These are mixed and heated cautiously to about boiling point. The solution so obtained is diluted tenfold with oil before use. This dressing penetrates and covers well, and its oily nature should make it lasting. Unfortunately, all vegetable oils are very expensive now.

BLACK CURRANT BUD MITE

Some Black Currants of the variety Seabrook's Black, planted four years ago, already have a sprinkling of big buds on them. In the eastern counties this variety apparently enjoys almost complete immunity from bud mite, and, on the strength of this reputation, it has been planted very largely in other parts of the country in recent years. It is to be feared that it will not retain its good character for long. From one district comes the report that it is quite as badly affected as Boskoop Giant. *Market Grower.*

FURTHER INVESTIGATIONS ON THE EELWORM DISEASE OF NARCISSUS.*

IN the spring of 1917 I delivered a lecture on the Narcissus disease, and although at that time the investigation was still in its infancy, it was definitely shown that eelworm was the cause of the disease which has been giving growers great concern during the past few years. Since 1917, two papers have been published by me in the R.H.S. *Journal* on the treatment of the disease, and occasional notes have appeared in the *Horticultural Press*.

On taking up the investigation of Narcissus disease in 1918, I was amazed to find that eelworm infestation had reached such enormous

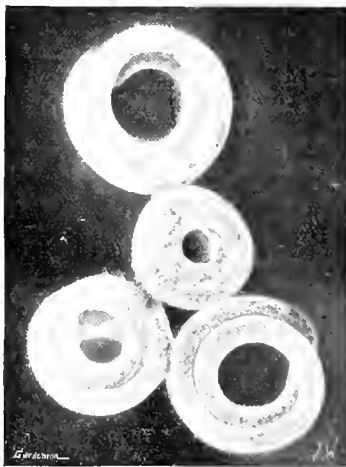


FIG. 93.—EELWORMS IN A QUIESCENT STAGE (× 144), IN WHICH CONDITION THEY RETAIN THEIR VITALITY FOR AT LEAST TWO YEARS.

proportions, and I was inclined to believe that the dangerous character of the disease had been greatly underestimated by growers. Affected bulbs were receiving careless treatment, clean land was being infected, and stocks hitherto free from eelworm were becoming diseased because growers did not realise the seriousness of the matter, consequently, not only were the majority of stocks infected, but land was rendered unfit for the cultivation of Narcissus.

It is essential that growers interested in the bulb industry should be able to recognise the Narcissus disease, to enable them to take correct measures at the right time and in the proper manner. If the disease is allowed to go

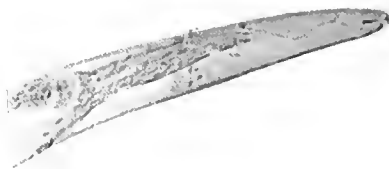


FIG. 94.—HEAD OF AN ADULT EELWORM (× 350), SHOWING THE NEEDLE POINT (WITHDRAWN) BY WHICH IT PIERCES THE PLANT TISSUES.

unrecognised and disregarded this negligence constitutes a direct danger to the industry. Some growers are of opinion that the one and only trouble of the Narcissus is eelworm, and therefore it is not surprising to hear it stated that the bulbs can grow out of the disease. In such cases I feel certain that if the bulbs had fought themselves, then these bulbs were not

affected with eelworm. Thus it will be seen that another danger arises, for if the trouble is misdiagnosed and the so-called eelworm disease does not prove very destructive, the dangerous character of true eelworm disease is not realised.

The best time to examine stocks of bulbs for the presence or absence of the disease is during the growing period. In a badly diseased stock the symptoms of the disease will be noticed in many stages of development. There will be plants which look perfectly healthy with regard to the quantity of foliage made, but close examination will generally show that such plants are diseased, the disease appearing in the form of small, pale coloured, swollen areas, which stand out in contrast to the deeper green of the rest of the leaf.

Pale spots which are not due to eelworm sometimes occur on Narcissus foliage, and the best test is to draw the leaf between the thumb and finger. If a decided swelling is felt, then the leaf is affected with eelworm; if there is no swelling, then the spot has been produced by causes other than eelworm. On carefully examining the swollen area, it will be seen that the swelling is beneath the skin of the leaf, and when the spot is cut across, the internal tissue of the leaf is found to be brown, indicating the position of dead plant cells. When scrapings of these swollen areas are examined under the microscope, eelworms (sometimes very few in number) will be found (see Figs. 93 and 94), together with a large number of eelworm eggs. The disease shows up very markedly in the foliage of broad-leaved varieties, such as Emperor and Victoria, but in the case of *N. poeticus* varieties and hybrids the swellings, although present, are not so pronounced. Sometimes the swelling occurs away from the edges of the leaf; at other times it appears on the edge.

When making observations in the field, a diseased stock which has been planted one or more years may be found to contain a number of plants which have produced plenty of foliage, but growth is quite abnormal. The leaves are yellow and sickly; they twist and have ragged edges, and are deficient in cell sap and spongy in texture. The swollen areas are also to be found, but, owing to the yellowness of the leaves, they are not so readily observed as in the case of a plant which is only slightly affected, and in many cases the swollen areas become very irregular in shape. Some bulbs may have refused to grow at all and entirely decayed away. Thus we may find three types: 1st, those which show an occasional spot; 2nd, those which produce twisted and contorted foliage (see Fig. 95); 3rd, those which have produced no foliage at all.

Another symptom, although it cannot always be attributed to eelworm, is the production of stunted and late flowers. Where bulbs are found throwing flowers a few days later than the bulk it is always advisable to examine them. In some cases it may be found to be due to deficient root action or other causes; it may be found also to be due to eelworm.

When a stock of diseased bulbs has been left in the ground for two or more years the disease occurs in more or less circular patches. If one of these patches is examined it is usual to find that no foliage has been produced in the centre of the infected area, and, working from the centre outwards, bulbs producing the contorted and twisted foliage will be found; while, just outside the circle, bulbs will be producing plenty of strong foliage, but spotted with swollen areas. This is readily explained. A diseased bulb was planted, the eelworm escaped from the bulb on its decay and infected the neighbouring plants, producing spotted plants; next year the spotted plants produced twisted foliage or no foliage at all, while increasing numbers of eelworms were liberated and affected healthy bulbs, so that the diseased patches became greater in extent the longer the bulbs were left undisturbed.

Turning to the symptoms of the disease in the bulbs, one of the outstanding characteristics of the disease is that, although the bulbs may be badly diseased and produce contorted foliage, there is always an abundant production of roots.

* Lecture by Mr. J. K. Ramsbottom, delivered before the Royal Horticultural Society and Horticultural Club, April 13, 1920.

If bulbs showing a trace of disease in the foliage are lifted in spring, they will be quite white inside, whereas when the bulbs of plants showing the disease in a more advanced stage are cut open, the tissue is discoloured (see Fig. 96).

It is very difficult to describe the symptoms in the bulb, because other diseases may cause the fleshy scale leaves to turn brown. So much depends upon the degree of infection.

In slightly diseased bulbs it is possible to trace the disease from the "nose" downwards. When the bulb is transversely cut, the diseased, fleshy scale leaves have a brown colour and the texture of the scale leaf is dry and spongy where the eelworm is working. With other diseases causing a brown, fleshy scale leaf, the colour is usually much darker than in the case of eelworm disease, and the dead tissue is usually wet. When a bulb is badly diseased, the base separates from the fleshy scale leaves, and it is not uncommon to find swarms of eelworms hanging from the rupture, like a tuft of cotton wool. In other cases the embryo growth of the bulb is affected (*i.e.*, that portion of the bulb which is to produce the foliage and flower the next spring). In such cases, if any foliage is produced at all, it will be malformed. Thus it requires a very practised eye to discern by merely cutting open a bulb whether it is affected with eelworm, and personally, after spending the best part of four years on this work, I never diagnose the trouble until I have taken scrapings and examined them under the microscope. Therefore I am inclined to place more stress on the symptoms of the disease during growth than on symptoms during the dormant stages of the bulbs.

With regard to the diseased patch in the field; lifting time arrives and the bulbs are sorted ready for planting. It is quite impossible, without cutting open the bulb, and by so doing destroying it, to distinguish a healthy bulb from one which is slightly affected, and no matter how diligently the sorting is done, it is certain that quite a number of diseased bulbs will escape notice. These slightly infected bulbs are distributed over a large area (*i.e.*, instead of having the disease confined to one spot as it was before lifting, it is now distributed over a large area) and it has happened within my knowledge, that after these bulbs have been left in the ground two years the disease has reached such proportions that all of them have been rendered absolutely worthless. This is not mere theory; it has been the bitter experience of some of the biggest bulb growers in this country.

The question now arises as to what can be done to prevent the disease from spreading. We know that the disease is due to eelworm and we know that eelworms are not confined to the bulbs only, but are present in the soil. Every care should be taken to keep a diseased stock isolated, as infected soil may be easily transported by means of implements, horses and the boots of the workers. In Holland men are employed on every bulb farm to examine the plants carefully. All bulbs showing symptoms of the disease are marked with a stick and these men are immediately followed by "eradicators," who remove the marked plants with an instrument specially designed for the purpose. This instrument, called the "Koker," consists of a circular zinc cylinder about 5 inches in diameter and about 2 feet in length. It is thrust into the soil and the surrounding earth together with the diseased bulb is removed. Some growers take out about a cubic foot of soil and sacrifice the healthy bulbs enclosed in that area. The wide planting system which the Dutchmen employ and the texture of their soil make this elimination of the diseased bulbs a simple matter, and much good results from the work, for not only are bulbs removed while only lightly affected, but the removal of the soil reduces the spread of infection.

I do not think, however, that the method can be relied upon to entirely eradicate the disease from the field; much depends on how carefully the work is done, but it is a method which is very useful in keeping the disease within bounds in a stock which shows a trace of disease. Unfortunately, the greater density of the Lincolnshire soils prohibits the use of the

"Koker," but an attempt is being made to find a suitable instrument for the purpose.

It appeared to me in 1916 that the only way to fight the disease was to find some practical means of killing the eelworms in the bulbs and so eliminate their power of infecting healthy bulbs. Soaking the bulbs in cold solutions of chemicals for one, two, three and four days proved useless, simply because the solution never gained entrance to the interior of a bulb. Gaseous disinfection was also attempted, but with equally unsuccessful results. By placing slides of eelworms on a thermal stage and examining them under a microscope it was found that the pests could not withstand a high temperature, consequently soaking bulbs in water at temperatures varying from 110° to 120° for different lengths of time was tried.

In the spring of 1917 it was found that bulbs which were treated at a temperature of 120° F. were killed and those which were treated at a temperature of 110° F. had suffered very little; no live eelworms were seen in bulbs which were submerged in the hot water for four hours. In bulbs which had been treated for two hours in water at 110° a few live eelworms were found, although the



FIG. 95.—DAFFODIL BULB BADLY INFESTED WITH EELWORM, AND SHOWING DISTORTED FOLIAGE.

great proportion of them had been killed. I had no information regarding what a three-hour treatment would do. I took the information to two of the Spalding growers, Mr. Geo. Monro, Junr., and Messrs. J. T. White and Sons—two growers who had done much to further the investigation—and they resolved at much cost to place the treatment on a commercial basis. An apparatus was designed and completed in November and soaking operations commenced immediately; a four-hour treatment in water at 110° was adopted. I took advantage of this opportunity to treat four lots of 500 bulbs each from a very badly diseased stock showing 95 per cent. infection, and these were treated for 1, 2, 3 and 4 hours respectively. These bulbs were transferred to Wisley.

The following year it appeared as though the bulbs treated for four hours had been badly damaged. The treated bulbs at Spalding occupied about 6 acres of ground and there was hardly a blade of foliage to be seen. The treatment seemed to be a dismal failure. The growers left the bulbs in the ground for another year, as they were found to be quite hard, although they had not produced roots. Next year (1919) these bulbs grew healthy and strong.

(To be concluded.)

FLORISTS' FLOWERS.

VERBENAS.

THE number of people who can recall the days when the Verbena held the chief place in the flower garden must now be few. Like nearly every popular flower, its period of popularity had its limits and extended from the early 'forties to the 'eighties of last century, when, if any were to be found who gave no place for Verbenas in his garden, he would have been regarded in much the same manner as Dick Swiveller did the Marchioness when she admitted her ignorance of the taste of beer. The earliest known species worth growing is *V. Aubletia*, the Rose Vervain, but it was not until the advent of the South American species that the Verbena was worth, and obtained, practical attention. The first of these of gardening value was *V. Melandres* (Gillies) figured in *Bot. Mag.*, tab. 3333, as *V. chamaedrifolia* (Hooker), and at the same time *V. pulchella* was introduced, a species that varied from seed and which produced a white variety at Coull in Ross-shire in 1834. It long continued to be grown as a bedding plant.

V. venosa, which is hardy in many parts of Great Britain, came next in 1835, and the year following, *V. Tweediana* flowered at Glasnevin, where it was grown in a stove-house. This species was figured in *Bot. Mag.*, tab. 3541, and there is also a fine plate of it in the *Magazine of Botany*. I imagine that it is from these, with the exception of *V. venosa*, that garden sorts were raised. It is recorded that Mr. Wills, when gardener at Huntroyde, raised thousands of seedlings from *V. venosa* crossed with others, but none of these ever proved of value. Many varieties were imported annually from the Continent, and in the Verbena period, Scott of Merriott had no fewer than 500 French and British sorts.

In my recollection, the best varieties for bedding, which were distinct from the pure florists' kinds, were *Defiance*, raised by Robinson, a private gardener at Thames Bank, Pimlico, and distributed by Charles Turner, in April, 1848, at 7s. 6d. per plant, the usual price being 5s. for novelties. Subsequent history of *Defiance* has proved the anticipation of its introducer to have been correct, for in its colour it has never been surpassed. Purple King, the best of that colour, was raised by Scobie, of Holland House, and sent out by Dobson of Isleworth in 1853; *Brillante de Vaise* before 1856; *Aristo* at the same date, and Mrs. Halford, the best white, in 1856. *Crimson King* was grown extensively in the early 'seventies. Miss Willmott is the most popular variety that has appeared since, and now is almost always grown from seed, as indeed are Verbenas of all colours, where grown at all.

There is no more difficulty in producing a stock of these Verbenas from seed than of any other easily-grown plant. Some establish them in pots, but I favour box culture. With *V. venosa*, a different treatment is needed where propagation by the stolons is not carried out. Seeds will sometimes not germinate for twelve months after sowing, and they are always tardy in germinating. My own plan is to steep the seeds in warm water for two days previous to sowing, and never to allow the soil in which they are sown to become the least dry. By this means I have never found them to fail, nor to be too late to plant out with other bedders. *V. venosa* is best planted in broad masses to obtain its wonderful colour effect. A simple but pretty edging, where an edging for Verbenas is desired, is one of mauve dwarf *Ageratum*. This year *Matricaria eximia* "Golden Ball" is to be used here. It also associates well with other plants, and I have had it thus with *Godefia Schaninii* fl. pl., with a very broad edging of *Saponaria calabrica*, which was particularly striking. Donald Beaton, who, by the way, tried to cross it with other kinds long before Mr. Wills' experiments, planted it very thickly among variegated scarlet *Pelargoniums*. Beds of these were called "shot silk beds." It is

remarkably fine too, mixed with the old Mangles' Variegated Pelargonium.

Various reasons have been advanced for the loss of popularity by Verbenas. They may have been over-propagated, but doubtless the bedding Viola, the Begonia, Nemesia, and others, had a great effect in shouldering them aside. Surely it would be worth while to resuscitate Verbenas in named varieties, and probably those noted above are still to be had.

One cause of failure with many growers was too late propagation in autumn and using artificial heat to induce root formation. Verbenas root so readily that I knew a very successful grower of many thousands annually, who rooted stock for keeping over winter out of doors. But the plants were established by the beginning of August. Then it must be remembered that the Verbena is all but hardy and should not be housed though protected—

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

English versus Scottish Gardeners.—I have been very much interested in Mr. F. C. King's article (see p. 172), *vs* English versus Scottish Gardeners. I have served under both, and I could not regard one class as better than the other. All gardeners have their own special methods of cultivating fruit, flowers and vegetables, therefore the merit of one class as compared with another is largely a matter of opinion. I quite agree with Mr. King's idea of varying a lad's work and giving him a little job to do by himself; he will naturally try to do right, and if he fails the opportunity arises to explain and show him how it should be done. A little encouragement goes a long way. If head gardeners took a little more interest in their young men, and imparted a little more of their know-

ledge in the production of new greenhouse varieties; it is a tender species and cannot be grown out of doors, except in especially favoured localities in the south-west of England and Ireland. The earliest hybrid from it was, I believe, Princess Alice, the result of crossing *R. Edgeworthii* with *R. ciliatum*. This latter is also a native of the Himalayas and hardier than *R. Edgeworthii*, but as it flowers early in the year the blossoms, if unprotected, are liable to be injured by frost. Other hybrids of *R. Edgeworthii*, all of which possess its fragrance, are *R. Forsterianum*, a particularly fine plant whose other parent is the Moulmein *R. Veitchii*; and *R. sesterianum*, between *R. ciliatum* and *R. Edgeworthii*. Some years ago the late Mr. Isaac Davies, of Ormskirk, raised a number of valuable hybrids between *R. Edgeworthii* and *R. multiflorum* (*R. ciliatum* × *R. virgatum*), including *Comtess of Derby*, *Comtess of Sefton*, *Duchess of Sutherland* and *Mrs. James Shawe*. In all of them the flowers are nearly white and highly fragrant. W.

Datura sanguinea.—This plant belongs to the section *Brugmansia* of the genus, and is characterised by the shrubby or arborescent habit of the species. I have just been reminded of the above plant by receiving specimens from Cornwall, where it is grown in a private conservatory, and blooms all the year round, as a result evidently of the mild climate. In greenhouses it is usually treated as a deciduous plant, though naturally evergreen, and is often cut hard back after flowering. In the conservatory in question it is both evergreen and perpetual-flowering. At present the small tree bears hundreds of flowers, with buds in all stages of development upon the growing shoots. Originally in a pot, it grew through the bottom, after which the pot was broken away and the plant left to grow where it stood. It has now attained a height of 14 feet, with a considerable spread. The funnel-shaped flowers are eight to nine inches long, though described as seven inches, and the tube four to eight feet high in this country. The long tube is orange, while the limb of the corolla is blood-red, or bright crimson, at its best. A plant of this character is capable of producing splendid effects, when planted out in a cool conservatory, and requires far less attention and feeding than when grown in pots. The species is figured in Sweet's *British Flower Garden*, II., 272, as *Brugmansia sanguinea*. J. F.

The late Mr. W. J. Tutchter.—The late Mr. W. J. Tutchter, Superintendent, Botanic Gardens, Hong Kong, began his gardening career with his father at Kingsweston, after a sound education at a Bristol city school. From the first he showed a keen and intelligent interest in his work, and his motto: "What is worth doing is worth doing well," was carried out in his attention to every detail. From Kingsweston he went to Ashton Court, under Mr. Bethel, and thence to Messrs. Jas. Veitch and Sons' nurseries, and on to Kew Gardens, where he became deputy foreman of the Orchid department. From Kew he went out to Hong Kong as deputy superintendent, and after a few years he became superintendent of the Botanic Gardens. While in the East he did not forget his native land. He sent accounts of Orchids, Roses, etc., to the horticultural Press, and the last, I well recollect, was on the *Phaius grandifolius*, as it is grown at Hong Kong, in the *Gard. Chron.* of January 21, 1919. Mr. Tutchter made a great name for himself in Hong Kong, and I desire to pay my tribute to his merits, to his tenacity of purpose, and to his high ideals. Such men as he are an honour to the name of Kew and a credit to British horticulture. J. Prince.

Freesia Names and the R.H.S. Floral Committee. With reference to your remarks on Coloured Freesias on p. 164, may I say that Buttercup is a well-known variety. It has appeared in Van Tubergen's list since 1914. It seems to me to need explanation why the members of the Floral Committee took upon themselves to say that the variety Mr. Dabynple sent up for an award under the name of Buttercup was not Buttercup. Robinetta, which I

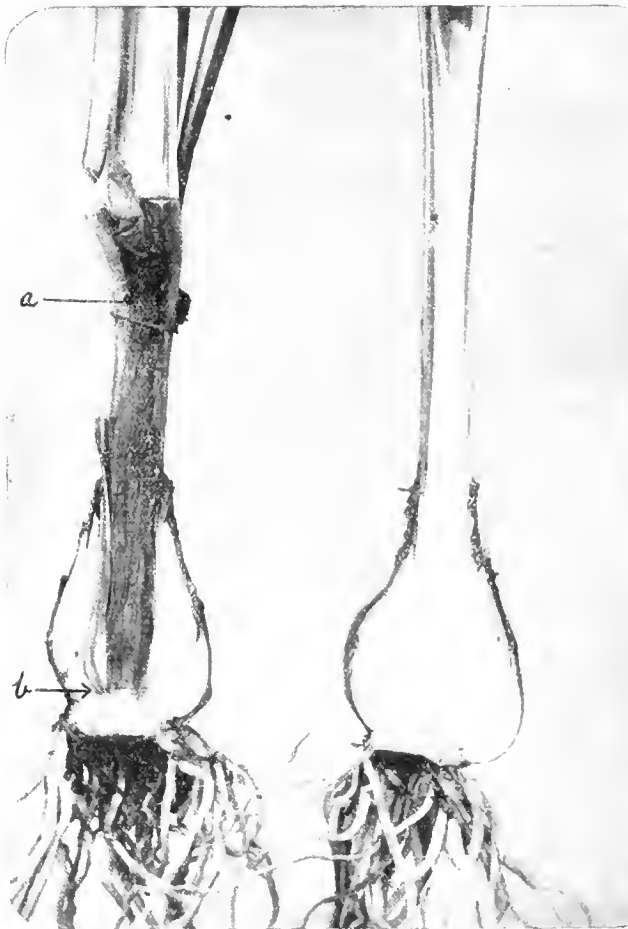


FIG. 96.—A NARCISSUS BULB SHOWING (a) POINT OF INOCULATION BY EELWORM IN FLOWER-STALK AND (b) INVASION OF THE BASAL PLATE BY EELWORMS. (D) HEALTHY BULB. (By courtesy of the Royal Horticultural Society.)

before the middle of November, and as it is important to get cuttings early in the year, slight warmth must be employed towards the end of January. The few weeks in winter is therefore the only period there ought to be any danger of the stock deteriorating, aphids and mildew being the two fatal enemies to fear. The cuttings root so readily in spring that scarce sorts, split up so as to have an eye and a leaf, will even root in an ordinary propagating pit or frame hot-bed in little more than a week. Hardening off used to be responsible also for much debility in the stock for summer planting. This was due largely to growing the young plants in too much heat and also, perhaps, to starvation, for Verbenas undoubtedly need a fairly rich soil and no stint of water at the roots. R. P. Brotherton.

ledge to their assistants, I feel sure that a better feeling would be created. If they were given more encouragement they would take a greater interest in their work and still give "the head" the respect due to him. By learning to obey one learns how to command. *William McComb, Osgoby Hall Gardens, Selby.*

Rhododendron Edgeworthii.—This Himalayan Rhododendron forms a rather loose-growing shrub with prominently veined leaves, which are more or less hairy on the upper surface and quite woody beneath. The flowers, borne a few together in loose heads, are about three inches in diameter, white, with a central blotch of yellow, and deliciously fragrant. The fragrance of *R. Edgeworthii* has led to its use by the

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 15.—The following groups were exhibited at the meeting of the Royal Horticultural Society on the 15th inst.

A large bank of hybrid Rhododendrons, raised from R. Doncaster × R. Aucklandii superbum, was shown by E. H. LOWINSKY, Esq., Sunningdale, (gr. Mr. G. Dribble). This group was the most imposing in the hall, and was awarded a Gold Medal. The Floral Committee gave Awards of Merit to four of the best varieties, and these are described on p. 196.

Variations of splendid quality were shown by Messrs. ALLWOOD BROS. (Silver Flora Medal), Mr. C. ENGELMANN (Silver Grenfell Medal), and Messrs. STUART LOW AND CO. (Silver Banksian Medal).

Messrs. H. B. MAY AND SONS interspersed their customary collection of indoor Ferns with goodly groups of large-flowered Calceolarias, Cinerarias and other flowering plants (Silver Banksian Medal).

Roses formed an attractive feature of the show, and these were contributed by Messrs. B. R. CANT AND SONS, who included masses of Golden Ophelia and Hon. Mrs. R. C. Grosvenor (Silver Flora Medal); and Mr. E. J. HICKS, whose prominent varieties were Climbing Lady Hillingdon, Mr. Elisha Hicks and Joanna Bridge (Silver Banksian Medal).

Messrs. SWEET AND SON staged a group of their double-flowered Cytisus racemosus, particularly well flowered.—Messrs. R. and G. CUTHBERT staged Azalea mollis of gorgeous colouring (Silver Flora Medal).—Pyruses and Prunuses in great variety were staged by Messrs. J. CHEAL AND SONS. Pyrus Lady Northcliffe, an immensely improved Pyrus floribunda was particularly effective (Silver Flora Medal).

A large collection of hardy border flowers, in which various Crown Imperials were prominent, was shown by Mr. G. W. MILLER (Silver Flora Medal).

Many Rhododendrons from Falmouth and fine sprays of Erica mediterranea were contributed by Messrs. F. GILL AND SONS. Rhododendron Nuttallii was awarded a Cultural Certificate (Silver Grenfell Medal).—Mr. L. R. RUSSELL showed several greenhouse Rhododendrons, with splendid half-standards of Azalea indica varieties (Silver Grenfell Medal).

A choice collection of Auriculas was exhibited by Mr. JAMES DOUGLAS (Silver Grenfell Medal), while Mr. G. REUTHE contributed a collection of new and rare plants, including half-hardy Rhododendrons (Silver Grenfell Medal).

Messrs. W. CUTBUSH AND SONS arranged an attractive group of Polyantha Roses (Silver Banksian Medal).—Viscount ASTOR (gr. Mr. W. Camm) sent three baskets of excellent Celsia cretica (Silver Banksian Medal).

Bronze Flora Medals were awarded to Messrs. BOWELL AND SKARRATT, and Messrs. R. TUCKER AND SONS, for alpine, and to Messrs. REAMS-BOTTOM AND CO. for splendid St. Brigid Anemones.—A Bronze Banksian Medal was awarded to the Misses HOPKINS for an alpine garden.—Messrs. G. BUNYARD AND CO. showed the interesting Bilbergia nutans and dwarf Irises.

READING AND DISTRICT GARDENERS.

At the recent fortnightly meeting held in the Recreation Club Room, Abbey Hall, Mr. A. J. Cobb, the new superintendent of the Horticultural Department of the University College, Reading, gave a most interesting and practical lecture on "The Formation of New and the Improvement of Old Shrubberies." The lecturer claimed for flowering trees and shrubs that they provided some of the most beautiful features in British gardens. He had already noted with pleasure that many beautiful flowering trees grew well in the Reading district, showing that the locality was very suitable for them. The lecturer gave clear cultural directions as to the laying out of shrubberies and advised combinations for spring and summer

flowering and also for securing the loveliest autumn tints. At the close of the discussion a hearty vote of thanks was accorded to Mr. Cobb for his lecture and the suggestions he made.

Mr. H. Goodger, Stoneham House Gardens, Calcot, was awarded a First-Class Certificate for a collection of fifteen dishes of Apples, the fruits being of splendid colour and in excellent condition for so late in the season. Mr. G. Tovey, Leighton Park Gardens, received an Award of Merit for a group of Cineraria stellata.

In terminating the winter session, the members held a "Floral Table" competition and the result was as follows:—First prize, Mr. H. GOODGER, The Gardens, Stoneham House, Calcot; Second prize, Mr. J. WYNN, The Gardens, Hammonds, Checkendon; Third equal prizes, Mr. T. MARTIN, The Gardens, 44, Craven Road, and Mr. E. BLACKWELL, The Gardens, Foxhill. It being "Hospital Night," a beautiful display of cut flowers was made, contributed by Messrs. F. ALEXANDER, E. J. DORE, A. H. FELKER, E. R. JAMES, C. MOULTON, F. TOWNSEND, A. WEBB, and J. WYNN. The flowers were sent to the Royal Berkshire Hospital, and a collection enabled the Association to send a sum of £2 12s. 0d. to this worthy Institution. In a competition for three dishes of Salads, Mr. J. WYNN was awarded the First Prize. Mr. W. SHARPE, The Gardens, Sidmouth Grange, staged a basket of Blenheim Pippin Apples, the fruits being of splendid colour and in excellent condition.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE monthly meeting of this Society was held in the Royal Horticultural Society's Hall on Monday, April 12. Mr. Chas. H. Curtis was in the chair. Four new members were elected. Four members withdrew double the amount of their interest, amounting to £16 13s. 6d., and one member over 70 years of age withdrew £10 from his deposit account. The death certificates of four deceased members were received and the sum of £227 11s. 5d. was passed for payment to their respective nominees; this sum included £152 5s. 3d. which was standing to the credit of one late member.

The sick-pay for the month on the Ordinary side amounted to £57 8s. 4d., and on the State Section to £34; and maternity benefits came to £7 10s.

Copies of the annual report and balance sheet may be obtained from the Secretary, Mr. A. C. Hill, 35, Alexandra Road, West Kensington Park, W.

TRADE NOTES.

MESSRS. BELL'S PLANT FOOD CO., the well-known Chelsea firm, has removed to larger works at Lewisham, in order to accommodate their expanding business. The firm was formerly known as W. Bull and Sons, and was for very many years engaged in the raising and importation of Orchids at the King's Road premises. The last of the glass houses there have just been disposed of.

A MEETING of the Agricultural Wages Board, after considering objections to the proposal to increase the minimum rates of wages for male agricultural workers of 21 years of age and over throughout England and Wales, made certain amendments, and the proposal was confirmed as an Order, to come into operation on Monday, April 19. The general effect of the Order is that in areas where the ordinary minimum rate has been 36s. 6d., 37s., 37s. 6d., or 38s., it will now be 42s., and in areas where the minimum rate has been higher than 38s. it will be raised by 4s. in each case. The Board also resolved to give notice of a proposal to increase the minimum and overtime rates for male workers under the age of 21 years throughout the country, the proposed increases in the weekly minimum rates varying generally in the case

think was put in commuerce a year before Buttercup, was evidently taken by the Floral Committee as having been raised by Mr. Dalrymple. It is too bad of the Committee to jump to conclusions and, unintentionally, I allow, make people who know the circumstances think that the gentleman who submitted them for Award might be wishful to claim them as his own raising. I advocated a reform of the Floral Committee at the annual general meeting. I little thought that a case, which clearly is "one for me," would occur so soon. Joseph Jacob.

Bog Irises.—The beautiful Water-Irises of the East are often planted in the ordinary herbaceous border; but to see them in perfection they should be grown on the edge of a pond, or in some position where their lower roots are never dry. Failing the possession of such a spot in the garden, they may be well grown in a wooden tub, or half-barrel about 2½ feet deep, which can either stand at some prominent spot on a terrace, or at the corner of the lawn; or the tub may be sunk near the base of a bank or rock-border with good effect. It must be well supplied with water in dry summer weather up to the half of its depth or more, but in winter it will not need more water than the rain supplies. The grand flowers of the popular I. Kaempferi will then make a fine bouquet in July, when well established, in various shades of violet, crimson-purple, and royal blue, as well as in pure white with golden blotches—perhaps the loveliest of all. The members of another group of bog Irises are natives of Eastern China and Siberia, where they form rich carpets of colour on either side of the soil raised above the moist cuttings on each side of the great railway. The individual blossoms of these Irises are not very large, but they form a pyramid of bloom 5 ft. in height, and the spikes contain a large number of flowers in various tints of blue, or white, most effective when well grown in a tub or by the water-side. One of the best is I. siberica Snow Queen, ivory white; I. Bleu Coeleste, pale blue; and I. orientalis Blue King. In contrast with the violet and blue varieties, Iris ochroleuca Queen Victoria in two shades of yellow is excellent, and our native Yellow Flag, Iris Pseudacoris, is also handsome and effective; whilst Iris Monneri is yellow, although its hybrid Monsieur Cambridge Blue, and Dorothy Foster, Premier, and Juno are in various shades of violet and blue; all being worthy of a place in a collection of these plants. They fill a large tub with roots in three or four years, when they may be divided and replanted, placing three clumps in each tub, or one only in a smaller receptacle. They are quite hardy, only requiring good garden soil and abundance of water to do well, planting them either in spring or autumn. Even in a city, or on a roof-garden, they can be grown in tubs surrounded with virgin-cork or pot plants, and for the decoration of a verandah or a balcony they are unique. J. L. Richmond.

The Adjectival Form of the Word "Fungus."

—The reviews of Hiley's recent book on *The Diseases of the Larch* bring out prominently the want of uniformity in the use of the adjectival form of the word "fungus." The author uses "fungal" in the title of the book. "fungous" is commonly employed; for example, by the writer of the review of this work in your issue of April 10. "Fungoid" is also in use. The last would seem to be ruled out, as the "oid" affix signifies, I believe, "resembling." A fungoid growth would then be one resembling that produced by, but not one really arising from, a fungus. The word has on this assumption a meaning all its own, and should not be used to denote diseases caused by fungi. Of the two alternatives left I have a predilection for "fungous," on euphonic grounds, but then it is identical in sound with the noun. As "fungal" corresponds with "algal," which apparently is the only adjectival form in use for the algae, it would seem preferable on this account. The writer is in no position whatever to speak authoritatively on this matter, but deems it desirable to have the form of adjective applicable to fungi definitely fixed—at any rate for scientific and horticultural purposes. J. P., Carlisle.

of workers aged 20 to 21 from 3s. 6d. to 5s., according to the area; for workers aged 19 to 20, from 3s. to 4s.; and for workers aged 18 to 19, from 2s. 6d. to 3s. 6d., with proportionate increases for workers under the age of 18. It also decided to give notice of proposal to increase the minimum rates for female workers of all ages.

THE Chamber of Horticulture has removed from 11, Adam Street, Adelphi, and has entered into occupation of its commodious offices at 18, Bedford Square, W.C.1. As Mr. R. Wynne has resigned his position as Secretary of the Chamber all communications should be sent to "The Secretary, Chamber of Agriculture," at this new address. The Chamber arranged a meeting at the House of Commons on Thursday, April 15, for the purpose of establishing a General Parliamentary Committee to promote the interests of British horticulture. At this meeting it was arranged that growers and others interested in commercial horticulture should write to the Member or Members of their constituency, requesting him or them to get into touch with Mr. Rupert Gwynne, M.P., with a view to joining this committee, which will confer with the Parliamentary Committee of the Chamber on May 15. The great point for the moment is to arouse the interest of Members of Parliament on the important subject of British Horticulture.

Obituary.

Sir Edmund Giles Loder, Bart.—British horticulture has sustained a severe loss in the death of Sir Edmund Loder, Bart., which occurred at his home at Leonardslee, Horsham, on the 14th inst., from heart failure following a short illness. Sir Edmund had returned from Scotland about a fortnight previously, where he had been fishing. We understand that whilst in the north he caught a chill, and complications followed which terminated fatally. He was born in August, 1849, and was the eldest of seven sons of the late Sir Robert Loder, Bart. He succeeded to the baronetcy in 1888. His great interest in gardening is well known to all readers of this journal, and his gardens at Leonardslee were amongst the most famous in the country. Both the soil and the situation at Leonardslee are very favourable for most plants, and Sir Edmund had a very catholic taste for all manner of hardy species, but he was specially interested in Rhododendrons, Conifers and Alpines. His collection of Rhododendrons was one of the most extensive in the country, being second only in extent, probably, to that at Camlays. Of late years he made a hobby of raising Rhododendrons of the Himalayan type, and his variety, *Loderi*, obtained by crossing *R. Griffithianum* with *R. Fortunei*, is the finest white flowered hybrid in existence—at any rate in regard to the size of the flowers, some of which approach seven inches in diameter. The Rhododendrons and Azaleas at Leonardslee in May provide one of the most wonderful exhibitions of colour and fragrance to be seen in any garden in the British Isles: it is sad to reflect that the planter has passed to his rest just as the flowers are approaching the zenith of their glory. To his interest in Conifers our columns last year bore ample evidence. In the issues for May 10, 17 and 24, 1919, we published a list, from his pen, of those that were growing in the open at Leonardslee, and from this list it may be seen that the Leonardslee pinetum is practically complete, so far as Conifers capable of cultivation in the open air in Sussex are concerned. The collection of Junipers at Leonardslee—in these days a neglected group—is particularly good. His keenness for detail and close observation was remarkable. When not in the garden he was always studying some problem in scientific work, and he was the possessor of a fine library, containing an almost complete collection of works of reference on the subjects which he made his special study. In his younger days

he took a keen interest in Alpines, and the rock gardens at Leonardslee contain a remarkable collection of rare and choice plants. Many semi-tender subjects, such as Camellias and Palms, are acclimatised in favourable parts of the grounds—a number of these having been formerly in the grounds at the Crystal Palace, Sydenham. Sir Edmund was also greatly interested in fruit-growing, and his varieties of fruits was a very extensive one. At one time he grew Narcissi very extensively, and in the days when the variety King Alfred was comparatively new, he had one of the finest batches of this noble Daffodil, specimens of which grew as high as 3 ft. 4 ins. Sir Edmund was a keen zoologist, a great sportsman and hunter, and a famous rifle shot, as the large number of trophies—heads, horns and skins at Leonardslee—bear witness. In the grounds were acclimatised various foreign animals and birds, notably beavers, kangaroos, deer and emus. He married, in 1876, Marian, youngest daughter of William Egerton Hubbard, of Leonardslee, who survives him. His only son, Robert Egerton Loder, born in 1887, married, in 1915, Muriel Rolls Hoare, only daughter of Mr. and Mrs. Rolls Hoare, of West Grinstead Park, Horsham. He served as captain with the 4th Battalion Royal Sussex Regiment in the war, was wounded at Gaza and died on March 29, 1917, leaving one son, Giles Rolls Loder, the heir to the baronetcy, who was born in 1914. The funeral took place at Holy Trinity, Lower Beeding, on the 19th inst. The coffin was borne from Leonardslee on a farm wagon drawn by four horses, each with a driver, and eight employees were the bearers. The officiating clergymen were the vicars of Lower Beeding, Henfield and Bolney.

John Snell—The sudden and untimely death of Mr. John Snell leaves a gap in the ranks of horticultural and agricultural experimentalists which will be difficult to fill. On many occasions our columns have testified to the splendid work Mr. Snell has done at Ormskirk in connection with the trials of Potatoes annually held there, and of which he had charge as an inspector under the Ministry of Agriculture. Testing varieties of Potatoes for immunity to wart disease was the business which brought the Ormskirk trials and Mr. Snell so prominently before the public. For ten years he paid the closest attention to this work, to the great advantage of the country. So highly was he esteemed and so greatly was his work admired and appreciated, that agriculturists from America and many European countries visited the Ormskirk Potato Trials for the purpose of gaining first-hand information from the greatest expert on the subject of disease resistance. Mr. Snell died at Erston on Tuesday, April 20, just a week after his marriage.

ANSWERS TO CORRESPONDENTS.

CEDRUS ATLANTICA GLAUCA: G. F. There is no trace of disease on your shoots of *Cedrus atlantica*, and we are of the opinion that the trouble is solely due to climatic changes. Excessive wet, or a period of dry weather, especially in the spring, will cause the growths to shed a great many leaves, but the trees soon recover. From the appearance of the shoots we should say your trees will break into new growth satisfactorily and appear as healthy as ever in a couple of months' time.

GRUBS FOR IDENTIFICATION. W. H. C. The grubs are those of a Carabid Beetle. It is impossible to tell, without breeding them, to which genus they belong. They suggest *Pterostichus niger* (the Carabidae, or Ground Beetles, are omnivorous in habit both in the larval and adult stages, feeding on earthworms, slugs and other insect larvae. Only in the rarest cases have any been reported as damaging plants. They may be regarded as friends to the gardener.

NAMES OF PLANTS: L. M. W. 1, *Enochorda grandiflora*; 2, *Spiraea arguta*; 3, *S. prunifolia* var. *flora pleno*; 4, *Prunus subhirtella*; 5,

Cupressus pisifera var. *squarrosa*; 6, *Ornithogalum luteum*; 7, too withered for identification; 8, *Cytisoma japonica* var. *elegans*.—*L. C.* *Sparmannia africana*.

NAMES OF FRUITS: T. R. J. Round Winter Nonsuch.—*J. W. J.* Small's Admirable.—*T. W. E.* 1, Beauty of Kent; 2, Winter Strawberry; 3, Annie Elizabeth; 5, Scarlet Nonpareil; 6, not recognised; 7, American Mother; 8, Stirling Castle.

PEACH LEAVES CURLING AND TURNING RED: J. W. J. In the absence of specimens, it is difficult to determine the cause of the curling and colouring in the Peach leaves, but the description given in first letter, leaves little room to doubt but that the malformation is due to the presence of a fungus named *Exoascus deformans*. This disease is always most in evidence when there is a sudden fall in temperature and especially when cold winds prevail, but it is checked by an increase of temperature. The affected leaves should be removed and burnt. Spraying the trees with Burgundy mixture just before the leaf buds burst is a preventive measure that has proved eminently satisfactory: the mixture is rendered more effective if $\frac{1}{2}$ pint of milk is added to every three gallons, as this addition increases its adhesiveness.

PICEA ROOTS DISEASED: R. D. T. A careful examination of the roots has revealed the presence of the mycelium of some fungus which is not determinable at this stage. It is probable that the roots of your Piceas have entered sour clayey soil and have died therein; the fungus may be a consequence of the conditions prevailing and not the cause of the trouble.

RHODODENDRONS. G. H. We regret we cannot undertake to name varieties of Rhododendrons or other florists' flowers, as we have no means of comparing them.

RICHARDIA (ARUMS) DISEASED: J. B. H. The *Richardia* (Arum Lily) plants submitted are attacked by the disease known as Soft Calla Rot. The cause of the disease is a Bacteria called *Bacillus aroideae*. This organism occupies the intercellular space in the host and dissolves the layers that connect the cells, causing the affected tissue to break down into a soft slimy mass. No cure has yet been discovered, but the disease may be prevented by a careful selection of the corns and by changing the soil in the beds every third or fourth year.

STANDARD OF WAGES IN GARDENS. E. S. G. The standard of wages drawn up by the National Union of Horticultural Workers are the wages that body recommends for gardeners generally, but they are not official in the same sense as those of the Agricultural Wages Board.

UNION JACK FLOWER BED: H. N. You cannot do better than use the plants you suggest, as they all remain bright during wet weather, whereas *Felargonium* do not flower well and produce too much foliage in wet, unless weather. A good white *Lobelia* might be used instead of the *Alyssum*, but, on the whole, the *Alyssum* is the more dependable subject for your purpose.

VIOLETS DISEASED: M. A. The trouble is due to an attack of a species of botrytis, a fungus which is encouraged by a close atmosphere and excessively moist conditions. All the diseased foliage should be removed and burnt and the plants sprayed with dilute Burgundy mixture or a solution of sulphide of potassium. When the plants are eventually removed from the frames they should be burnt and Violets should not be planted again in the same soil. A new stock of young plants should be obtained from a source entirely free from infection.

Communications Received—C. M. C.—S. M. S. S.—A. P. S.—J. P.—T. B.—F. B. B.—E. M.—A. W. A.—W. P.—J. C. B.—R. I. L.—J. B.—A. H.—W. C.—B. B.—C.—E. P.

THE
Gardeners' Chronicle

No. 1740.—SATURDAY, MAY 1, 1920.

CONTENTS.

Aberdeen, new Professor of Botany at .. 211	Ministry of Agriculture, work of the .. 211
Apples, late, low prices for .. 220	Narcissus, further investigations on the eelworm disease of .. 218
Birmingham, Potato exhibition at .. 212	Obituary— Snell, John .. 222
Books, notices of— Everybody's Book of Garden Annuals .. 220	Rain and fruit prospects Rhododendron Edgeworthii .. 220
Sweet Peas and Antirrhinums .. 220	Riviera, the Palms of the .. 216
Twentieth Century Potatoes .. 220	Roses, pruning, in a mild spring .. 216
Cestruums, hybrid .. 220	Royal Botanic Gardens Science and fruit growing .. 211
Chrysanthemum, a late flowering .. 217	Smallholders and rabbit breeding .. 212
Cider industry .. 212	Societies— Royal Horticultural Sparrows and fruit buds .. 220
Cultural memoranda— Violets, the cultivation of double, .. 215	Trinidad Botanical Gardens, centenary of .. 212
Daffodil day at Terregles .. 211	Vegetables— Cabbages .. 219
Florists' flowers— Carnations, perpetual-flowering, in the open .. 217	Vines, the spring planting of .. 219
"Gardeners' Chronicle" seventy-five years ago .. 212	War graves .. 211
Hawaii, Algaroba tree in .. 212	Week's work, the .. 214, 215
Land settlement .. 211	Wilson's, Mr. E. H. fresh exploration, .. 212
Lobelia tenuior .. 217	

ILLUSTRATIONS.

Chrysanthemum Autofrat .. 215, 217
Narcissus Golden Spur, forced bulbs of, showing effects of hot-water treatment for the destruction of eelworms .. 218, 219
Thlaspi rotundifolium .. 213

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.77°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, April 28, 10 a.m.: Bar. 29.5, temp. 51°. Weather—Dull.

Horticulturists, no less than agriculturists, will find much matter of interest in the survey of the work of the Ministry of Agriculture contained in Sir A. Griffith-Boscawen's speech on the Agricultural Vote in the House of Commons on April 23. To those who see salvation only in economy and who cannot distinguish between productive and unproductive expenditure, the Ministry's estimate of £4,500,000, as compared with the half a million expended by the Department in the year before the war, must appear formidable; but anyone who knows the facts and who is anxious to see home resources of food production developed to the utmost will recognise that the increase is not out of proportion to the enlarged and intensified activities now undertaken by the Ministry. First among these activities is the establishment of Small Holdings for ex-service men, which includes the provision of land and of buildings and the equipment of the holdings. In view of all the difficulties it will, we think, be conceded that to have provided already some 6,000 holdings is an achievement of which the Ministry have a right to be proud. Apparently, the total number of holdings which are required is somewhere between 20,000 and 30,000, and if, as is to be expected, progress in the coming years becomes more rapid, the whole number should be supplied by 1922. Nor are the Ministry neglecting the interests of the Allotment Holder. It was evident during the war that whereas the large majority of

public bodies were only too anxious to provide Allotment land, a small minority were obstructive. The powers possessed by the Ministry are generally sufficient to overcome such obstructiveness, and it is satisfactory to know that the Ministry intend to exercise its powers vigorously. Not the least interesting of the announcements made by Sir A. Griffith-Boscawen was that the Ministry have established a Plant Disease Control Department. In Mr. Fryer and Mr. Cotton the Ministry have experts who command the confidence of agriculturists and horticulturists, and in giving them and their colleagues a freer hand than has been the case in the past, the Ministry have undoubtedly taken a step in the right direction. The headquarters staff will no doubt act in close co-operation with the Advisory Officers in Plant Diseases attached to the chief agricultural stations, and if this be done it should not be long before this country has what it so badly needs—namely, first-class phytopathological service not only for research purposes, but also for the control of plant pests. Speaking not without experience and with a full recognition of the high abilities of the non-technical civil servant, we are convinced that the only way in which so highly technical an industry as agriculture can be promoted is by securing the services of experts with administrative capacity as well as technical knowledge, and in putting them in charge of the conduct of affairs. This policy which is being followed by the Ministry has already produced good results, and will, we are assured, make the Ministry what it ought to be—agriculture's and horticulture's guide, philosopher and best friend; for the expert is in touch with practical affairs and practical men. The administrator pure and simple has no friends; his life is lived remote, unfriendly, alone, and his high abilities fail to drive because the clutch is always out. In conclusion, we may express the hope that the reconstituted Horticultural Advisory Council will be called into frequent conference with those responsible for horticulture, as by this means only may close contact be maintained between the industry and the administration.

Royal Botanic Gardens.—According to *The Times*, a new scheme, estimated to cost about £50,000, has been proposed by Mr. George Dance, a member of the Council, to remodel the grounds of the Royal Botanic Society, Regent's Park, and to place the Society on a sound financial footing. The main idea of the scheme is to provide means for professional men and those living in the district to obtain recreation in the gardens, which are about 30 acres in extent. The greenhouses in the grounds, in various stages of decay, would be rebuilt on a larger scale. It is proposed to raise the £50,000 required for the scheme by the issue of debentures, the interest on which would be paid out of the fees for participation in the games. The balance would be available for encouraging and developing horticultural science.

War Graves.—Sir Thomas Mackenzie, High Commissioner for New Zealand, who recently returned from a visit of inspection to the British war cemeteries in France and Belgium, has expressed his satisfaction with the progress of the work of arranging and planting the final resting-places of our fallen men. Everywhere, said Sir Thomas, he was much impressed with the many signs of the care which was being lavished, under the direction of General Ware and Colonel Woodland, to make the cemeteries worthy of the brave men whose remains were enshrined in them. Masses of flowers were to be seen; Daffodils, Auriculas and Wallflowers, and Rose bushes had been planted in profusion. Many thousands of roots, bulbs, plants, and shrubs had been sent by the Botanical Gardens

at Kew, and every completed cemetery had its permanent staff—generally of five or six men working under a skilled gardener. Up to the present 360 grounds had been handed over by the War Department to the Commission, and it was expected that within the next six months the full total of upwards of 2,000 cemeteries would pass into the care of the Commission. Some of them would contain as many as 15,000 graves.

Land Settlement.—In a written reply to Captain Coote, Sir Arthur Boscawen gave the following particulars of progress made in England and Wales under the Land Settlement Facilities Act, 1919:—Men actually settled (civilians and ex-Service men), 5,794 on 79,631 acres. Acreage acquired, or agreed to be acquired by county councils with the Ministry's approval, 137,590; average cost per acre, £41 4s.; applications outstanding: approved and awaiting land, 20,060; waiting interview and standing over, 10,890; loans guaranteed (to December 31, 1919), 10 for a total of £1,575. In addition the Ministry has acquired 28,294 acres for farm settlements. Out of a total of 1,391 applicants, 697 have been approved, and of these 511 men are already settled. Forty eight applicants are awaiting interview.

Aberdeen's New Professor of Botany.—Aberdeen University recently gave a warm welcome to Professor Craib, the new occupant of the Chair of Botany, in succession to the late Professor Trail. Sir George Adam Smith, Principal of the University, presided, and introduced the new professor. After a warm tribute to the long and valuable services rendered by the late Dr. Trail to the University, Sir George said there had now been appointed as his successor one who, like Dr. Trail, was a graduate of the University, and who added to his studies research at home considerable experience in botany in tropical regions. Professor Craib, who received a great ovation, said he would like to associate himself with the Principal's remarks with regard to the late Professor Trail, for whose memory he cherished the warmest regard. The subject chosen by Prof. Craib for his inaugural lecture was "The Moisture Movement in the Trunk of Deciduous Trees."

"Daffodil Day" at Terregles.—Mr. C. E. Galbraith of Terregles, Dumfries, kindly held a "Daffodil Day," at Terregles recently on behalf of charitable objects. Large numbers of people visited the grounds, and a handsome sum was realised for admission; for Daffodils sold; and teas. The public interest taken in the event was heightened by the fact that Terregles was recently bought by the Board of Agriculture for Scotland for various developments in connection with the activities of that Board, and the occasion gave an excellent opportunity of viewing the place. Mr. Galbraith has purchased Kirkmichael, Dumfriesshire, but it is to be hoped that the Board of Agriculture will maintain the magnificent gardens in connection with their horticultural training scheme. The gardens have long been noted as being among the finest in the south-west of Scotland.

Science and Fruit Growing.—Under the title of "Science and Fruit Growing," Professor Keeble reviews, in the current number of the *Edinburgh Review*, the investigations carried out by the Duke of Bedford and Mr. Spencer Pickering during the past 25 years at the Woburn Experimental Fruit Farm, and at the same time enters into a careful consideration of the prospects which attend the fruit growing industry in this country. In connection with the latter subject, attention is drawn to the decrease in the acreage under fruit which has taken place during the past few years. This decrease, according to the returns published by the Ministry of Agriculture, amounted between the years 1913 and 1919 to 11,231 acres of "top fruit" and 18,139 acres of soft fruit—the largest reduction being that of the Strawberry acreage (8,422). These facts, together with the large and probably permanent increase in the consumption of jam, make it probable that the acreage under soft fruits is likely to undergo a considerable extension in the near future. In

the case of Apples, there would appear also to be room for an extension of acreage but, as growers know only too well, this fruit has to meet serious competition from imported fruit; although, according to the extracts contained in this review, there are consumed at the present time four or five home-grown Apples for every imported Apple. Prof. Keeble gives high praise to the pioneer work carried on at the Woburn Experimental Fruit Farm and believes that those researches and others in progress at Long Ashton and East Malling are already bearing, and will continue to bear, good fruit.

Conclusion of the Horticultural War Relief Fund.—The Executive Committee of the R.H.S. War Relief Fund met a few days ago under the presidency of Lady Northcote, at her house in St. James' Place, to give an account of its stewardship. Among those present were Lord Lambourne (President), Miss Balfour, Sir Harry J. Veitch (Hon. Treasurer), Mr. F. J. Hanbury (Chairman), Lady Margaret Boscawen, Mrs. Henshaw, Mr. H. M. Collinson, Mr. Reginald Cory, Sir Albert Rollett, Mrs. Brodie of Brodie, Lady Dynevor, Lady Margaret Macrae, Lady Jersey, Lady St. Cyres, and Mr. C. Hentschel, the Secretary. Mr. Hentschel reported that about 50,000 fruit trees, 48,000 tools, and 400,000 packets of seeds were distributed under the aegis of the French Red Cross. In addition, Belgium received £5,500 for the manufacture of paillassons, while Serbia and Roumania were given great assistance. Sir Harry J. Veitch stated that the total sum collected amounted to £213,000, of which £21,000 was raised during the past fifteen months. All the money was being disbursed with the exception of a small sum retained to enable the Committee to replace fruit trees which were dead on arrival. Lady Northcote paid tribute to the devotion and energy of those who had helped to make the fund a success and enabled the Committee to accomplish so much in such a good cause. She specially mentioned Miss Balfour, Mrs. Lowther, Sir Harry Veitch and Mr. C. Hentschel, and said that they deserved the heartiest thanks of all concerned in the work. Reference was made also to the arrangements for distributing the seeds, tools and trees, carried out by the British Committee of the French Red Cross, through Capt. MacDonnell and his staff in Paris. Lady Northcote stated that over one hundred letters from the local Mayors in the various districts assisted, testified in no uncertain fashion to the great help the fund had been able to render, and the splendid way in which the distribution of material had been made. Lord Lambourne, on behalf of the Royal Horticultural Society, thanked Lady Northcote for her work, and said the Committee desired to express not only admiration, but gratitude for the zeal and enthusiasm she had shown as the Lady President of the Fund.

Small Holders and Rabbit Breeding.—With the object of stimulating the production of hutch rabbits for table purposes, and for fur bearing, the Ministry of Agriculture are circularising certain of the county authorities, suggesting that the conditions are now favourable for the encouragement of this industry among small-holders and others suitably situated in respect to supplies of surplus vegetable material and other feeding stuffs. The counties approached at present include Kent, Surrey, Sussex, Middlesex, Essex, Suffolk and Norfolk. It is proposed that arrangements shall be made for pioneer courses of lectures in suitable districts to be given by an expert approved by the Ministry, who will be prepared to recognise expenditure on an arranged scale as eligible for aid under the grant regulations. In 1913 over 2,000 tons of tame rabbits, valued at £120,400, were imported into the United Kingdom from Belgium, France, and the Netherlands; in addition to 24,000 tons, valued at £656,000, from Australia, New Zealand, and other countries. Last year's Board of Trade returns show the total disappearance of the imports from the Continent, and the reduction of approximately half the other supplies. There is every reason to believe that efforts will be made in the near future to regain the lost trade, unless home producers can supply

the demand. On the fur side of the subject it is worthy of note that the difficulty of disposing of the pelts of suitable breeds at remunerative prices, hitherto experienced by small breeders in this country, bids fair to be overcome under a co-operative scheme put forward by the Fur Board of the Beveren Rabbit Club. This scheme provides for the payment of a fixed sum for the pelts of rabbits of the Beveren and Havana breeds, and the sharing of profits among the members after allocating a certain proportion to the management and other expenses. The dressing of the pelts is also to be undertaken on behalf of the members. The skins of these breeds, as also of the chinchilla, are exceptionally handsome, and remarkably high prices are reported to have been paid for made-up articles.

High Price for an 18th Century Leaden Figure.

—The sum of 120 guineas was recently realised at Christie's for an eighteenth-century leaden figure of Pomona. Such ornaments were at one time common in gardens, but they are now eagerly sought by collectors and used for other purposes.

Mr. E. H. Wilson's New Exploration Tour.

—We learn that Mr. E. H. Wilson, assistant director of the Arnold Arboretum, is preparing for a lengthy journey for the purpose of discovering new plants suitable for cultivation in America. He will leave Boston in July and visit India, Ceylon, Australia, and New Zealand, among other countries, and his tour will occupy about two years. Mr. Wilson has almost completed the work of cataloguing the specimens he brought from Korea and Formosa, and consequently is free for this further trip, in which we hope he will add to his fame as a plant collector.

Sad Death of a Gardener.—The body of William Holmes, landscape gardener, of Letchworth, who served in Mesopotamia, has been found in the river at Derby, but there is no knowledge as to the cause of the accident. Mr. Holmes was the eldest son of William Holmes, for many years Secretary of the National Chrysanthemum Society, and grandson of William Holmes, of the old Frampton Park Nursery, Hackney, who was one of the founders of the Stoke Newington Chrysanthemum Society, which subsequently developed into the National Chrysanthemum Society.

Centenary of the Trinidad Botanic Gardens.—The Royal Botanic Gardens, Trinidad, have completed a century of uninterrupted work and is thus one of the very few tropical gardens of the Empire which has had a continuous existence of one hundred years. To mark the centenary a historical sketch of the gardens is in course of preparation and will be published during 1920 in one or two numbers of the *Bulletin of the Trinidad and Tobago Department of Agriculture*.

Reopening of the Crystal Palace to the Public.—The Crystal Palace will be opened to the public use on June 9, and the opening ceremony will be performed by H.M. the King, who will be accompanied by Queen Mary. Gardeners are specially interested in this National building, for apart from the extensive grounds and gardens, many floral exhibitions have been held there in the past, notably those of the National Rose, National Chrysanthemum and National Dahlia Societies. The Crystal Palace has also been utilised by the Royal Horticultural Society for the holding of exhibitions and some of its most successful fruit shows have been held there. It is interesting to learn that special non-stop trains will run from London to Sydenham in less than a quarter of an hour.

Potato Exhibition at Birmingham.—The National Potato Society of Great Britain and Ireland will hold an exhibition of Potatoes in the Bingley Hall Birmingham, on Tuesday, Wednesday and Thursday, November 9, 10, 11, 1920. The schedule includes fifty-two classes, the majority of which are open, but there are special divisions for farmers and market-growers, allotment holders and amateur gardeners. Many of the

prizes are offered by trade firms, and substantial monetary prizes are offered by Messrs. Sutton and Sons, Messrs. E. Webb and Sons, Ltd., Messrs. Dobbin and Co., Messrs. Randall Bros., and Parsons, Ltd., and Bees, Ltd. The most valuable prizes are in Messrs. Bees, classes 44 and 45, for 3 dishes, distinct, of non-immune varieties and 5 dishes, distinct of immune varieties, the prizes being £5, £3, £2, £1 and 10s. in each case; the exhibitors in these two classes are restricted to those who limit their gardening to growing produce for home consumption. Two Silver Cups of the value of ten guineas each, are offered by Messrs. Dennis and Sons, Ltd., Kirton, in two classes for 1 cwt. sample bags of ware Potatoes respectively, as usually dressed for market on a 1½ inch riddle. The Organising Secretary is Mr. W. H. Morter, Parks Department, Council House, Birmingham.

The Algaroba Tree in Hawaii.—The original Algaroba tree (*Prosopis juliflora*), a tree of historic interest, which was planted in December, 1828, in the Mission grounds in Honolulu, was removed on October 23, 1919, to the sorrow, says an article in the *Hawaiian Forester and Agriculturist*, of all sympathetic residents in Honolulu. Perhaps no other trees in the world has been responsible for greater benefits to the land of its adoption than this original Algaroba, for from it, by the assistance of live stock, there have been established on the lee shores throughout the Hawaiian Islands, forests which now cover approximately 90,000 acres of what used to be barren lands, but which now produce an annual crop of about 50,000 tons of excellent fuel. Besides this, the trees produce an enormous yield of Beans, which furnish a valuable fattening food for stock after the long dry summer has exhausted the supply of grass. In addition, the flowers of these forests afford food for bees in numerous apiaries, producing honey to the value of more than £33,000. On account of the economic position which it holds in the islands' flora the Algaroba tree may be considered to-day as the most valuable tree in Hawaii.

"The Gardeners' Chronicle" Seventy-five Years Ago: Effects of the winter in Devon. For nearly half a century the south of Devon has not been visited with such intense cold as occurred during the early part of the month of March. Being absent from home, the exact degree was not tested in my garden, but it was sufficiently severe to freeze the neighbouring estuaries; and consequently the injury to our tender plants has been great. Among the shrubs in my own grounds that are either entirely destroyed or killed to the ground are three splendid specimens of *Acacia dealbata*, *melanoxylon*, and a broad leaved variety of *verticillata*, which never had a leaf injured before, though wholly unprotected; they were planted, but not trained, against east or south walls, and the former was more than 50 feet in height, and in the month of April literally a mass of blossom. Many other species of smaller size have likewise perished, as have *Leptospermum grandiflorum*, *Comarostaphylos arbutoides*, *Arbutus canariensis*, three tender species of *Cytisus*, *Correa virens*, and *Hydrangea japonica*. The following having survived such a season, may, I think, be classed among those shrubs that are actually acclimatised in this district, though a few of them have had the foliage slightly injured:—*Arbutus tomentosa*, *Ceanothus thyrsiflorus*, *Magnolia Harwickii* (?), *Tasmannia aromatica*, *Eucalyptus alpina*, *Correa rufa*, *Viburnum odoratissimum*, *Poinciana Gilliesii*, *Grevillea sulphurea*, and *rosmarinifolia*, *Fabiana imbricata*, *Ozothamnus multiflorus*, and the beautiful Japan lilies. *Rhododendron Rollissonii*, *zeylanicum*, *arborescens album*, *a. roseum*, and *a. Roylii*; *cinnamomeum*, *campanulatum* and *campanulatum roseum* have stood well; and all the hybrids from *arborescens* and *a. album* are uninjured both in foliage and flower-buds; but the hybrids from *cinnamomeum* have suffered a little; *Rhododendron Smithii aureum* has lost its leaves, and *Azalea indica phoenicea* is much hurt. My Lemons, Oranges, Citrons and Shadocks under a frame of reed are more injured than I ever remember them to have been, but those under a frame of wood have received no damage. *A Devonian Gard. Chron.*, May 3, 1845.

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM HAROLD VAR. MASTER DICK.

THE first flower of this finely-coloured cross between Odm. Jasper (amabile × crispum) and Odm. eximium (ardentissimum × crispum) is sent by Dr. Miguel Lacroze, Bryndir, Reohampton. With Odm. crispum in every stage of its development, the hybrid derives from that species fine form and size, but it has a dark, almost self-coloured flower, although none of its ancestors had that character, not an uncommon feature where Odm. crispum predominates in a complex hybrid. The sepals and petals are claret-purple, with darker nebulous patches in the centre and slight white tint on the margins. The lip, which shows much of the Odm. Pescatorei in Odm. ardentissimum, has claret base and white front, and the column, which is the least variable of all the parts, is still that of Odm. crispum, white with purple tint on the basal half.

DENDROBIUM BASSETTII DEANLANDS VARIETY.

FLOWERS of great beauty and varying tints of this handsome cross between D. Rolfeae (nobile × primulinum) and D. melanodiscus Salteri (Findlayanum × Ainsworthii splendidissimum) are sent by Mr. C. F. Waters, Deanlands, Balcombe, who considers his form of D. Bassettii the best. The flowers, which are large and of fine shape, show much of the characters of D. melanodiscus. They have a white ground, tinged in varying degree with rose-pink, the well-rounded lip having a dark disc. The cross was originally shown by Mr. Salter, from Mrs. Haywood's gardens at Woodhatch, Reigate, in 1914, and has since that time appeared under various names in gardens.

ODONTOGLOSSUM MRS. HARRY WORSLEY.

MR. J. EVANS, of Colwyn Bay, sends a flower of a noble new Odonoglossum raised between O. amabile and O. Hallii var. King Edward VII. The hybrid appears to be the largest and best yellow ground Odonoglossum which has flowered up to the present time. The ground colour of the sepals and petals is lemon-yellow, slightly tinged with rose from the blotching on the reverse side, and densely and uniformly blotched with dark red. The broad lip is bright chrome-yellow, with a band of ruby-red in front of the yellow crest, which has numerous radiating red lines on each side. The column is yellow, with a few red markings. In its class it is not easy to conceive a more showy Odonoglossum.

NEW HYBRIDS.

SEVERAL very pretty hybrids, which should be recorded, were shown by R. G. Thwaites, Esq., Streatham Hill, at the meeting of the

NEW HYBRIDS.

(Continued from April 3, p. 169.)

Name.	Parentage.	Exhibitor.
Brasso-Laelio-Cattleya Alcides ...	B-L-C. Veitchii × L-C. Walter Gott ...	Flory and Black.
Brasso-Laelio-Cattleya Cissie ...	L-G. Myra × B-C. Mrs. J. Leemann ...	J. and A. McBean.
Brasso-Laelio-Cattleya Jupiter ...	B-L-C. Veitchii × C. armainvilleroense ...	Hassall and Co.
Cymbidium Ariel ...	burneo Lowianum × Ballianum ...	G. Hamilton Smith, Esq.
Cymbidium Dove ...	erythrostylum × Holfordianum ...	Saunders.
Cypripedium Seraphina var. Marcell ...	Ossulstonii × Beekmannii ...	Rev. J. Crombleholme.
Laelio-Cattleya Cairo ...	C. Schroderae × L-C. Ganymede ...	J. and A. McBean.
Laelio-Cattleya Cecidom ...	C. Cecilia var. Louis Chaton × L-C. Dominiana ...	F. J. Hanbury, Esq.
Laelio-Cattleya Cremona ...	L-C. Trimyra × C. Suzanne Hye de Crom ...	Flory and Black.
Laelio-Cattleya Gorda ...	L-C. Trimyra × C. Brenda ...	J. and A. McBean.
Laelio-Cattleya Gretal ...	Dominium × Lustre ...	J. and A. McBean.
Laelio-Cattleya Gretna ...	C. Portia × L-C. Baroness Schroder ...	J. and A. McBean.
Laelio-Cattleya Hildom ...	Hilda × Dominiana ...	F. J. Hanbury, Esq.
Laelio-Cattleya H. T. Pitt ...	L-C. Bella × C. Enid ...	H. T. Pitt, Esq.
Odontioda Clottie ...	Brashawiae × Coronation ...	Armstrong and Brown.
Odontioda Joicyei ...	Odm. Promerens × Oda. Coronation ...	J. J. Joicey, Esq.
Odontioda Violetta ...	Oda. Thwaitesii × Odm. perculatum ...	R. G. Thwaites, Esq.
Odontioda Leon Perrin ...	Oda. Sauderae × Odm. eximium ...	Flory and Black.
Odontocidium Epiphorum ...	Odm. Epicasta × Oncidium corynophorum ...	Charlesworth and Co.
Odonoglossum Everest ...	Princess Mary × Mirabeau Mastiff ...	J. and A. McBean.
Odonoglossum Gloriana ...	Jasper × crispum Raymond Crawshaw ...	Dr. M. Lacroze.
Odonoglossum Harold var. Master Dick ...	Jasper × eximium ...	Dr. M. Lacroze.
Odonoglossum Jasperworth ...	Jasper × Aireworth ...	C. J. Lucas, Esq.
Sopbro-Laelio-Cattleya Brilliant ...	S-L-C. hetchleyflora vivicans × C. Empress Frederick ...	S. Low and Co.
Sopbro-Laelio-Cattleyez Royalist ...	S-C. Atrens chloriosa × L-C. Gro Woodham ...	Armstrong and Brown.
Sopbro-Cattleya Lowellii ...	S-C. Mrs. F. Wellesley × C. Lawrenceana ...	R. G. Thwaites, Esq.

THE ALPINE GARDEN.

THLASPI ROTUNDIFOLIUM.

THIS charming little Crucifer has been given various names, including Iberis rotundifolia, Iberidella rotundifolia, Noccaea rotundifolia and Hutchinsia corymbosa. It is a variable plant with a wide distribution over the mountains of central Europe, and grows at elevations up to 13,000 ft. on the Matterhorn. The plant illustrated in Fig. 97 was met with above the Riffenberg on the way to the Gorner Grat. It was growing in the debris of a stony waste through which water from the melting snow percolated. In every crevice between stones might



FIG. 97.—THLASPI ROTUNDIFOLIUM; FLOWERS ROSY-LILAC.

hybrid has a fine lineage and should display great merit when fully matured.

SEEDLING CYMBIDIUMS.

FEW Orchids are more easily raised from seeds than Cymbidiums; the seed should be sown directly it is ripe around the base of plants that do not need root disturbance. The seedlings should be pricked off and grown on without a check until they reach the flowering stage. Seedlings already growing singly in pots should be placed in larger receptacles as soon as they need more root space. Loam should not be used in the compost, which, for small seedlings, should be cut into fine portions. T. B.

be seen the rich lavender flowers in compact tufts above the tiny, rounded, fleshy leaves. In this country Thlaspi rotundifolium may be cultivated in moraine conditions in gritty soil with ample drainage and plenty of moisture when growing actively. In such places self-sown seedlings appear around the old plants, forming compact tufts two or three metres across, covered in April and May with numerous heads of rosy lilac, fragrant flowers.

Thlaspi limosellaefolium, a closely allied species from the Maritime Alps, differs only in its more elongated, narrower leaves. It flourishes in the same conditions as suit T. rotundifolium, and on the whole is the more easy to establish of the two. Another closely allied plant, T. cepeaeefolium, has similar heads of rosy lilac flowers, but the small leaves have a few blunt teeth on the margin. W. J.

DALIBARDA REPENS.

THIS Dalibarda does not occupy a place in the front rank of rock plants, but it has its value, especially where a low-growing plant with white flowers is desired for covering a cool bank, terrace, or ledge in the rock garden in soil which is rather light in its nature. It likes shade and grows naturally in the woodlands of the northern United States, and as far north as Nova Scotia.

The species is generally hardy in this country, but fails occasionally through being planted in too sunny a situation. The plant has a low habit, Violet-like leaves and small white flowers. It is the only member of the genus, and bears the name of M. T. F. Dalibard, a botanist of France, who lived in the 18th century. It has also been called Rabus Dalibarda, and, from its resemblance in foliage to the Violet, Dalibarda violaeoides. Propagation is effected by means of division in spring. The plant flowers from June to September. S. Arnott.

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COVTS, Foreman, Royal Botanic Gardens, Kew.

Tecoma Smithii.—This plant has beautiful yellow flowers flushed with scarlet, and is worthy of more general cultivation. The flowers appear in late autumn and early winter, when bright coloured subjects are specially appreciated. Cuttings root readily, and should be inserted towards the end of April or the beginning of May; in the immediate neighbourhood of London they should be rooted at least a month earlier in order that the plants may be in flower before the time of fogs, as these cause the flower buds to drop. Strike the cuttings in a close case in an intermediate temperature. When rooted, they should be potted on as required, until they are in six-inch pots in which they will flower. The plants should be grown in a cold house, and, towards the end of summer, may with advantage be stood out-doors for a month or six weeks, to favour the ripening of the wood. Where large inflorescences are required, the plants should be grown to single stems; in any case they should only be pinched once, and two strong shoots allowed to develop. When the flower-buds show, all lateral growths should be rubbed out; this is most important, for if they are not removed the flowers fail to develop.

Agapetes buxifolia and A. macrantha.—These two beautiful greenhouse plants belong to the natural order Vacciniaceae. *A. buxifolia* produces its red, tubular flowers in great profusion, and makes a pretty, compact subject in pots, but both species are seen at their best when planted out in a bed or border in the greenhouse or conservatory: they need a peaty compost and ample drainage. Cuttings of *A. buxifolia* root easily at any time in fine, sandy peat. *A. macrantha* has larger flowers, beautifully chequered red and white; this species is not so readily propagated as the other from cuttings, which form a mass of callus, thus preventing the development of roots; if this callus growth is pared off it generally results in the cuttings rooting. Fortunately, the plant is easily propagated by grafting on young plants of *Cavendishia acuminata*.

Fentapterygium serpens.—This is another fine indoor plant, belonging to the same natural order as *Agapetes*; it is very beautiful, with its long, graceful shoots, wreathed on their under sides with tubular red flowers with darker V-shaped markings. It is attractive either as a pot specimen or planted out in a shallow bed in the conservatory. This plant has a large, tuberous-like root-stock, and as in its natural state it is more or less an epiphyte, it requires ample drainage and a free, open compost of sandy peat mixed with a little light, sandy loam. It is easily rooted from cuttings, inserted in pots of sandy peat, and placed under a bell glass.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Fruit Trees on Walls.—The failure of fruit trees on walls is sometimes due to drought at the roots; those trained against south walls or growing in soil of a light nature are very liable to suffer from this cause. Where the walls have extra wide copings or where boards are used at the top of the wall to protect fruit blossom, the soil close up to the wall remains quite dry, as the rains cannot reach it. It is therefore advisable to examine all fruit borders occasionally, and, when necessary, give the soil a thorough watering. The present is a suitable time to make an examination, for, although much rain fell in April, the winter was exceptionally dry. A light mulching of short manure should be placed over

the roots of all fruit trees that give promise of good crops of fruit. Where the drainings of stables or manure heaps can be obtained it should be used for feeding the roots, diluting it to a suitable strength. As a rule, it may be given mixed with an equal quantity of water. Where liquid manure of this nature is not obtainable and the borders are not in a rich condition, a little concentrated fertiliser suitable for fruit trees should be applied. Where trees are treated in this way and the roots kept moist, red spider and other insect pests rarely give much trouble.

Hoing.—The hoe should be used frequently amongst all kinds of fruit trees, and especially after heavy rains. This operation will not only destroy many weeds, the soil will be loosened and thus better aerated, and a great deal of the moisture prevented from evaporating during hot dry weather. Raspberries and Strawberries should be hand weeded at this season.

Late Apples.—Apples have, on the whole, kept in good condition this season. Newton Wonder, in my estimation, is one of the best keepers, and should be grown more extensively. The tree is free growing, with erect branches, and an excellent cropper. When on a visit to King's Newton, where this Apple was raised, at the village inn, I was given permission to see the original tree. It was then well laden with fruit of excellent quality, and the growth was very robust and clean. Other cooking varieties that have kept well are Alfriston, Edward VII. and Bramley's Seedling. Hornead's Pearmain should be grown more extensively as a late dessert variety. The flesh is crisp, juicy and of pleasant flavour, but the fruits have a tendency to grow too large for dessert purposes. Cox's Orange Pippin kept well into April. This Apple is often gathered too early; it will not keep in good condition when harvested too soon. Encore is another good keeping variety, and I still have fruits in excellent condition. The tree is a strong, erect grower, and the fruits cook well.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Weavoe Castle, near Cardiff.

Mushrooms.—During the summer and early autumn, Mushrooms may be grown in a shed on hot-bed material, or in a cool position adjoining a wall in the open. The minimum size of the bed should be 4 feet in length, 3 feet in width with a depth of fifteen inches at the back and one foot in the front; the width may be increased to four feet and the length extended, where the quantity of fermenting material available will permit of this being done. Straw horse manure is best for the purpose and should be collected frequently, removing the longest of the litter. It should be spread thinly on the floor of an open shed and turned every other day, placing the dung on the outside of the heap in the middle. The heap should be turned until fermentation has reduced the whole to a dark colour, and it is in a sufficiently moist state to slightly bind when squeezed in the hand. In making the bed, the manure should be trodden firmly. Spawning should not take place until the temperature of the bed declines to 90°, at which time pieces of spawn about 2 inches square should be inserted 2 inches below the surface, at a distance of 9 inches apart each way. Cover the manure with two inches of sifted loam, and make it firm by beating with the back of a spade. Finally cover the bed with clean straw to maintain an even temperature. Mushrooms should appear in six to eight weeks from the date of spawning.

Marrow.—Marrow plants required for summer cropping should be raised from seed placed singly in 3-inch pots and germinated in a warm house. As soon as the first rough leaves form, harden the plants in a cold frame.

Turnips.—Early Milan and Snowball are good varieties of Turnips and a sowing of these sorts should be made in the open. Sow thinly in drills made fifteen inches apart.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq., Castleford, Chepstow.

Disa.—Although this is not the proper season to report these Orchids, small examples that have filled their receptacles with roots may be placed in pots two sizes larger. A suitable rooting-medium consists of good fibrous peat and loam in equal parts with a sprinkling of crushed crocks and chopped Sphagnum-moss added. The plants that are not disturbed will need watering more frequently than hitherto, and should be sprayed lightly overhead in bright weather, but spraying should be done sufficiently early in the day for the foliage to dry before sunset. The top ventilator immediately over the plants should be open more or less both night and day. Thrips must be watched for and directly any are seen the plants should either be sprayed with or dipped in No. 1 All liquid insecticide.

Anguloa.—Many of the Anguloas are sending up their flower spikes and after the scapes are removed the plants may be repotted; specimens not flowering may be dealt with at once. The introduction of the superb *A. Clitonii* gave renewed interest in the genus, but it is surprising that no hybrid from it has as yet appeared. Other desirable species are *A. Clowesii*, *A. eburnea*, *A. Ruckertii*, with its variety *sanguinea*, and *A. uniflora*. All are worth growing, judged from the decorative standpoint. Anguloas are strong-rooting plants, and enjoy a somewhat retentive compost, therefore fibrous loam may be added to the usual mixture of Osmunda fibre and Sphagnum-moss. One-third fill the pots with broken potsherds for drainage, and place a thin layer of loam fibre over the crocks. Reduce the ball of soil, cut away dead roots, and remove any back pseudo-bulbs that are not necessary for the future welfare of the plant. Make the soil firm, and leave sufficient space for watering. The plants will thrive in a shady corner of the intermediate division, or at the warmer end of the cool house. For a few weeks water the roots sparingly, and take care that moisture does not accumulate in the young shoots, or they may decay at their bases. When the receptacles are filled with roots generous supplies of moisture may be given until the pseudo-bulbs are fully matured. At that stage the plants should be rested, and given only sufficient water to prevent shrivelling of the pseudo-bulbs. During the growing period the foliage, and especially the undersides of the leaves, should be examined at intervals for the presence of red spider; if the pest is detected, sponge the leaves with a weak insecticide.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers.—After this date, the amount of fire-heat may be reduced to a minimum, and the house closed early in the afternoon, with sun-heat and plenty of moisture. After fire-heat is reduced, guard against excessive moisture on dull days, otherwise mildew will appear on the plants, and this disease spreads very rapidly. Let the roots have a brisk bottom heat, and give them copious supplies of water warmed to a temperature of 85° to 90°. Apply top-dressings, and use liquid manure liberally. Crop the plants lightly and give them plenty of ventilation, but prevent cold draughts. Attend carefully to the stopping and tying of the shoots. Liberal syringing is the best means of keeping down attacks of red spider, which sometimes becomes troublesome to this crop. Examine Cucumbers in frames on two or three occasions weekly; pinch laterals at the first joint beyond the fruit to keep the beds evenly covered with foliage. Soft water at a temperature of 80° to 90° is best for general use, and may be substituted occasionally by weak liquid manure and soot water. Root feeding is not often necessary in the early stages, and when liquid stimulants are used, the foliage should be washed with clear water afterwards.

CULTURAL MEMORANDA.

THE CULTIVATION OF DOUBLE VIOLETS.

No difficulty should be experienced in having a good supply of first-class Violets from the commencement of October until early May, or even later.

If stock is scarce, runners should be detached from the plants when they are lifted in the autumn, and dibbled into boxes filled with light, sandy compost and placed in a cold frame; these cuttings will make good plants for augmenting the supply of young stock in the spring.

Where stocks are plentiful and the plants have been growing in unheated pits during the winter, plenty of young plants will be available from the end of April and onwards by dividing the old crowns and selecting from them the cleanest growths with roots attached. They should be planted on a border under a north wall, or, failing that, any sheltered ground that is not too heavy and is in good condition.

Many growers make the mistake of planting

At the end of August make preparations for transferring the plants to their winter quarters. Unheated brick pits are ideal structures for this purpose, and a very mild hot-bed of stable manure and leaves (if available) should be used to give the plants a good start. The pits should then be filled to within six inches of the roof glass with the following compost:—To every part of loam add a third part of leaf-mould (preferably Oak or Beech), a fifth part of wood ash, and gritty material.

It is an excellent plan to collect all the turf edgings when the sides of lawns are trimmed in April, sprinkle each layer with "Vaporite" to kill injurious ground insects, and use the material for growing Violets.

After making the soil firm, remove all runners and flowers from the plants and set the runners six inches apart each way. Water them freely by means of a coarse rose on the water can, and allow the lights to remain off the frames for a fortnight, or, if the weather continues warm, until the end of September.

After the lights are placed in position, abund-

Pot Vines.—One-year-old pot vines which were cut back when dormant, and later shaken out of their receptacles and potted in 11 or 12-inch pots, should be making rapid growth. Very little water will be needed until the new roots are established in the soil, but when they have reached the sides of the pots they may be given warm, diluted liquid manure, soot water and guano water, increasing the strength as the vines advance in growth. At other times, tepid water may be given and used freely to damp the walls and other bare spaces. It may also be syringed on the vines when the house is closed in the afternoons of bright days. As growth develops, pinch each lateral at the first joint, but take great care not to injure the principal leaves. When the canes are 8 or 9 feet in length, stop them, to cause the lower buds to swell.

Yearling Vines.—Single eyes which were rooted in pots or squares of turf as recommended in the calendar for February 7, should be ready for transferring to 7 or 8-inch pots. It will not be wise to repot the plants before they are ready, as any check from declining heat at this critical stage would react severely on their growth. A night temperature ranging from 63° to 68°, and a day temperature of 70° to 85°, according to the weather, will be suitable. Admit a little air early in the day, increasing the amount as the sun gains power. Close theinery early with plenty of atmospheric moisture, and, in the evening, admit a little air and allow the ventilators to remain open a trifle during the night. Use a compost consisting of rich, fairly rough loam, bone-meal, charcoal and old lime-rubble. Do not add animal manure to the soil. The pots and crocks should be clean and dry; the soil also should be fairly dry, as firm potting is necessary, and if the compost is mixed a fortnight in advance, so much the better.

THE FLOWER GARDEN.

By SIDNEY LEOO, Gardener to the Dowager Lady NUNBURNHOLME, Warton Priory, Yorkshire.

Bees.—Honey Bees are often a source of attraction to young visitors to flower gardens. On rising ground, and some little distance from the main pathway, a sowing of *Limnanthes Douglasii* may be made to serve, when in flower, to attract bees and butterflies. Amongst other hardy annuals which produce much nectar, are the many varieties of *Phacelia*. Seeds may be sown at the present time and at intervals, for some time to come.

Roses.—Roses of all sections are growing freely, and from now onwards keen and constant attention must be given to combating the numerous enemies of the plants. Should sharp frosts occur during the next few weeks, thoroughly spray the frozen foliage with cold soft water before the direct rays of the sun reach the plants, to prevent sudden thawing of the leaves. Every few days the Rose maggot and other leaf-rolling pests should be diligently searched for and destroyed by pressing them between the thumb and finger. Froth, deposited in the axils of the leaves by the frog-hopper, may be removed, together with the insect, by means of a small brush, and placed in a receptacle containing salt and water. Should small holes be noticed in the ripe stems of the plants, they will probably have been caused by the pith-boring grub. Thrust a piece of wire sharply down the hole to destroy the pest, afterwards closing the entrance with putty. Aphides and thrips may be kept in check by spraying the plants with diluted Quassia extract and a nicotine specific respectively, but do not spray when the direct rays of the sun reach the plants. Early attention in supplying moisture to or conserving it about the roots in dry weather, by watering or mulching, is the best preventive of attacks by red spider. A short time previous to the plants blooming, and again immediately after the first flowers have faded, it is advisable to spray the plants with a solution of potassium sulphide as a precaution against fungus pests—especially mildew. If mildew has already appeared, add a little soft soap to the specific to cause it to adhere to the foliage.



FIG. 98.—CHRYSANTHEMUM AUTOCRAT, AS GROWN FOR MARKET BY MR. H. A. DE GRAAFF. (See p. 217).

Violets out-of-doors too early; nothing is gained by this system.

On one occasion I deferred planting until June and gathered flowers which won premier honours on the show bench, from the plants in frames, before the end of October.

Preparation of the ground is an all-important detail; the soil should be well trenched the previous autumn and a liberal quantity of stable manure, wood ash and lime rubble incorporated with it. During the growing season copious supplies of weak manure water, in which a bag of soot has been placed, will greatly assist the plants to form strong crowns, while daily spraying with the hose or syringe should never be neglected, or red spider will spread rapidly. A distance of one foot between the rows and the same space between the plants will suffice, while the constant use of the flat hoe is imperative to destroy weeds and keep the surface soil loose.

The importance of keeping the plants to single crowns throughout the summer cannot be too strongly emphasised, and the grower will be amply rewarded during the winter by an increase in the size and quantity of the flowers.

ance of air should be admitted on all favourable occasions, and the golden rule to be observed in ventilating is to remember that whilst Violets greatly resent cold draughts, they equally dislike coddling.

Water should be given sparingly until the mid sunny days of early spring, when frequent applications of weak, liquid manure will greatly increase the supply of flowers.

Attention should regularly be given to the removal of decayed leaves, and the soil should be stirred with a pointed stick after receiving a light, top-dressing of wood ash.

Protection should be given from frost. Plants that produce the largest and best coloured flowers should be marked for propagating purposes.

The following are the best double varieties: Marie Louise, deep blue with white eye; Mrs. Arthur, deep blue; Comte de Brazza (syn. Swanley White), pure white; Lady Home Campbell and Mrs. d'Arcy, lavender; Mrs. J. J. Astor, rosy violet. *David White, Thegdon Place Gardens, Epping.*

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PRUNING ROSES IN A MILD SPRING.

THE precocity of the season, caused by the pleasant, but unusual mildness of the winter and spring of 1920, has led many amateur Rose growers to entertain doubts as to the best method of treating their Roses at pruning time.

The amount of new growth for the time of the year has been quite extraordinary, only this afternoon (middle of April) I measured a new shoot between 7 and 8 inches in length. The greater numbers of these new shoots, of course, are flowerless, but in some cases there are buds apparently well shaped and of such a size that, had one seen them later in the season, one might expect the flower in about three weeks' time.

Little difficulty will have occurred as to pruning and trimming in the case of the Wichuraianas and other rambling Roses. These were generally dealt with in the autumn before the mildness of the season produced any effect, but those who deferred the operations of pruning, training and thinning to February, or later, will have had to take special care in handling last year's growths, or they may have knocked off many of the secondary growths which produce the flowers of the coming summer. Even so, however, no great harm will have occurred.

Some years ago I remember seeing in September a group of pillars of Dorothy Perkins in a low-lying garden near water, apparently in full flower as we see them in summer, and I was told that the early shoots had been destroyed by a late frost, which had caused the buds at the base of the flowering shoots to push afresh and give a late crop of bloom.

The Rugosa Roses which are pruned in February presented no difficulty; I merely cut them a bud or two lower than usual and took out rather more of the old wood. The hybrid perpetuals also were pruned much as usual; their upright habit causes the new growth to appear at the top of the strong shoots, far above the point at which they are normally reduced. The difficulty seemed to arise when I came to the H.T.'s and Teas, which are not generally treated until the end of March and early April, and some of us, partly perhaps out of curiosity to see what would happen, have this year deferred the pruning of these Roses even later than usual.

There can, I think, be little doubt how it is best to proceed. The rule that each shoot should be pruned to a dormant bud should be observed, perhaps with even greater care than in a normal year. With the H.T.'s grown as dwarfs this has generally been fairly easy, but with the dwarf Teas it has sometimes involved shortening the plants to the ground level.

The case of standard Teas and H.T.'s has presented a rather more serious problem. Where

standards are grown for garden decoration and not merely to produce exhibition blooms, the art of the pruner is largely directed to forming a well-balanced head. To attain this not merely must the shape of the tree after pruning be considered, but also the character of the branches that are left.

If one is fortunate enough to find a tree with several strong, well-ripened growths of the previous year fairly well placed to secure the desired symmetry of the head, these may be relied upon, removing the older growths. But this seldom happens with a standard some years old, which has already made a large head. Here we may have to rely to a great extent on branches that have been cut back for several years, and where there are good, new growths from the head, which we particularly wish to retain, the tree has a provoking habit of making them all on one side. Now it is well to remember that the growth which is likely to result from these two classes of shoots will differ in character and will probably be more vigorous when proceeding from the young shoots than from branches cut back for several successive years. If, then, a standard such as I have supposed is found, there are several things to be considered in pruning it. First, if we reduce the branches to a perfect symmetry, one of two things will happen, either the young branches will shoot vigorously from their tops and we shall have a tree with much more vigorous growth on one side than the other, while when we come to prune in the following year we shall find that the young shoots we left long to balance the cut-back stems have been left with an undesirable length of barren wood without buds on them, or if we have reduced the new growths to a length sufficiently short to prevent this, we shall have had to reduce the cut-back stems to a point beyond the previous year's growth, which has made them slow in starting growth or perhaps produced inferior growth, or sometimes none at all. Parenthetically, I would add that if it can be avoided the outward pointing bud to which the pruning is carried should not be older than the growth of the previous year, and if the previous year's growth is reduced to the bud at its extreme base, this will usually be slower in starting than one a trifle higher.

The conclusion to be reached, therefore, is that strong, young shoots of the previous year should be reduced somewhat more than perfect symmetry immediately after pruning requires. At the same time older growths in their immediate neighbourhood should be freely sacrificed so as to give the growths from the younger shoots perfect freedom to develop.

Next, it is important to do everything we can to provide for the development of young shoots from as near the base of the head as possible. With this object we should try every year to reduce the cut-back branches. If the cut-back branch has made two good shoots, one at the extremity and one a little further back, then cut away the branch to the second shoot.

Again, avoid overcrowding the head, and when opportunity offers cut out an old stem to the base, to make room for younger ones.

It is no bad plan after pruning a row of standards, to go over them again after an interval of about a week, noticing the buds that are pushing out, and to revise the pruning accordingly.

To return to the special difficulties of this year. In the case of a few standards, and particularly in that of the Teas, it will sometimes be found that there is no dormant bud to cut

to without reducing the size of the head to an undesirable extent. The procedure in such cases must depend on the extent to which the last bud to be retained has developed. If the bud has only just broken, it may perhaps be left. If, however it has grown out some inches, I think it better to cut it back nearly to its base with a sharp knife. Buds that start too early are often barren, or at best produce malformed flowers. Two shoots will probably start from the base of the cut shoot, and when these are observed that which is best placed may be retained and the other rubbed out.

A question that many are asking is whether the mild spring will produce an unusually early summer flowering. With regard to the Rose species and the summer flowering varieties which receive little pruning, I think the answer is almost certainly yes. The garden Roses, however, of a perpetual character, which receive rather severe pruning, will in all probability be more affected by the weather experienced in May and June than by anything that has yet occurred. *White Rose*.

THE PALMS OF THE RIVIERA.

THE Riviera is usually considered to be the point farthest from the tropical zone where Palms are indigenous, and the one species found here is the well-known *Chamaerops humilis*, but it has been exterminated as a wild plant on this northernmost limit of its habitat. Still, if no wild Palms are now to be found on the Riviera, the cultivated species are numerous. Indeed, probably in no part of the globe, not even excepting tropical countries, are so many Palms to be found in gardens.

It must be remembered that, apart from a few Date Palms which have existed for centuries, all the Palms here are comparatively young, the oldest having been planted only about half-a-century ago, and the great majority much later. The Date Palm, *Phoenix dactylifera*, is slow-growing, but many of the species introduced at a comparatively recent date are of much quicker growth and have reached almost as great a height as the old Date Palms.

Palms are beautiful at all times, the foliage undergoing no apparent change. At times and at seasons, varying according to the species, flowers are produced, and though the individual flowers are insignificant, their agglomeration in very great numbers is often most graceful and heightens the ornamental value of the plants, especially as the yellowish-white colour contrasts agreeably with the foliage. When the flowers are followed by the fruits, often produced in enormous numbers and sometimes of striking colour, then the ornamental effect of the Palms is further enhanced.

A Palm constitutes a perfect ornament, and as it does not branch, it occupies little space. It is therefore quite understandable that on the Riviera, even along the principal thoroughfares where the land is very high-priced and the buildings crowded so as to leave only a few square metres free for a little garden in front, Palms are preferred for planting, and as they rarely produce much shade it is possible to grow Roses and flowering bulbs under them.

South California, although about ten degrees nearer the Equator than the Riviera, has a climate almost identical, and any plant succeeding here succeeds there. The same may be said of South Africa, especially the Cape, most parts of extra-tropical Australia, Chili, Argentina and, of course, the Mediterranean region in general. Any notes I may send about Palms apply not only to the Riviera, but also to the other countries named, of which some are a little warmer, others a little cooler, but I hope to give also the minimum temperature which the different Palm species have resisted. *A. Robertson Proschowsky, Jardin d'Acclimatation, Nice.*

FLORISTS' FLOWERS.

PERPETUAL-FLOWERING CARNATIONS IN THE OPEN.

THESE Carnations are practically hardy, and there is no doubt that in so far as private growers are concerned the plants benefit from being grown for a reasonable period in the open. Compared with trade growers, many gardeners labour under difficult conditions. Small houses are commonly employed, and the atmospheric conditions prevailing in them are much too artificial; consequently the plants are denied the same free circulation of air and the natural earthy surroundings that prevail in the larger, lofty structures of the specialists. Moreover, many in the neighbourhood of towns have to contend with a deleterious atmosphere, with all its disadvantages in winter. However, apart from this, careful observation seems to point to the necessity for growing a certain number of plants for a period under natural conditions, in order to keep them in full vigour and to obtain healthy, short-jointed cuttings.

It is worth while to emphasise the value of Perpetual-flowering Carnations in the open. This is by no means a new use they are being advocated for, yet there is considerable hesitation in many parts in putting them to the test. A few years ago much was said of their bedding qualities, but many overlooked the chief thing necessary to obtain success, which is to plant good specimens. A bed of spring-rooted plants is always lacking in effect. The flowers are not plentiful enough to make it attractive. Nothing less than strong, bushy plants, well established in 48-sized pots, give satisfaction. The very large-flowered kinds are not the best for districts away from the south. Various methods of raising the plants suggest themselves. Cuttings rooted from April to June and grown in cool conditions make ideal specimens for the spring following, as by regular attention to stopping they may be kept dwarf and bushy. Another method requiring rather longer time but much less trouble is to root the cuttings about 18 months before they are required, in a cold frame. Here they may pass the winter, to be planted out early in spring, lifted and potted in the autumn, and wintered in a cold house until planting time. Still another way is that of cutting the plants that have been blooming for about a year well back in January. By keeping the old stock plants rather close but on the dry side and spraying them overhead occasionally they soon break, and by the time the weather is favourable they will be in splendid condition for planting.

In any case, specimens already showing for flower and bushy in habit are essential. It is an advantage if the bed or border can be made ready to receive the plants sometime in April or early in May. Seeing that stagnant moisture and wireworms are the two main evils that prove fatal to the plants in the open, a well-drained soil and the destruction of this pest are of first importance. Most soils benefit also from a liberal addition of wood ash and old lime rubble; in the case of very heavy soils it may even be advisable to remove a portion and substitute a good open compost of a similar nature to that employed for pot plants. Manures that give humus should be used sparingly, even on light soils, as the necessary stimulating plant food is best supplied in the form of a concentrated fertiliser, and bonemeal.

Carnations do best in firm soil, and, when planting, the roots should be loosened a little from the bottom of the ball, and the soil subsequently worked well round it, care being taken not to bury the stem deeper than it has been in the pot. Labour is saved if suitable wire supports are fixed at once.

Summer treatment is largely a matter of watering in dry weather, with the careful use of the hoe and an occasional dressing of some suitable fertiliser. Aphides and thrips are the most troublesome insect pests, but a timely spraying with a nicotine insecticide will keep them in check.

For bedding out it is evident that we need more varieties with the dwarf and free-flowering

habit of the old scarlet Britannia. Excepting Carola and its sports most of the popular varieties may be put out with equal success, in favoured districts; otherwise preference should be given to the smaller-flowered sorts.

I have already referred to planting out for the summer cuttings rooted in the autumn in cold frames, the bulk of which may be secured from those doing service in the flower beds. It will also be found an advantage to plant a batch of spring-rooted plants out of doors. Apart from the saving of labour, which is considerable, the plants benefit from the full exposure. Red spider is seldom troublesome, growth is remarkably dwarf and yet free, and the plants may be lifted in September without causing them any apparent injury. Equal benefit is derived by plants growing in pots when they are put in the open for most of the summer. The only protection necessary is from heavy rains. In very sunny localities it is advisable to plunge the pots in ashes to keep the roots cool. *F. T.*



FIG. 99.—CHRYSANTHEMUM AUTOCRAT, A LATE WHITE-FLOWERING VARIETY.
Photograph taken on March 29, 1920.

A LATE-FLOWERING CHRYSANTHEMUM.

It may interest readers of *The Gardeners' Chronicle* if I relate my experience with the beautiful Chrysanthemum named Autocrat, also known as Enfield White, or Cheshunt White.

Long before and ever since Christmas of 1919 I have been sending consignments of flowers of this variety to Covent Garden Market. The remarkable fact is that I am still sending fine blooms, and forwarded very large consignments during Easter week. Indeed, we shall continue cutting good bloom for some time to come. The flowers are of first-class quality, and they certainly have gained the admiration of all who have seen them. I have enquired at Covent Garden Market whether similar Chrysanthemum blooms have been sent in previous seasons at this time of the year, and I am told by some salesmen that during their lifelong experience at the market they have never seen anything to equal them. Sometimes a few bunched sprays of poor blooms are sent from an almost finished crop. Never, however, has anyone previously seen a house full of Chrysanthemums flowering fresh and strong at Easter, looking as though it were autumn (see Fig. 98).

I believe this Chrysanthemum has a wonderful

future, and it will no doubt be possible to have fine blooms of it almost all the year round. So far I have had them as early as August, and there will be no trouble in cutting good blooms at the end of May. I also think it possible to produce two crops from the same plant during twelve months. Of course, certain people will consider that Chrysanthemums are out of season at this time of year and it would not pay to grow them as the public do not want them. On the contrary, although one of my salesmen passed this remark two months ago, since then he has on several occasions ordered, by telegram, extra special Autocrat blooms for his customers, and the prices so far have been remunerative.

The aim of this note is not to teach Chrysanthemum growers their business, but rather to induce them to experiment for the purpose of discovering the possibilities of this and perchance some other valuable variety.

The plants illustrated in Fig. 99 had no special

treatment. I shall certainly make it my business to treat Autocrat in the coming season with extra care, and see what next season will bring forth. *H. A. de Graaff, Hampton.*

LOBELIA TENUIOR.

This Lobelia is a splendid, blue-flowering subject for the conservatory during the summer and autumn, and a sowing should be made now. The plants from an earlier sowing are ready for transferring to the pots in which they will flower. Well-grown examples require 6-inch pots. As it is a slender-growing plant, the best results are obtained by growing three or four plants in a single pot. In common with most pot-grown annuals, this Lobelia requires careful cultivation.

Annuals in pots require timely attention as regards staking; slender shoots of Hazel, or the longer prunings of Apples and Pears, are best for this purpose, as their natural colour is less ofensive than the usual green painted stakes. The neat and artistic staking of plants is by no means easy, and is deserving of more care and attention than is usually given to it. *Foreman.*

FURTHER INVESTIGATIONS ON THE EELWORM DISEASE OF NARCISSUS.*

(Concluded from p. 207.)

Last year (1919) the treatment was commenced early, for I was convinced that damage occurred if root action had commenced. The bulk of soaking was completed by the end of September and no bad effects have resulted from the treatment. Where the treatment was given after September, the bulbs did not grow with the same freedom as those treated earlier in the

on behalf of the Dutch Government, has experimented more with the application of hot air than with hot water. I visited Holland last May, but found the work had not yet been placed on a commercial basis, and until that time arrives, we cannot compare the two treatments.

Having treated the bulbs, the utmost care should be taken to plant them in ground which has not previously carried a diseased crop of Narcissi. I know of no commercial method of rendering infected soil clean. Steam sterilisation may prove to be effective, but the expense attached to the process would be too great. Disinfection of soil by such chemicals as carbon

bulbs early (particularly if the stock is a costly one) and when they have dried off, soak them in water at a fixed temperature of 110° for three hours. Do not carry the work of soaking beyond the end of September. If the bulbs are required for forcing, I think it would be safer to treat them for two hours at 110° and so eliminate the danger of damaging the flowers. This two-hour treatment does not free the bulbs entirely from eelworm and if the bulbs are again required for planting they must first undergo the full treatment. I ought also to point out that the apparatus used should be capable of doing the work efficiently. A tank with a gas ring underneath it may result in more harm than good, as it is next to impossible to keep the water at a fixed temperature. Even the temperature of water in the tank varies greatly. Where tons of bulbs have to be treated, the apparatus becomes very costly and is work for a heating expert.

(c) If Narcissus disease is present on the farm, see that infected soil is not carried about and keep the infected ground isolated. For at least five years grow upon the infected ground crops which are immune to the eelworm which affects Narcissi.

(d) Having treated the bulbs, see that they are planted on ground which has not carried a diseased crop of Narcissi, and as far away as possible from land which has carried diseased stock. Do not contaminate the bulbs during the interval between treatment and planting.

(e) Be ever on the look out for trouble. It should not be taken for granted that because a stock is healthy one year, it will be healthy the next.

The time may not be far distant when the purchaser will demand from the grower an absolute guarantee that the bulbs supplied are free from eelworm. I am certain that it is possible to tell whether diseased bulbs have been supplied or whether the bulbs have contracted the disease since leaving the growers' hands.

I am quite confident that if growers take the advice which has been offered them they will be in a position to guarantee their bulbs to be free from disease. It is a debatable question as to whether rigid control ought to be brought into force, but I feel certain that the bulb industry of this country has a greater future before it than ever it had and con-



FIG. 100.—FORCED NARCISSUS GOLDEN SPUR: THE STOCK SHOWED 95 PER CENT. INFECTION WITH EELWORM.

season. Last year nearly 200 tons of bulbs, representing a total of about 6 million were treated at Spalding. I think growers will agree that the results are highly satisfactory. I do not lay claim to have killed every eelworm and the countless number of eggs contained in 200 tons of badly diseased bulbs, but I have walked through the stocks of treated bulbs and examined many beds, and can find no trace of disease.

I do not propose to describe in detail the apparatus at Spalding. The principle is that of circulating water through a boiler to a supply tank and from there to two soaking tanks and back again through the boiler. The apparatus is capable of taking 8 cwts. of bulbs at a time. Thermometers registering the heat are inserted in the flow and return pipes and there are also two wall thermographs, which serve as a check on the work, recording the temperatures.

Last year lots of 300 bulbs were treated at a temperature of 110° F. for 1, 2 and 3 hours, to see what effect the treatment had on bulbs which were to be used for forcing. Golden Spur was the variety employed. I was alarmed to find the damage done to the flower in the bulbs treated for three hours. Records show that these bulbs were treated early, and I believe the flower bud had not sufficiently advanced to withstand the treatment. Bulbs of different varieties—Emperor, Empress, Sir Watkin and ornatus, treated later, produced marketable flowers when forced and were not injured in any way. Out of doors the flowers came practically normal, although in some cases the edges of the perianth segments were imperfect, but by no means unfit for market. Thus it has been found that by soaking the infected bulbs for three hours in water at a temperature of 110° F., the eelworms are killed, and if the treatment is carried out throughout July, August and September, the bulbs suffer no harm. It is also advisable not to commence the treatment too early, but to wait until the bulbs have ripened (about three weeks after lifting time).

The cost of the hot-water treatment, inclusive of labour, is estimated at about £1 per ton. Not only are the eelworms killed by this hot-water treatment, but the grubs of the larger and lesser Narcissus flies are also destroyed.

Dr. Slogteren, who is investigating the disease

bi-sulphide, toluene, naphthalene, mercuric bichloride and formaldehyde. I have proved to be entirely useless. The best course is to starve the eelworm out of the ground by growing crops that are immune to attack. Eelworm has been recorded on many crops, but in nearly every case I have not been able to get the eelworm affecting Narcissi to attack these crops. The Onion was the exception, the crop being absolutely destroyed when sown upon land infected with Narcissus disease. How long the eelworm can remain active in the soil I am not prepared to say, but I think that infected



FIG. 101.—NARCISSUS FROM SAME STOCK AS IN FIG. 100, BUT TREATED FOR ONE HOUR IN WATER AT A TEMPERATURE OF 110°. THESE BULBS SHOWED 65 PER CENT. OF EELWORM INFECTION AFTER BEING FORCED.

ground should not be utilised for Narcissi for at least five years, possibly longer.

In conclusion, I know that I have left much unsaid, but I have given the main points of the work without too much detail.

To summarise:—

(1) Make certain how to recognise the disease and do not confound it with other troubles which are not half so serious as the eelworm disease.

(2) Examine all your bulbs, and if a diseased stock is found, then (a) carefully remove all plants showing signs of infection, (b) Lift the

sequently it behoves every grower to keep his stocks in a high state of perfection and free from disease. The hot-water system is an easy and effectual method of rendering Narcissus bulbs free from the disastrous attacks of eelworm, but the precautions I have given in treating the bulbs must be rigorously observed, especially as regards the correct degree of temperature of the water in the whole of the vessel. For this reason it may be necessary to employ a special apparatus, such as that employed in the treatment of the bulbs at Spalding.

* Lecture by Mr. J. K. Ramsbottom, delivered before the Royal Horticultural Society and Horticultural Club, April 13, 1920.

VEGETABLES.

CABBAGES.

If Darwin in writing his *Origin of Species*, had required an additional instance of the extraordinary capacity for variation of any recognised species, he could scarcely have chosen a more typical example than the Cabbage, which, under various forms, is perhaps the most prominent and certainly one of the most indispensable crops of kitchen gardens and allotments.

In referring to the "greens," as they are

selection seems to have been in favour of heads having particularly white centres, while the French varieties have a tendency to red in the outer leaves. Probably soil has much to do with this colouration, for further north, in the Netherlands, the all-red Cabbage was developed. In the South of Europe, a type having crinkled instead of smooth and glossy leaves gave us the familiar Savoy, so named from the district whence it was first brought to this country.

Of the varieties which, instead of forming one large mass of leaves, send up a tall stem and

flower buds. These, again, are divided into purple and green sorts, and lead us naturally to the most remarkable development of all, the production of a large head of closely-packed flower-buds.

Gardeners often argue as to the difference between white Broccoli and Cauliflowers, and do not seem to agree upon the point. As they obviously sprang from the same source, it seems impossible to find a clear definition, although it may well be that the Cauliflower, which is not so hardy as the Broccoli, was produced independently. This section, most highly esteemed of all the Cabbage group, seems to have come to Europe from the Island of Cyprus. Seventeenth century English gardeners considered that only seed procured direct from the Mediterranean region would produce the true large-headed "Kale-flower." We have changed all that, and Veitch's Autumn Giant will produce heads a couple of feet in diameter, a size that would certainly astonish the Cypriote who first took to munching selected fat buds of the "Cole-flower." *Herbert Mace.*



FIG. 102.—NARCISSUS GOLDEN SPUR; SAME STOCK AS IN FIG. 100, FORCED AFTER THE BULBS HAD BEEN TREATED FOR TWO HOURS IN WATER AT A TEMPERATURE OF 110°. FLOWERS AND FOLIAGE GOOD; BUT ABOUT 1 PER CENT. OF EELWORM INFECTION REMAINED. (See p. 218.)

generally classed by the cook, the gardener usually calls them the Brassica "family," but as a matter of fact, they belong, not to one family, nor, indeed, one genus, but one species only. That species, *Brassica oleracea*,—Cabbage, Colewort, Collet or Kale, as it is variously named—is still found wild on various parts of the British coast, and is sometimes used as a cooked vegetable in places where it grows freely. It is a Cruciferous plant whose appearance may readily be recognised by those familiar with undersized Cabbages which have "bolted" and flowered.

Bearing in mind this simple, wild plant, with its loose spike of bright yellow flowers, it is amazing to think of the strange developments which it has undergone under cultivation. Every part of the plant has been modified, sometimes in one direction, sometimes another. Four main lines have been followed—(1) the development of an enormous number of large, closely-packed leaves in one head as in the Cabbage and Savoy; (2) a development of stem and lateral shoots as in Brussels Sprouts and the Sprouting Broccoli; (3) a great increase in the size and number of leaves, as in the familiar Borecole or Kale, and (4) the extraordinary agglomeration of flower buds into a fleshy mass, as in the Cauliflower and Broccoli.

If not the most highly esteemed vegetable for culinary purposes, the Cabbage unquestionably takes pride of place in regard to the extensiveness of its cultivation, and apparently it was in this direction that the original Colewort, which attracted the gastronomic attention of primitive man, first started on its highly-specialised career. The Gauls, indeed, must have grown it, or found it growing in this form, for it is distinctly referred to by them as *Chou vepu*. The former name is retained by the French not only for the Cabbage, *Chou cabus*, but for all the other types, for example *Chou fleur*, the Cauliflower. Its development seems to have been carried on simultaneously in most of the Northern European countries, and at the present time all the innumerable varieties may be classed in groups springing from a few distinctive forms produced in different countries. The typically British Cabbage seems to be that represented to-day by the variety Enfield Market. In Portugal, the

side-shoots, the Brussels Sprout is perhaps the best known. It also has blistered leaves of the Savoy type, and its peculiarity is that the tendency to compact folding of the leaves into a ball is brought out in the numerous sprouts which form in the axils of the leaves. This variety, as its name indicates, is of Belgian origin, and is mentioned in market records of that country as far back as the thirteenth century.

Perhaps there are more variations of this tall sprouting form than any other, for we have the Tree Cabbage, which in the Channel Islands

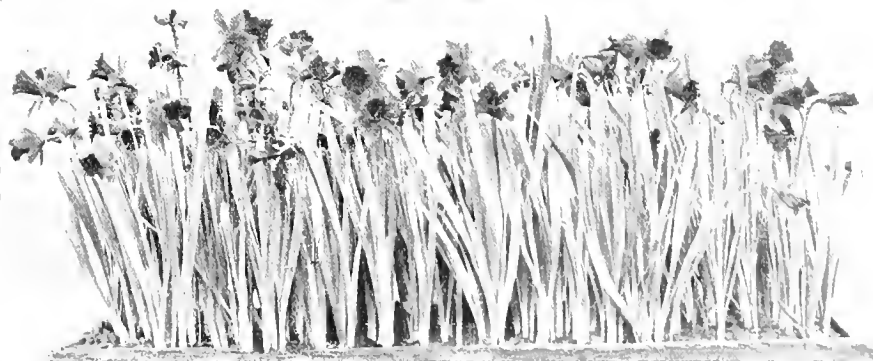


FIG. 103.—FORCED NARCISSUS GOLDEN SPUR, SAME STOCK AS IN FIG. 100; BULBS TREATED FOR THREE HOURS IN WATER AT A TEMPERATURE OF 110°. GROWTH VIGOROUS AND BULBS FREE FROM EELWORM INFECTION. (See p. 218.)

grows to a height of ten feet or more and produces an enormous quantity of side-shoots; the Flanders Kale, which is like the Tree Cabbage, but, as in the dwarf form, has the local purple colour; and Scotch Kale, with deep green, intensely curled leaves.

In the section known as Broccoli, there is a bewildering variety. Some are cultivated mainly for the side-shoots thrown out in the spring, and instead of forming miniature heads like the Brussels Sprout, produce tender

but guard against the temperature exceeding 85° to 90°. The distance for planting should depend on the length of winter and the future method of training; a distance apart of from 4 feet to 6 feet or more is suitable for vines to be grown on the extension system. The planting of super-numerary vines for fruiting a year after planting is not to be recommended, as it requires a very strong resolution to remove them in time, and if this is not done, harm results to the legitimate vines. *J.*

THE SPRING PLANTING OF VINES.

Those who have facilities for propagating, raise vines to have them in readiness for planting during the present month, or as late as the middle of June. May, however, is the best month for planting vines, as genial weather which usually follows is favourable to the vines making rapid growth and also for ripening the wood. Do not grow young vines in very small pots; those of 7 or 8 inches in diameter are the most suitable size. Another method is to insert the eyes in squares of turf, and later place them in boxes of a convenient size, for planting. The border should be made in advance to allow the materials to become thoroughly warmed; the sun will soon warm the surface, and, with a lining of fresh Oak leaves, the soil will be warmed to a good depth. In these conditions, with a moist, genial atmosphere in the house, the young, green vines will make rapid and healthy growth. Do not plant the vines deeply, but place warm compost firmly round their roots, and water them with soft, tepid water to settle the soil. Although shade is hardly needed, a slight covering may be necessary for a few days in very bright weather. Keep the house fairly close until the roots have grown in the fresh soil, and the shoots are developing freely.

NOTICES OF BOOKS.

Twentieth Century Potatos.

THE title of Mr. J. Fraser's book* is not altogether a happy one, as it suggests that reference is made only to modern Potatos, whereas certain of the varieties carefully described by the author have been in cultivation upwards of thirty years, and some for over half a century. Some 817 varieties are described in the 72 pages of the book, and in almost every instance the description includes the name of the raiser and introducer, date of introduction, the shape and colour of the tubers, colour of flowers, and reference to quality, habit of growth and cropping capacity. Resistance to Potato disease and immunity to wart disease are recorded, and the relative earliness or lateness of the variety is set forth by means of figures in every instance. The book is a record of painstaking work, conducted over a long period of years; it is interesting and useful, but its usefulness would be increased if, at the end, lists of varieties classified according to shape, colour, earliness, and immunity to disease, were inserted in future editions.

Annual Flowers.†

THIS is one of a series of nature books in course of publication by Holden and Hardingham, Ltd. of the dimensions of an ordinary pocket book. The work treats of the commoner sorts of annual and biennial flowers for the decoration of the garden and for the production of flowers for cutting. The remarks on cultivation are generally to the point though meagre in detail, and some of these details scarcely agree with the practice of gardeners, e.g., sowing *Lobelia* in autumn, *Gilia coronopifolia* in January to be planted out in May, and Canary Creeper in heat. Some of the commoner perennials are also noted as being subject to annual or biennial treatment, but such sterling plants as Dahlias, Hollyhocks, Pansies, Verbenas, Cannas, Begonias, Gourds and *Salvia splendens*, to mention a few amenable to that culture, are strangely overlooked. In the list of Sweet Peas we jostle against *Blanche Burpee* and other venerable ladies of last century, whose names we had not seen for a very long time.

A Sweet Pea Book.‡

A SECOND edition has been issued of Mr. W. Cuthbertson's essay on Sweet Peas and Snapdragon, first published in 1915. It is practically identical with the first edition, but the list of varieties has been brought up to date. Some of the old sorts are still there, however, e.g., John Ingham, of ugly magenta tint; Nora Unwin, and Edrom Beauty, still a fine variety. Those who believe that varieties die out need not be surprised to find these and other old kinds included, because the author assures us that varieties are continually being renewed and frequently improved by the Sweet Pea specialist. He tells us, too, how to get the lovely Audrey Crier true by crossing Princess Victoria and Edrom Beauty. Tom Jones, Warrior, Mrs. A. Hitchcock, Constance Hinton (loveliest of whites), Royal Purple, beloved of ladies, and other newer sorts are also noted as those to be grown either for exhibition or home use. The essay is one of the briefest of the many books on this ever-charming flower, but it is also one of the best.

The part of the book devoted to the Antirrhinum is briefer still, but adequate from a cultural point of view. My experience differs from the author's as to the time to remove spikes. Mr. Cuthbertson says when flowered out, but that would mean here a cessation of flowering on the part of the plants, and I find it essential to remove before that stage is reached. But seasons have much to do with the uninterrupted flowering of this plant, which has become a feature in almost every garden. R. P. R.

* *Twentieth Century Potatos*. By J. Fraser, F.L.S., London. The Cable Printing and Publishing Co., Ltd. Price 3s. net.

† *Everybody's Book of Garden Annuals*. By Haslehurst Greaves, F.L.S., London. Holden and Hardingham, Ltd. 1s. net.

‡ *Sweet Peas and Antirrhinums*. By William Cuthbertson, V.M.H., London. James Clarke and Co., Second edition, price 2s. 9d.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Rain and Fruit Prospects.—Since November, 1919, very wet, mild weather has been experienced among these Welsh hills. Everything hardy is very forward, but outdoor work is sadly behind and in many gardens and allotments digging has not commenced, and we are in the last part of April. Pears have set well, and all small fruits look promising. Gooseberries should be a good crop; Apples are coming into bloom and the first Strawberry flowers are opening on a south border. We have, however, had two dry days and I hope dry weather will continue. The growth of Sharpe's Express Potato was well up in the row two weeks ago. Three inches of rain fell last week—a record! J. P., *Aberdare*, April 18.

Sparrows and Fruit Buds.—I am sorry I did not read Mr. Teatherton's letter in reference to my remarks that sparrows destroy the fruit buds of Currant and Gooseberry, and I must thank Mr. Tomalin for calling my attention to it. That anybody with any pretence to observation should deny this astonishes me, for I have had ocular proof of it for over fifty years. If Mr. Teatherton has sparrows in his garden he will find that they pick out the fruit buds of Currant and Gooseberry. I may add that I have studied the habits of birds for over fifty years and am fairly well known in the ornithological world as an outdoor observer. F. Boys, *Norwood, Beverley*.

Onion Fly.—The Onion Fly (*Phorbia ceparum*) may be combated by hoeing the ground frequently during its resting period and by burning all infected bulbs. Strew lime and soot in between the rows of seedlings, and spray them with petroleum emulsion early in the spring. I have tried these methods with satisfactory results. C. M. *Carmick*.

Prices for Late Apples.—I am not surprised to see *Market Grower* complain that stored Apples did not pay this season. My experience is the same, and it is common with growers. In this neighbourhood—South Hants—Bramley's Seedling sold for 11s. per bushel in November. During the middle of February 8s. per bushel was the market price. The shortage of sugar and its increase in price doubtless had much to do with the low prices for Apples. The low general prices obtaining about that time and a little later were attributed by some to inferior grading; such a suggestion to a practical man savours of the ridiculous. Men of my acquaintance, who realised these low prices as well as myself, know their business, as market men; such suggestions can only have been made by those ignorant of the subject. Recently the market price for Damelow's Seedling (Wellington) was 19s. 6d. per bushel. In this neighbourhood this Apple has kept better than any other kitchen variety. Bramley's Seedling and Newton Wonder deteriorated quite suddenly, which, I am told, was the common experience in certain neighbourhoods. E. M.

Hybrid Cestrum.—By the kindness and courtesy of Sir David Prain, Director at Kew, a specimen of Cestrum, placed in my hands, that came from San Remo, has been identified as a hybrid between *C. fasciculatum* and *C. Parqui*. There is a specimen of the same plant in the Kew Herbarium that had come from Mentone. These specimens seem of interest because there exists, apparently, on the Riviera, a Cestrum that has not been dignified with a name, and there is also the question of its origin. To me this plant is of much interest in comparison with a hybrid I have raised, one of the parents being also *C. Parqui*, because the leaves of the San Remo plant are fairly identical with those of that species, though the flowers seem to have been less the result of its influence. The hybrid of mine to which I refer was between *C. elegans* (fem.) and *C. Parqui*, the last I made at Cambridge. *C. Parqui*, which I met with for the first time many years ago in the Jardin des Plantes, Paris, is a very hardy plant, coming up from the

ground every year like a hardy Fuchsia and late in the summer bearing large heads of rather dull, yellow flowers in profusion. My object was to get the bright colour of its greenhouse relative upon a similarly hardy plant for outdoor culture, but it cannot be said that the plants I saw flower gave much promise to this end. They were of interest, however, because of the almost absolute domination of the male parent, the only evident difference being found in the flowers, which still bore strong evidence of *C. Parqui*. The domination of the male parent could hardly be more complete. A special object I had in view, supposing the plants were fertile, was to raise seedlings from them to study on Mendelian lines. Mendelism, if one may so term it, is shown only by the crossing of closely allied forms of the same species. Why is it not shown in the case of hybrids between more distantly related plants? The relation or difference has never, I believe, been discussed, and fertile hybrids have hardly, perhaps, been raised to a sufficient extent with the special view of observation. R. Irwin *Lynch*.

Rhododendron Edgeworthii.—In the notice of this fine species (see page 208), W. states that "it cannot be grown out of doors, except in especially favoured localities in the south-west of England and Ireland." This limitation should be extended probably to the whole of the west coast of England and Scotland wherever shelter from cutting winds can be secured. Here we train it against a wall, which suits its straggling habit of growth. We have two bushes about seven feet high, which, without any other protection, flower profusely in May. We have also a young plant established as an epiphyte or saprophyte on the decayed cleft of an old Beech. Mr. McDouall, of Logan, has succeeded in the same manner, which accords with the natural tendency of the species to grow in such a position. *R. bullatum*, the Chinese counterpart of *R. Edgeworthii*, is reputed to be hardier; but the severe frost of November, 1919, was fatal to the only specimen—a small one—which we had in the open border without protection. Herbert Maxwell, *Monreith*.

The Education of Young Gardeners (see p. 145).—It is surprising that the past system—or lack of system—of horticultural training has produced a gardener carefully trained to his craft, who, generally speaking, understands the nature of soils, the general effects of climate and temperature upon vegetation, and not only the names but the natures of many kinds of plants; whilst careful study has enabled him to obtain valuable knowledge of his calling. The young gardener is an individual with mental as well as physical forces, ideas as well as arms to work with. The very first step in his education is to increase that individuality. When we consider that the choice of a gardening career by many lads is determined by exterior circumstances, environment or accident, rather than by any particular impulse upon their part, can we wonder that this progressive profession has little charm for them and means in the end little more than a "blind alley." Such lads fulfil the obligations of duty, yet without possessing that zeal, energy or observing power which tends to success. All depends upon those under whom the youth is trained. A little tact and correct appreciation on their part, instead of the too-often assumed assurance that there is no ground for hope in their protégés, seldom fails to elicit a spark of dormant talent. I contend that many a lad's lack of interest in his work is not entirely due to indolence of disposition, nor dull, impenetrable stupidity, but to lack of consideration and tact on the part of his superiors. The first essentials to produce efficient work are good feeling and mutual understanding. By showing cheerfulness and enthusiasm, the head gardener usually creates in the youths under him confidence, ambition and concentration. There is a magnetic influence in strength of character which youth admires and often aspires to achieve. This causes thought and observation, and self-instruction generally follows. L. W. Young, 47, *Tredgar Road, Dartford Heath; late Warton Priory Gardens, York*.

[SOCIETIES.]

ROYAL HORTICULTURAL SOCIETY.

APRIL 27.—Spring flowering shrubs, Roses, Tulips, Orchids and Auriculas provided the principal attractions at the Royal Horticultural Hall, on the above date. Exhibits were numerous and good and the visitors so many that there was a crush throughout the afternoon. Novelties were not of outstanding importance.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), W. J. Bean, S. Morris, John Green, John Heal, W. Howe, A. Ireland, J. W. Blakey, C. R. Fielder, John Dickson, Chas. Dixon, A. J. Jackman, E. F. Hazelton, W. P. Thomson, E. H. Jenkins, R. W. Wallace, R. Cory, Arthur Turner, J. F. McLeod, J. Jennings, J. W. Barr, F. Page Roberts, G. W. Leak, George Paul, W. R. Dykes, C. Williams, Clarence Elliott, H. Cowley and W. B. Cranfield.

AWARDS OF MERIT.

Iris Yellowhammer.—A pretty, tall, free-flowering, seedling Iris, of a pleasing shade of soft yellow, shown by Mr. W. R. DYKES. The falls are reticulated at the base with greenish-yellow and the beard is orange gold. The standards are broad, about three inches tall, and they overlap. The variety is one of the earliest flowering of the tall, bearded Irises.

Carnation Renown.—A pale-pink perpetual-flowering Carnation of excellent form and substance. The calyx is entire and the petals of good substance, roundish in shape and with nearly entire margins. Fragrance is an additional charm to this fine novelty. Shown by Messrs. WM. CUTBUSH AND SON.

Anemone St. Bavo.—This is a handsome strain of Anemone of the *A. fulgens* type, but showing a considerable variety of colours. The form and poise of the flowers are distinctly those of *A. fulgens*, and those who love this brilliant Windflower will greatly appreciate the wider range of colour now provided by the *St. Bavo* strain. The tones included rose, scarlet, red, pink, rosy-lilac, salmon and magenta. Shown by Mr. C. G. VAN TUBERGEN, Jr., Haarlem.

Freesia Apogée.—This is a striking new Freesia with large blooms of a lovely shade of yellow. In form and size it is the best of the yellow group, though, perhaps, not the deepest in colour. The lower segments are blotched with orange, which tone is reflected in the throat generally. Shown by Mr. C. G. VAN TUBERGEN, Jr., Haarlem.

GROUPS.

Messrs. ALLWOOD BROTHERS displayed perpetual-flowering Carnations in splendid style and in large numbers; they showed their own varieties, and among these Wivelsfield White, Wivelsfield Claret and Jessie Allwood stood out prominently (Silver-gilt Flora Medal).—Messrs. WM. CUTBUSH AND SON filled a large space with dwarf and standard Roses and flowering shrubs; their dwarf Rose, Mrs. W. Cutbush, was the leading feature of the group (Silver-gilt Banksian Medal).

Mr. KEITH LUXFORD and Mr. C. ENGELMANN were extensive exhibitors of perpetual-flowering Carnations, and were awarded a Silver Flora and a Silver Grenfell Medal respectively.—Mr. G. W. MILLER contributed spring flowers, and made an effective display with Polyanthuses (Silver Banksian Medal).—Violas in great variety, set up in small pans, were shown by Messrs. CARTER, PAGE AND CO. (Bronze Banksian Medal).

Messrs. R. WALLACE AND Co.'s group consisted of standard Cytisus in variety and Azaleas arranged over various alpine (Silver Flora Medal).—Messrs. BOWELL AND SKARRATT had a fine group of Gentians in their collection of alpine flowers, the latter including Bowles' Black Viola (Bronze Banksian Medal).—Messrs. B. LADHAMS showed Cardamine pratense lilacina and the dwarf yellow Cheiranthus Little Gem.

Messrs. STUART LOW AND Co. were exhibitors of perpetual-flowering Carnations and showed Red Beacon and Mrs. E. Douty in good form (Silver Banksian Medal).—*Prunula Forrestii*, *Ramondias* and *Clematis* were the features of Messrs. PIPER's group (Bronze Flora Medal).—Mr. CLARENCE ELLIOTT had a grand display of Gentians, backed by *Tiarella*s and dwarf Pines.—Mr. W. WELLS, Jr., exhibited Geum Bonsii, and Messrs. BAKERS showed *Ranunculus montanum* and other alpine flowers (Bronze Banksian Medal).

Mollis Azaleas, freely-flowered and bright, were used by Messrs. J. PEED AND SON to fill one corner of the hall. Azalea Favourite, rich red, was finely shown (Bronze Flora Medal).—*Rhododendron fragrantissimum* R. Dalbousiae Victorianum were shown, with Maples and Wistarias, by Mr. L. R. RUSSELL. In another group Mr. Russell showed stove plants, including a brilliant-flowered, but unnamed, Gesnera (Silver Grenfell Medal).

Mr. M. YORKE exhibited big flowering branches of *Erica arborea*, *E. a. alpina*, *E. codonodes*, *E. australis* and numerous *Trilliums* (Silver Grenfell Medal).—Mr. G. REUTHE's *Rhododendrons* were very bright and attractive, and in his group were noted *Menziesia multiflora major*, and a lovely little plant of *Daphne rupestris grandiflora* (Silver Grenfell Medal).—Mr. C. VAN TUBERGEN's *Freesias* were delightful; he had Buttercup, Success, Gold Coin and Apogée, all yellow sorts, and La Charmant, a pink and yellow variety (Bronze Banksian Medal).

St. Bridg Anemones were shown by Messrs. REAMSBOTTOM AND Co. (Bronze Banksian Medal).—Mr. PRICHARD contributed alpine plants (Bronze Banksian Medal), and Messrs. WATERER, SONS AND CRISP exhibited hardy flowers in variety (Bronze Flora Medal); while Messrs. TUCKER AND Co. showed a very bright collection of low-growing plants suitable for the rock garden (Silver Banksian Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, C. J. Lucas, R. Brooman White, Gurney Wilson, Arthur Dye, Walter Cobb, J. E. Shill, W. H. Hatcher, J. Charlesworth, A. McBean, E. R. Ashton, Fred K. Sander, R. E. Rolfe, Pantia Ralli and Stuart H. Low.

AWARDS.

AWARD OF MERIT.

Brasso-Laelia-Cattleya Joan var. Excelsior (*C. Octave Doin* × *B.-L. Mary Gratrix*), from Messrs. CHARLESWORTH AND Co., Haywards Heath. A noble, clear yellow hybrid, but scarcely equal to the original flowered by the firm, and which, it is said, realised 250 guineas.

Odontoglossum Adula (*eximium* × *Doris*), from PANTIA RALLI, Esq., Ashtead Park (Orchid grower Mr. Farnes). A superb flower of perfect shape, reddish-purple, with bluish-white margins and tip. The front of the lip is white.

Cattleya Tityus Pasy's variety (*Enid* × *Octave Doin*), from W. R. FASEY, Esq., Holly Bush Hill, Suaresbrook. The fourth of this very showy cross to receive an Award, and the best. The flowers, of perfect shape, are rose coloured, with purplish-crimson front to the lip.

Odontoglossum Bonaparte (*Aglaon* × *percultum*), from W. R. FASEY, Esq. (Orchid grower Mr. Seymour). Flower large and of perfect form, white, showily blotched with purplish crimson.

Odontoglossum Fabia Frant Court variety (*eximium* × *Aglaon*), from B. H. SMITH, Esq., Frant Court. A charming *Odontoglossum*, white, with clusters of claret blotches around which are rose-purple rays.

Odontoglossum Diamond (*King Arthur* × *eximium*), from Messrs. J. and A. McBEAN, Cooksbridge. One of the best of the deeply coloured hybrids, perfect in form and richly blotched with dark mauve.

Odontioda Devia (*Oda. Charlesworthii* × *Odm. Viola*), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. A fine extension in

the dark-coloured *Odontiodas*, the flowers being large, of fine form and deep claret in colour with a gold shade.

GROUPS.

Messrs. CHARLESWORTH AND Co., Haywards Heath, were awarded a Silver Flora Medal for a fine group of excellently-well-grown Orchids, in which their superb forms of *Miltonia Charlesworthii*, *M. Lyoth* and others of their raising were very effective. With them were showy *Odontoglossums* of bright colours, but probably the most admired were their fine, white, lemon-yellow spotted forms of *O. crispum xanthotes*, and their home-raised, typical, white *O. crispum*, which are still the most favourite *Odontoglossums*. Richly coloured *Odontoglossums* and *Odontiodas* and a general representative selection of Orchids of the season made up the group.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), secured a Silver Flora Medal for a choice group of good hybrids and some rare species. *Miltonia vexillaria Memoria G. D. Owen* and the rose-coloured *Cynorchis kewensis* were noted in the group.

Messrs. J. and A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for a very well-arranged exhibit of *Odontiodas*, *Odontoglossums* and other hybrids.

Messrs. SANDERS, St. Albans, were awarded a Silver Banksian Medal for a number of showy hybrids, and rare species, including *Coelogyne paudrata*.

Messrs. ARMSTRONG AND BROWN, Orchid-hurst, Tunbridge Wells, were awarded a Silver Banksian Medal for a selection of excellent hybrids, including *Odontioda Zampa* Orchid-hurst variety (*Coronation* × *Cooksoniae*), a grand improvement on *Oda. Coronation* and fine in form and colour and *Oda. Corojoasp* (*Oda. Coronation* × *Odm. Jasper*), rich purplish-red, with white transverse markings.

Mr. HARRY DIXON, Spencer Park, Wandsworth Common, was awarded a Silver Banksian Medal for a pretty group which contained excellent *Odontoglossums* and *Odontiodas*. A very interesting specimen in this exhibit was a very fine plant of *Vanda Parishii Marriottiana*, with a fine spike of wax-like, rose flowers.

Messrs. FLORY AND BLACK were awarded a Silver Banksian Medal for a group in which good hybrid *Odontoglossums* were prominent.

OTHER EXHIBITS.

Baron BRUNO SCHRÖDER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed fine cut spikes of the very handsome *Odontoglossum crispum Leonard Perfect*, and *O. c. apium* from the original specimen bought by the late Baron Schröder at what was then thought a record price.

Messrs. STUART LOW AND Co., Bush Hill Park and Jarvisbrook, Sussex, showed the pretty *Laelia-Cattleya Ferschro* (*L.-C. Feroma* × *Schroderae*), a pretty hybrid, formed like *C. Schroderae*, but tinged with primrose yellow.

B. H. SMITH, Esq., Frant Court, Sussex, showed *Odontoglossum crispum* Frant Court variety, a clear white flower of fine form.

C. J. LUCAS, Esq., Warnham Court, showed *Odontoglossum Thetis* (*Solon* × *The Czar*), of fine shape and rich colour.

Dr. MIGUEL LACROZE showed a very fine form of *Brasso-Cattleya Cliftonii magnifica* and other hybrids; also *Sophro-Laelia-Cattleya Entre Rios* (*S.-L. C. Marathon* × *L.-C. St. Gothard*), a very promising hybrid; and *Odontoglossum Faustina* (*Dora* × *eximium*), of good form and pleasingly marked.

G. W. BIRD, Esq., The Manor House, West Wickham (gr. Mr. Redden), showed two well grown *Odontiodas*.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Miss Willmott, Messrs. W. R. Dykes, G. W. Leak, P. R. Barr, J. Jacob, W. B. Cranfield, G. Churcher, W. F. M. Copeland, W. Poupard, and Charles H. Curtis (Hon. Sec.).

As a result of the recent cold weather, Tulips were not a great feature on this date. There

was, however, one very fine display of Darwin varieties, and a couple of novelties.

AWARDS OF MERIT.

Tulip Advance.—A wonderful Tulip, with flowers of the largest size, good form and fine substance. It is a seedling from *T. Gesneriana*. The colour is clear scarlet, with a blue base, but the outer segments are marked on the outside with pink, which shades to dull white, and this detracts somewhat from the brilliance of the blooms. However, it is a grand Tulip. Shown by Mr. C. G. VAN TUBERGEN, JR., Haarlem, Holland.

Tulip Firenze.—A charming Tulip belonging to the *strangulata* group. It has pointed flowers of medium size and good substance, and the colour is clear, soft orange. This is one of the Tulips of Florence, where it is known as *Tulipa Buonarrotiana*, though this, apparently, is not a correct name. Mr. Bowles has grown the plant at Myddleton House, and among his friends it has come to be known as *Bowles' Orange*. It has now been exhibited and duly named. Shown by Mr. W. R. DYKES, Godalming.

GROUPS.

One of the finest groups of Darwin and Cottage Tulips ever seen in the hall was exhibited on this occasion by Messrs. DOBBIE AND CO. Their flowers were well grown and admirably staged in stands of varying height. The group occupied the whole of the space between the entrance and the east annexe. Notable varieties shown were *The Giant*, *Edmée*, *Erguste*, *White Swan*, *Psyche*, *Faust*, *Bouton d'Or*, *Dora* and *Clara Butt* (Gold Medal).

Messrs. G. BUNYARD AND CO. contributed a group of Tulips and Irises. The former were in excellent condition, and the blooms of *Psyche* and *Clara Butt* very fine (Silver Banksian Medal).

Messrs. BAER AND SONS showed a group of Darwin and Cottage Tulips, in which most of the popular sorts were represented; the flowers were young and somewhat small, but very fresh and bright (Silver Flora Medal).

Mr. A. ROBINSON, Bawtry, showed Daffodils, and the group was a surprise to most visitors owing to the fact that most Daffodils are over in the south. Mr. Robinson had good specimens of *Lalah*, *Pedestal*, *Molly Bawn*, *Queen of Hearts*, *Croesus* and *King Alfred*.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), G. F. Tinley, G. Berry, Owen Thomas, E. A. Bunyard, P. C. M. Veitch, H. Markham, S. B. Dicks, J. G. Weston, W. H. Divers, W. Wilks, A. H. Pearson, A. Bullock, J. S. Kelly, W. Bates, Ed. Harris and E. Beckett.

The only exhibit was a collection of vegetables staged by Messrs. SUTTON AND SONS, for which a Silver Banksian Medal was awarded. This excellent collection was of a similar character, and of the same fine quality, as this firm's exhibit at the last meeting. On this occasion the chief kinds were Market Cucumbers; Potatos, *Epicure*, *Duke of York*, *Ninetyfold* and *May Queen*; Lettuces, *Matchless* and *Early Paris*; Mushrooms, Radishes, Cress and Mustard.

* * Owing to pressure upon our space, we are compelled to hold over our reports of the *Rose* and *Auricula Shows*.—Eds.

Obituary.

THE LATE MR. JOHN SNELL.

APPRECIATIONS.

ONE of the most foolish of aphorisms is that no man is indispensable; the opposite is the truth—all men of capacity and character are indispensable. Of such men John Snell was one. Sturdy, with piercing blue eyes, direct and abrupt of speech, he attracted the more by repelling at a first meeting. To those who live by soft civilities, John Snell had nothing to give, but those who love the naked truth, ex-

pressed boldly, enjoyed themselves in his society and found themselves filled with a strong and warm affection for one who dealt so justly and unsparingly with them and with everyone else. For they could not but fail to discover that John Snell was brusque of speech, not because he loved them less, but because he loved truth more. He was an enthusiast and had the minor defects and major merits of that rare class of men. He was happy in his work, and no man could have made a greater success of the Ormskirk Trials than did John Snell. Untrifling in his work, he possessed an unrivalled knowledge of Potato varieties, and he must have been a dull person who did not derive keen enjoyment and much information from the annual pilgrimage to the trials at Ormskirk. There John Snell reigned, throned in the affection of the Lancashire growers, and no matter who the distinguished person who presided at the Conference, John Snell was the "star," and the conference revolved about him like satellites about a sun. Impetuous and dogmatic he was—for he preserved always the temperament of youth—but these traits were not blemishes except in the cold eyes of the sedately wise. They were endearments which make us like less perfect things and men more than those of finished perfectness. His loss is a severe blow to the great industry of Potato growing. It will be deplored by large numbers of horticulturists all over the country; for no man ever went out apparently to make so many enemies and found so many friends. *P. K.*

May I add a word of appreciation to what has already appeared concerning the late Mr. John Snell and his work. As I stood by the side of his open grave in the remote churchyard of his native village of St. Cleer, on the edge of the Cornish moors, last Friday, the first bright day of this dull month, I could not but think of his work and how he did it. The history of wart disease in England has been written elsewhere and many have taken a part in the making of it, but the Ormskirk trials have been the most continuous and extensive contributions thereto, and they have proved conclusively that resistance to wart disease is a varietal characteristic in Potatos as constant as flower colour, and in doing that they have ensured the continuance of the cultivation of a crop that has not even yet reached to its full importance. At the early age of 42 he lays down his work, leaving the prospect bright where, but for that work, it had been gloomy; leaving the farmer, the gardener, the cottager, and the allotment-holder secure of a crop that was apparently threatened by extinction through the attacks of a malignant and incurable disease, and the statesman with the power of furthering the production of fuel in almost unlimited quantities within our own shores if he will but seize it. Not only in carrying out these trials, but also in bringing their results before the people at large and before the farmers and Potato-growers in particular, by exhibitions, conferences and lectures did he do most valuable work. In his brief life he accomplished what many who have reached old age might look back upon with pride. He possessed great tenacity of purpose, and did not lightly yield up an opinion once formed; he had the courage of his convictions and energy to translate them into speech and action; he would carry on when he thought his action right, in spite of opposition and attack with greater vigour for discouragement; when he believed it necessary he did not hesitate to hit hard, but his sense of humour and his wit took the sting out of most of his hard sayings. The Ormskirk trials will not be the same without his capable guidance, and there and elsewhere he will be sorely missed. *Fred J. Chittenden.*

ANSWERS TO CORRESPONDENTS.

A TENANT'S PLANTS: *J. B.* You are at liberty to remove the consumable crops but, unless you have an agreement to the contrary, you cannot disturb the fruit trees, Roses and other permanent plants.

APPLES ROTTING AT THE CORE. *E. H. B.*: So far as we can gather the rotting is merely a natural decay which sets in sooner or later in stored Apples, and is caused by no particular disease. Some varieties of Apples first show this natural decay round the eye or near the stalk, whilst others commence to decay in the centre.

DESTRUCTION OF RATS: *F. G.* The Ministry of Agriculture has given the following recipes for the making of baits for the destruction of rats:—(1) Barium carbonate, 6 ozs.; meal, 16 ozs.; dripping, 4 ozs.; salt, $\frac{1}{2}$ oz. This makes 1,000 baits of 6 grains each (i.e., pieces as large as a hazel nut). (2) Barium carbonate, 4 ozs.; biscuit meal or plain meal, 4 ozs.; oil of Aniseed, 5 drops. Mix with fat to a paste, and lay out in pieces the size of a hazel nut, in places where rats are known to be present. (3) Tallow, 50 per cent.; barium carbonate ($Ba CO_3$), 50 per cent. Mix to a thick paste with dripping and spread on cubes of bread the size of dice. (4) Squills, red, powdered, 20 per cent.; bread, 30 per cent.; fat, 30 per cent.; syrup, 20 per cent.; Aniseed, 6 drops. Crumble the bread, mix ingredients to a paste and apply as in Nos. 1 and 2.

FIGS RIPENING UNSATISFACTORILY: *F. T. R.* Fig trees, whether under glass or out of doors, should have their roots confined within a fairly limited area. When the roots are free to ramble at will, the trees are inclined to make gross growth, which fails to ripen satisfactorily and consequently does not bring the fruits to such perfection as in the case of trees with a limited root run.

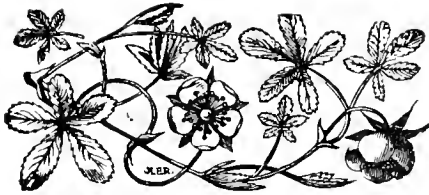
NAMES OF PLANTS. *H. B. H.*: We regret we cannot undertake to name varieties of florists' flowers. *W. W. F.*—*Serapias cordigera*.

PEACH AND PEAR LEAVES DISEASED: *T. J. H.* The trouble appears to be due to the fungus *EXOASCUS deformans*. Spray the trees with Burgundy mixture or Bordeaux mixture before the buds begin to swell in the spring (middle February—beginning of March) and again a few days later. A suitable Burgundy mixture is made from copper sulphate $2\frac{1}{2}$ lbs., sodium carbonate $2\frac{3}{4}$ lbs., water 12 gals. Nothing can be done this year beyond removal of the dead shoots and badly diseased leaves. The Pear leaves were too shrivelled to determine the cause of their injury.

SWEET PEAS UNDER GLASS: *W. C.* The seeds should be sown in boxes or pots in the first week in October. The seedlings should be grown in cold frames and should be planted in the border where they are to bloom, in January, in good, turfy loam. They may be trained to thin Hazel rods or 6-inch mesh wire netting. Mulch and feed the roots with manure-water when the flowers appear. *Hawmark Pink*, *Barbara* (salmon), *R. F. Felton* (lavender), *King Mauve*, *Mascott's White* and *Thos. Stevenson* (orange) are six of the best sorts for your purpose.

VINE LEAVES MILDEWEY. *J. B.*: The leaves are very weak and have been attacked by mildew; from your statement that the vines are dripping with moisture every morning, it is evident that the atmosphere is kept too damp, a condition that is favourable to this disease. Fire heat in conjunction with early ventilation and possibly a little ventilation all night, will have the effect of lowering the excessive amount of moisture, which apparently is most in evidence when the temperature is lowest. In conjunction with improved atmospheric conditions, flowers of sulphur should be distributed upon the affected parts by means of small bellows such as are supplied by sundriesmen. Another remedy is to spray the foliage with a solution of sulphide of potassium, at the rate of $\frac{1}{2}$ oz. of sulphide to one gallon of water.

Communications Received.—C. H.—J. H. M. F.—W. M. C.—W. R.—W. W.—A. G. H.—C. S.—K. S. H.—E. M.—J. C.—J. H.—T. C.—H. P.—E. H. J.—C. E. P.—H. I.—J. C.—W. J. B.



THE
Gardeners' Chronicle

No. 1741.—SATURDAY, MAY 8, 1920.

CONTENTS.

Aotus gracilima	232	Obituary—	
Apple Afriston	232	McKenzie, William ..	234
Begonias from Novem-		Moorman, J. W.	234
ber to March	230	Sharp, W.	234
Black Currant, the	223	Plants, new or note-	
Books, notices of—		worthy—	
The Calendar of Gar-		Rhododendron Fraseri	225
den Operations	230	Pyrus floribunda	229
Chadwick lectures, the		Royal Academy, floral	
Enham village centre for		pictures at the	224
disabled men	232	Schneider, Georges, pro-	
Foreign correspondence—		posed monument to	
Columnas	230	the late	223
Froesia names and the		Superfluous wood in	
R.H.S. Floral Com-		fruit and other trees	224
mittee	232	Shakespeare's garden ..	227
Fungus, adjectival form		Societies—	
of the word	232	Antwerp Floral Ex-	
"Gardeners' Chronicle"		hibition	233
seven & five years ago		Manchester and North	
Holland, garden produce		of England Orchid	234
under glass in	224	National Auri-cula and	
Inaw Bum, plant col-		Primula	234
lecting on	228	National Rose	232
Iris, notes on	225	Surbiton and District	
National Rose Society's		Chrysanthemum	224
provincial show	223	Week's work, the	226, 227
		Wisley	231

ILLUSTRATIONS.

Iris Yellowhammer	225
Moorman, J. W., portrait of the late	234
Narcissus Firetail	227
Pyrus floribunda	229
Rose Rev. F. Page Roberts	233
Saxifraga hibernica flowering on the rockery at Wisley	231

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 50.01°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday* May 5, 10 a.m.: *Bar.* 30.5, *temp.* 56°. *Weather*—Dull.

The Black Currant.

Anyone who aspires to improve existing races of fruit-bearing plants has two courses open to him. He may either try the "hit-or-miss" method and by cross-breeding promising varieties or by selection from any existing varieties endeavour to raise a new and better variety; or he may adopt the laborious course of surveying experimentally existing varieties in order to determine, in the first place, which, if any, of them is suitable for a given type of climate and soil. It, however, the latter course be chosen the experimenter finds himself immediately confronted with the difficulty that the nomenclature of the varieties is in a state of confusion. The names in common use are by no means absolutely trustworthy, and not infrequently one name is ascribed to several distinct varieties or one and the same variety bears more than one name. This has proved to be the experience of Mr. R. G. Hatton and his colleagues who have been engaged during the past few years in an investigation of the Black Currant with a view to its improvement. It is necessary, therefore, as Mr. Hatton points out in an account* of preliminary work in testing and classifying varieties of Black Currant, to

introduce order in the chaos of nomenclature before proceeding to the work of breeding.

How necessary this preliminary work is may be judged from the fact that when the collection was being formed at the East Malling Experimental Station, not infrequently two or three distinct varieties were received under a single name and one and the same variety under such distinct names as Boskoop Giant, Victoria and French!

At first sight it is difficult to understand how this confusion of nomenclature could have arisen, for in the case of the Black Currant all varieties are derived from one species, Ribes nigrum. A probable explanation is that until recent years and not until the value of the Black Currant as a jam fruit was discovered, this fruit was held in but little esteem. As a consequence the older writers were at slight pains to describe varieties or even to record the date and manner of origin of novelties. Another reason lies doubtless in the fact that varieties which may be of considerable economic importance may differ but slightly from one another in readily recognisable botanical characters. The great importance of terminological exactitude in the diagnosis of varieties is strikingly illustrated by Mr. Hatton's tests of the cropping qualities of known varieties of Black Currants at East Malling, where the soil is rather too light to suit this plant. Of the varieties tried, one, and one only, cropped uniformly well, and its yield exceeded that of any other variety by 1 lb. per bush per year. To have established a plantation before this information had been obtained would clearly have meant the risk of considerable financial loss; for it would have been by no means certain that the variety in question—the true Baldwin—would have been chosen for planting.

Hence it is evidently of the first importance to all concerned with the breeding or growing of this fruit that there should be produced an authoritative description of the recognisable characters of existing varieties of Black Currant in order that the breeder may have a sure basis for his work, and the grower may know which to grow and what he is growing.

Since little information as to the characters of varieties is to be obtained from past writers, reliance has to be placed on careful observations and descriptions made afresh.

A first instalment of such observations and descriptions is given by Mr. Hatton in the *Journal of Pomology*. From an examination of the comprehensive collections made at East Malling, it appears possible to separate Black Currant varieties into four groups.

In the literature of Black Currants reference is not infrequently made to "old red bud" and "old green bud" varieties, and this character of bud colour is found to offer a convenient basis for classification. Accordingly Mr. Hatton classifies varieties into "Red Bud Type and Whitish (the old green) Bud Types."

Each of these divisions may be further divided into two groups, thus:—

Red Bud Types—

Group I., e.g. French Black—Merveille de la Gironde.

Group II., e.g. Boskoop Giant

Whitish Bud Types—

Group III., e.g. Goliath (Victoria Group).

Group IV., e.g. Baldwin.

A certain number of varieties, such as Carter's Champion and Laxton's Blacksmith, are for the present placed among unclassified varieties.

The chief, and apparently most constant,

difference between Group I. French and Group II. Boskoop Giant are:—

	Group I. French.	Group II. Boskoop Giant.
Bushes	... large, compact	... medium to larger spreading
Buds	... much branched	... scantily branched
	... medium	... large
	... conical	... broad
	... pointed	... blunt
	... bud scales very tight	... compact
	... late in coming into leaf	... early
Racemes	... 1—3	... often single
Peduncle	... medium length	... long
Flowers	... 6—10	... 12—19
Calyx tube	... pale yellow green	... bronze green
Sepals	... tinged pink	... purple in bud, reddish when open
Leaf	... lobbs acute	... obtuse
Angle of leaf to petioles	... gradual obtuse	... almost at right-angles
Fruit	... medium to small	... very large
Season	... mid	... earliest
Skin	... tough	... tender
Flavour	... very acid	... fairly sweet

A full table of distinguishing characters of varieties of groups 1 and 2 is to be found on p. 80 of the *Journal of Pomology*.

The chief varieties of Group I. (French) are:—Ogden's Black, Black Grape, Lee's Prolific, Black Naples, North Holland Black, Seabrook's Black, Mammoth Westwick Resister, Siberian and Dutch Black (?= French Black)

Group II. Boskoop includes:—Boskoop Giant—Hoogendyk's Seedling, Prince of Wales and Black Bunch.

Mr. Hatton's article, which should be read by all growers of Black Currants, is to be supplemented by others dealing with the remaining groups.

Surbiton and District Chrysanthemum Society's Show, 1920.

The tradesmen of Kingston have presented this Society with a handsome bowl, valued 25 guineas, which will be offered in an open class for 18 Japanese blooms, in six varieties, to be shown in six vases, at the Society's annual exhibition, on November 5. The Secretary, Mr. T. Smith, Coombe Court Gardens, Kingston Hill, informs us that the schedule has been published, and he will be pleased to send a copy to anyone interested.

The National Rose Society's Provincial Show.

The National Rose Society will hold an exhibition in Roundhay Park, Leeds, on Tuesday and Wednesday, July 13 and 14, in conjunction with the annual show of the Roundhay and District Horticultural Society. The schedule of the Rose Society includes 34 classes, of which sixteen are open to all. The Cory Cup is offered for a new seedling climbing Rose raised by a British grower. Exhibits in this class are eligible for the award of a Gold Medal or Certificate of Merit of the N.R.S. The principal class is for 36 blooms, distinct, in which a trophy and £2 are offered as the first prize. Two of the N.R.S.'s Silver Medals will be awarded for the best Rose exhibited by nurserymen and amateurs respectively. The schedule of the Roundhay Horticultural Society includes classes for flowers, fruits and vegetables. The chief class is for a display of plants and flowers other than Roses, for which prizes of £10, £5, £3 and £2 are offered. Substantial money prizes are also offered for 24 blooms of Roses, distinct, 12 bunches of Sweet Peas, distinct, and 12 vases of Carnations, distinct. The Hon. Secretaries are Mr. J. E. Fyler, 17, Roman Place, Roundhay, Leeds, and Mr. B. A. Wild, Canal Gardens, Roundhay, Leeds.

Monument to the late M. Georges Schneider

Friends of the late M. Georges Schneider, President and founder of the Société Française d'Horticulture de Londres, whose death was recorded in our issue of January 6, 1917, p. 11, are forming a committee to collect funds for the erection of a suitable monument on M. Schneider's grave at Barnes, Surrey. Monsieur A. Truffaut is taking an active part in this tribute to his former comrade, and the members of the Committee include also M. Abel Chate-

* Black Currant varieties. A method of classification by Ronald G. Hatton, M.A. *The Journal of Pomology*, Vol. 1, No. 2.

may, M. Louis Gentil, and M. Alfred Nombrot. Subscriptions are being received by Monsieur Emile Thiébaud, 30, Place de la Madeleine, Paris, and the fund will be closed at the end of June. Probably a number of Monsieur Schneider's friends, both in England and in France, will be glad of this opportunity to place on record their esteem for one who did so much to befriend young gardeners, and to make pleasant the student-days of his young compatriots.

Superfluous Wood in Fruit and other Trees.—The Remedy.—Mr. C. Martin, County Horticultural Instructor, Isle of Wight, recommends in a pamphlet bearing the above title, the throttling of trees by means of wire bands to induce fruitfulness. He urges in support of his recommendation that healthy, vigorously growing trees, difficult to bring into a condition of fruitfulness, may be rendered fruitful by the regulated constriction of their stems, and that the desired result is obtained by the effect of the constriction on checking root growth and inducing the formation of fibrous roots. Needless to say, only experiment can demonstrate the practicability of the method, which, of course, has been in use for centuries as a means of checking local growth and inducing the formation of large fruit. The effect of constriction of the stem should undoubtedly tend to reduce root development, for the elaborated sap which finds its way from the leaves through the bast to the roots would tend to be checked in its downward flow and the roots in consequence would be partially starved.

The Use of Fertilisers in Counteracting Adverse Climate.—The *Journal of the Ministry of Agriculture*, Vol. 26, No. 11, February, 1920, draws attention to the value of artificial manures in mitigating adverse effects of climate on crops. Thus in districts with light soils where drought is to be feared, the use of potash manures, by causing a prolongation of vegetative growth, enables a plant to stand up better against the drought. Phosphatic manures, on the other hand, effect the more rapid maturing of crops, and hence are specially useful in districts where heavy rainfall is to be anticipated.

Garden Produce Under Glass in Holland.—The Ministry of Agriculture and Fisheries has received, from His Majesty's Consul-General at Rotterdam, the following information concerning garden produce under glass in Holland. The exceptionally fine spring weather, together with the large amount of sunshine, has caused the early development of all crops. The condition of Strawberries is stated to be very good in the Westland and Rhine districts and in South Holland, while reports from other parts of the country are favourable. The prospects of the Tomato crop are increasingly good, and the same may be said of Cucumbers, especially of those grown in the Westland District. Carrots are very good at Hoogezand, Gouda and Nymegen, and in the Rhine and Westland areas; less good in the Western part of Friesland. The report on Cauliflowers and Lettuces is generally encouraging.

Prizes at the National Potato Show.—The value of the 1st prizes offered by Messrs. Bees, Ltd., in Classes 44 and 45 at the National Potato Show, Birmingham, on November 9, 10 and 11, is £10 in each case, and not £5 as stated on p. 212. Other prizes of £5, £3, £2 and £1 are offered in these classes, competition in which is restricted to *bona fide* allotment holders and amateur gardeners.

The Chadwick Lectures.—In the second of his Chadwick Lectures, delivered at the Royal Sanitary Institute, Westminster, Sir Daniel Hall discussed the practical working of allotments. He opened with a brief history of this branch of land cultivation, which goes back to a very early date. Statutes of the time of Henry III. seem to indicate that wherever changes in land occupation tended to make labourers landless, measures were afterwards taken to assist them to obtain control over a small portion of cultivated ground. The gross effect, however, was never great, and it is estimated that in the early

years of last century less than a thousand rural allotments existed in the County of Oxford. During last century the movement spread steadily, stimulated for a time by the wages agitation of the seventies, but beneath the advancing wave of agricultural depression the effort died away. The lecturer distinguished between two classes of allotments: the comparatively small, really a detached garden, worked by the wage-earner in towns and villages, and the larger parcel of land by which the rural labourer has attempted to eke out his indifferent earnings. In the last return of land occupied under the Small Holdings and Allotments Act, the average size of the holdings was one-sixth of an acre. During the war, on the contrary, the 253,000 allotments created worked out at exactly 15 to the acre, or a little over 10 rods. The history of small allotments is difficult to trace, but they certainly took their origin in the 19th century, with the development of the industrial system and the growth of towns. Practically all were provided by private enterprise between 1830 and 1840. It was not until 1887 that public authorities obtained powers enabling them to acquire land and let it in allotments. The Small Holdings and Allotments Act of 1908 constituted the Board of Agriculture the central authority for all such allotments. The greatest extension came during the war, after the threat of scarcity had been fully realised in 1916. While it is difficult to estimate exactly the total number of allotments in the country, the estimated figure for 1918 was 1,400,000 allotments in being. The number to-day has been put as high as 1½ million, but official returns, not yet completely tabulated, would indicate a number more closely approaching a million.

The Royal Academy.—Perhaps the most favoured flower chosen by artists as the subject for a still life study is the Anemone, and these blooms are exhibited in their abundance at the Royal Academy this year. Their many colours of rose and purple lend themselves to most effective grouping. Among some of the studies Elizabeth Hancock portrays them lying carelessly on a polished table in company with a blue vase. In a smaller study near, the flowers are shown in a bronze vase, and have a pleasing effect. We see them again with Ranunculus and other spring flowers in an old jug, and the small, pink, double Anemone looks very dainty grouped with catkins in a blue pottery vase. In the water-colour room there is a fresh, bright study of the same flowers in a white vase, with a gaily coloured cloth on a polished table. One of the most striking of the flower studies is an oil painting by Anna Airy, called "Roses Triumphant." The subject is a group of white blooms in a long-stemmed vessel, standing out dazzlingly white from the dark curtain as background. Another strong picture is by H. Davis-Richter, portraying a mass of pink and white Hydrangeas, and in the foreground, a bowl of Water-lilies. His other painting is of an interior—very sunny—with a bowl of Asters in the foreground. H. d'Arcy Hart contributes a glowing bunch of Zinnias in a blue bowl, also a further group of Delphiniums and Carnations. We see Carnations again in No. 458, pale pink against a background of chintz, making a pleasing addition to an old-world room. Near by is the Mary Allwood Carnation in a green and brown pottery vase. The jug of flowers by Violet Wilson shows a strong scheme of Geraniums, Fuchsias, Delphiniums and Iris; and Ida Mostyn gives us also a mixed study, this time in orange, blue, etc., and staged on a striped cloth. Ethel Wright exhibits a pleasing work of garden flowers in one picture, and a large bunch of Paeonies in a blue vase in her other, both very strong works. Smaller studies are "Christmas Roses," by A. F. W. Hayward, a bowl of red and orange Begonias, Rambler Roses and Daisies; a clean study of Apple blossom in a blue Japanese vase; some Cape Gooseberries; Sweet Peas in a piece of blue pottery; mixed Delphiniums in a glass jar, and red Pelargoniums in a white jar. There are two autumn studies that are noteworthy, a fine mass of fruit lying on a table, the Pomegranates being particularly real, and the other a group of Chrysanthemums with Pumpkins and baskets

of fruit. The choicest garden scenes are contributed by J. Farquharson, R.A., and Lilian Stannard. The former artist shows "A Corner of the Garden," a delicious glimpse with arches of Roses and herbaceous border of blue Delphiniums and Canterbury Bells, also "A Scotch Garden," with arches of Roses, a sundial in the midst of a Pelargonium bed, and foreground of yellow and white Poppies. The studies by Lilian Stannard are in the water-colour room, and show, firstly a charming view with mixed herbaceous borders flanking a grass walk, backed by a high Yew hedge. Secondly, one with flowers of a quieter hue, all tones of lilac, Michaelmas Daisies with stone-flagged path, leading to an entrancing summer-house; and, thirdly, a delightful peep into a garden in June, with pergola of Dorothy Perkins Rambler Rose, Lilies, Delphiniums, Violas and Campanulas on either side of a wide grass path. A water-colour by another artist is of Delphiniums against two large Cypress trees, and a soothing sketch of Lilies and Lavender, with downs as a background, is exhibited by M. Aumonier. Frances Drummond shows careful work in her Lilies against a grey garden wall, as also does Ernest Haslehurst in his water-colour of "A Devon Cottage." Just two other garden pictures show us a nurse in a wilderness of Hollyhocks and Roses, and a larger painting depicts a sunny stone-flagged garden, with tubs of flowers, and three charming ladies.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Plant Watering.* It may be superfluous to state that plants either suffer from too much or too little water, but it is not so to show that this is frequently the case in the same pot at the same time; that is an evil far more extensive in a general collection of plants than may be supposed, and a point opposed to good cultivation earnestly demanding our attention. When the surface-soil in the pots becomes dry, a careless hand at once adds a fresh supply, without ascertaining whether the soil, in which the roots are, at all require it, and again on the other hand, the top soil frequently appears perfectly wet, while the bottom of the ball is as dry as dust. This is a most calamitous circumstance, and one of common occurrence, especially amongst newly-potted plants. When a plant is just potted, it should have a sufficient supply to penetrate every part of the ball, and then remain until another supply is positively required, that is, till the ball has parted with the greater portion of its moisture and the plant is on the point of flagging, the interstices being all filled with air as it should be. This air, again, requires to be driven out by a fresh supply of water, thus keeping up a vigorous and healthy action by continual interchanges of air and water, but at the same time never allowing either of them to remain long enough to affect the health of the plant. Watering by "driblets" is the worst of all watering; it keeps the surface of the soil in a puddle, but never reaches the roots; the eye is thus deceived and the plant is often dead before the cause is discovered. When a plant does not part with its moisture freely, like its neighbours, but remains in a wet state, it should be immediately inspected; for should a plant remain subject daily to the application of driblets of water for any time, death must of necessity ensue.—*Duro, Gard. Chron., May 10th, 1845.*

Publications Received.—*The Nursery Manual*, America. L. H. Bailey. Macmillan and Co., Ltd., London. Price 15s. nett. *Roses, their History, Development and Cultivation*, J. H. Pemberton. Messrs. Longmans, Green and Co., 39, Paternoster Row, London, E.C.4. New Ed. Price 15s. *Palms of the Philippine Islands*, O. Beccari. Bureau of Science, Philippine Government, Manila, Philippine Islands. *Temperature relations of certain Potato-Rot and Wilt-Producing Fungi*. By H. A. Edson and M. Shapovalov. Government Printing Office, Washington. *Growth of Green Crops on Arable Land for Dairy Cows*. The University College of North Wales, Bangor. Copies may be obtained free of charge on application to The Principal.

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON FRASERI.

A FEW weeks ago a plant was received at Kew from Mr. G. Fraser, nurseryman, Webu-chet, Canada, which he described as a hybrid that he had raised from *Rhodora canadensis* and *Azalea mollis*. The plant is now in flower, and it shows characters which bear out Mr. Fraser's description. I believe this is the first hybrid with the *Rhodora* that has been recorded. It may well, therefore, bear the name of the raiser. Both parents are now included in *Rhododendron*. As a garden plant, earliness of flowering inherited from the *Rhodora* should give this hybrid some value, and as both parents are good forcers, it ought to be useful in that way too. The plant has rather wiry, twiggy growth, smooth bark, and is deciduous. The new leaves, which come with the flowers, are about an inch long, ovate, short petioled, hairy on both sides, and borne on shoots about three inches long. The flowers develop in terminal umbels, three to six in each, and have hairy green pedicels an inch long; calyx minute; petals in two series, three above, two below, united at the base, forming a tube $\frac{1}{2}$ in. long, the limb about two inches across, bright, rosy mauve; stamens ten, short; style as long as the corolla, curved. There are many *Rhododendrons* of the same stamp among the evergreen Chinese species, but the Japanese *R. rhombicum* is most like it in the shape and colour of its flowers and in its deciduous habit; the leaves are, however, quite different. I can imagine *R. Fraseri* becoming a favourite garden shrub on account of its hardiness and earliness of flowering. W. W.

NOTES ON IRISES.

HYBRIDISING BEARDED IRIS.

THE results which Mr. R. S. Sturtevant gives of his *Iris plicata* crossings (p. 184) are an interesting and valuable addition to our knowledge of *Iris* genetics. Breeders are apt to follow some preconceived ideal, and all my *plicatas* have been derived from one original phenotype, Mme. Chereau, which I chose because it was the only *plicata* at that time with height and good habit. If any other strain of *plicata* has come into my seedlings through crossings with varieties carrying *plicata*, it is most probable that it has always been the same genotype that has been brought in except, possibly, in the cases of Camelot and Dimity. Mr. Sturtevant's results cover a wider range of unions, and though at first sight they do not seem to be in accord with mine, yet after careful study I think there is not only no need to suggest error, either in his results or my own, but that they will enable us to give, tentatively, the actual factorial composition of the *plicata* type.

The cross of Mme. Chereau \times Jean d'Arc, giving no *plicatas*, which seems so incompatible with the clear conclusion from my crossings that the *plicata* type is recessive, provides the clue. Evidently there is more than one genetic type of *plicata*, and the results suggest that we have here a situation similar to that worked out by Bateson and Punnett in their classical experiment with the two genotypic varieties of Emily Henderson Sweet Pea. Apparently a similar series of factors C, R, and B, are involved, which is to be expected, since it is so commonly found in the simple anthocyanin coloured flowers. In addition, one may for the present suppose a factor M (a "marginal" or *plicata*-pattern factor); though eventually, no doubt, M, will be found to represent something more complex than a single factor. If the Emily Henderson Sweet Pea example were followed exactly the two different *plicata* genotypes would have the factorial composition cRRMM and CCrMM, but taking all the results into consideration, and especially the fact that pure whites do not come, or only very rarely, in the F_2 generation of *plicata* crosses, it appears more likely that they should be, Comte de St. Clair (and Mme. Chereau) =

CCRRbbMM (the *R. plicata* type); Jean d'Arc = CCrrBBMM (the *B. plicata* type).

Then only one assumption is needed to bring all Mr. Sturtevant's and my results into harmony—that the presence of the factor M, in single or double dose, will always give a *plicata* unless both R, and B, are also present in the same zygote. It is a very reasonable assumption, as a similar interaction of factors has been found in other cases. Since every gamete of the *R. plicata* type will contain R, and every gamete of the *B. plicata* type will contain B, it follows that none of the seedlings (zygotes) of the cross of Mme. Chereau \times Jean d'Arc will be *plicatas*, since all will contain both R, and B. In fact they will behave like the F_1 generation of the cross of the two types of Emily Hender-

(2) \times E. 205 (a), agree with Mendelian expectation of the result of inter-crossing of Oriflamme and other varieties carrying *plicata*, but of varying factorial composition. The result of Oriflamme \times self (if its factors are as suggested above) would be 3 *plicatas* to 13 non-*plicatas* (one of which might be a white). But the actual composition of such varieties must often be much more complex than that suggested for Oriflamme, since they may also contain amoena or variegata factors, and this would tend to reduce the proportion of expected *plicatas*.

One objection may be made to this scheme, viz., that C and B without R, in the Jean d'Arc type, give a coloured (though only a partially coloured) flower, whereas in Sweet Peas, C and



FIG. 104.—IRIS YELLOWHAMMER; AN EARLY-FLOWERING VARIETY. R.H.S. Award of Merit, April 27 (see p. 221).

son Sweet Pea and revert to an original type owing to the reunion of two (complementary) colour factors.

Mr. Sturtevant's results show, I think, that Oriflamme must be carrying *plicata*, so, if we assume that it is also heterozygous for B, we may represent its factorial composition as CCRRBbMm. Then the cross of Oriflamme \times Comte de St. Clair or Mme. Chereau (the *R.* type *plicata*) will give *plicatas* and non-*plicatas* in equal numbers. (In Mr. Sturtevant's cross, the seedlings were all *plicatas*, but with only 4 flowering, we may take it that this is the result indicated, since so many of my crosses have given the one-half Mendelian ratio.) Oriflamme \times Jean d'Arc (the *B.* type *plicata*) will give all non-*plicatas*, as obtained.

Lastly the result of 2 *plicatas* out of 36 seedlings from the cross of Anne Leslie \times Archeveque, or my result of 2 *plicatas* out of 18 seedlings from the cross of two non-*plicatas* C7b

B give no colour unless R also is present. But I suggest that the marginal factor M contains a partial (a "marginal") R and so enables the flower to have coloured margins. This could hardly be so if the *plicata* factor M was an inhibitor, but it is almost certainly not, or we should have clear evidence of dominance.

This scheme is but an attempt to co-ordinate the results at present obtained, and will no doubt require modification or even recasting when sufficient records are accumulated to make a closer and fuller analysis possible. Meanwhile, we gain a clue to the means of getting a pure, white "plicata" and can understand now why it never appears from the intercrossing of only one type of *plicata*. I think also that this scheme may throw some light on the relationship (which Mr. Sturtevant remarks on) between certain types of intensely coloured *pallidas* and *plicata*, and between certain "red" *pallidas* and *plicata*. A. J. Bliss.

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

Lycaste.—This genus contains several showy Orchids, and few plants are more popular than *L. Skimmer* and its numerous well-marked varieties. *L. Balliae*, *L. Gratrixae*, *L. macrophylla*, *L. cruenta* and *L. aromatica* all require the same treatment. The present is a suitable time to examine the plants to ascertain if any need fresh soil. Plants that are not pot-bound, and growing in sweet compost, need not be disturbed this season. A mixture of fibrous loam and partly-decayed Oak or Beech leaves, with a moderate sprinkling of crushed crocks or coarse sand, forms a suitable rooting medium. After the soil has been pressed well between the roots and brought up to within an inch of the rim of the pot, it should be surfaced with chopped Sphagnum-moss. *Lycastes* may be grown with *Anguloas*, and given similar treatment in regard to watering. Scale insects are sometimes troublesome, and the pseudo-bulbs should be examined for this pest when the plants are repotted.

Lycaste Dyeriana.—This species is the most remarkable member of the genus, and the growths hang downward in a similar manner to those of the well-known *Cattleya citrina*. It should be grown on a small pan or raft in Osmunda-fibre and Sphagnum-moss, and the pan suspended about two feet from the roof glass of the intermediate house. The plant is not so vigorous growing as other *Lycastes*, and needs careful watering throughout the year.

Phaio-calanthe.—Of all the bigeneric hybrids *Phaio-calanthe* may be regarded as the greatest failure, for well-grown examples are but rarely seen. Annual repotting is recommended, and it should be done directly the new growths develop roots from the base. Most of the old compost should be removed and replaced with a mixture of fibrous loam, peat, and partly-decayed leaves. The plants may be grown in the *Cattleya* division. When the roots have taken possession of the fresh compost afford them water liberally until growth is finished. These plants do not need such a decided rest as *Calanthes*, yet, being semi-deciduous, they do not require so much water as *Phaius* during the winter. No doubt it is during the season of rest that deterioration begins.

PLANTS UNDER GLASS.

By JOHN COULTS, Foreman, Royal Botanic Gardens,
Kew.

Propagation.—Nov is a suitable time to propagate many greenhouse *Ericas*, *Epacris*, and certain other hard-wooded greenhouse subjects as they root readily from young, twiggy growths sufficiently firm to prevent damping. Small cuttings should be used, and great care taken in preparing them for if the bark is torn off they are certain to damp. They should be inserted in pots filled with fine, sandy peat, made very firm, and placed under a propagating glass in a cool house; the glass should be wiped dry inside each morning.

Eustoma (Lisianthus) Russellianum.—This plant is sometimes described as an annual, but it should be cultivated as a biennial. In common with many other plants belonging to the *Gentianeae* it is a very difficult subject to grow successfully, but is so beautiful that it is worth all the trouble that the cultivator can give it. The seed, which is very fine, may be sown any time during the present month on the surface of the soil, and the pot should be covered with a piece of glass, after the manner of raising *Begonias*. Raise the seedlings in a house having an intermediate temperature, and grow them in

their younger stages in a temperature of some 50°. In their first season endeavour to have the plants with strong rosettes of leaves, without making any attempt to induce premature flowering. The young plants are best wintered in a warm greenhouse temperature, and they may be repotted the following spring when growth becomes active. The compost should consist of light, mellow peat and leaf-mould in equal proportions, with the addition of coarse silver sand and charcoal. The pots should be freely drained. The frequent failure of this plant is, no doubt, due to growing it in an excessively high temperature, the hot, dry atmosphere rendering it very liable to attacks by thrip; mildew, also, is at times troublesome, but both pests are generally the result of wrong cultural treatment.

Crinum Powellii.—This handsome *Crinum* and its variety *album*, also *C. Moorei*, although hardy in the south at the base of warm walls, are excellent subjects for growing in large pots or tubs for conservatory decoration. They are generally stored for the winter in a dry, frost proof shed. If not already done, examine the plants forthwith to see if repotting or top-dressing is necessary.

Agapanthus.—This exotic plant requires the same treatment as *Crimums*, and, being a strong-rooting subject, requires plenty of feeding in the form of dilute liquid manure and soot-water.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe
Castle, near Cardiff.

Leeks.—The earliest sown Leeks are ready for planting. A wide trench should be made as for Celery, and a good dressing of decayed manure dug into the bottom spit below where the roots will be planted. Plant deeply and at a space of 15 inches apart each way. Leeks intended for exhibition should be grown in narrow trenches; manure should be placed in the bottom as before and covered with soil, but plenty of space should be left to allow of watering. Make the soil firm as the work proceeds, and plant in single rows at 15 inches apart in the rows. Blanching should be commenced as soon as the plants become established by placing cardboard collars or three-inch drain pipes about six inches in height around them. Any Leeks of last year's crop still in the ground should be lifted and stored at the foot of a north wall.

Seakale.—Plants that have not been forced should have their crowns removed with a sharp knife, or they will expend much of their energy in producing flowers. The subsequent growths should be thinned to a single crown.

Herbs.—The present is a suitable time to form new beds of Mint. Cuttings from young growths made about four inches long and severed at a joint may be inserted in sand in the open. The cuttings will soon form roots and send out numerous shoots. A few strong, deep boxes should be prepared and cuttings inserted in them to provide plants for forcing next winter. Herbs intended to be raised from seed should now be sown in a sunny position in soil that is not of a rich nature.

Peas.—The staking of Peas should be done early and before there is any danger of the haulm falling over. The plants should be slightly earthed up by drawing soil towards the rows. Insert the stakes firmly in such a manner that they will be the same width apart at the top as at the base. A few of the smaller twigs should be pushed in the centres of the rows to ensure the even distribution of the growths when they commence to climb.

Vegetable Marrows.—The flowers on Marrows growing in frames should be pollinated and the growths stopped and regulated. Marrow plants required for summer cropping should be raised from seed placed singly in three-inch pots and germinated in a warm house. As soon as the first rough leaves form, harden the plants in a cold frame.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Early Strawberries.—Strawberries growing on warm sunny borders are developing their fruit trusses, and the flowers are on the point of expanding. As the danger from frost is not yet past, it will be advisable to have some light protective material in readiness. Small evergreen boughs placed over each plant will serve to ward off much frost.

Leaf Spot on Apples.—Leaf spot on Apples is caused by a fungus, and if allowed to spread unchecked causes the foliage to drop prematurely. This disease is very detrimental to the well-being of the tree; it results in badly matured wood and arrested growth of buds. Trees of the following varieties in these gardens were badly attacked by this disease two years ago:—Cox's Orange Pippin, St. Everard, Lord Hindlip, Bismarck, Emperor Alexander, and Warner's King. The trees lost much of their foliage, and the fruits were very disfigured. The treatment consists in spraying the trees with Bordeaux Mixture at half strength, repeating the spraying at intervals of ten days or so. One or two sprayings are not sufficient to stamp out this disease; it must be combated with perseverance, and the spraying should extend over the period of six or seven weeks, commencing immediately the trees have passed out of flower.

Infertility of Apples.—The failure of the Apple crop may be due to one of several causes, such as spring frosts destroying the bloom and unripened wood failing to form fruit buds; but it is often due to infertility. Certain varieties will not set fruit satisfactorily with their own pollen, and it is necessary to plant other sorts in their neighbourhood. Stirling Castle and Lane's Prince Albert are good pollen bearers, and should be planted near shy setting varieties.

Thinning of Peaches and Nectarines.—Where these fruits have set freely, the surplus ones may be removed. In thinning the fruits, first remove those that are badly placed and those of small size. Defer the final thinning until it can be determined that plenty will develop to form a satisfactory crop. As a general rule, allow each Peach fruit one square foot of surface, and in the case of Nectarines one fruit to every nine inches.

Training.—When nailing or tying in the young growths of fruit trees, take into consideration the future welfare of the tree. Avoid overcrowding of the young wood, or it will fail to ripen sufficiently to crop next season. Train only sufficient of the shoots to furnish the whole of the space available with young wood for bearing fruit next year.

THE FLOWER GARDEN.

By SIDNEY LAGO, Gardener to the Dowager Lady
NUNBERGOLME, Warter Priory, Yorkshire.

Exhibition Roses.—The thinning of the young shoots should be carefully continued in the case of plants required to furnish blooms for exhibiting, leaving from three to six healthy growths, according to the vigour of each individual plant. The uppermost buds usually produce growths which give the finest flowers. As the season advances, remove all buds other than the central one from each truss. Extra strong growths arising from the base of the plant should be stopped when 8 to 12 inches high. Clay's Fertiliser may be applied to the soil at the present time and lightly worked in with a hand-fork. When applying stimulants of any kind the soil should not be excessively dry.

Ilex.—No better time than the present can be chosen for transplanting Hollies. The ground the plants are intended to occupy should be thoroughly prepared by breaking up the lower soil. Immediately after the planting afford the roots a copious watering and apply a heavy mulching of suitable material to conserve the soil moisture. A good spraying with clear water during fine evenings, will greatly benefit trans

planted Hollies. The superiority of Hollies grown on their own roots cannot be too strongly emphasised. Young, own-root plants, of from 3 to 4 feet high, quickly make headway, and are in every respect superior to grafted plants.

The Iris Garden.—A very light dressing of cocoanut fibre or similar material may be placed on the ground between varieties of Iris to prevent the flowers being bespattered by soil during heavy rains. Note should be made of exhausted beds, and sulphate of lime may be ordered in readiness to mix with the soil at the time of transplanting the clumps. Planting should take place immediately after the flowering season is over. Generally speaking, moisture-loving Iris object to lime in any form, and varieties of *I. spuria* and *I. longipetala* do not require lime.

Gerbera.—Hybrid forms of *Gerbera Jamesonii* growing in six-inch pots, in a cool pit, should be given an abundance of both light and air with a view to planting them in a sunny position in the border three weeks hence. They will grow and flower well in a free, gritty soil. If space is allowed at planting time, the *Gerbera* may be interplanted with *Dimorphia terca aurantiaca*, seeds of which may be sown in boxes at the present time.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Melons.—An economical method of growing Melons after this date is to collect a quantity of leaves and add from one-third to one-half of stable litter, turning and mixing the materials thoroughly during the time they are fermenting. The making of a hotbed that will retain warmth for some considerable time requires experience. The chief thing is to use just the requisite amount of pressure in building the bed that will give it the necessary firmness, but not more. It is also important that the plants should be strong and healthy; at a later date the seeds may be sown in the beds direct, but at this early season they should be germinated in small pots. One plant to each small light is sufficient; two plants may be used when the light measures 6 feet by 4 feet. The best soil is good loam rather heavy than light, as the firmer the growth is the earlier the plants will fruit, and the latter will set better than when growth is soft. Melons should be grown in full exposure to sunshine; cold water should never be used to damp either the foliage or the beds, and damping should only be done early in the afternoon of bright, warm days. A little ventilation early in the day will cause the foliage to harden and strengthen the plants generally against attacks of red spider. A fresh, buoyant atmosphere is necessary to obtain the best results with Melons in frames.

Peaches.—The fruits in the earliest Peach house will soon be ripe, and when they are gathered the trees should be syringed at close of day to keep the foliage clean and healthy. Give the borders a thorough soaking of water and do not allow the atmosphere to become very dry, a condition which many erroneously consider conducive to the ripening of the wood. Keep the ventilators wide open, both day and night, and by the end of the present month lights that are removable may be taken off the roof entirely.

Later Peach Houses.—The trees in late houses should receive regular attention in disbanding and tying of the shoots and thinning the fruits. Remove all shoots which are not required for bearing or furnishing the space, to allow the sun and air to enter freely and assist in ripening the wood. Give liquid manure and other stimulants to trees swelling their fruit, especially old trees; where the drainage of the border is perfect and the trees healthy, there is no danger of over-watering. Thoroughly syringe the trees night and morning with soft water, and fumigate the houses directly green fly is detected.

NARCISSUS FIRETAIL.

MODERN progress in the *Narcissus* has given us many beautiful varieties, in which the corona, or crown, carries rich colouring of orange and orange-red shades, some even approaching an Apricot tint. The variety *Firetail*, illustrated in Fig. 105, has a beautiful red crown which is thrown into relief against the rich, sulphur-yellow of the segments, which are broad and overlapping.

SHAKESPEARE'S GARDEN.

The note on p. 188 reminds me that this is not the first time an attempt has been made to gather together an assemblage of plants and flowers representative of those mentioned by our great national poet. There was at one time, if there is not actually at present, a Shakespeare garden in Waterlow Park, and the mention of it in the English Press was sufficient to cause some curiosity on the other side of the Channel, for I remember I was commissioned by the editor of a well-known French horticultural journal to report upon it. Unfortunately it was too late

tion only reminds me of many others in which some historical knowledge will be required to prevent error:—

“There with fantastic garlands did she come
Of Crowflowers, Nettles, Daisies and Long
Purples.

That liberal shepherds give a grosser name,
But our cold maids do Dead Men's Fingers
call them.”

To particularise, for instance, Pansies are mentioned. What kind of Pansy is it proposed to plant in this new Shakespeare garden? Are Pansies to-day anything like those that grew in the great poet's day? Do some of the donors imagine that any of their twentieth century specimens will in any way illustrate those grown in the sixteenth-seventeenth centuries, even if the authorities put the so-called botanical name, *Viola tricolor*, upon the labels, as I have seen done elsewhere? At any rate the responsible authorities must be expected to know that such is not the fact. I cannot help thinking that a great deal of the material so liberally contributed during the past three months will require a very severe overhauling before the end of the year.

As to archaic names, or the use of names



FIG. 105.—NARCISSUS FIRETAIL, R.H.S. AWARD OF MERIT, APRIL 13, 1920. A HANDSOME SULPHUR-YELLOW VARIETY WITH RED CROWN.

in the year to see the garden at its best, and so I was unable to examine many of those plants in flower which purported to be mentioned in the poet's works.

It is satisfactory to know that in response to the appeal of the guardians of Shakespeare's birthplace, much material for planting the garden has been forthcoming. But are the recipients as well as the donors perfectly satisfied that these contributions really represent the flowers of Shakespeare's time? It is quite true that they may bear the names of those he refers to, but if the plants are not the same as those that were grown in Elizabethan gardens the value of such a collection will be illusory, and will not convey to the visitor, or the zealous student of Shakespeare any proper idea of the flowers known and grown in Shakespeare's day.

Of course it may be assumed that those in charge of this interesting historical and literary floricultural undertaking will be able to overcome all difficulties in the way of identifying flowers that bore names not in use with us twentieth century flower gardeners—one nota-

differing from those existing to-day, a superficial glance at a list of Elizabethan plant names gives much food for reflection.

I stood side by side with a young infantry soldier and his lady friend in the Rotunda at Woolwich; they were examining with some amount of curiosity the section of a shrapnel shell, the bullets of which were packed as closely as berries in a bunch of Grapes. “That,” said the young soldier, “is what they call grape-shot.” As an old Artillery Volunteer I walked away and smiled. So it will be with some of the occupants of this new Shakespeare garden, unless considerable supervision is exercised. Fancy the budding amateur florist, the uninitiated tourist or the man in the street gazing upon some very fine specimens of modern garden Pansies—say, for instance, some of the *Odiei*, *Trimardeau*, or *Sutton's Mammoth* strain, and thinking they were replicas of the flowers contemporary with the great poet of Stratford-on-Avon!

Well might Ophelia say—

“And there is Pansies, that's for thoughts.”

C. H. P.

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PLANT COLLECTING ON IMAW BUM.—II.*

WE now find ourselves wading knee deep through scrub and dwarf Rhododendron, clambering over boulders, and finally climbing cautiously along razor-backed ridges.

Many Rhododendrons are in flower, but they are irregular and cautious in this respect; we do not find in the Alpine belt that blaze of colour we are accustomed to see at 9,000 feet, when nearly all the tree Rhododendrons flower simultaneously. On the other hand, we are almost certain to find some species in flower from May till October.

Amongst those to which I might draw particular attention are the following:—(i.) A dwarf shrub of two feet, rather bushy; flowers lemon-yellow with brick-red stamens; trusses corymbose, 5-8 flowered. I know of no familiar type with which to compare it. Seeds of this species germinated at Mr. A. K. Bulley's Sealand garden in February of this year. (ii.) A diffuse, wiry, undershrub, crowded with purple flowers. It resembles *R. intricatum*. This species also has germinated at Sealand. (iii.) Two, or perhaps three species of the campylogynum type. One has vinous red, bell-shaped flowers, borne horizontally on long, erect stalks, in pairs. Another has very similar flowers, but they seem to be always single instead of in pairs, so that this may be a different species in spite of external resemblance. Both have the small leaves brilliantly silvered beneath. A third species has flowers of a glorious flesh pink; it is not nearly so common as the other two, and is very similar to them when in fruit. A packet of seed sent to England may contain all three species; anyhow, the seeds have germinated at Sealand, and I live in hopes, for all three would be real acquisitions to the rock garden. (iv.) A species with delicate shell pink flowers, very small, not obviously Rhododendron like, borne in short spikes. This also is a heather-like undershrub. Though fairly common, it was much scattered amongst other species, never forming extensive colonies as do the campylogynum types mentioned above. Unlike the latter however, it set extremely little seed; it was rare to find more than one ripe capsule on a truss, the others having aborted. Quite often the whole truss aborted, and many a plant yielded no seed at all. The little seed I did get was all collected during two days of violent snow-storms and bitter wind, with numb fingers. But one good seed is better than a thousand bad ones—this little has germinated at Sealand. I have some recollection of a very similar species from Yunnan or Szechuan, but I cannot put a name to it. (v.) A creeping species with minute leaves and thin, wiry stems closely hugging the granite rocks. This plant would probably be overlooked were it not for the

erect flowering stems bearing large, widely open, rosy-purple flowers. The corolla is almost flat and salver shaped, speckled at the base with darker purple. Altogether it is a most striking species, something like *R. oresbium*, from Yunnan. This species, too, set very little seed, quite two-thirds of the capsules aborting. However, what I did secure was good, for it has germinated at Sealand.

Two rather larger Rhododendrons, forming tangled thickets up to two feet deep, and growing socially, are worthy of notice.

One of these, *R. euchroum*, is one of the first Alpine species met with when climbing the spurs of Imaw Bum. As soon as one meets with *R. euchroum*, one feels that one is within a few hours' climb of the Alpine belt. In the valleys it comes down even lower, lining the streams, backed by dense thickets of Bamboo below 10,000 feet. As it is found right up to the summit of Imaw Bum, it has a range of over 3,000 feet, which for an Alpine species is considerable. The higher one goes, the more restricted becomes the altitudinal range of species as a rule.

R. euchroum has trumpet-shaped flowers of flaming orange or brick red, and leaves which may be either rufous, or silver beneath. The latter appears to be restricted to higher altitudes, and may be a distinct variety. This species, too, has germinated at Sealand. The second species has crimson flowers, which however, in shape and character of truss, otherwise resemble those of *R. euchroum*. The leaves, however, are rather different, being concentrated in distinct rosettes at the ends of the twigs, and lacking the rufous or silvery covering beneath. The thin, red buds, protected by soft, fleshy looking scales, with the tips turned back, are also peculiar.

Unlike *R. euchroum*, which is a splendid seeder, this species set very little seed on Imaw Bum. But here the reason for this was manifest. Two out of three capsules harboured a small caterpillar snugly curled up inside feeding on the seeds. Yet such seed as was secured was good, and has germinated at Sealand.

I may remark here that the species of Rhododendron enumerated are by no means equally common, nor equally distributed, on the slopes of Imaw Bum. Although any of the species might be found on either flank, north-east, or south-west, in suitable localities; yet, on the whole; the species covering the protected north-east flank were quite different from those covering the exposed south-west flank, whence came the rain and snow and biting winds.

To the protected slope were chiefly confined those species enumerated under (iii.), (v.), and *R. euchroum*. To the exposed slope, those enumerated under (i.), (ii.), (iv.), and the crimson-flowered *euchroum*, as it may be called. Similarly, while the campylogynum species, *R. euchroum*, and the yellow-flowered dwarf, are extremely common on Imaw Bum, making up the bulk of the Rhododendron carpet; the *intricatum* species (ii.), number (iv.), and the crimson *euchroum* are much less common; while (v.) is rare. Still rarer is another creeping species, with larger glossy leaves, of which I failed to find a single flowering or fruiting specimen, though I found some old capsules.

Some of the north-east frontier Rhododendrons seem to have a peculiar habit of bursting into flower whenever a spell of fine weather breaks the monotony of almost everlasting rain. Thus the *intricatum* species I found in flower first in June, and again in October. *R. agapetum* was in full bloom in May, but it was also in full bloom in August. This latter, however,

is not an Alpine species, but a tree of the temperate rain forest.

To continue with the Alpine species, one of the commonest of all is a thin bushy shrub up to six feet high. Though it extends well into the Alpine belt, it also grows lower down amongst boulders in the stream beds, or mixed up with dwarf Bamboo at the tree limit. Often it grows socially; but in the Alpine region it is confined to the protected northern and eastern slopes. The flowers are straw yellow, dabbled at the base with rather sickly, yellowish-green spots. They are not particularly attractive, coming out in May or June before the leaves appear. This species also sets abundant good seed, which has germinated at Sealand.

Two other Alpine species, neither of them dwarfs, call for notice. They have the rather rounded, smooth leaves, silvered beneath, of *R. Wardii* and the same curved capsules. One has yellow flowers, and leaves covered with a glaucous bloom. It is a small, bushy shrub, not above two feet high on the scree, where it forms dense tangles, growing socially. But down in the Alpine valleys, where it occurs as low as 10,000 feet in the Conifer forest, lining the streams, it is a shrub 10 ft. high. The other has flowers which seem to vary in colour, and fatter, curved capsules. The leaves have no bloom. It does not occur on the exposed scree, but is common amongst the Bamboos at the tree limit, and on high ridges amongst the last straggling Fir trees.

There are several species of Rhododendron of which I found only a single plant on Imaw Bum. Unfortunately, they were generally not in flower. To go back for a moment to the very dwarf species, especially those of the campylogynum type, perhaps the most remarkable thing about them is that in spite of their minuteness, no one could ever mistake them for anything but Rhododendrons. They have all the characteristics in miniature.

It may be remarked here that the big tree Rhododendrons are all found in the middle forest belt—the temperate rain forest. Below that, in the Indo-Malayan forests, from 2,000 to 5,000 feet above sea level, although Rhododendrons are not rare, they are all shrubs, sometimes up to fifteen or eighteen feet high, but not bigger. Above the temperate rain forest, in the Conifer forest, say from 10,000 feet up, there are no tree Rhododendrons. Even a Nuttalli species, common on the Bum, which ranges up to over 12,000 feet, becomes dwarfed and gnarled above 10,000 feet. In the Alpine belt there are of course, the creeping species and small bushes already described.

There is a curious feature about the Nuttalli Rhododendron, which grows commonly on the steep, granite ridges leading up to Imaw. Here it is social, forming a sort of elfin wood on the precipitous slopes of the ridge, interspersed with Abies. It never grows erect on these steep slopes, as Abies does. In general, the Rhododendron makes an angle of about 45° with the slope, which itself averages 45°. Often the trunks are ascending, though rarely, even at the ends of the branches, becoming erect; sometimes they grow out horizontally for several feet, and may even remain so throughout their length. From their smooth trunks depend filmy ferns, but, unlike Abies, which is covered with moss supporting Utricularia, they hold very little moss growth.

Two possible explanations of this peculiarity suggest themselves—(i.) That they are shallow-rooted, so that the weight of the tree pulls them down out of the perpendicular as the earth

* The previous article appeared in *Gard. Chron.*, April 3, 1920, p. 168.

slips on the steep slope. It is certain that the soil is not deep towards the summit of the ridge; the bare rock crops out everywhere. On the other hand, these trees do not simply lean over, they do actually *grow* out horizontally. (ii) That the weight of the large leaves and heavy blossom on young trees pulls them down, and only as they grow older and stronger are they able to hold up their heads. But, again, there is the same objection—the trees do not merely lean over. Besides, they do not bear blossoms when they are young. Snow, however, might have the effect of weighting them down.

If the explanation is not mechanical, the fact is contrary to the accepted belief in negative geotropism.

It must not be supposed that Rhododendron is the only shrub that finds a place in the alpine zone of Inaw Bum. Quite a number of shrubs, especially on the protected side, huddle them-

which ascends higher than any other conifer, since it is able to squeeze itself into the most exclusive retreats.

After the Rhododendrons, however, it is the alpine flowers which attract attention. These I will describe in a subsequent article. *E. Kingdon Ward.*

SPECIMEN TREES.

PYRUS FLORIBUNDA.

It is nearly sixty years since this fine ornamental Crab was introduced from Japan. For many years after its introduction this plant and *Pyrus spectabilis* were without rivals among flowering Crabs, and, although newer varieties such as *P. Scheideckeri* and *P. Eleyi* may equal

shape, varying from 1½ inch to 4½ inches long. The flowers develop in clusters of about half a dozen, each blossom 1 to 1½ inch wide, rosy red in the bud stage, pale pink when open. Of their profusion the illustration gives ample evidence.

Pyrus floribunda is usually at its best towards the end of April. This year it was in full flower three weeks before its proper time, and its beauty was greatly marred by strong winds, heating rains, and slight frosts. The tree is obtainable from most nurserymen, with whom it goes commonly by the name of "*Pyrus Malus floribunda*." In the interests of correctness and uniformity it may be mentioned that in this association of names "*Malus*" is wrong, used as a specific term, for the tree under notice has no close relationship with the true *Pyrus Malus*, which is the common English Crab or Apple. It is, nevertheless, quite correct to call it "*Malus floribunda*," thus making *Malus* the generic

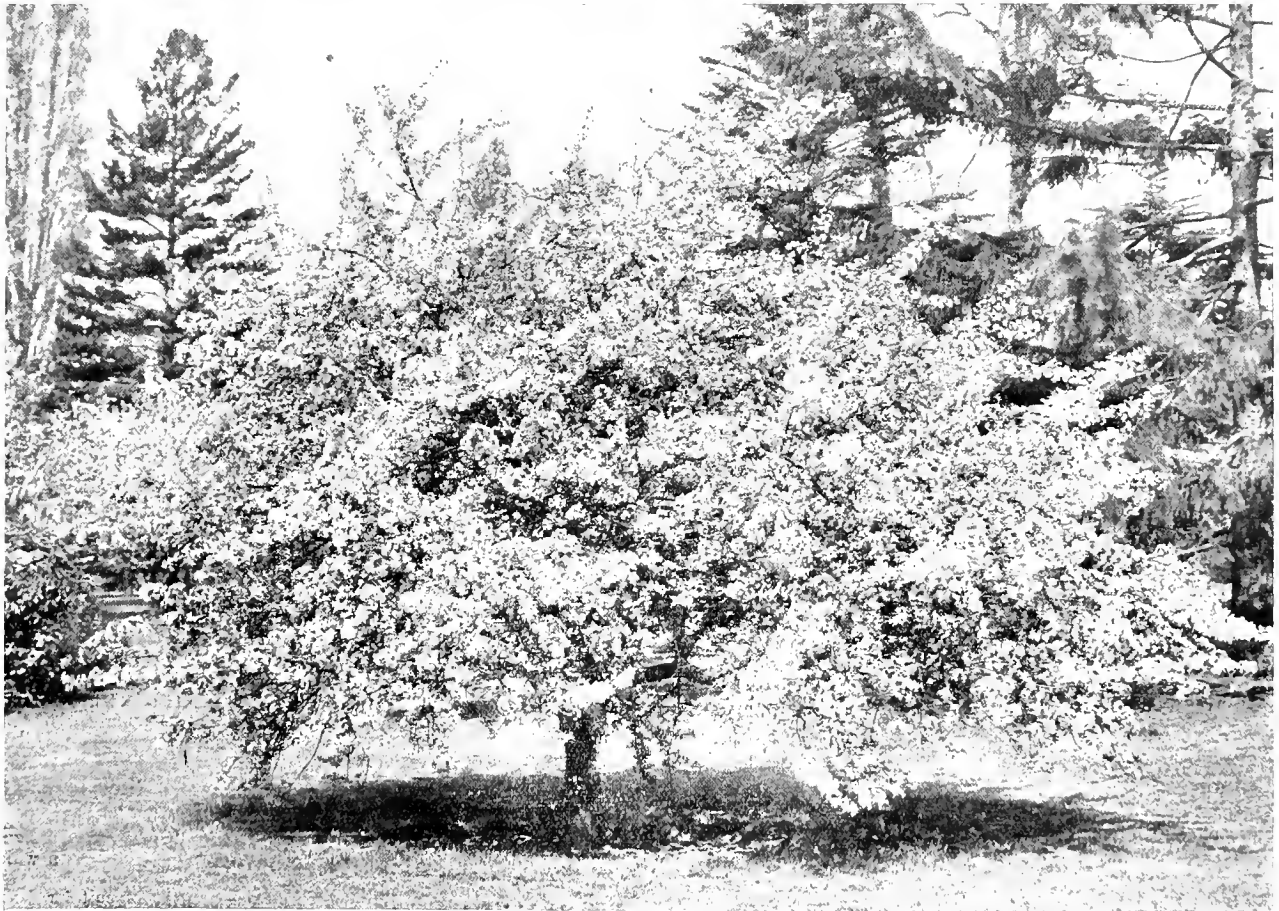


FIG. 106.—PYRUS FLORIBUNDA: SHOWING THE USEFULNESS OF THIS SPECIES AS A SPECIMEN TREE.

[Photo by E. J. Wallis.]

selves against friendly cliffs, or crouch amongst the boulders. There is *Spiraea Wardii*, for instance, a wiry, somewhat ragged shrublet, not above two feet high, with small white flowers. It occurs on the boulder scree, chiefly on exposed slopes. *Potentilla fruticosa*, with cream or lemon-yellow flowers, is found here too. It forms small, compact bushes which try to hide themselves from view altogether; though it also faces the driving rain. Two species of *Pyrus* are worth noticing. They are confined to more sheltered situations on the north face. One has pink flowers, scarcely scented, and dark green leaves, highly polished, so that on the rare sunny days in summer they shimmer like burnished silver. The other has sweetly-scented, cream-coloured flowers. Both have white berries. Sometimes the two species are found growing together. A small Cherry, with white flowers, is scattered amongst the big boulders which strew some of the slopes. The fruit contains a very large rugose seed, surrounded by a very thin flesh. Needless to say, it is quite inedible. There is also a Juniper,

or surpass it in colour and size of blossom, it remains one of the very best, not only of ornamental flowering Apples, but of all flowering trees. As a lawn tree of small or medium size it is unsurpassed. The beauty and graceful form of the plant are well shown in the specimen illustrated in Fig. 106, which is growing near the Water-Lily house at Kew. The tree will, in good soil, attain to a height of 20 to 30 feet, or even more, retaining its bushy, rounded form. It is perfectly hardy and grows well in any soil of good, or even moderate quality. Where the ground is poor, an occasional mulching of stable manure is a great help to growth.

The Crab has long been cultivated in Japan, and it would appear to be not a true species, but a variety of hybrid origin. A Continental botanist has suggested *P. Toringo* and *P. baccata* as its parents. The former seems very likely, as occasional leaves on strong, virgin shoots resemble those of *P. Toringo* in having a three-lobed or five-lobed shape. On flowering twigs all the leaves are ovate, and on strong growth of the current year they are also mostly of that

name, for recent botanical opinion tends to divide up *Pyrus* as conceived by Bentham and Hooker into several genera, of which *Malus* is one.

There is a beautiful form named *atrosanguinea*. I first saw this fine variety in Mr. Anthony Waterer's nursery at Knapp Hill, about thirty years ago. Its flowers are of a deeper, richer, rose shade than those of the common form. When out of bloom it may usually be distinguished by the shining upper surface of the leaves. In ordinary *floribunda* this is rather dull. The Crabs generally constitute one of the most ornamental sections of small, flowering trees, and many of them are attractive also when in fruit. They are hardy; *Pyrus baccata* is harder even than the common Apple, and their cultivation very simple. These floriferous trees are very ornamental in the background of shrub-beries, and they are splendid as isolated specimens on lawns or the ornamental grass-land of parks and paddocks. They have another value in gardens, for they may be forced and used as pot plants for the decoration of large glass-houses in late winter and early spring. *W. J. B.*

BEGONIAS FROM NOVEMBER TO MARCH.

In this article I propose to outline my method of maintaining a succession of lovely and useful Begonias in flower from November to March.

After many trials of various species and varieties, I have retained for the purpose only four kinds. These are *Begonia Gloire de Lorraine*, and the variety *amabilis*, *B. John Heal* and *B. Gloire de Sceaux*.

The propagation and culture of these kinds differs only in detail and may be carried out by anyone having a stove where a temperature of not less than 65° can be maintained. Cuttings of *B. Gloire de Lorraine* and its variety *amabilis* are available by the month of April. Only those proceeding from the root-stalks should be used. The cuttings may be inserted in thumb pots, but I have found greater success in the use of ordinary cutting boxes, about 6 inches in depth. These should be well drained and half filled with fine sand and sifted leaf-mould in equal quantities, with a layer of silver sand on the top. Insert the cuttings firmly, give the soil a good watering and cover the box with a sheet of glass; afford shade from bright sunshine. This method has been found to produce excellent results, and a fine root system which is little damaged if intelligently handled when placing the young plants in 3-inch pots at the first potting.

The compost for the first potting may be composed of one part loam, two parts "flaky" leaf-mould and sand. I am convinced that the period between this and subsequent pottings is the critical stage in the cultivation of these Begonias.

Before experience taught me other methods I followed the general practice of providing an elevated stage for the young plants in the stove, watering, shading, and spraying in the usual way. The results were far from satisfactory. The young plants did not grow freely, and consequently were easy victims to rust and thrip. To those who have sufficient room in a propagating case I would recommend placing the young plants therein for a time, giving them care in watering. Failing these facilities here, a box 15 inches deep and of a length suitable to requirements was made. Herein the young plants are bedded to the depths of the pots in Sphagnum moss. Sheets of glass are laid over the box, which is made so as to incline the glass a little, and this allows moisture to drain off easily at the sides and prevent "drip," which is so harmful to the foliage of Begonias. In these conditions the plants grow strongly and make branched specimens by the time larger pots become necessary.

Anticipating this repotting by a day or two the glass should be removed from the box to allow the occupants to become accustomed to the less congenial atmosphere of the stove. For this potting 6-inch pots are used with special attention to the drainage. The potting soil we use is not a complex "mixture," and consists simply of loam, two parts—the best procurable—the soil sifted out and the fibre retained; leaf-soil or mould of Oak or Beech from the previous years' "fall," in a flaky condition, and clean sharp sand. This compost, while retaining moisture, never becomes sodden like other mixtures I have used. Potting is best done loosely; just sufficient pressure is needed to ensure that no spaces exist between the ball of the plant and the sides of the pot. The parts of the stove exposed to the strongest rays of the sun will have been lightly shaded by this period. Hence, if the atmosphere of the house is kept warm and fully charged with moisture, the newly-potted Begonias will soon make good growth.

Watering must never be done carelessly, and special attention is required at this stage. While it is necessary to keep the whole ball of soil moist, it must never become wet. It were better to let the plants depend mainly, for a time on the moisture of the atmosphere. In due season an increase in the amount of water afforded, in proportion as growth advances, will become necessary.

Six-inch pots are the largest used for these Begonias, and grand specimens for use in the house or for conservatory decoration can be grown in receptacles of this size.

Of the winter-flowering Begonias, *B. John Heal* is the variety mostly grown here. The large, single flowers, of a brilliant rose-carmine colour, are profusely borne on large or small plants. So accommodating is this variety that a good stock is easily raised. In propagation and cultivation the conditions as previously stated for *Begonia Gloire de Lorraine* are adopted and the results encourage me to continue them. Propagation may also be effected from axillary shoots which are freely produced if the plants have been properly rested after flowering. Drying off is bad practice. Plants that have been properly cared for during the resting period commence growth freely and give abundance of early cuttings. After two or three years' growth tubers are formed, which may be treated very much in the same manner as those of the summer-flowering Begonias.

Begonia Gloire de Sceaux, the last to flower, is most satisfactory during the month of March. Words fail to express the wonderful combination of flower and foliage that gives a unique beauty to this Begonia. It is more adaptive than most of the other kinds, but is well suited if similarly treated. Cuttings from stock plants are plentiful towards the end of May and onwards. This Begonia needs more pot-room than the others mentioned. Thrips must be combated at all seasons, and cooler conditions should be provided during the flowering season of all varieties.

Begonia Gloire de Lorraine commences flowering in November and continues until the end of December. This is followed by the winter-flowering *B. John Heal*, which is at its best by Christmas and is passing fair even at the end of January. By this time, *B. Gloire de Lorraine* var. *amabilis* is in grand form and retains its loveliness until *Gloire de Sceaux* completes a sequence of much beauty and great usefulness. *Dunston, Perthshire.*

FOREIGN CORRESPONDENCE.

COLUMNEAS.

To the species and hybrids of *Columnea* mentioned in the note by *Foreman* (see p. 193), I beg to make a few additions, including possibly the finest of all, *C. gloriosa superba*, which does not seem to be so well known nor generally grown as its great beauty and value as a hanging basket plant warrants. In the *Revue Horticole* for 1-19, p. 904, was published a coloured plate of this comparatively new plant, native of Costa Rica. Its slender stems depend and bear small but thick purplish, velvety and opposite leaves. These stems may reach two feet in length, carry large flowers of the fiercest red colour, with dome-shaped upper divisions; these grow upright and expand one after another all through the summer and sometimes in winter, so long as the plant keeps growing. From this plant and a hybrid raised in Messrs. de Vilmorin's nurseries at Verrières, and named *C. vedrariensis*, a second hybrid has been raised, but not described yet, which shows a very great improvement upon its last named parent and the other upright growing kinds. It has partly retained the foliage characters of *C. gloriosa*, especially in the dark red tint. The large flowers are of a deeper red and only slightly streaked with yellow. Whitish fruits, the size of a small cherry, have set both on *C. gloriosa* and its hybrid.

C. vedrariensis is a hybrid between *C. Schiedeana* and *C. magnifica*; the flowers are similar in size to those of this latter species, more brilliant red, but more striped with yellow than are those of *C. Schiedeana*.

The plant is almost as strong growing and floriferous as *C. Schiedeana*. It is a good plant for the greenhouse, flowering from March to May, according to the temperature given. *C. vedrariensis* has been described and figured in the *Revue Horticole*, 16th October, 1918, p. 168.

C. Banksii, the hybrid raised by Mr. J. Lynch, late curator of the Cambridge Botanic Gardens, has not produced a single flower during the many years since it was presented to Verrières by its raiser. *S. Mottet.*

NOTICES OF BOOKS.

Garden Operations.*

MANY years have passed since Joseph Paxton published (in 1842) his *Calendar of Garden Operations* and generations of gardeners have been guided along sound lines and prospered in their handiwork by following its teachings. It has always been a matter for regret that means were not found to republish it during the war, for it was out of print just about the time the war began. If it could have been procured, even in its pre-war form, a multitude of new gardeners would have been benefited and those who were called upon to advise concerning the choice of a cheap and reliable book would have then been set no difficult task, for there was none cheaper than this in those days, nor any more reliable.

True, it contained notes and directions upon the cultivation of many plants which could not receive attention in the strenuous struggle to raise more and still more food—a struggle which must not end even yet—and it may have been this that caused the publishers to hold their hand for the time—but it also contained full and clear directions for the growing of all the vegetable crops, directions that would have come as a boon and blessing to thousands of novices up and down the land, and which would have helped to clarify and crystallise the teaching of many of their leaders.

The coming of this new edition has been too long delayed, but its appearance now in a new form and with a revised text will be none the less welcome. Like everything else, its price is increased, but it is still cheap. Instead of stiff paper, it has linen covers, and the paper on which it is printed is a little smoother, and therefore takes the illustrations a little better than did that of the old edition, and the book is a little thicker; the shape is handy, the print good, and the general get-up excellent.

It contains a calendar of doings in the garden for every month, arranged to fit average conditions and dealing with all the vegetable crops, hardy flowers, both herbaceous and shrubby, common greenhouse and conservatory flowers, as well as fruits of all kinds, and there are in addition chapters upon special subjects such as allotment holders' shows, potatoes, plants for special purposes, successional cropping, and so on. Special attention has, the introduction tells us, been devoted to the chapters on insect friends and foes and fungus diseases of plants, which are all treated in a way designed to assist in dealing with any attack with which the gardener may have to contend.

All is so good that it is difficult for the reader to find anything to criticise adversely, even though he be a reviewer whose clear duty it is to search out faults as well as virtues. Perhaps it is not altogether just to criticise because we do not think enough has been made of the cultivation of annuals in pots for greenhouse decoration; not altogether just, for this phase of gardening has not yet come into its own. It will be discouraged by the cost and difficulty of obtaining fuel, and we commend it to the careful attention of all possessors of frames and greenhouses, whether heated or not; later on it will commend itself. Further, we should like to have seen a little more note taken in the *Calendar* itself of the saving of crops in July, to the value of which attention has been directed in other parts of the book.

We lay the book down with the assurance that the revisions made have enhanced its value, and the certainty that its long career of usefulness will be given a new lease of life by the publication of the 1920 edition. *F. C.*

* *The Calendar of Garden Operations*, by members of the Staff of *The Gardeners' Chronicle*. New and enlarged edition. 174 pp., 8vo. (*Gard. Chron.*, London, 1920.) 2s. net, art linen.

WISLEY.

WHEN the late Mr. George Ferguson Wilson selected the sixty acres of land in the midst of the wild and rugged scenery of Wisley Common for the express purpose of forming a garden with as wild and natural a character as it was possible to make, he could little have dreamed that it would form the nucleus of one of the world's greatest gardens—for such, in truth, Wisley now is.

By passing into the possession of the Royal Horticultural Society, it was bound to become important in the horticultural world; but few in 1903 would have dreamed that in such a relatively short period these gardens would come to rival the old Chiswick gardens at their best. Many of us remember Chiswick only in its later and less glorious period; but in its zenith it was the centre of horticultural activities in Great Britain, and received the discoveries of some of the most successful plant-collectors that have left these shores, notably Robert Fortune, David Douglas, Don, Dampier Parks, Hartweg and Forbes.

The newer gardens are not less fortunate, for a great wealth of promising garden plants, representing the results obtained by modern plant collectors, including Mr. Reginald Farrer and Mr. George Forrest, are being carefully raised at Wisley, with a view to distribution to Fellows' gardens, as in the case of the older introductions. It is probable that few of our readers have had the opportunity of visiting Wisley during the period of the war and after, and it was with the special object of seeing what advance had been made, and the present condition of the gardens, that we paid a visit in the latter end of April. The first impression is one of satisfaction at the high state of cultivation that these gardens present. Even the most exacting skilled gardener could not but express approval of the condition of the plants and crops, and the way in which things are managed generally. Beautiful plants are always an object of delight to the lover of nature, and when to this are added an environment that is in complete harmony with them and the very best possible results in the plants themselves, there is little left for criticism.

It seems natural for almost everyone who visits Wisley to go first to see the rock-garden; and as the rock-garden is situated in some of the most delightful scenery of the whole gardens, visitors find ample to repay them for their pilgrimage (for the journey to Wisley is by no means an easy one, and although some complain of its inaccessibility, its remoteness is one of its charms). Spring is, of course, the time for rock-gardens, and the Wisley rockery is now so full of interesting and rare plants in flower that we can only refer to a few subjects that appealed to us. We may here remark that the little Alpine house at the summit of the rockery should not be missed, for it is filled with floral gems, all luxuriating in the most happy manner, and showing how wide the range of subjects is for those who take up the cultivation of this form of gardening. At several points of vantage on the rockery the rich orange flowers of *Cheiranthus Allioni* arrest attention, and the great masses of *Saxifragas* such as *bathoniensis*, *sanguinea superba* (a finer and deeper shade than the former) and *Wendock Best of All*, with flowers as large as a shilling, of a beautiful pale pink shade, certainly worthy of its name; *Viola gracilis* Mrs. Bowles, with flowers of a pleasing shade of Plum purple; *Iberis gibraltaria*, which forms huge bushes of pale satiny-mauve flowers; *Phlox subulata*; all manner of coloured *Primulas*, and a whole host of similar beautiful things give sheets of striking colour. There are rare gems in the alpine house also and in pockets and nooks of the rockery, such as delight the specialist, and of these we have only space to enumerate a few, including *Meconopsis Pratii*, a blue species something like *rudis*, but with a looser flower-spike; *N. integrifolia*, *Asperula suberosa*, *Haberlea ferdinandi-Coburgii*, with flowers like those of a regular *Ranondia*; *Cornus canadensis*, *Anemone nemorosa* *Allenii*, a pale lavender flowered form;

Lewisia Howellii, the flowers prettily striped with carmine; *Trifolium uniflorum*, the upright single flowers having a white base; *Thalictrum anemonoides*, having white Clematis-like flowers on long shoots, surrounded by a whorl of leaves; *Ranunculus aconitifolium*; and *Sedum spathulifolium*, the lower leaves of which are brick-red and the upper ones greyish, making a fine contrast, and appearing at a distance like a bed of red flowers close to the ground. The *Saxifraga* illustrated in Fig. 107 is *S. ligulata*, often called *Stracheyi*, and was in flower in February, when it formed a very imposing object.

The pools at the base of the rockery are very charming with hardy *Primulas* in flower, the unfolding fronds of *Osmunda* and other Ferns, and *Aponogeton distachyum* in full flower in the water. The *Rhododendron* garden was just becoming interesting, and already at the time of our visit, *R. kewensis* was in its full glory. In the little clearance where the Lilies are planted, *L. giganteum* was sending up shoots which, by their appearance, promised to eclipse those of any former years in stature. In one of the little bays of the *Rhododendron* garden the

season, but much spoiled by the incessant rain of April. Its close companion, a beautiful tree of *Pyrus floribunda*, was, however, in its full beauty, and it could not be surpassed as an ornamental flowering tree. Of the *Berberises*, we have only space to refer to one—the beautiful *B. Bergmannii*, variety *acanthifolia*—the new leaves of which are of a delightful bronzy tint, like that of the young Oak, and are thrown into strong relief by the dark green of the older foliage. The *Paeony* garden has been planted afresh for the purpose of conducting a trial of varieties, and the *Gentian* border near by formed a long ribbon of the richest blue—though we do not think the plants are quite so fine as we have seen them on some previous occasions.

The glasshouses call for a short notice, though one or two of them are filled with new Chinese plants; but before we enter, reference must be made to a magnificent patch of *Daphne Cneorum* on the low containing rock-wall near the path. This plant was luckily placed, more or less by chance, in the position it now occupies, and it has grown so well and flowered so profusely



FIG. 107.—SAXIFRAGA LIGULATA FLOWERING ON THE ROCK GARDEN AT WISLEY IN FEBRUARY.

ground was carpeted with *Arisarum proboscideum*, and, as the leaves were pushed aside, great profusion of flowers, with the curious tail and brown pouch which are responsible for the common name of "Mouse flower," were observed. Before we leave this part of the grounds, reference should be made to the fine plants of *Enkianthus campanulatus*, the best of the genus, and producing loose racemes of flowers, which are bell-shaped, and of a creamy-yellow ground-colour, streaked with red, and tipped with the same colour at the apex of the lobes. We refer to this plant because we consider it very suitable for decorative purposes when cut, as the blooms and leaves are both attractive and last a long time fresh; the plant is, moreover, of quick growth. Near this plant, a great patch of *Gaultheria procumbens*, forming a carpet, was covered with the pretty scarlet berries. Just beyond the *Rhododendron* garden is the new ground known as the "seven-acre," which is being laid out with broad shrubby borders, in which the newer introductions from China are being planted. A large pond has been formed in this part of the gardens, and will be planted with *Nymphaeas* and other aquatics, which do so well in this favoured spot.

The path leading to the *Berberis* garden and the *Paeony* quarters is by the fine old *Cherry*, which was as floriferous as ever this

that we doubt if a better example has been seen before in any garden. Of the new plants in the greenhouses, the more promising were *Primula werringtonensis*, of the *obconica* type, with bright rose flowers which become paler with age; this species has great promise as an indoor plant; *P. Wardii*, one of *Forrest's* introductions with a capitate head of rosy-mauve fragrant blooms, about $\frac{3}{4}$ inch across, and the scape some fifteen inches tall; *P. secundiflora*, *P. Loezii*, somewhat like *frondosa* in flower, but producing stolons which root readily, and in this way the plant spreads; a fine form of *P. Forrestii*, the strongly-scented blossoms being a rich yellow shade; *P. helodoxa*, a tall spike, bearing up to five whorls of primrose to bitter-cup-yellow blooms; *Aster likiangensis*, a very dwarf plant, but bearing a flower two inches across of a lavender blue shade and a central golden cushion; *Meconopsis rudis*, one of the blue-flowered species, but the colour is rather washy indoors; and *Primula pulchella*, a rather difficult but charming plant with lavender blue flowers, set off with a yellow eye.

The fruit and vegetable quarters are as interesting as the more decorative parts. Various trials of vegetables are being conducted, and the plants are already making excellent growth. They include a trial of thirty one stocks of summer Spinach of the round seeded type; 120

stocks of first-early Peas; 127 stocks of Broccoli; 76 stocks of second-early Potatoes; and, in the fruit quarters, 89 stocks of Strawberries. It is an excellent plan at Wisley to cultivate selections from previous trials of vegetables, as this enables the visitor to make easy comparison when the inferior ones have been eliminated. Thus, there was a bed of Leeks, all magnificent plants, in which Dobbie's International, Prizetaker, and Royal Favourite, appeared conspicuous. The same was done with Kale, and of these we were much impressed with New Sprouting and Hearting, the latter, with large, Parsley-like leaves, and forming a distinct heart. It was interesting, too, to notice that of the early Cabbages, Harbinger was far and away the earliest to heart, and splendid heads had been ready for cutting two weeks previous to our visit. April was also good, and this variety is of a darker colour, which some may prefer. Flower of Spring proved the best of the bigger type, but was distinctly later than those mentioned.

At the end of the vegetable garden, near the main walk, a series of beds has been planted with bearded Irises, for the express purpose of classification. As this Iris plantation is of considerable width, it should prove a fine feature when the plants are established. On the top of the hill, the fruit plantation provided a most gorgeous spectacle, for almost every tree was a mass of blossom. This, we believe, is the fine plantation which yielded so freely in 1918, when Apples were so scarce generally; and, judging by the promise this year, there should be a record crop. The trees themselves were the picture of health, and spraying had just been completed for the Codlin Moth, as it is the practice at Wisley to spray before, rather than after, the flowers are expanded.

Never before have we seen so many Lady-birds as there were amongst these trees, and it was interesting to see that they were clustering about the grease bands, presumably feeding on the insects which had been trapped on them.

Among other things of general interest at Wisley, the trials conducted by Mr. G. F. Wilson on the Onion Fly are being continued, and a trial of washes against Rose Mildew has been carried out. The planting of the Pinetum has also been continued. A large plot of additional land has been purchased close to the gardens, but as it is at present chiefly occupied by farmers, to whom it is leased, it cannot at present be incorporated into the Society's land. It will, however, be taken over gradually, and should prove very useful.

Much still remains to be done at Wisley, but considering the short space of time during which the Society has been in possession, it is remarkable how much has been accomplished. There is no doubt whatever of the value of the work being done under Mr. Chittenden's skilful guidance, and gardeners all over the country are under a lasting debt of gratitude to the R.H.S. and to Mr. Wright and the staff at Wisley for providing and maintaining such a beautiful and useful garden.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Adjectival Form of the Word "Fungus."—*J. P.* raises an interesting point on p. 209. Four adjectival forms are in use: "fungoid," "fungous," "fungal," and "fungus." *J. P.* points out the error arising from the use of "fungoid"; "fungous" is almost equally objectionable, for it means, according to the dictionary, "consisting of or growing like a fungus." Fungal, like algal, is usually used to mean "belonging to a fungus," as "fungal hyphae." "Fungus disease" can scarcely mean anything but "a disease produced by a fungus," unless it be "a disease of a fungus," and rarely indeed would the context fail to keep that meaning clear. Why not then retain the form "fungus disease," which has long been in use and is well understood? *F. J. C.*

Freesias and the R.H.S. Floral Committee (see p. 208).—It seems odd that the Rev. J.

Jacob should charge the above named Committee with "jumping to conclusions," and do the very thing himself. He writes that Robinetta "was evidently taken by the Floral Committee as having been raised by Mr. Dalrymple." What proof has he of this? As a matter of fact the Floral Committee did nothing of the sort. The Committee's concern on all novelties which come before it is the merit of the subject, not who the raiser is. And I venture to say that, on the occasion in question, it did not depart from its course. On a baseless assumption, therefore, Mr. Jacob considers he has a case for reform, thought it must tumble to pieces as all things without foundation do. As to "reform," isn't it enough that the Floral Committee is "reformed" annually? *E. H. Jenkins.*

—What seems to the Rev. J. Jacob to have happened at the Floral Committee when Mr. Dalrymple's Yellow Freesia was put on the table did not happen. The yellow variety was picked out from among others and received an Award of Merit. When the name was mentioned, someone said there is already a Freesia named "Buttercup." No one said: "this is Van Tubergen's 'Buttercup,'" presumably because no member present knew enough about Freesias to be certain. The chairman then ruled, and I hold rightly, that the award would stand, but a new name must be given. I think there is a very great deal to be said for many of Mr. Jacob's points which he raised at the annual meeting of the R.H.S., and some day, when I am back at normal, I hope to say them. *W. Cuthbertson.*

Apple Alfriston.—No date is known when this Apple was raised near Uckfield, Sussex, but it is nevertheless one of the good old sorts, probably one of the most regular croppers we have. During March and April the fruits are especially good and certainly excellent for cooking. In appearance the fruit does not, perhaps, rank with Crimson Bramley, for example, but I am not sure that the highly coloured varieties are the best cookers. *E. J.*

Aotus gracillima.—One of the most graceful of all New Holland or hard-wooded plants is *Aotus gracillima*, and withal not a difficult subject to grow well. At the present time plants of this class are not in favour, but the vagaries of fashion are so pronounced that they may regain their old-time popularity. *Aotus gracillima*, which was introduced in 1844, belongs to an order freely represented among Australian trees and shrubs, namely Leguminosae. If cut back hard immediately after flowering it pushes out long slender shoots, clothed with small, linear leaves. These shoots arch over in a very graceful manner, and are in spring furnished throughout the greater part of their length with brightly coloured blossoms, the keel being of a brownish crimson colour, and the rest of the flower yellow. This species requires much the same treatment as Cape Heaths and other hard-wooded plants, that is to say, it needs a compost mainly consisting of peat and sand, effective drainage, firm potting and careful watering afterwards. *W. T.*

Enham Village Centre for Disabled Men.—You have kindly noted from time to time the establishment and progress of the above undertaking. It is now in full working order, and there are 150 men in residence. We are making horticultural training one of the chief industries, and the men are making good progress. Another field is required for extending the cultivation for market, to give the men proper experience in marketing. We receive capitation grants from the Ministry of Pensions towards the current expenses of the men, but we have to find independently the capital required, and the Council will be grateful for donations from horticulturists interested in the curative treatment and training of disabled ex-Service men towards the amount of £250 needed at once for this purpose. Contributions will be thankfully received, either by the Secretary, Captain Hollis, 51, Lincoln's Inn Fields, or by myself, *Joseph Cheal, Chairman of Horticultural Committee, Crawley.*

SOCIETIES.

NATIONAL ROSE.

APRIL 27.—The spring show of the above Society, which was held at Vincent Square in conjunction with the R.H.S. fortnightly meeting, was responsible for many exhibits of especially fine Roses and, in spite of the inclement weather, induced many enthusiasts to attend.

As was only to be expected, groups of Roses were not very numerous, but sufficient were staged to illustrate the great skill of our growers, for all the plants were clean and healthy, and even profusely flowered, while the majority of the cut blooms were excellent. The same praise cannot be extended to the decorative classes, which, generally, were of only average merit.

NEW ROSES.

To the new seedling Roses submitted for judgment the Council awarded one Gold Medal and three Certificates of Merit. All of these novelties were more meritorious than on some previous occasions, and were characterised by good habit and clean foliage.

GOLD MEDAL.

Rev. F. Page-Roberts (see Fig. 103).—A beautiful H.T., recommended for exhibition and for garden decoration. It is a full bloom, with much of the Maréchal Niel form, good both in bud and fully expanded. The yellow colour varies from a good clear shade to deep orange, flushed with apricot, and is nearly always light at the tips. The blooms are pleasantly fragrant. Shown by Messrs. B. R. CANT AND SONS.

CERTIFICATE OF MERIT.

Padre.—A brilliant H.T. Rose of good shape as buds, though it appears that the blooms will be loose when mature. The colour is cherry cerise, with a suggestion of magenta. Shown by Messrs. B. R. CANT AND SONS.

Mrs. Curnock Sawday.—A dwarf H.T., recommended for garden and under glass. A well-shaped bloom of bluish-pink colour and pleasant perfume. The foliage is clean and the blooms are borne on long, stout stems. Shown by Mr. ELISHA J. HICKS.

Constance Casson.—This H.T. may be described as a much glorified Gorgeous, which variety it resembles, though the petals have much more substance and are tinted with old gold. It is a very attractive bloom. Shown by Messrs. B. R. CANT AND SONS.

OPEN CLASSES.

The 1st prize for a group of pot Roses and cut blooms was won by Mr. ELISHA J. HICKS, who made a fresh and attractive display, principally of pot plants. The standards of Mrs. Elisha Hicks and Mrs. Geo. Norwood (H.T.'s), and Orleans, Ellen Poulsen and Mrs. Cuthbush, of the polyantha varieties, were particularly good. Of the cut blooms, a central stand of Mrs. Elisha Hicks was splendid and served to draw attention to smaller, but equally good, vases of such as Mme. Edouard Herriot, Climbing Hillington and Chas. E. Shea.

In the class for a group on staging Messrs. B. R. CANT AND SONS were placed first. Their blooms of Covent Garden, Emily Gray, Snow Queen, Golden Ophelia, Esmeé, Padre and Constance Casson were especially fine. 2nd, Mr. GEO. PRINCE, whose attractive arrangement included a plant of the curious little Rosa Watsoniana, with cut blooms of Paul's Scarlet Climber, Harrisonii, American Pillar, Cupid and C. V. Haworth.

Mr. E. J. HICKS was awarded 1st prize for six Pillar Roses, which included three of his own seedlings. Star of Hurst and Belle of Hurst are single white varieties of good size, white Queen of Hurst is a splendid double. All will have prominent places in gardens in the future. Mr. HICKS was also awarded 1st prize for 25 dwarf polyantha Roses, which included splendid plants of Ellen Poulsen and Mrs. Cuthbush.

Messrs. B. R. CANT AND SONS found no competition in the class for 24 blooms of exhibition Roses, and were awarded 1st prize for a most

creditable collection, which was characterised by size and quality. The very best varieties were Snow Queen, Constance, Casson, Sallie, Covent Garden, Mrs. John Laing, Phoebe, W. R. Smith, Lyon Rose and Capt. Hayward.

With a slightly inferior collection, Mr. E. J. HICKS was awarded 1st prize for 18 blooms, among which he had fine examples of Caroline Testont, Candeur Lyonnaise and Frau Karl Druschki.

Mr. A. T. GOODWIN showed a dozen splendid, richly-coloured blooms of Maréchal Niel. The best 12 blooms of any variety other than Maréchal Niel was of Constance Casson, by Messrs. B. R. CANT AND SONS; 2nd, Mr. ELISHA J. HICKS, with very creditable blooms of Mrs. Elisha Hicks.

The only exhibit of three baskets of cut Roses was by Mr. ELISHA J. HICKS, who was awarded the 1st prize for decorative examples of Lady Hillingdon, Mme. Edouard Herriot and Mrs. George Roupell.

Mr. HICKS was the only exhibitor of six new Roses put into commerce since 1916, and was awarded 1st prize for good blooms of Chas. E. Shea, The Queen Alexandra, Alex. Ernesti, Mrs. Dunlop Best, Mrs. Elisha Hicks and Raymond.

AMATEURS' CLASSES.

Mr. G. A. HAMMOND, Burgess Hill, had a dozen splendid blooms well-deserving the 1st prize awarded him. The very best were William Shean, Mrs. Geo. Shawyer and Mrs. Foley Hobbs.

There were two awards for six blooms, and Mr. H. L. WETTERN, Oxted, was easily first with splendid blooms of such as Madame A. Chatenay, Mrs. E. Mawley and William Shean.

Mr. HAMMOND had good blooms of William Shean and was awarded 1st prize in the class for six blooms of any variety.—Mr. WETTERN was also first with a praiseworthy basket of cut Roses.

The only group of cut Roses was by Mr. G. A. HAMMOND, who had a very fresh and clean collection and received the 1st prize.

DECORATIVE CLASSES.

In the Nurserymen's Section there were only two dinner table decorations, and these were of fairly even merit. The 1st prize was awarded to Mrs. A. BIDE, while Mr. E. J. HICKS was second.

In the Ladies' Amateur Section there were six tables, and here the awards were the subject of considerable criticism by the visitors, who rightly preferred the lower-placed arrangements, which were certainly more graceful and attractive. The 1st prize was awarded to Mrs. COULSTON HALE, Warminster; 2nd, Mrs. BARTON, Colchester; 3rd, Mrs. COURTNEY PAGE, Enfield.

Mrs. COULSTON HALE had a graceful vase of cut Roses, and received the 1st prize; while Mrs. COURTNEY PAGE was 2nd with a more restrained vase of fine blooms of Melody.

A splendidly-arranged bowl of Joanna Bridge won 1st prize for Mr. ELISHA J. HICKS; 2nd, Mrs. A. BIDE.

The best bowl was by Mrs. F. CHARLTON, who used blooms of Chas. E. Shea to advantage; 2nd, Mrs. COURTNEY PAGE; 3rd, Mrs. COULSTON HALE.

NATIONAL AURICULA AND PRIMULA.

APRIL 27.—The annual show of the Southern Section of the above Society was held at Vincent Square on this date in conjunction with the R.H.S. fortnightly meeting. In this unusual season the date was too late for southern growers. Consequently the show was a small one, though there was some particularly attractive plants to be seen.

As usual, Mr. JAMES DOUGLAS was the most prominent trade exhibitor. He contributed a splendid non-competitive collection of Alpine Auriculas, which included many beautiful forms of this very attractive type of the plant. His first-prize collection of 12 "dissimilar" Auriculas included Gordon Douglas (the premier white-edged variety), Wm. Smith, Druid, Gleam and several especially well-marked seedlings.

Mr. DOUGLAS was also first for twelve and six Alpine Auriculas, respectively, both exhibits in-

cluding magnificent plants of Prince of Tyre; while Kaffir, Majesty and Golden Dustman were also splendidly represented.—Mr. J. T. BENNETT-POE, who was second in the class for six Alpine Auriculas, was awarded the James Douglas Memorial Cup.

Mrs. GROVES, Brondesbury, was first with four Alpines in Class 14 and six Alpines in Class 16, which is for amateurs who grow their plants unaided. She had excellent plants of Gertrude and Unexpected.

The single-plant and seedling classes were not well represented. First prizes were won by Mr. H. A. SOAMES and Mr. H. S. BARTLETT.

Mr. GEO. MILLER was awarded the first prizes for Polyanthuses and Primroses, which he showed in very good condition, and he also had an attractive collection of species and varieties of Auricula and Primula.

growers promised to help, an exhibitions' committee was formed with Mr. Brunton as Chairman, and Mr. Jolis was appointed showman. The latter gentleman made a preliminary trip to Antwerp, and when he was able to report what space the British exhibits might occupy, and the amount of labour, stands and etceteras, local authorities were prepared to provide, organisation proceeded rapidly. Greatly daring, the Committee agreed to fill the whole of the central space of the new Floral Hall at the Antwerp exhibition, and the Belgian authorities promised to give every facility for transporting the exhibits from Dover. One large railway van load of accessories was taken over on Thursday, April 29, but the flowers and most of the plants were taken over on April 30, accompanied by the majority of the British party, under the guid-



FIG. 108.—H. T. ROSE REV. F. PAGE ROBERTS. (See p. 232.)

ANTWERP FLORAL EXHIBITION

At the first of the floral exhibitions held in connection with the Antwerp Fêtes British horticulture made a splendid effort, the Chamber of Horticulture achieved a great success, and British Carnation and Rose growers covered themselves with glory. It is worthy of mention that the Ministry of Agriculture invited the Chamber of Horticulture to take a practical interest in the flower exhibitions at Antwerp, and particularly in the opening function on May 2. The Chamber invited its federated associations and members to assist. The response was not very encouraging, but eventually a few traders and Covent Garden

ance of Mr. Arnison, who acted as courier and friend generally. The difficulties presented themselves at Dover and Ostend, not at Antwerp, but great relief was experienced when it was found a few hours later that the employees in the goods department of the railway intended to celebrate May Day by ceasing to work! An early start was made on May 1 and although midday was the time appointed for having everything ready for the consideration of the jury, one o'clock arrived before the display was completed. The Britishers, including several ladies, worked splendidly, and though they finished an hour after the time allowed, they were ahead of several of the Belgian growers,

and, after all, judging did not commence until about 4 o'clock. Soon after 1 o'clock a command was received to lunch with the officers of the Exhibition, and to those who are acquainted with the usual procedure of an official luncheon on the Continent, we need not explain why the judging was deferred. M. Chas. de Mosschere, President of the Committee of the International Shows, presided and was supported by the President of the Administration of the Antwerp Fêtes; M. E. Nagels, Secretary of the horticultural section, and M. René Van Rysselberghe, director of the Antwerp plantations; Mr. George Monro, Jr., President of the British Chamber of Horticulture; Comte Oscar Le Grelle, M. H. B. Beernaert, of the Flandria Company, Ghent; M. Pauwells and many others, including several Dutch growers.

The British party comprised Mr. Geo. Monro, Jr., Mrs. Monro, Mr. and Mrs. Brunton, Mr. and Mrs. R. H. Page, Mr. Chas. H. Curtis, Mr. C. Engelmann, Mr. W. E. Wallace, Mr. Willis, Mr. Laurence Cook and Mr. Jolis.

The International Horticultural Exhibition at Antwerp is, as already suggested, a section of the Antwerp Fêtes of 1920, arranged in conjunction with the Seventh Olympiad, the whole being under the patronage of the King of the Belgians. There is a permanent horticultural exhibition, but this is not far advanced. Temporary exhibitions, of which the one under consideration was the first, have been arranged throughout the year, and the concluding one, in October, the twenty-second of the series, will be of Chrysanthemums.

More delightful surroundings for an exhibition could scarcely be imagined. A part of the lovely Parc de Rossignols—Nightingale Park—presented to the City of Antwerp by Comte O. Le Grelle, just outside the old ramparts, has been enclosed for the purpose, and the great floral hall occupies a central position, quite distinct from other buildings, and is a lofty and light building, eminently suitable for the purpose, except that greater facilities for ventilation would be an improvement.

A detailed account of the show will be given in the next issue.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 1.—Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, D. A. Cowan, J. C. Cowan, A. Comingsby, J. Evans, A. Hamner, J. Howes, A. Keeling, D. McLeod, J. Lupton, W. Shackleton, E. W. Thompson, and H. Arthur (Secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Odontoglossum crinum Shackletonii (Luciana × ardentissimum Robinsoniae), a large well-shaped flower, heavily blotched with brown and with petals of a purple shade; *O. crispum Troytown*, a large white flower, very round in shape and of good substance; *O. Elfrida var. magnificum* (Uro Skinneri × ardentissimum), the sepals with large and the petals with small spots; lip flat; *Odontoda alcantara var. rubra* (Oda Cooksoniae × eximium), flower of solid maroon colour, sepals edged white; *Oda Chanticleer var. superba* (C. Noeziana × Oda), Cooksoniae), a large flower of brilliant light scarlet colour; from P. SMITH, Esq.

Brassa-Cattleya Cliftonii Gratrix's var., a large flower of good even colour and with a large lip; *Lycaste Skinneri Royal Beauty*, the segments are brilliantly coloured; from S. GRATRIX, Esq.

Lycaste Skinneri Cazador, from Mrs. BRUCE and Miss WRIGLEY.

AWARDS OF MERIT

Odontoglossum crispum Gladiator, *O. Titus* (crispum-Harryanum × eximium), *Cattleya Mendellii Bride'smaid*, *Laelia-Cattleya Joy Sander*, from S. GRATRIX, Esq.

Lycaste Skinneri delicatissimum, from Mrs. BRUCE and Miss WRIGLEY.

Obituary.

Jacob William Moorman.—The sad news reaches us of the death, on the 1st inst., of Mr. J. W. Moorman, for many years superintendent of Victoria Park, London. Mr. Moorman was a well-known personality in the horticultural world and was a regular attendant at the meetings of the R.H.S., where he assisted in the deliberations of the Floral Committee, of which he was a member for several years. He was born in May, 1849, and commenced his gardening career at Teignmouth. He gained further experience in such well-known places as Poltimore Park, Devon; Poynton Towers, Cheshire; Messrs. J. Veitch and Sons' Nurseries, Chelsea; and Sulby, Warwick, previous to becoming head gardener at Coombe Bank, Kingston, where he remained for seventeen years. Subsequently he became associated with the Metropolitan Gardens Association, and laid out Myatt's Park, Camberwell, of which he was the first superintendent. In 1888 he was appointed by the London County Council to the charge of Brockwell and Dulwich Parks, and five years later



THE LATE J. W. MOORMAN.

was transferred to the more important post of superintendent of Victoria Park. He remained at the latter place until his retirement in June, 1910. Mr. Moorman was a very capable gardener and especially interested in the cultivation of Chrysanthemums, for which he won many awards at exhibitions. For several years he served on the Committee of the National Chrysanthemum Society and for a time acted as Treasurer. On two occasions Mr. Moorman gained the highest award—the Gold Medal, of the R.H.S. for collections of Hyacinths, Tulips, and other spring flowering bulbs. He also secured many other high honours at metropolitan exhibitions, including the shows of the Royal Botanic Society, those at the Crystal Palace and Alexandra Palace. Mr. Moorman was keenly interested in the horticultural charities and was a Committee-man of the Royal Gardeners' Orphan Fund up to the time of his death. He was a frequent and valued contributor to these pages and in 1909 wrote a series of articles in the *Week's Work* on the management of public parks and gardens.

William McKenzie.—We much regret to announce the death of Mr. William McKenzie, late gardener at Glenmick House, Aberdeenshire, at the ripe old age of 87. Entering the service of the McKenzie family in 1871, deceased served under three generations—Sir James McKenzie, Sir Alan McKenzie, and latterly Sir Victor McKenzie. When Glenmick House was built, in 1871, Mr. McKenzie laid out the fine gardens and policies there, and also at Brackley, another Highland seat of the McKenzies. An efficient and skilful gardener, Mr. McKenzie was greatly esteemed by his employers, and the kindly way he was treated by the family up to the end proved how absolutely he had gained their confidence. The funeral took place from Kimberley House, Ballater—not far from the scene of his life's work—to which he

retired a few years ago, and was very largely attended. A typical Highlander, of a most genial and kindly disposition, and highly esteemed by all who came in contact with him, his memory will long be cherished. Mr. and Mrs. McKenzie celebrated the diamond jubilee of their marriage on New Year's Day, 1919.

W. Sharp.—The death is announced of Mr. W. Sharp, for the past 31 years gardener at Freelands, near Perth. Mr. Sharp was a specialist in Orchids, of which he raised many seedlings, the earliest of these being *Masdevallia Curlii*, which he raised while gardener at Priorwood, near Melrose. He was a well-known exhibitor at the chief Scottish shows, where his displays of Orchids invariably held high place and gained many medals and prizes. Mr. Sharp was 68 years of age.

ANSWERS TO CORRESPONDENTS.

INSECT FOR NAMING: E. S. C. The insect is *Bombylius major*. It belongs to a family of flies whose larvae are parasitic on other insects, in the case of *B. major* probably on wild bees. In the adult stage it is harmless, seeking its nourishment from flowers. It is therefore in no way harmful to fruit bushes.

MARCHEL NIEL ROSE: G. W. T. You should have shortened the long growths about half or a little more; the buds near the base would then have burst into growth. In growing this Rose under glass it is necessary to have the plant well established, and this will take three or four years; the blooms should be sacrificed until this object has been attained. The subsequent treatment then consists chiefly in shortening the young growths to about six inches, more or less, according to their strength, and cutting out the weak shoots entirely. This work should be done at the end of the growing season. If there is more than one long growth on your plant, cut one back to a few inches of the base to induce the dormant buds to break. If there is only one, the dormant buds may be induced to break into growth by bending down the shoot in a semi-circle and tying it in position after growth has commenced. During the resting season climbing Roses should be grown in a cool temperature; fire-heat only tends to weaken the plants.

NAME OF PLANT: L. S. A. *Cotoneaster horizontalis*.

PRUNING FRUIT TREES IN AUTUMN: M. G. To follow out either of the methods suggested would eventually lead to failure, as it is obvious that trees may be injured by an excess of fruit-bearing spurs, even more readily and seriously than by an excess of growth. The happy medium is the best course to follow, hence the importance of reducing the number of either wood shoots or fruit spurs, according to the health and vigour of the tree. Knowledge and judgment are necessary to combine the two methods, more especially under the present up-to-date methods of fruit culture, with more fertile stocks. The condition of the roots has a great bearing on the formation of an excess of either wood or fruit spurs, and excess of growth can best be regulated by root-pruning.

RHUBARB RUNNING TO FLOWER: E. M. S. Rhubarb, like any other flowering plant, endeavours to produce bloom and seeds; this is a natural effort on the part of the plant to reproduce itself. In ground that is fairly heavy and rich the Rhubarb generally makes strong growth and throws up flower spikes, but in very poor soil it rarely flowers. Moreover, when Rhubarb is "pulled" severely, its ability to flower appears to be reduced considerably. The flowering growths should be cut out as soon as they form.

Communications Received.—B. D. J.—J. D. C.—J. R.—R. A.—C. S.—R. W. R.—J. C.—E. J.—C. W. T.—G. H.—S. A. E.—J. G. S.—F. N.—R. T. G.

THE Gardeners' Chronicle

No. 1742.—SATURDAY, MAY 15, 1920.

CONTENTS.

Agricultural Botany, National Institute of	235	Nursery, fire at a	235
Allotment, produce from a 10 rod	242	Orchid notes and gleanings—	
Apple Afriston	243	Dendrobium Pierardii and D. primulinum	239
Apples, double worked	243	Masdevallia coccinea and M. ignea	239
Bath and West of England Show	236	Miltonia Bleana	239
Books, notices of—		Reine Elisabeth	239
Lawns and Greens	237	Orphan Fund, Gardeners' Royal	236
The Flora of Ches-stow	237	Potato clamps, Black-leg in	235
Burby Park, Horse-chestnuts in	236	Silver Leaf disease of Plums	235
Cultural memoranda—		Societies—	
Leaves, propagation by	242	Antwerp Floral Exhibition	244
Darfield Rectory, Yorkshire, the garden of the Rev. Walter Stonehouse at, in 1640	240	Manchester and North of England Orchid National Auricula and Primula	247
Food production, increased	235	Royal Caledonian Horticultural	235
Forest tree pollen, the "flight" of	236	Royal Horticultural	245
Freestias and the K.H.S. Floral Committee	243	Royal National Tulip	247
Fritillarias	241	Tomatoes, artificial pollination and yield of	236
"Gardeners' Chronicle" seventy-five years ago	236	Trade notes	247
Glasgow Parks staff	236	Trees and shrubs—	
Hampton Court gardens	243	Enkianthus campanulatus	237
Horticulture in Austria, the present situation of	242	Trochodendron aralioides	237
Lancashire Potato trials	235	Zanthoxyla apiifolia	237
		Week's work, the	238, 239

ILLUSTRATIONS.

Antwerp flower show, views of the	236, 242, 243 & 244
Darfield Rectory, plan of the garden at, in 1640	241
Enkianthus campanulatus, flowering spray of	237
Tulip Firenze	239

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 51.8°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, Wednesday, May 12, 10 a.m.: Bar. 29.7; temp. 67°. Weather—Bright.

Silver Leaf Disease of Plums. Messrs. Brooks and Bailey, in continuation of their previously published investigations, have described recently the results of their later researches into Silver Leaf Diseases*. The most interesting of these results relates to experiments in injecting antiseptics into trees attacked by Silver Leaf. Among the antiseptic substances used were sulphate of iron, neo-salvarsan, and certain aniline dyes—eosin, methyl violet, congo red, gentian violet and methylene blue. The experiments were necessarily carried out each on a small number of trees, and at all events in those in which aniline dyes were used resulted in a larger proportion of recoveries than have been observed by the authors to occur naturally. As Messrs. Brooks and Bailey observe, their experiments are of more scientific than practical interest, since a method of treatment invoking the disturbance and cutting of roots is not suitable of application to orchards. Nevertheless, it is to be hoped that the authors will continue this line of investigation, for it by no means follows that what now seems impracticable may yet provide a key for the effective treatment of this disease. In the meantime there remains nothing but to employ ceaseless vigilance and the drastic methods of surgery to Plum orchards affected by Silver Leaf disease. We know the nature of the enemy—*Stereum purpureum*—and its modes of attack. Until a cure is discovered there is nothing for it but to cut out all diseased

wood, in the hope of suppressing the attack in the tree affected, and of preventing neighbouring trees from being attacked likewise.

How implacable is the advance of the disease once it has obtained a hold on an orchard is indicated by the following statistical record made by Mr. L. Neaverson, in a Victoria Plum orchard near Wisbech. In the case of this orchard the spread of Silver Leaf occurred in spite of attempts to arrest it by plugging trees with sulphate of iron, and notwithstanding the fact that the most severely affected trees were cut down each winter:—

No. of trees	1910	1911	1912	1913	1914	1915	1916	1917	1918
standing	154	128	108	100	87	73	67	49	40
Healthy trees	74	78	69	60	50	37	29	23	16
Slightly affected	40	21	18	18	17	20	20	15	17
Badly diseased	40	29	21	22	20	16	18	11	7

It is evident that if the remedial measure of removing diseased wood is to be effective it must be carried out in the most meticulous manner. To leave dead wood either on the trees or in the orchard is to provide a breeding ground for the fungus, and to ensure the scattering of countless numbers of spores on the healthy trees. Of these numbers some fall on wounded surfaces, germinate, penetrate to the living tissues, and infect them. It would be an interesting and instructive experiment for the Ministry of Agriculture to undertake the carrying out of sanitary preventive measures in one or two typical orchards, with the object of demonstrating beyond cavil the possibility of arresting this disease, which, when left to run its course, works destruction on all the more susceptible varieties of Plums. There would, we think, be no difficulty in arranging for one or more orchards to be set aside for this demonstration, and, if rigorously conducted, it should serve, not only for the purpose of demonstration, but also to increase knowledge with respect to the operations and their timing necessary to arrest the progress of Silver Leaf.

Lancashire Potato Trials. Lancashire is the second largest Potato-growing county in England, with an average area under this crop, in the decade, 1910-19, of 45,430 statute acres. Inasmuch, moreover, as a large part of the Potato land lies in the scheduled area south of the Ribble—where only varieties immune to wart disease may be planted—it is of the first importance for Lancashire farmers to know which resistant varieties are the best and most profitable for planting in their district.

The Ormskirk trials, designed as they are for the purpose of testing resistance, and of necessity carried out under other than field conditions, require to be supplemented by field trials and hence the Secretary of Agriculture of the County Council for the County Palatine of Lancaster, Mr. T. Milburn, has organised in the county a comprehensive scheme of Potato trials under farm conditions for the purpose of ascertaining which of the immune varieties are the best croppers and generally most suitable for profitable farm cultivation in the county, and, particularly, which show most resistance to Late Blight and possess the best cooking qualities.

The varieties included in the trials were:—Ally, Arran Comrade, Great Scot, Kerr's Pink, Majestic and Tinwald Perfection. Scotch seed of all these varieties was used, and was planted in ten stations, one hundredweight of seed of each variety being planted under uniform conditions.

The heaviest crop was given by Ally, which yielded in 1919 (average of 9 centres) 11 ton 18½ cwt. per acre; Kerr's Pink was

second with an average of 11 ton 8¾ cwt.; Great Scot next (11 ton and ¼ cwt.) and Majestic fourth (9 ton 9½ cwt.).

In 1919 Late Blight was not prevalent, but where it occurred, Arran Comrade suffered most. Majestic, both in 1918 and 1919, was disappointing and Tinwald Perfection gave its best results on black soil—a fact which growers in Eastern counties should note.

National Institute of Agricultural Botany.—Mr. Wilfred H. Parker, M.A., has been appointed Director of the National Institute of Agricultural Botany. The Institute, including the Official Seed Testing Station for England and Wales (the Director of which is Mr. Saunders, B.Sc.), will be housed at Cambridge in a large building which will be completed by next summer. Meanwhile, the temporary office of the Institute is at 72, Victoria Street, London, S.W.1.

Royal Caledonian Horticultural Society.—The report of the Council of the Royal Caledonian Horticultural Society contains the announcement that the union of the Society with the Scottish Horticultural Association is again under consideration, and that it is proposed to unite the two societies under the charter of the Royal Caledonian Society. The Council announces that an autumn show will be held on September 8 and 9 of this year.

Increased Food Production.—The lesson taught by the serious shortage and high price of food in Ceylon during the war has apparently been laid to heart by the authorities, who announce in *The Tropical Agriculturist* for March 20 that it is proposed to increase considerably the area in the island under food crops, and recommend that supplies of seed which are apparently available should be saved for planting purposes. Similarly the Department of Agriculture, Federated Malay States, is urging, in a special bulletin, *Food Production in Malay*, the need for increased local production.

Fire at a Nursery.—A fire occurred at Messrs. John K. King and Son's premises, Coggeshall, Essex, on the 6th inst. The larger warehouse and its contents were destroyed, but the other warehouses were untouched. Messrs. King inform us that they will be able to execute orders as usual.

Exhibition of Country Produce and Handicrafts.—A show, organised by the National Federation of Women's Institutes, will be held at the Royal Horticultural Hall, Vincent Square, Westminster, on the 15th, 17th, 18th and 19th inst. Each day continuous lecture demonstrations will be held on various forms of home crafts and rural industries, and the programme includes plays under the auspices of the British Drama League; morris and country dances by members of the English Folk Dance Society, concerts, etc. The Hon. Exhibition Organiser is Miss Alice Williams, National Federation of Women's Institutes, 14, Idlesleigh House, Caxton Street, London, S.W.1.

Black-leg in Potato Clamps.—Messrs. Paine and Haenseler draw attention* to the importance of constructing Potato clamps properly as a means of preventing this disease. The symptoms of Black-leg disease have been shown to be produced by artificial inoculations of Potatoes with *Bacillus atrosepeticus*, but it remains uncertain whether it is the sole agent of the disease. The authors draw attention to a device for securing ventilation of the clamp which is frequently used in Germany. Poles are laid along the ridges after the first layers of straw have been placed over the Potatoes. Other layers of straw are laid on the poles and then the covering of earth is put in position. By this means air channels running along the whole length of the clamp are provided. To prevent rats and mice from gaining access to the clamp the open ends of the channels are blocked by means of galvanised wire.

*Derny in Potato Clamps due to Black-Leg, *Journal of Ministry of Agriculture*, vol. 27, 1, April, 1920.

* Silver Leaf Disease; including Observations upon the Injections of Trees with Antiseptics, by F. T. Brooks, M.A., and M. A. Bailey, M.A. From the *Journal of Agricultural Science*, IX, September, 1919.

Royal Gardeners' Orphan Fund.—The annual festival dinners of this gardening charity were discontinued during the period of the war, and it is to be regretted that the fund suffered in consequence, for money raised annually at, and in consequence of, these festive occasions constitutes a very considerable part of the revenue of the institution. This year the dinner will be held as usual, and the date has been fixed for Wednesday, the 19th inst. It is termed the Victory Festival Dinner, and will be held in Prince's Galleries, Piccadilly. The Rt. Hon. Viscountess Astor, M.P., will preside. The occasion offers an opportunity for all lovers of gardens to support this excellently-managed and deserving fund, and small contributions, as well as larger sums, will be welcomed. We make a special appeal to gardeners to contribute, and thus assist the orphans of those of their fellow craftsmen who have fallen by the way. The fund would receive considerable help if head gardeners, or others specially interested, inaugurated a collection in their gardens and districts, and we shall be happy to receive and acknowledge amounts raised in this way.

Artificial Pollination and Yield of Tomatos.—From careful tests on the hand pollination of Tomatos, it is stated* that the artificial pollination of Tomatos produces a double benefit to the

grown out-of-doors. In the former case the conditions obtaining in the earlier months of the year are by no means always propitious to the setting of fruit, and it might prove advantageous for growers of early Tomatos to make a practice of hand-pollination. In the case of Tomatos grown out-of-doors, setting is often poor in amount, and here also hand-pollination might prove useful. In any case, such statements as those that hand-pollination nearly doubles the yield and saves three weeks in the ripening of the crop, however we may be inclined to doubt their applicability to Tomato crops grown in this country, deserve to be put to practical test.

The "Flight" of Forest Tree Pollen.—That the pollen of plants may be carried long distances by the wind is well known. Examples of the actually observed distances are, however, rare. *The Experiment Station Record* (1,141, No. 1), cites a case in which means were taken on two lightships, situated respectively 18½ and 33 miles from land, to collect air-borne pollen by exposing sticky plates to the air. Examination of the plates, after exposure to the air, showed that there were adhering to each square inch of the plates exposed on the first lightship nearly 4½ million grains of Spruce pollen, almost as many Birch pollen grains, and about one-third as many Pine pollen grains; and on

grounds won unstinted admiration from the countless thousands of visitors on the two past Sundays. The Hawthorns, which stud the open places of Bushy Park, are also in full beauty, and many persons made delighted pilgrimages to them after they had feasted their eyes on the nobler Chestnuts. In connection with the Horse-chestnut avenue, it may be recalled that the trees in this famous double avenue and the Limes were planted by King William III, at a cost of sixpence apiece, in 1690. Many of the original trees have died, but a goodly number remain, and it is these that are responsible for the present wonderful display. The many young trees which, from time to time, have been planted in the gaps, naturally flower rather earlier, and are now beginning to shed their blooms. The origin of the common name of *Aesculus hippocastanum* is the subject of speculation on the part of the public, who, encouraged by the fact that it can be proved by experiment, mostly believe that it is because the scar left on the twig by the leaf stalk is in the shape of a horse-shoe. But Gerrard, the old herbalist, remarks that the tree received its name because "the people in the East countries do with the fruit thereof cure their horses of the cough, shortness of breath, and such-like diseases."

Bath and West and Southern Counties Society's Show.—The annual exhibition of this old-established Society will be held at Salisbury on the 20, 21, 22, 24 and 25th inst. As usual a horticultural section is provided and the flowers, fruits and vegetables will be arranged in a special pavilion. Near the forestry pavilion, demonstrations in tree-pruning, grating, spraying and rural wood industries, will be given. The exhibition will open at 9 o'clock on Thursday, May 20, and at eleven o'clock on the same day the exhibition will be formally inaugurated by the Mayor of Salisbury, who will attend in state with his Corporation and representatives of the Local Executive Committee, and will be received by the Society's President (the Earl of Radnor) and the members of the Society's Council. The Show will open on the other days at the same hour, and will close on Thursday, Friday, and Saturday at 7, and on Whit-Monday at 8 p.m. On Saturday morning the annual general meeting of the members of the Society will be held. The Show will finally close at 6 p.m. on Tuesday, May 25.

"The Gardeners' Chronicle" Seventy-Five Years Ago.—*The Heartsease or Pansy.*—Harmony or proper distribution of colour is a property on which there appears to me to be a great diversity of opinion; but, in all flowers, I hold it essential that the three bottom petals should agree in shade, whatever may be the colour of the upper ones; and, in selfs, it is necessary that all should assimilate. The reverse of this, I am aware, has been for a length of time allowed, and many flowers have been sent out as first-rate with the ground-colour sadly stained, which is as great a defect in the flower under consideration as a discoloured bottom to the cup of a Tulip. If the flower is a self, whether white or yellow, it must be pure and steadfast in colour; and the eye large and well-defined, being generally either black or dark-purple, contrasting as much as possible with the body colour. When the colour is dark, whether purple, black, maroon, or crimson, the eye should be either yellow or white, without the shading off so apparent in some varieties. In belted flowers, or those with a margin of colour encircling the three bottom petals, it ought to be of a uniform width throughout; and the less the triangular spot, often seen on the lower one, is apparent, the better is the flower. Size is the least essential of the properties to be enlarged upon, as there can be no question which flower should take precedence, when the other points of those in competition are equally balanced. In judging a collection of flowers, I should give to form, four points; substance, three; distribution, or harmony, two; and size, one. And it will be necessary that censors should disqualify any flowers that have been unfairly dealt with, by cutting or clipping the edges, pressing, etc.—*W., Gard. Chron., May 17th, 1845.*



FIG. 109.—ANTWERP FLOWER SHOW: GENERAL VIEW DOWN THE RIGHT-HAND SIDE OF THE FLORAL HALL. (See p. 244.)

grower. It results in both a larger and an earlier crop. The Tomato is a plant which is very easily pollinated by artificial means. Perhaps the easiest and quickest method is to pull away the ripe stamens and to use them for dusting the stigmas with pollen. Very little practice suffices to give the necessary amount of skill for the operation, and hence the cost of the operation need be but low. According to the experiments to which reference has been made the difference between the average yields of pollinated and unpollinated plants was no less than 3 lb. per plant—a difference which would represent a value of produce far greater than the cost of the operation. The further statement that hand pollination results in the production of fruit ready to harvest 21 days before fruit set naturally is extremely difficult to believe. It may, of course, have been the case under the conditions of the experiment, but we doubt very much whether a like result would be generally obtained. Nevertheless, the statement is worth noting and testing, particularly with reference to crops under glass grown for the early market, and also to Tomatos

those exposed on the lightship 33 miles from land about one-half of these quantities.

Glasgow Parks Staff.—By a decision of the Glasgow Corporation, made a short time ago, Mr. James Whitton, V.M.H., takes the title of Director of Parks, his deputy being called Assistant Director. The chief in charge of each park is now entitled Curator. It has for a long time been felt that the designations of these posts did not properly correspond with the importance of the duties, and this was very marked in the case of the Curators, who were formerly called Foremen, a name quite unsuitable for those who were performing responsible and onerous duties in charge of the individual parks.

Bushy Park Horse-chestnuts.—Although May 2 was the popular "Chestnut Sunday," yet the world-famous trees were in even greater glory on the following Sunday. As a rule this unofficial festival falls on the third Sunday in May, but the early season has affected the Horse-chestnuts equally with other vegetation. In the absence of unduly rough winds and serious frosts the flowering this year has been perfect on the noble avenue of trees, together with isolated specimens in the Park, and the Hampton Court

* *Experiment Station Record*, X L, 9

NOTICES OF BOOKS.

The Flora of Chepstow.

LOCAL floras are chiefly interesting to students who live in the district, and in a measure to collectors who may be contemplating a visit to the neighbourhood in the hope of making additions to their collections. Mr. W. A. Shoobred has compiled a very interesting flora,* embracing a district around Chepstow, extending north and south for a distance of nine miles, and eleven to twelve miles east and west. Situated as it is in the lower part of the tidal Wye valley, with much aboriginal wood on either bank of the river, with rocky elevations, marshes and level ground, a rich flora is to be expected. This expectation is amply verified by the book, which records 1,006 flowering plants and vascular cryptogams, as well as 179 species of mosses. That is a large number of species, even when the modern multiplication of *Roses*, *Heracia*, *Rubi* and some other species is taken into consideration. The author has had the help of the leading experts on these difficult genera, so that the species are, no doubt, correctly identified. The arrangement and the nomenclature follow those of the 10th edition of *The London Catalogue of British Plants*, except where recent research has improved upon it. Nevertheless, a few anomalies remain, such as *Ulmus glabra* for the Wych Elm, which is the roughest or the most hairy of the British Elms; and *Oenothera biennis* (*aggregata*), when the well authenticated *O. Lamarkiana* might have been used. The small-flowered *O. biennis* rarely occurs outside gardens, whereas the other is abundant in many places. It is usual to regard *Ulmus campestris* and *Populus alba* as native British trees, but as they do not reproduce themselves by seeds in this country, their nativity is a moot point. According to reliable recent evidence only the female of *Populus alba* is to be seen. Both trees reproduce themselves by suckers. Rare northern plants in the area are *Pyrola secunda*, *Saxifraga hypnoides* and *Rubus saxatilis*. It is surprising that only one form of *Mentha aquatica* × *arvensis* (*sativa*, L.) is mentioned, nor any of the numerous varieties of *M. arvensis*, especially the rare *M. a. parietariaefolia*, which occurs at Symonds Yat, outside the scope of the flora, though a few other rare plants from that reach of the river are mentioned. Though it is really a hybrid, it has long been described and recorded as a variety of *M. arvensis*, and might by this time have been brought down to the Chepstow district by the River Wye. The species of *Melica* and *Armeria* have been restored to the old names, thereby removing that anomaly of *The London Catalogue*. *Galanthus nivalis* is unreservedly considered a native. The map accompanying the flora is a good one, but is rather heavily shaded in the wooded regions near the river, making it difficult to find names of places. The author has produced a good working flora.

Lawns and Greens.

A THIRD edition of Mr. T. W. Sanders' useful work on *Lawns and Greens, their Formation and Management*, has been recently issued. The book deals with tennis and croquet lawns, bowling and golf greens, cricket grounds, grass paths, and the general formation and upkeep of ornamental grassland. The work commences with chapters on the preparation of the soil, drainage and levelling, accompanied by useful diagrams and illustrations. The methods of forming grassland from seeds and turves are contrasted, and a selection of the best grasses given for the purpose. The subsequent treatment of lawns by rolling, mowing, manuring and watering are dealt with, and there is a chapter on pests of grassland and methods of dealing with them. Those responsible for the upkeep of tennis and croquet lawns will find the book very valuable and useful, and especially the diagrams showing the correct methods of setting out tennis courts and croquet lawns.

* *The Flora of Chepstow*, by W. A. Shoobred, F.R.C.S., F.L.S., London: Messrs. Taylor and Francis, Red Lion Court, Fleet Street, 1920. Price 10s. 6d. net.

† *Lawns and Greens*. By T. W. Sanders. London, W. H. and L. Collingridge. Price 3s. 6d. net.

TREES AND SHRUBS.

ENKIANTHUS CAMPANULATUS.

OF the half a dozen or so species of *Enkianthus* in cultivation, all of them attractive, *E. campanulatus* (see Fig. 110) thrives the best and is the most vigorous. Usually seen with us as a shrub, it is capable of developing into a small tree 20 to 30 ft. high. The branches are produced in tiers, or whorls, in the manner characteristic of the genus, and the leaves are clustered at the ends of the twigs, measuring individually 1 to 2½ inches in length by half as much wide. The flowers, which expand in May, are borne in terminal loose racemes 1½ to 2 inches long, very abundant and very grace-

The typical *E. campanulatus* comes from Japan, whence it was introduced to England by Charles Maries, about 1880. Probably the variety is from the same country. W. J. B.

ZANTHORRIZA APIFOLIA.

THIS little deciduous shrub cannot by any means be regarded as showy, yet taken altogether it is very pretty and interesting. Popularly known as the Yellow Root, from the colour of its creeping roots, it pushes up erect stems from 1 to 2 feet in height. The leaves are pinnate and form a very pleasing feature. They are of a bright and cheerful green colour, and, as a rule, make their appearance simultaneously with the blossoms, which are borne in drooping panicles 4 to 5 inches in length. The individual flowers are very small, not more than a quarter



FIG. 110.—FLOWERING SHOOT OF ENKIANTHUS CAMPANULATUS.

fully pendulous. The bell-shaped corolla is one-third to half an inch long, five-lobed and of a dullish creamy yellow veined with red, the apex of each lobe being tipped with red also. Although the colouring of the flowers is rather subdued, their numbers and elegance, joined to the characteristic form and branching of the plant, give a very pleasing effect. In autumn, too, when the leaves change to golden and red before they fall, the plant becomes ornamental again.

The plant figured in the *Botanical Magazine*, tab. 7,059, as *E. campanulatus* is not the typical form, but a rather distinct variety which has been distinguished as var. *Palibinii*, after Palibin, a Russian monographer of the genus. It differs in having rather smaller flowers almost entirely of a rich red, and in some other respects. It was long cultivated in the Croombie Wood nursery, and therefore probably exists in various collections.

of an inch in diameter, and often less than that. The colour is a tone of lurid purple. This *Zanthorhiza*, which belongs to the Ranunculaceae, is a native of a considerable tract of country in the eastern United States of America, and is perfectly hardy in England. It was introduced so long ago as 1776, but is very rarely seen in gardens. A truly moist soil of an open nature is suitable for the plant and the situation may be partially shaded. The plant may be readily increased by division after the manner of a hardy herbaceous perennial early in the year before growth commences. H. T.

TROCHODENDRON ARABOIDES.

THE reference on p. 197 to the flowering of *Trochodendron aralioides* reminds me that this plant is now flowering at Messrs. Adnorch's establishment at Verniers, near Paris. This is only the second time it has flowered, and although planted eight years ago, the plant is not more than 3 ft. high. S. H. G.

The Week's Work.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Hardy Bamboos.—Bamboos may be propagated by division of the clumps, and the work may be done now. Remove small clumps consisting of two or more culms, with their rhizomes intact, from the main plant. Care should be taken not to dislodge any soil which may adhere to the lifted tufts. The portions may, if desired, be planted in prepared, permanent quarters forthwith, carefully watered, top-dressed with well-rotted cow manure, and finally covered with leaves. The edge of a natural stream is a suitable place for propagating Bamboos and in which to keep a reserve of young plants. When established, they may be removed any time from October until the end of May. After spring planting, spray the leaves of the plants daily with rain water late in the afternoons for a few weeks and water the soil as required. To retain the grace and elegance of these fine foliated plants, do not expose them to north and easterly winds. The selection of a suitable background or setting is of the utmost importance to obtain the best effect. Many flower gardens might be relieved of a portion of the common shrubbery, and an interesting feature made by associating such subjects as Pampas Grass and Yuccas with varieties of Bambusa, or by the grouping of Bamboos alone.

Viola Royal Scot.—This variety of Viola is one of the hardiest and most consistent of blue flowering plants and very suitable for growing on heavy, cold soils. It forms a veritable blue carpet from spring until the end of summer. When broadly massed, and relieved here and there with a few plants of *Centaurea gymnocarpa*, which may be planted out in May, the effect is charming. Royal Scot is not subject to mildew; moreover, if left undisturbed in the same bed, it will give satisfaction for a number of years. An application of bone flour is of benefit to established beds of Viola, and may be applied at the present time.

Hedera.—There is still time to plant varieties of Ivy from pots, and to cut to the ground delicate growing kinds planted last year to cause stronger growths to develop. To bring out the fine variegation of certain varieties, it is advisable to grow the plants in comparatively poor, somewhat firm soil and to restrict the root area. The variety *madeirensis variegata* is very pleasing when adhering to low rustic work in a sheltered position. Many beautiful, green-leaved forms are seen to the best advantage when trained as pyramids in various parts of the flower garden. During the first season of planting, attention to watering in hot weather is essential.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Peaches.—Trees in second-year houses with fruits approaching ripeness should receive a good watering, after which no more moisture should be required at the roots until the fruits are gathered. Leaves shading the fruits should be arranged on one side of them to expose the latter fully to the sun and cause high colour to develop. Discontinue the use of the syringe when the fruits are ripening, also lessen the amount of atmospheric moisture, gradually increasing the quantity of air by leaving the top and front ventilators partially open at night and using a little warmth in the pipes should the weather be cold. By these means well flavoured fruits are obtained, whereas an excessively moist atmosphere produces insipid and badly coloured fruits. Continue to feed the trees occasionally through the summer and autumn, especially old

specimens which have carried large crops of fruit.

Figs.—Early pot Fig trees, which have been surrounded at the base with fermenting leaves, are throwing out white, fleshy roots, which should be encouraged to grow by placing turves around the rims of the pots and filling the space with well-rotted manure. Do not neglect the roots within the pots, but let them be well supplied with warm, diluted liquid manure and other food. Use the syringe freely until the fruits commence to ripen, when the amount of ventilation may be increased and a little fire heat used. Remove all weak shoots, thin them where they are crowded, and pinch gross ones; by these means, and keeping the temperature of the house at 65° at night with a little air, and 75° to 80° on fine days, the fruits will attain a good size and ripen quickly. Trained trees require constant attention in thinning and tying the shoots. Fire heat cannot yet be dispensed with, but the valves should be closed early on bright days. Air should be admitted gradually when the temperature reaches 70°, but close the house early in the afternoon, syringing freely to promote plency of atmospheric moisture.

Strawberries.—The fruits on the plants comprising the latest batch are approaching ripeness. Give the roots plenty of water when they require it, and admit all the air possible. It will be a relief to get these plants out of the houses, because of their liability to infestation, red spider loose shelves should be removed, and those that are fixed cleansed thoroughly.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe Castle, near Cardiff.

Celery.—Celery raised from seed sown early in February is ready for transplanting in prepared trenches. Previous to planting, a dressing of soot and salt, the latter at the rate of 1 oz. to the square yard, should be thoroughly raked in the ground. The trenches may accommodate two or more rows of plants, according to their width, but a space of 12 to 15 inches each way should be allowed according to the vigour of the varieties grown. All suckers should be removed from the plants at this time, also any foliage attacked by the Celery-fly. The roots should be put fairly deep in the soil, which should be made firm about them and afterwards well watered. Celery intended for exhibiting should be planted in shallow trenches containing plenty of manure. Plant a single line in each trench, and later wrap brown paper around the stems to blanch them; make periodical examinations for pests, temporarily removing the paper collar to enable this to be done. Slugs are partial to Celery and, owing to the mild winter, are more numerous than usual. They should be trapped by placing bran under pieces of boards or slates placed among the rows. Later seedlings should be pricked off before they become crowded in the seed pans. Transplanting should be done with but little check to the plants; on a firm bottom, place two inches of old Mushroom-bed manure and the same depth of old potting soil in which to prick out the seedlings at four inches apart; cover them with a temporary light.

Salsafy, Chicory and Dandelion.—Seed of these vegetables may be sown now in rows made fifteen inches apart. Place a few seeds at intervals of twelve inches in the rows. The ground for these crops should not have been recently manured. To grow Salsafy of good quality on heavy land, it is necessary to make deep holes with an iron bar, fill them with sifted soil, and sow in the manner advised for other tap-rooted crops.

Maize or Sugar Corn.—The green ears of this plant provide an agreeable change of vegetable, and plants should now be raised by placing the seeds singly in four-inch pots and germinating them in a warm house. When large enough, plant the seedlings in well-manured ground, in rows two feet apart, allowing a space of nine inches between the plants in the rows.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Alpine Strawberries.—Plants raised from seeds sown as previously advised and pricked out into boxes are growing apace. As soon as they are well established stand them in a frame near the glass, and gradually harden them for planting out of doors.

Newly-Planted Trees.—Fruit trees planted late in the season need attention as regards watering, for, although much rain fell last month, a few days' sun and drying wind would soon cause heavy soil to crack. Top-dress the roots with old hot-bed manure containing leaves. The mulch will assist in retaining the soil moisture and allow water that is applied to penetrate evenly into the soil.

Green Fly.—Aphis has made an early appearance this year, and steps should be taken to destroy the pest, which checks the swelling of the fruit considerably and cripples the growth. Spray the trees with Quassia extract or some other suitable insecticide.

American Blight or Woolly Aphis.—In certain districts this pest is a great source of trouble to Apple growers, especially when it makes its appearance at the base of the tree and attacks the roots. In the case of root infestation, inject bisulphide of carbon about two feet from the stem, using about 2 oz. to 4 oz., according to the size of the tree, making about four injections at equal intervals around the stem. Some of the soil may also be removed and fresh mould substituted. In cases of slight reinfestations on the branches, soft soap and sulphur may be applied with a stiff brush and worked well into the affected parts.

Silver-Leaf Disease.—Examine all trees for Silver-leaf, and where the branches are diseased cut them out and burn them. The cut surfaces should be trimmed clean by the use of a sharp knife, and all wounds dressed with knotting or tar.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens, Kew.

Climbing Roses.—Such varieties as *Gloire de Dijon*, *Lamarque*, *Cloth of Gold*, and *Maréchal Niel*, should, as they pass out of flower, be pruned hard. Strong new shoots should be trained at least one foot apart, allowing them to grow their full length if the space is available. This is the only method that will ensure success with that troublesome variety, *Cloth of Gold*. As Roses under glass are generally planted in a restricted root area they should be fed with liquid manure on frequent occasions during the growing season. Tea Roses, whether in pots or planted out, are more or less perpetual-flowering, and should be assisted by frequent applications of liquid manure and other suitable fertilisers.

Gesnera cardinalis.—If seed of this *Gesnera* is sown now and the plants grown on in a temperature of 55° to 60° this brilliant-flowered subject will bloom during the coming autumn. The plant has a tuberous root-stock, and, if started early in the new year, grows quickly and flowers during April and May.

Moschosma riparium.—This elegant, white-flowered plant is very beautiful for autumn flowering, and cuttings may now be rooted in an intermediate temperature. The plant is easily grown in a cool house during the summer, and its successful flowering presents no difficulty in the pure air of the country; in the neighbourhood of London, fogs too frequently cause all the flowers and buds to drop.

Coleus barbatus.—This *Coleus* should be propagated now, and is best grown in an intermediate temperature. Its pretty pale-blue flowers make it a useful subject for the decoration of the warm greenhouse during the autumn.

Leonotis Leonurus.—The scarlet-flowered *Lion's Tail* is also very useful for autumn flowering. Plants propagated last month should be potted on as they require it, and should make large specimens by autumn. They are best

stood outdoors during the summer, when strict attention must be given in watering and syringing, as this species is very subject to attacks of red spider.

Strobilanthes isophyllus and S. Dyerianus.—Cuttings of *Strobilanthes isophyllus* should be inserted and rooted in an ordinary propagating case. The pale, lilac-blue flowers are very attractive in winter. *S. Dyerianus* is usually grown for its beautiful coloured foliage, and its flowers, though pretty, should be pinched off, for in common with most species of *Strobilanthes* flowering tends to kill the plant, or at least weakens it, making it a difficult matter to obtain suitable shoots for use as cuttings.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISAGHT, Esq. Castleford, Chepstow.

Epidendrum vitellinum.—This *Epidendrum* is one of the few that may be grown in the cool house, where its reddish flowers make a pleasing contrast to those of *Masdevallia* and *Odontoglossum*. Repotting is best done when growth begins, using shallow pans filled half their depth with drainage material. Very little moisture at the root is needed when the season's growth is completed. The type blooms during the autumn months, but the variety *majus* produces its flower-scapes throughout the summer.

Laelia Jongheana.—This *Laelia* continues to grow for some weeks after flowering, therefore the roots should be kept moist until the pseudobulbs are developed. Repotting may be done directly the flowers are removed. Grow the plants in small pans furnished with wire handles to suspend them from the roof rafters of the intermediate house.

Phalaenopsis.—A small division is often set apart for these showy Orchids, but this is not necessary, provided a shady, moist corner can be found for them in the warm house. They will also do well in a plant stove, but they should not be exposed to strong sunlight. The temperature should fluctuate between 70° and 80° during the summer with sun heat, but in winter a maximum of 60° will suffice, provided the atmosphere is not heavily charged with moisture, and the soil is not kept in a saturated condition. Shade is necessary during the spring and summer, but it should not be so dense as is often recommended, and I have seen some very good examples of *P. Rimestadiana* suspended from the roof rafter of the *Cattleya* division. Ventilation is important, but air must not be admitted indiscriminately, or the plants may be chilled, or the atmosphere become too dry. On most days sufficient air may be admitted through the bottom ventilators, and when the weather is mild the apertures may be left open an inch or two throughout the night. Whenever the top ventilators are used, care must be taken to prevent cold currents of air passing over the plants; during hot weather the ventilators may be raised a little at night to allow superfluous moisture to escape, thereby creating a suitable atmosphere for healthy growth, and in that case black spot will rarely appear. The rooting medium for *Phalaenopsis* consists of clean, live Sphagnum-moss, with a little *Osmunda* or Al fibre added for such strong-growing kinds as *P. amabilis*, *P. Sanderiana*, *P. Rimestadiana* and *P. Schilleriana*. Charcoal nodules and crushed crocks should be incorporated with the mixture. The present is a suitable time to top-dress or repot *Phalaenopsis*, but the latter operation is only necessary at long intervals unless the plant becomes unhealthy. Top-dressing should be done annually; it consists in removing decayed and sour soil without injury to the roots and substituting fresh material. The plants are usually grown in teak wood baskets or cylinders, and ample drainage is necessary.

Peristeria elata.—Plants of *P. elata* are sending up their flower spikes, and should receive ample supplies of water at this stage. Repotting should be deferred until the scapes are removed, but specimens not likely to flower can be dealt with at once. Use a similar compost to that recommended for *Cymbidiums*.

ORCHID NOTES AND GLEANINGS.

MASDEVALLIA COCCINEA AND M. IGNEA.

WILLIAM BOLTON, Esq., Wilderspool, Warrington, sends a selection of *Masdevallias*, including *M. ignea* and *M. coccinea* varieties, the latter more generally known in gardens as *M. Harryana*, and ranging in colour from pale lilac to bright scarlet and deep purple. Mr. Bolton remarks that although these beautiful, cool-house plants are now somewhat neglected, the display of their brilliant flowers in spring and

shorter and with broader leaves than the type, is sent, agrees with *D. Pierardii latifolium*, a well-known approach to the long-bulbed form of *D. primulinum*, both having been frequently seen in gardens, many years ago, and named *D. cucullatum*.

A plant was shown at Manchester, on April 15, as *Dendrobium venustum* (*primulinum* × *Pierardii*), and it would be interesting to know how it compares with this form. In any case, the name gives an instance of the inadvisability of giving scientific names to hybrids, as the name *D. venustum* was used for a Siamese species many years ago, and consequently a

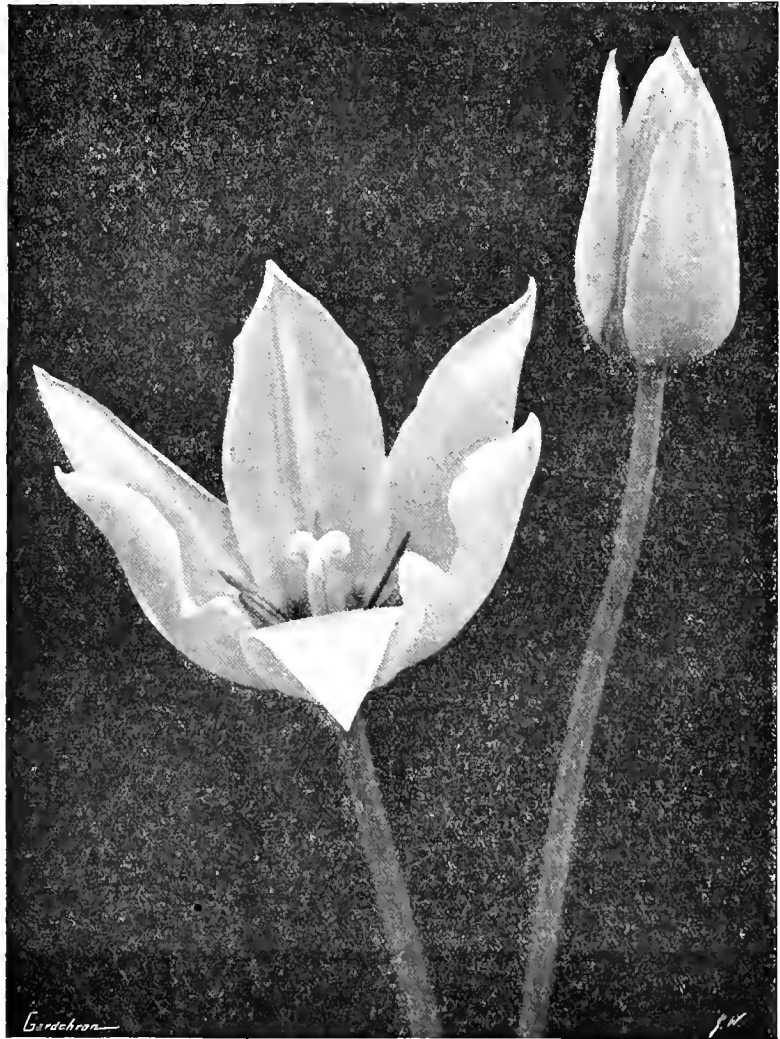


FIG. 111.—TULIP FIRENZE: COLOUR CLEAR SOFT ORANGE, R.H.S. Award of Merit, April 27, 1920 (see p. 222).

summer gives a better return for the care bestowed on them than probably any other section of small-growing Orchids, and their compact growth and bright green leaves render them very attractive.

Flowers of others of the *M. coccinea* section, and *M. triangularis* were also sent.

Masdevallas retain their old leaves years longer in gardens than they do in nature, the tips of the leaves merely decaying and becoming unsightly instead of falling off. It is better for the plants, and for their appearance, to remove all old leaves as soon as they show sign of decay at the tips.

DENDROBIUM PIERARDII AND D. PRIMULINUM.

During the past month several correspondents have sent forms of these two fine old *Dendrobiums* showing great variation, one form of which a portion of a pseudo-bulb, much

fresh garden name should be selected for this plant.

D. Pierardii was one of the earliest *Dendrobium* introductions, and it is also one of the widest in distribution in India and other parts. It formed one of the most beautiful plants in collections at exhibitions years ago, specimens having twenty or more slender flower-clad stems drooping around the basket in which the plant was usually grown.

MILTONIA BLEUANA REINE ELISABETH.

With reference to this superb Orchid, which was erroneously entered with the R.H.S. Orchid Committee as *M. Bleuana* Princess Elizabeth, on February 24 last, when its owner, Monsieur Firmin Lambaen, of Brussels, was given the Silver-gilt Lindley Medal and First Class Certificate for this remarkable variety (see *Gard. Chron.*, March 6, p. 117), we are informed that the name given above—*M. Bleuana* Reine Elisabeth—is the correct title.

- Acorus verus. Calamus aromaticus officinarum. G.T.
- Adiantum adversariorum.
- Aethiopsis, vid. in annuis. (See under Annuals.)
- Azaraea. T.
- *Azzifolium foliis aureis et variegatis.
- Alchimilla. G. [In Wombwell Cow-pastures, and many other places in Yorkshire.]
- Alkekengi fructu rubro. T.
- Alisma baccifera. G.
- Athaea vulgaris.
- * " frutex.
- Auripolassum. G. [Amongst Barley near Bechtree, betwixt Oxford and Banbury.]
- Auygdalus. G.T.
- Anagallis lutea. G.
- * " tenuifolia monelli
- * " " " fl. luteo.
- * " " " aquatica angustifolia erecta: nescio an descripta. (I do not know whether it is described.)
- * Anagallis aquatica rotundifolia.
- Androsæmon. G.
- Anemone sylvestris latifolia alba. 3. Matt. vulgaris. G.
- * " " " fl. coeruleo multiplici.
- * " " " fl. albo multiplici.
- * " Chalcædonicæ maxima versicolor.
- * " latifolia fl. coccineo simpli: fundo purp.
- * Anemone latifolia fl. coccineo simpli: sine fundo.
- Anemone latifolia fl. purpureo simplici saturo.
- * Anemone latifolia fl. simpli: purp. diluore.
- Anemone latifolia fl. sanguineo simpli.
- * Pato major. T.
- Anemone tenuifolia fl. simpli: coeruleo. G.
- * " " " pleno coccineo. T.
- * " " " albo. T.
- * Angelica baccifera. " " "
- Anthyllis lentifolia, sive Alisma ericiata marma.
- * Anthyllis leguminosa Hispanica. G.T.
- Apocynum Syriacum Clusii.
- Aquilegia vulgaris albiq. varietates. (Several varieties.) G.T.
- * Aquilegia virginiana.
- * " vulg. flore variegato varietates. T. rosea fl. coeruleo et variegato.
- Arabis. G.
- * Arachnida Lusitanica, seu Pisum sub terra siliqui fex.
- * Aracus major Boetius Boetii.
- * Arbor Judæe. G.T.
- * " lethi, ex Guinea.
- * " vitæ. Thyia Theophrasti. G.T.
- Aristolochia saracenicæ.
- Armeria latifolia fl. albo simpliciter. T.
- * " " " fl. rubro saturo holo-serico T.
- * " " " fl. rubro multiplici. versicolor.
- Armoraria pratensis elegans fl. pallido que duplex, mas, et formosa.
- * Armoraria sive Elychnis plumaria, fl. pleno (In Netherwood hall grounds in Darfield Parish.)
- Arum Byzantinum.
- * " minus veronensis. L'Ob. 2T.
- Asarum. G.T.
- Asclepias flore albo. G.T.
- * " nigro. G.T.
- * Asperula vulgaris et flore coeruleo. G.
- Asphodelus major albus ramosus. G.
- * " luteus vulgaris. G.
- * " minimus luteus acrifolius palustris.
- Aster Italorum.
- * " Virginianus fl. albo fruticosus.
- Astragalus sylvaticus.
- Astrantia nigra. G.
- Auricula ursi variorum colorum (of several colours). G.T.

- Cardamine flore pleno. T.
- * " vulgaris.
- * " altera flosculis minoribus.
- * " impatiens Siss folius. Vid: Sium in Annuis. Anna enim est. (See Sium among the Annuals, for it is an annual.)
- * Carum. G.
- Caryophyllata montana purpurea. G.T.
- Caryophyllus flos simplex et plenus var: colorum (of several colours).
- * Caryophyllus montanus minimus. Pumilio alpinus.
- * Caryophyllus mediterraneus.
- * " flos multiplex var: colorum (of several colours).
- * Caryophyllus montanus purpureus. [Nere Nottingham between the Town and the Gallowes.]
- Caryophyllus Holosteus arvensis.

(To be continued.)

garden. There are numerous varieties of this stately plant which gave Gerarde so great delight on its introduction, but for simple effect, the red form is the most useful. It is of slight value to grow only one or two; it must be planted by the dozen or the hundred to show its true quality. I am not sure that it is not a very neglected plant; probably the seeming proximity of a fox wherever it is found may have led to its being ostracised, but it is only fair to state that it does not always smell rank or to so grievous a degree, and surely its other merits—its stately habit, its beautiful dark stem, its crown of foliage, its drops of pearl, its curious habit of raising its fertilised capsules,

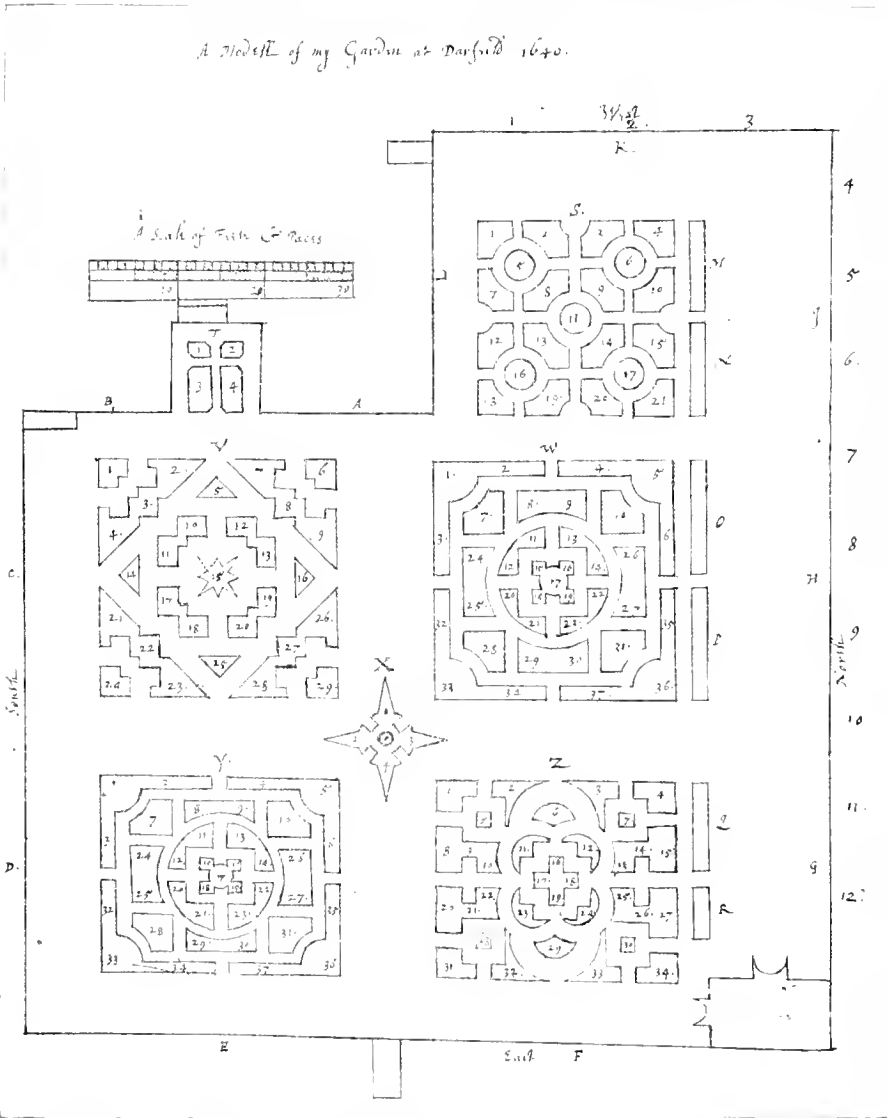


FIG. 112.—A MODEL OF MY GARDEN AT DARFIELD, 1640.

FRITILLARIA.

The most striking flower in the garden at the end of April, *malgré* Daffodils and Tulips, was the Crown Imperial. I have grown a large quantity from seed, many of which are vermeil-lined, and the plants have formed large clumps in mixed borders where they are permitted to thrive by the courtesy of the herbaceous occupants which fill the spaces later in the season. Seeds are produced abundantly here, and indeed so many seedlings have been raised that I had to destroy numbers. At first, year ago, the seedlings were raised under glass, but ultimately I found that the seeds germinated like those of other *Fritillarias* in the open

all combine to make it an intrinsically valuable plant.

There are other *Fritillarias* open at present, some of no value apart from their refined habit of growth, and none probably more desirable than the white—the purple *Fritillaria* that Matthew Arnold knew on "Thames's bank." The pure white in particular is a lovely flower. Then there is the black purple *Fritillaria pyrenaica* which, like the Crown Imperial, has two faces, the inside of the sepals being even more engaging than the outward one. All are easy to increase from seeds, and the seedlings are not so outrageously long in flowering as are those of Tulips or Daffodils. R. P. Brotherton, Prestonkirk, Midlothian.

FOREIGN CORRESPONDENCE.

THE PRESENT SITUATION OF HORTICULTURE IN AUSTRIA.

THERE is no necessity for explaining that horticulture as a whole is badly affected by the present economic and political situation in this country. Austria has not only lost a long and exhaustive war, she has lost much more by peace. German Austria is reduced to a poor, small country with few natural resources, and surrounded by states that are none too friendly with her. The worst, however, is the fact that each little "land" within the narrow limits of the present republic acts in the most selfish way.

I resided in the U.S.A. during the war, because I was on an exploring trip in western China when the war broke out, and not being able to go back to Austria, I accepted an invitation from Prof. C. S. Sargent to go to the Arnold Arboretum at Jamaica Plain, Mass. Therefore, when I came back to Vienna in October, 1919, I, perhaps, more deeply felt the contrast between the past and the present than anyone who had remained

he needs for keeping up his establishment, make it impossible for him to maintain his former standard and even difficult to grow what is needed to-day.

Vienna has been famous for its beautiful gardens, but these are beginning to disappear. The public gardens are kept fairly well by the city, and in this extremely lovely and warm spring, the private gardens and suburbs look much finer than they really are. The work of the landscape-architect is restricted. Where, formerly, he planted handsome flowers and shrubs, there are now growing Lettuce, Cabbage, Potatoes and other useful things. The number of war-gardens is immense. Hundreds of colonies of what are called "Schreiber" gardens have sprung up, and the Schreiber-garden movement is one of the characteristic features of the time.

The situation of the Horticultural Society is a rather lucky one. It was in possession of a valuable piece of ground in one of the best parts of the city, but it has sold part of it during the war, and now has some money at its disposal. But it cannot realise its intention to build a new home, because no houses at all can be erected at a time when one brick costs about 3 crowns. The society has a garden of its

of 1917. I have kept accurate account of expenditure, also the retail value of produce, and find the plot has yielded very much more financially than the figure given above. Originally the ground was pasture for an indefinite number of years. On breaking it up in February, 1917, I found the soil to average 7 inches of heavy loam, resting on yellow clay, which contained a large proportion of flints. No stable manure or humus in any form has been added to the soil, principally from lack of time, and the difficulty of getting the manure up the hill.

In two successive winters I top-dressed the whole of the soil with two bushels of lime, after roughly digging the ground, and applied superphosphate of lime, sulphate of ammonia and fish manure to growing crops as required. I attribute such success as I have achieved to roughly digging the ground early in winter, again at planting time (the ground being very heavy), the judicious use of lime and fertilisers, and to keeping the surface of the soil in an open condition through the growing season.

I give below a detailed account of the crops and their money value for the past year, by no means claiming the best possible results. An allotment holder in my immediate vicinity grows vegetables calculated to delight the eye of a professional gardener, but at the expense of much time and manure. As representing the financial point of view, Cauliflowers were found to take front rank. Over 100 were cut in six days during last July. At fourpence each they paid the rent, £1, for the year, also the seed bill.

The variety was Sutton's White Queen, which seemed to revel in tropical heat and formed large, white, firm heads. My residence is half an hour's tram ride from my plot, and it will be understood that better results could be obtained were I living closer, as the work is done after my business hours.

A YEAR'S PRODUCE.

Crop.	Sown 1919	Planted 1919	Gathered 1919-1920	Value £ s. d.
Potatoes ..	March 8	April 19	July 10, 1919	4 4 0
Cauliflower ...	—	May 31	July 22, 1919	3 6 0
Savoy's ...	May 10	July 24	January 5, 1920	16 3
Swedes ..	May 9	—	February 7, 1920	6 0
Parsnips	April 5	—	December 20, 1919	8 2
Shallots ..	—	April 5	June 30, 1919	6 0
Turnips ...	April 8	—	June 14, 1919	16 0
Carrots ..	April 23	—	July 12, 1919	6 0
Cabbage	March 8	May 24, 5	June 27, 1919	2 8 0
Brussels sprouts	March 8	May 24	October 18, 1919	1 19 0
Broadhead Cabbage	May 10	July 7	November 12, 1919	12 0
Autumn Protecting Broccoli	May 10	July 14	April 4, 1920	1 7 0
Total out of pocket expenses				16 14 5
Balance				3 1 8
				13 12 9

J. G. S.

CULTURAL MEMORANDA.

PROPAGATION BY LEAVES.

IN the issue of a gardening journal (defunct now for many years) for October, 1856, the following note occurs:—"Some years ago I first tried to raise bulbs of a Cape Ornithogalum, by setting a cutting of a leaf. The leaf was cut off just below the surface of the earth, in an early stage of its growth, before the flower-stalk had begun to rise, and it was put in the earth near the edge of the pot in which the mother plant was growing, and so left to its fate. The leaf continued quite fresh, and on examination (when the bulb was flowering) a number of young bulbs and radical fibres were found adhering to it. They appeared to have been formed by the return of the sap which had nourished the leaf. Thereupon two or three leaves more were taken off and placed in like



FIG. 113. —ANTWERP FLOWER SHOW: VIEW DOWN THE LEFT HAND SIDE OF THE FLORAL HALL, WITH M. NAGEL'S EXHIBIT IN THE BACKGROUND.

during the past five years, and had become used to the misery.

Vienna has always been the centre of horticulture interest in old Austria, it is even more the centre to it at present. But, what a change! The beautiful city, once the meeting place for all who went to central and eastern Europe, is still beautified by gardens full of Lilacs, Forsythias, Irises, and other lovely flowers, but about all parts famine is lurking, and far too many pallid-faced children and worn-out mothers are to be seen.

The main impression is that everything (I might say everybody) needs repair. Everybody is so exhausted by the war and its evil consequences as to have lost the energy necessary to keep up the struggle.

Some of the gardeners, of course, are by no means badly affected by the present situation. Many of the market gardeners have become well-to-do men. They sell their few vegetables at prices undreamed of any previous time, because there are a few rich men, too, who can pay for them. But the people as a whole are not able to buy Lettuce, Spinach, or Cauliflower at the present rates. The case of the florist is, to a certain degree, different. Scarcity of labour and very high wages, combined with the high cost of fuel, wood, glass, and every other material

own at Esslingen, about two hours from the city, in the so-called Marchfeld, but at present it is not much more than a vegetable garden. It will take some time to transform it again into a real experimental ground.

The old *Gartenzeitung* has been changed to a new *Zeitschrift für Obst- und Gartenbau*. This journal consists of two parts: one devoted to horticulture, landscape-architecture and similar matters, and the other concerned with fruit-culture and market-gardening. The former *Obstbau- und Pomologie-Gesellschaft* has been united with the Horticultural Society, which tries to do its best in helping the reconstruction of horticulture in its broadest sense in German Austria. *Camillo Schneider, Vienna, April 24, 1920.*

PRODUCE FROM A 10-ROD ALLOTMENT.

ON page 200 it is stated that Sir Daniel Hall gave the average produce of a 10-rod plot as £9 in the retail market. On the Dulwich College estate on the side of a hill facing east, in company with many other allotment holders, I have worked a 10 rod allotment since the spring

situations, but they turned yellow, and died without producing any bulbs. It appeared to me then, and it was confirmed by subsequent experience, that, in order to obtain a satisfactory result, the leaf must be taken off while the plant is advancing in growth. I found it easy thus to multiply some bulbs that did not willingly produce offsets. I afterwards tried, without cutting the leaf off, to make an oblique incision in it under ground, and in some cases just above ground; attempting, in fact, to raise bulbs by layering the leaf. This attempt was also successful, and some young bulbs were formed on the edge of the cut above ground, as well as below. I tried cuttings of the stem of some species of *Lilium*, and obtained bulbs at the axil of the leaf, as well as from the scales of the bulb; and that practice has been since much resorted to by gardeners, though I believe it originated with me. I raised a great number of bulbs of the little plant which has been successfully called *Massonia*, *Scilla*, and *Hyacinthus corymbosus*, by setting a pot full of its leaves, and placing a bell-glass over them for a short time. A bulb was obtained with equal facility from a leaf of a rare species of *Eucomis*; and experiments with the leaves of *Lachenalia*s were generally successful. I apprehend that all liliaceous bulbs may be thus propagated; but the more fleshy the leaf, the more easily the object will be obtained."

I was prompted to experiment in this direction after reading the above excerpt, and I tried to root leaves from one side of the newer *Daffodils* with every success. I also tried leaves from *Lilium regale* and was also successful. The literature upon this particular, and valuable, method of propagation is not very abundant, and the ablest contribution upon the subject will be found on reference to the eighth "Masters Lecture," delivered by Professor I. Bayley Balfour on June 4, 1912, upon "Problems of Propagation."

It was pointed out in that lecture that the practice of using leaf cuttings was more followed in the past than it is now; propagation of Citron, Lemon, and Laurel by this method being of great antiquity. Many of us, I think, in our zeal for progress, seem to have forgotten that all our heritage from the past is not bad. One writer, I forget his name at the moment, stated that this was a sad rehabilitation of the theory of total depravity! Even our too often despised ancestors, however, discovered some things that were worth remembering. In these days, observed Professor Balfour, leaf propagation was restricted by gardeners to a comparatively small number of facile forms—such, for example, as *Begonia*, *Melastomaceae*, *Gesneraceae* and *Crasulaceae*, where one finds substance and abundant water in the leaf—or, as the Professor described them, soft-leaved plants. He stated that although limited in use, the method is one which the gardener should not underestimate. It is undoubtedly underestimated in modern propagating practice, and is, indeed, almost a lost art. Look, for example, at the *Daffodil*. Owing to the disease caused by eelworm (*Tylenchus devastatrix*) many valuable bulbs have been lost. Under those circumstances, how many growers endeavoured to root leaves in order to preserve their stocks of choice varieties that were affected with eelworm in the bulb? Few, I fancy, ever attempted to root leaves of *Daffodils*, yet they may be rooted successfully.

I give the experiences of the writer in 1856. I have proved him to be correct. I quote again from Professor Balfour, and if one reads both extracts carefully it will be noticed how they agree in substance, especially so in regard to the proper time to insert leaves in order to root them. Professor Balfour said:—"Different as leaf is from stem, the process by which propagation takes place is the same. The leaf does not produce new leaves—it produces shoots. Given the possession of adequacy of active indifferent cells, that is to say, cells not already impressed with a definite morphological destiny, and of a sufficiency of food, then in proper conditions of moisture, aeration, and temperature, any leaf may be used as a cutting. Nor is the whole leaf necessary—petiole alone, or lamina alone, or portions even of these may serve."

The old experimenter of 1856 and Professor Balfour in 1912, draw attention to the proper stage at which leaves should be dealt with if they are to be used for the purpose of propagation, and it will be observed that what was demonstrated by a practical worker in 1856 was confirmed by science fifty-six years later.

I am glad that the paragraph written three-quarters of a century ago in *The Gardeners' Chronicle* has been republished and has thus caused the subject of "Propagation by Leaves" to be brought up again. The words of the writer of 1845 still remain true, and "experience is therefore wanted, and numerous experiments must be made to determine the details of such a practice." Professor Balfour's lecture—in which, by the way, full acknowledgment and tribute is made to the propagator and his staff at Edinburgh—should be reprinted and made accessible to every young worker who must study the problems of vegetative propagation. *George M. Taylor, Edinburgh.*

Since that date several new late varieties have been introduced, and doubtless have supplanted *Alfriston* to a certain extent, but I feel sure the latter can be found in many private fruit gardens in the West of England growing and fruiting freely as of yore. *J. Mayne, Eltham.*

Hampton Court Gardens.—The spring flowers in these famous gardens are now at their best. Large masses of Wallflowers of various shades of colour are in full flower; a fine bed of *Aubrietia* Dr. Mules covers some 50 square yards and is visible for a long distance. Other varieties of *Aubrietia* might be tried with advantage, as *Aubrietia* is the finest of all our spring flowers, and varieties of many distinct colours are obtainable. A novel bed is composed of *Cinerarias* in various beautiful shades of colour. The plants are in full flower and set about 18 in. apart. They are carpeted with white *Violas* and single white *Arabis*. Fortunately, there has been no frost to injure the *Cinerarias*. *Daisy Mavourneen*, a small double variety of a



FIG. 114.—ANTWERP FLOWER SHOW: VIEW OF THE COMBINED BRITISH EXHIBIT

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Double-worked Apples (see p. 142).—My experience of the cropping of varieties of Apples grafted on to other sorts is that more fruit is produced than when the trees are merely grafted on the ordinary single stock. For instance, James Grieve worked on *Benoni* gives large crops of smaller fruit. Cox's Orange Pippin and Allington Pippin crop enormously when double-worked on Irish Peach. Norfolk Beauty on Warner's King gives heavy crops in alternate years. Blenheim Pippin worked on *Benoni* gives more fruit than when grafted on to the ordinary stocks. I look upon double-grafting as much the best way to secure early crops of this Apple as preferred to any other method of culture. Lord Grosvenor is a good stock for inducing early fertility. *E. M.*

Apple Alfriston.—I have known this variety close upon half a century, and grew it for many years in Devonshire as a bush, and always found it a reliable cropper. My father, who was for many years outside foreman at Uncombe, Pince and Co.'s Nurseries, Exeter, thought a great deal of this Apple, and always recommended it to customers seeking a good late cooking variety. In the revised edition, by Thomas Moore, of the *Gardeners' Assistant*, published in 1873, the following synonymous names are given: Lord Gwydye's Newton Pippin, Oldaker's New, Shepherd's Pippin, Shepherd's Seedling, Baltimore and Newtown Pippin

beautiful rosy-pink colour, and several groups of *Primula malacoides* are flowering well. *Thalictrum asiaticum* makes a very effective group and attracts much attention from visitors. Ghent *Azaleas* are flowering well, in much variety of colour, and show to full advantage when seen through the dark Yew trees, surrounded by fresh, green grass. In the small garden are some large clumps of *Iris germanica* in full bloom; this is the best method of planting this class of Iris for effect; frequent moving weakens the plant and militates against a full display of flowers. In the pond garden *Pansies* in various shades of brown, gold and purple are very conspicuous and pleasing; *Camassia cusickii* is in flower; this plant is quite hardy and should be more extensively grown in gardens, for the pale-blue, starry flowers on tall stems are very effective, especially over a groundwork of white *Viola* or double *Arabis*. *Saxifraga crassifolia* flowered abundantly this spring, and was nearly over on April 29. Many other early flowers contribute to a charming floral picture. These famous gardens have completely regained their pre-war aspect, and great improvements have recently been made by clearing the banks of the canals and planting suitable subjects by the water side. *W. H. Divers, Westlean, Hook, nr. Surbiton.*

Freesia Buttercup. I should have finished my story last week. The second is, the Council of the R.H.S. was informed that the *Freesia* shown by Mr. Dohynny was *Van Tubergins Buttercup*, and it ordered the records of the Floral Committee to be altered accordingly. *B. Cuthbertson.*

SOCIETIES.

ANTWERP FLORAL EXHIBITION.

(Continued from p. 234.)

DURING the afternoon of the opening day, Mr. and Mrs. Geo. Monro, Junr., invited the Britishers to tea at the Grand Hotel, and in the evening Mr. Monro gave a dinner at the Restaurant de la Concorde, at which all the members of the British party were present, and to which he invited General Cabret, M. L. Straus and M. F. Steger, representing the Burgomaster and City of Antwerp; M. Edouard Pécher, president of the Antwerp Fêtes; M. Albert Grissar (an ardent lover and grower of Sweet Peas, but best known in England as the Secretary of the Royal Yacht Club of Belgium), and among horticulturists, M. Chas. de Bosschère, M. Emile Nagels, M. René van Rysselberghe. Altogether, there were about three dozen people present at this function, which, as Mr. Monro hoped served to cement anew the friendship between Belgium and Great Britain. In the speeches made, the Belgian gentlemen paid high tribute to the assistance Britain had

celently well. The principal entrance to the hall leads on to a broad platform from which the exhibition may be viewed as a whole, with its ground work of greensward and its setting of giant Palms (see Figs. 109 and 113).

Imagine then the scene which presented itself to the King of the Belgians when, at 10 a.m., on May 2. His Majesty opened the exhibition. The whole of the central area, except for a distant bank of Palms, Azaleas, and Rhododendrons, had been converted into a delightful garden, exquisite in its blending of colours, dainty in design and graceful in arrangements. On this platform the King met the exhibition officials and received an address of welcome. To this he replied in a gracious and quietly enthusiastic fashion; he expressed delight with the way in which Belgian horticulture was recovering from the effects of the war, regret that at such a moment France was prohibiting the importation of so much Belgian horticultural produce, and his appreciation of the generous way in which British horticulturists had shown their sympathy with Belgium, and the magnificent display they had made on this opening occasion. Mr. George Monro, Junr., Mrs. Monro, Mr. and Mrs. Brunton, M. Jolis,

nificent display. Mr. ENGELMANN showed Carola and its varieties in grand style, together with a number of new seedlings of great promise, and bold groupings of Mrs. Raphael, White Wonder, Coquette, Sunstar, Iona, Lucy Northlife (superbly grown and shown), Benora, Enchantress, Enchantress Supreme, Red Ensign, and many other fine varieties.

Two other large beds were filled with flowers supplied by Messrs. W. E. WALLACE AND SON, Eaton Bray; Messrs. ALLWOOD BROTHERS, Haywards Heath; Messrs. SHERWOOD, MASON, PAGE, and other Hampton growers. In these exhibits the varieties Robt. Page, Edward Page, May Day, Enchantress Supreme, Wivelsfield Wonder, Wivelsfield Claret, Mikado, Beacon and Enchantress were conspicuous, while two large stands, one at either end of a central bed of Heaths and Marguerites, were filled with May Day and Rose-pink Enchantress respectively. Messrs. WALLACE AND SON were awarded a Gold Medal.

The cut Roses, supplied chiefly by Messrs. E. STEVENS, LTD., and Messrs. A. STEVENS, LTD., both of Chesham, were used to fill huge vases and artistic baskets, each isolated, with a small basal grouping of Ferns and Selaginellas. The chief varieties were Liberty, Richmond, Mme. Abel Chatenay, Molly Sharman Crawford and Mrs. Stevens. They were glorious blooms and served to uphold the traditional excellence of the English national flower.

In low groups, in a cool setting of Moss and Laurel leaves, Tomatos, Cucumbers, Melons, Figs and a splendid lot of Apples were displayed and were ample evidence that British growers are as clever in the production of fruits and vegetables as in flowers. The contributors to this section were Messrs. GEO. MONRO, LTD., Mr. J. S. POUPART, THE GUERNSEY GROWERS' ASSOCIATION, Messrs. JOHN ROCHFORD AND SONS, Mr. D. INGAMILLS, Messrs. B. SHEARNE AND SON, and Mr. W. PINKER.

Messrs. STUART LOW AND CO. presented a beautiful group of Orchids and arranged their plants with great skill on a raised bed, in association with a small amount of rock work and ground work of green, fresh moss. Odon-tiodas, Brasso-Cattleyas, various hybrid Odon-toglossums, Laelio-Cattleya G. S. Ball, Cattleya Mossiae in variety, Oncidium McBeanianum, and some Cypripediums were the chief kinds displayed in a corner group that was a never failing centre of attraction.

One large bed was filled with Tausendschön and Jessie Roses, in pots, and proved a great success. In another place, Mr. P. LADD'S Heaths were a conspicuous feature. In addition to the firms named, Mr. W. PINKER, Portsmouth, Messrs. R. H. PAGE AND SON, Baker Street, Mr. H. G. MOUNT, and Mr. S. W. MOUNT, Canterbury, and Messrs. ANTHOS AND CO. contributed many flowers and plants which went to make this garden fair, while *The Gardeners' Chronicle*, Ltd., exhibited a series of the coloured illustrations that have appeared in these pages; these were arranged in two groups, placed only a foot or so above the ground and set about with green moss. His Majesty King Albert was greatly interested in them and said that he greatly admired the practical advice and fine illustrations published in the British horticultural Press.

The Chamber of Horticulture was awarded a special work of art for the collective British display.

Among the Belgian exhibits there were two of outstanding merit and both received the highest possible awards. One of these was a magnificent semicircular group of plants contributed by M. Albert, Krieglunger, Château den Brandt, Antwerp. This exhibit was about 25 yards long and about 12 yards deep at the centre. It was a splendid effort from one private garden and consisted of bold groupings of Cinerarias, Hydrangeas, Rhododendrons, Calceolarias, Azaleas, and Astilbes, against a background of fine Palms. In the central foreground, specimen plants of *Cryptanthus zonatus*, *Selaginella Watsoniana*, *Platycerium alcornoche*, and a number of interesting Bromeliads were arranged in a setting of rock and moss.

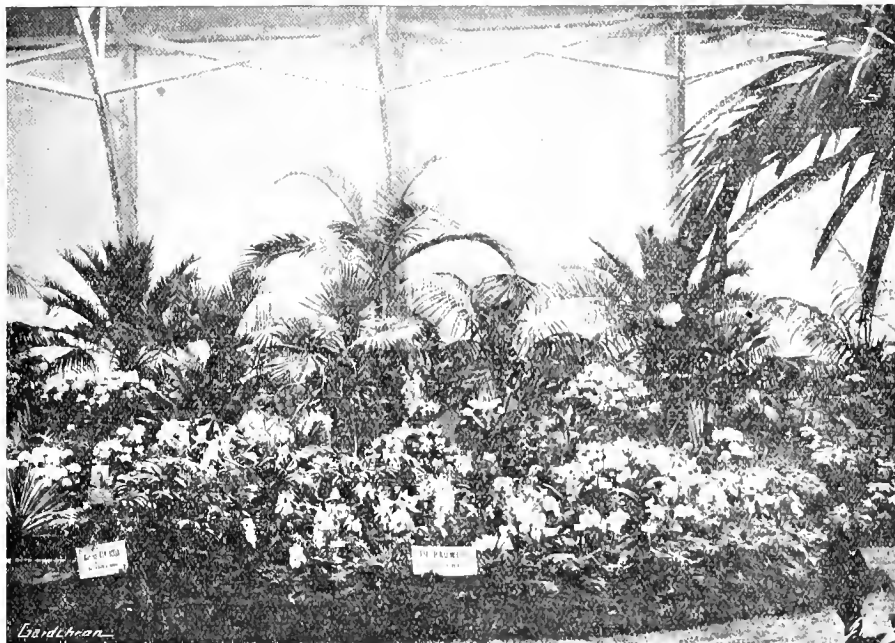


FIG. 115.—ANTWERP FLOWER SHOW: M. THEODORE PAUWEL'S EXHIBIT OF ORCHIDS.

rendered Belgium, the sacrifice of life and money on behalf of the rights and independence of their nation, and the hospitality we, as a people, had shown to the Belgian refugees. On the other side, the British speakers expressed their gratitude to the Belgian nation for its gallant stand at the outbreak of war; and their surprise and pleasure at the wonderful way in which Belgium is working to recover itself. As Mr. Monro put it, it was a great thing that Antwerp, at this period of time, should arrange a great International Exhibition and Fête—a sign of the splendid spirit the Belgian nation is showing. M. Pécher said that the British were the first to help Belgium to independence, the first to help when war broke out, the first to render aid to the distressed and, now, the first to show sympathy during the process of reconstruction by coming over and making the first great floral exhibition a complete success.

As is usual on the Continent, the ground within the building is laid out so that when the exhibits are in position, the whole presents a tasteful garden scene, wherein, obviously, there is no sign of those straight lines of staging or tabling, which characterise the majority of British floral exhibitions. M.M. Hubaut and W. Van Kuyck have designed the interior arrangements, and have done their work ex-

Mr. Chas. H. Curtis (*Gardeners' Chronicle*), and Mr. and Mrs. R. H. Page, were among those presented to His Majesty, and who accompanied him during his inspection of the floral exhibition.

Carnations formed the great feature of the British display (see Fig. 114) and these filled about half a dozen large beds, the flowers being arranged in tall stands and vases of various sizes over a ground work of Palms, Ferns and other foliage plants. The great varieties of these flowers, their high development, and the light and artistic manner in which they were displayed justly merited all the appreciation they received. Some idea of the extent of the British exhibit may be gathered from the statement that it included about 10,000 Carnation blooms.

Messrs. STUART LOW AND CO. had a fine exhibit of Carnations in which, among others, the varieties Mrs. Ives, Red Ensign, Coquette, British Triumph, Enchantress Supreme, Ivanhoe, Winter Glow, Sunbeam, the big pink perpetual Malmaison named Miracle, and the new purple Dorothy Mound, were boldly displayed. Messrs. Low and Co. were awarded an *Objet d'Art* for this display.

Mr. C. ENGELMANN filled two large corner groups close to the platform and was deservedly awarded a high-class work of art for his mag-

ROYAL HORTICULTURAL.

SCIENTIFIC COMMITTEE.

APRIL 27.—*Present*: Mr. E. A. Bowles, V.M.H. (in the chair), Messrs. A. Worsley, J. S. Arkwright, W. Hales, H. J. Page, G. Wilson, Dr. Voeleker, and F. J. Chittenden (hon. sec.).

White berried Aucuba.—Mr. ARKWRIGHT showed branches carrying many berries of the white-fruited form of *Aucuba japonica*.

Primrose "Evelyn Arkwright".—He also showed flowers of this fine Primrose, and said that all the seedlings of it which he has seen, as well as the original plant, were pin-eyed.

Cheiranthus ×.—He also showed flowers of the hybrid *Cheiranthus*, which had been before the Committee on several occasions, and drew attention to the prevalence of purple buds in this form, whereas those in some others of similar ancestry had yellowish or paler buds.

Hybrid Irises.—Mr. DYKES showed a series of hybrid Irises which he had raised, and briefly commented upon their peculiarities. In *Iris Alberti* the veining stops short upon the falls, and this character is handed on to its offspring. When crossed with *I. pallida* the early-flowering characteristics of *I. Alberti* are retained. *I. Korolkowi* × *I. atrofusca* gave a fine deep red purple flower. Seedlings of *I. stolonifera* produced flowers with either a blue or a yellow beard. He showed also *I. stolonifera* × *I. lutescens* and *I. Susiana* × yellow *lutescens*, the latter distinctly showing the veining characteristic of *I. Susiana*. *I. flavescens* is said to be a garden form of *I. variegata*, but it has been confused in gardens with *I. imbricata* of Lindley (which has also a purple form), a very distinct plant in its spathes, etc. *I. Korolkowi* × purple *chamaeiris* gave a tall flower spike with flowers having falls curiously curved under.

Chinese plants.—MRS. DU CANE GODMAN and Col. STEPHENSON CLARKE both sent flowering plants of some of the Chinese plants raised from seeds of Mr. Forrest's collecting; *Primulas* in the one case, *Meconopsis* in the other.

Hybrid Rhododendrons.—Mr. Magor, of St. Tudy, sent hybrid *Rhododendrons*, three of which showed inheritance mainly from the pollen parent's side, viz., *Rhododendron?*, probably a natural hybrid between *R. chartophyllum praecox* or *yunnanense* × *rubiginosum* (Forrest No. 5374); *R. × ambkeys* (*R. ambiguum* × *R. Keysii*); *R. × yuncinn* (*R. yunnanense* × *R. cinnabarinum*); and *R. × oreocinn* (*R. oreotrepes* × *R. cinnabarinum*). The last three were raised by the exhibitor.

MAY 11.—The usual fortnightly meeting was held on Tuesday last in the Vincent Square Hall, Westminster. The exhibits were sufficient to fill the large building, and three of the committees sat in the rooms on the first floor. The groups of flowers were exceedingly fine and the interior of the hall was gay with colour; masses of Tulips and *Rhododendrons*, collections of Roses, Carnations, Irises and Orchids, with a great wealth of Alpines and border flowers, were the principal subjects. The new method of arranging the tabling was successful in producing a better effect, but it did not solve the problem of crowding by visitors, the attendance being as numerous as on the two previous occasions. The placing of novelties on a special table met with general approval.

At the 3 o'clock meeting of the Fellows a lecture on "The Use and Relative Value of Trees in Great Britain" was delivered by Sir Daniel Morris.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, G. Reuthe, John Heal, John Green, S. Morris, C. R. Fielder, A. Ireland, Wm. Howe, H. J. Jones, John Dickson, Chas. Dixon, Arthur Turner, H. R. Derlington, Chas. E. Shea, E. F. Hazelton, W. P. Thomson, C. Elliott, N. Williams, Geo. Paul, Chas. E. Pearson, R. C. Notcutt, R. Cowley, Jas. Hudson, J. W. Barr, A. G. Jackman, W. R. Dykes and W. B. Cranfield.

AWARDS OF MERIT.

Paeony Souvenir de Professor Cornu.—A hybrid tree Paeony, with flowers of large size, full petalled and very imposing in appearance. The general tone is yellow stained with purplish rose, the centre being the more deeply stained. Shown by Mrs. BENSON, Buckhurst.

Clivia St. Nicholas.—A splendid variety of this excellent greenhouse plant, having flowers of large size, coloured orange-red, with a golden base. The habit is dwarf and compact; the foliage is dark green and the spike of seven widely expanded flowers are borne on a short, stout stalk. Shown by the Hon. ROBERT JAMES, St. Nicholas, Richmond, Yorkshire (gr. Mr. Benstead).

Primula Alben Aroon.—A beautiful hybrid from *P. pulverulenta* × *P. Cockburniana*. The stout scape is mealy and may bear as many as four whorls of flowers, the latter varying in colour from dark red to almost scarlet. The plant is robust and is a valuable addition to the hardy *Primulas*. Shown by Mr. M. PRICHARD.

Saxifraga Monica.—A very large flowered hybrid of the mossy section. The flower spikes are about 6 inches tall and bear a few of the large flowers, which are deep rose-red in the bud, but open paler, showing a white ground stained with red. The individual pips are more than an inch across.

Myosotis dissitiflora hybrida Roll of Honour.—A magnificent Forget-Me-Not with beautiful clear, opal-blue flowers, as large as those of *Omphalodes Lucillae*. The young flowers are pink and assume the delicate blue tint as they age. This variety is much superior to the type and a valuable spring flowering plant. Both these novelties were shown by Mrs. LLOYD EDWARDS.

Azalea Dr. Oosthoek.—A *Mollis* hybrid with large flowers of a red shade, flushed with orange, a distinct tone in *Azaleas* and very beautiful. The plant is exceedingly floriferous. Shown by Messrs. R. WALLACE AND Co.

BOTANICAL CERTIFICATE.

This award was recommended for a beautiful blue form of *Iris kashmiriana* named *Raniket*. It was introduced from Asia by Mrs. M. E. Troup in 1914 and was shown by her son, Captain R. Troup, Bridgwater. The standards are lavender blue and the falls purplish-blue, edged with a lighter blue. The beard is white. The flower is fragrant.

GROUPS.

The hardy Ghent and *Mollis* *Azaleas*, with their crosses, were perhaps the most important feature of the show: at any rate, they were most brilliant and added much to the attraction of the hall. The new style of arranging the spaces favoured these splendid shrubs, and the exhibitors were enabled to display the immense decorative value of these *Azaleas* to their fullest extent. Messrs. R. and G. CUTBERT brought a great quantity, which embraced all the possible colours and types, and the skilful arrangement of the glowing colours delighted the eye. Besides the great variety of *Mollis* and *Sinensis* hybrids which predominated, they also included some dainty bushes of the variable *Azalea Kaempferi*, which bore smaller flowers of artistic shades (Silver gilt Flora Medal).

Messrs. R. W. WALLACE AND Co. also arranged many splendid bushes of similar *Azaleas* and associated them with many Japanese Maples. In another exhibit Messrs. Wallace displayed many good Irises, particularly the graceful variety *Tol-long*, with floriferous little bushes of *Daphne creorum* major and many Alpines (Silver-gilt Flora Medal).

Messrs. JOHN WATERER, SONS AND CRISP filled an angle of the hall with magnificent *Rhododendrons*, mostly of *Pink Pearl*, *Bagshot*, *Ruby*, *Cynthia* and *Corona*, and also contributed a tastefully-arranged collection of Alpines (Silver Flora Medal).

Messrs. J. CHEAL AND SONS were also prominent exhibitors of hardy *Azaleas* and *Rhododendrons*, which they brought in great beauty. The arrangement was particularly appropriate and compelled the admiration of the visitors. In another place Messrs. Cheal had examples of the valuable *Star Dahlias* which they have made

The other very notable display was made by M. F. NAGELS, Wilryck, Antwerp, who created a charming garden scene in one corner of the hall; this was a very large exhibit, with three big and rugged Scotch Firs as a background, with Bamboos and *Rhododendrons* grouped beneath them in such a way as to give a wonderful sense of distance, and to suggest that if the winding grass paths were followed they would lead to Alpine gardens, water gardens, ferny dells, and other delights. Small groups of Japanese Maples and *Mollis* *Azaleas* lent colour to this garden picture, while isolated plants of *Dielytras*, *Tiarellas*, *Calthas*, *Astilbes*, *Geums*, and even big double *Daisies* occupied just the positions they were most suited to fill. In one shady corner, *Lily of the Valley* and *Viola cornuta* were very happily associated under Japanese Maples.

Azaleas were fairly well shown by M. F. NAGELS, but the plants were of modest size, and such as find a ready market for general floral decorations. They were not of the large exhibition size so generally associated with Continental spring shows.

M. L. BERCKELAARS ET FILS, Rue Lamoigniere, filled one large corner of the hall artistically, and arranged one of those garden scenes which generally find a place at such shows as this, and which add so greatly to the pleasing effect of the exhibition as a whole. Palms, *Euonymus* and *Conifers* were disposed in groups to form a background for a scene wherein there was a rock garden, with dwarf Indian and *Mollis* *Azaleas*, and a cascade of blue *Ageratum*—a most artistic item—a garden seat made out of an old log and *Spiraeas* in the lower portions. A work of art was awarded for this large and pleasing effort.

M. M. BIER AND ANKERSMID, Melle, near Ghent, were large exhibitors, and worthily won a high award for their display. It is not altogether an easy matter to bring gorgeously-flowered *Azaleas*, and even more brilliant *Anthuriums* into harmony, but this firm managed the business well, and associated these plants with well-grown *Araucarias*, *Phoenix Roebelinii* and *Dracaena Doucetii*. A conspicuously fine plant in this easy and effective display was a big example of *Cymbidium Lowianum* with six spikes of flowers.

M. LEON KERKVOORDE, Wetteren, won a Gold Medal and other awards for *Rhododendron Pink Pearl* and *Azaleas*. The FLANDRIA COMPANY, Ghent, supplied a very large number of Bay trees and the huge Palms—*Kentia Belmoriana*, *K. Forsteriana*, *Scaevola elegans*, *Chamaerops Fortunei*, *Rhapis flabelliformis*, *Latania borbonica*, *Arecas*, and others—which, placed at vantage points about the exhibition, lent to the whole scene an air of elegance, and gave it a distinct subtropical effect. It was a cause for general surprise among the British visitors that the Flandria Company had managed to keep these fine specimen plants, as well as many big *Acacias* and *Callistemons*, throughout the war period. Needless to say the Company figured prominently in the list of awards.

M. ARTHUR BRYX, Chateau Anvers, contributed a very large and interesting display reminiscent of pre-war times. In addition to the setting of Palms, *Azaleas*, and *Rhododendrons* M. BRYX exhibited some excellent *Anthuriums*, a few good *Amaryllis*, and large specimens of *Phyllotaenium Landenii* and *Sanchezia nobilis*.

M. K. VAN BELLEGHEM, of Loochristy, contributed splendidly-grown examples of the popular *Rhododendron Pink Pearl* and many Indian and *Mollis* *Azaleas*. Not only did he dispose examples in the hall, but he grouped large numbers out of doors, near the Japanese garden, which is not yet complete, although the water, the bridge, the tea house and the stone lanterns, with Bamboos, *Funkias*, Irises, and *Magnolias* suggest that in due course this feature will be one of the beauty spots of the permanent floral exhibition.

M. THEODORE PAUWEL'S fine group of Orchids, which is illustrated in Fig. 115, was a notable contribution to the floral display, and included well-grown plants of a variety of these beautiful flowering plants.

a speciality, and also exhibited many seasonable Alpines (Silver Banksian Medal).

Just inside the doorway Mr. L. R. RUSSELL had a showy group of standard Ghent Azaleas, particularly of the white variety Milton, with Rhododendrons and quaintly-shaped Wisterias in flower (Bronze Flora Medal).

Messrs. R. GILL AND SONS showed that, although the season commences earlier at Falmouth than in the Home Counties, Rhododendrons are still in season, and they also exhibited gorgeous sprays of Embotrium coccineum (Bronze Flora Medal).

Rhododendrons and Azaleas, with other shrubs and various Alpines were set up by Mr. G. REUTHE (Silver Banksian Medal); while Messrs. GEO. JACKMAN AND SONS displayed many splendid trained plants of Clematis. The varieties Lasurstern, Mrs. George Jackman, The President and Countess of Lovelace were magnificent (Silver Grenfell Medal).

Messrs. J. PIPER AND SONS included an attractive plant of the shrubby *Convolvulus Cneorum*; a collection of Clematis and other shrubs, with various Alpines (Bronze Grenfell Medal).

Roses were represented by several collections of fresh and beautiful blooms, as well as by a group of floriferous polyantha varieties, interspersed with Astilbes, by Messrs. W. CURBUSH AND SONS, who also had a collection of Alpines (Silver Grenfell Medal).

Mr. ELISHA HICKS showed such Roses as Mrs. Elisha Hicks and his new Queen of Hurst in great excellence (Silver Banksian Medal).

Messrs. B. R. CANT AND Co. had a brilliant stand of Rose Covent Garden associated with such sorts as the new *Padre* and Paul's Scarlet Climber (Silver Grenfell Medal).

Carnations were also prominent, and of these excellent collections were shown by Messrs. STUART LOW AND Co., who also staged various Mimosas and the variegated *Azalea indica* (Silver Flora Medal). Messrs. ALLWOOD BROS., who, besides a great number of the best standard varieties of Carnations, showed the great attractions and value of their Allwoodii type in Joan and Harold (Silver Grenfell Medal). Mr. C. ENGELMANN also contributed an excellent collection of Carnations (Silver Grenfell Medal).

Messrs. H. B. MAY AND SONS brought their customary exhibit of choice greenhouse Ferns, which served to display various groups of such flowering plants as *Verbenas* and *Hydrangeas* (Bronze Banksian Medal).

Mr. C. TURNER had an interesting collection of Lilac sprays, which included, of the double-flowered varieties, *Madame Lemoine*, *President Viger*, *Jeanne d'Arc*, and *Chas. Sargent*; while *Reamour* and *Madame F. Morel*, of the singles, were also especially noteworthy (Silver Grenfell Medal).

Alpines and border flowers were very numerous, and, in addition to those mentioned in conjunction with other exhibits, were shown by the following: Mrs. LLOYD EDWARDS, who had splendid Saxifrages (Silver Grenfell Medal); Mr. MAURICE PRICHARD, who had an especially fine feature in a brilliant group of *Primula Aileen Aroon* (Silver Grenfell Medal); Messrs. R. TUCKER AND SONS, who associated a fine spike of the fascinating *Iris Susiana* with *Veronica Hulseana* and *Pentstemon Scouleri* (Bronze Banksian Medal); Mr. G. W. MILLER made a great feature of *Heuchera triaralloides* with *Trollius* and *Polyanthuses* (Bronze Flora Medal); Mr. W. WELLS, JUNR., included a generous batch of *Gem Borisii* in his collection (Bronze Banksian Medal); Messrs. G. BUNYARD AND Co. had an ambitious but unconvincing garden of *Iris* and *Tulips*.

Mr. AMOS PERRY showed *Tulip Daphne Cneorum* major, *Cheiranthus Pamela* Purshouse and other hardy flowers (Silver Banksian Medal). Messrs. REAMSBOTTOM AND Co. had gorgeous blooms of *Anemone St. Brigid* (Bronze Grenfell Medal), and Messrs. CARTER, PAGE AND Co. had many pans of *Violas* (Bronze Grenfell Medal). Mr. G. R. DOWNER exhibited spikes of *Lupines* in variety (Bronze Banksian Medal), and the Rev. C. A. JARDINE brought "flowers from a London garden" (Bronze Banksian Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Gurney Wilson, R. A. Rolfe, William Bolton, Arthur Dye, S. W. Flory, J. Charlesworth, W. J. Kaye, J. E. Shill, Fred K. Sander, T. Armstrong, E. R. Ashton, Pantia Ralli, Frederick J. Hanbury, R. G. Thwaites, C. J. Lucas and R. Brooman-White.

AWARDS.

AWARD OF MERIT.

Odontioda Gloss Broadlands variety (*Oda. Charlesworthii* × *Odm. triumphans*), from E. R. ASHTON, Esq., Broadlands, Camden Park, Tunbridge Wells. A very handsome *Odontioda* raised by Messrs. Armstrong and Brown, who have shown several forms of it. The flowers, which have a waxlike texture, have equally broad sepals and petals, deep mahogany-red with some yellow on the lip.

Odontioda Fabia, Ralli's variety (*eximium* × *Aglaoon*), from PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes). A superb flower, of perfect shape, heavily blotched with claret-purple, the white ground showing between.

Cattleya Snowflake var. *Nol* (*Dusseldorfii Lindley* × *labiata alba*), from Sir H. S. LEON, Bart., Bletchley Park, Bucks. Flower of fine form, white, with chrome-yellow disc to the lip.

GROUPS.

Silver Flora Medals were awarded to H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), for a good group, with showy *Miltonias*, including a very handsome *M. Charlesworthii*. Specially good *Odontoglossums* and *Odontiodas* included fine forms of *Odm. crispum*, the variety *Ivanhoe* being very distinct, and *Odm. Lambeauianum* var. *stapelia* uniformly spotted as in some forms of *Odm. Jasper*. Some of the older varieties of *Odontoglossums* and some rare species were also shown.

E. R. ASHTON, Esq., Broadlands, Camden Park, Tunbridge Wells, for an exceptionally good group of very handsome *Odontoglossums*, *Odontiodas* and other hybrids. The white and blotched forms of *O. crispum* were well represented, and among the *Odontiodas* the new *Odontioda Camden* (*Oda. Coronation* × *Odm. illustrissimum*) was a very handsome form with perfectly-shaped, richly-coloured flowers.

Messrs. CHARLESWORTH AND Co., Haywards Heath, for a fine group of beautiful *Odontoglossums*, *Cattleyas*, *Laelio-Cattleyas* and *Miltonias*, the home-raised forms of the last-named being superb, the best forms of *Charlesworthii* and *Lyoth* very remarkable.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, for a pretty and interesting group including several of their new hybrid *Odontoglossums* and a very handsome *Odontioda* of the *Oda. Decia* batch, which secured an award at the last meeting. *Miltonias* and *Laelio-Cattleyas* were also well shown.

Silver Banksian Medals were awarded to PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes), for a group including interesting hybrid *Odontoglossums*, one cross, to which we shall refer later, being especially interesting.

Messrs. SANDER AND SONS, St. Albans, for a group containing a specially good selection of *Miltonias*, the central plant of *M. Charlesworthii* being a very handsome form. Among the species shown were a curious form of *Dendrobium Pierardii*, fine scarlet *Cochlioda Noeziana*, the rare *Bulbophyllum Penicillium*, with thick rachis and fringed lip, *Bulbophyllum picturatum* and others.

OTHER EXHIBITS.

Sir HERBERT S. LEON, Bletchley Park, showed the handsome *Laelio-Cattleya* Sir David Beatty var. *Leoniae*; a pretty *Brasso Cattleya Digbyano-Schröderae*, and the distinct rich, rose-pink *Miltonia vexillaria Thompsonii*.

PANTIA RALLI, Esq., showed *Odontoglossum Emma* (*eximium* × *Ashtedense*), of fine form and rich claret colour.

R. G. THWAITES, Esq., Streatham Hill, showed *Laelio-Cattleya Domes* (*L. C. Dominiana* × *C. Mossiae*), a fine flower, rose, with claret lip.

Baron BRUNO SCHRÖDER, The Dell, Englefield green (gr. Mr. J. E. Shill) showed cut flowers of fine forms of *Laelio-Cattleya Aphrodite* and *L. C. Fascinator*, light and dark forms being represented by spikes of four and five flowers.

The Hon. ROBERT JAMES, Richmond, Yorks., showed *Odontoglossum St. Nicholas* (*eximium* × *Promerens*), with richly blotched flowers.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), G. F. Tinley, S. B. Dicks, W. Bates, A. R. Allan, Owen Thomas, Geo. Kelf, A. W. Metcalfe, F. Jordan, Ed. Beckett, W. Humphreys, E. A. Bunyard, W. H. Divers, John Harrison, J. S. Kelly and A. Bullock.

Sir MONTAGUE TURNER exhibited twenty-four dishes of Apples for which a Silver Banksian Medal was awarded. The varieties included Christmas Pearmain, Duke of Devonshire, Starmer Pippin, Rival and Bramley's Seedling.

Narcissus and Tulip Committee.

Present: Messrs. G. A. Bowles (in the chair), W. A. Dykes, J. W. Jones, Geo. Churcher, Herbert Smith, W. A. Watts, J. D. Pearson, Jan de Graaf, W. R. Cranfield, Wm. Poupard, F. H. Chapman and Rev. J. Jacob.

AWARDS OF MERIT.

Tulip Alcece. A hybrid of Darwin × cottage, with flower of goblet shape and coloured rich, carmine-crimson. The base is white with opal blue staining at the edges.

Dido. A hybrid of the same section as the preceding, with longer, larger flower stained rose-carmine on a bronze coloured ground, the interior being almost wholly bronze. Both these varieties were shown by Messrs. E. H. KRELAGE AND SON, Haarlem.

GROUPS.

Messrs. ALEX. DICKSON AND SONS, exhibited a most glorious collection of May flowering Tulips from their Marks Tey trial grounds. This was one of the very best collections that we ever remember having seen, and in this notoriously difficult season it was all the more creditable. The arrangement also showed to the full the wonderfully fine blooms. Of the very many varieties so well set up, mention may be made of Logan Rose, a gorgeous, satiny-pink variety; Bouton d'Or, the well-known deep yellow variety; Mr. Farncombe Sanders, crimson-scarlet, Orange King, La Tulipe Noire, Sunset, rich Orange and Rev. Harper Crewe, salmon-rose (Gold Medal).

Messrs. BARR AND SONS had an interesting collection of May varieties at the end of the hall and these included Peter Pan, Boadicea and Goudvink, of beautiful bronze shading; Afterglow, Fabius and Ingelscombe Yellow in splendid form. (Silver-gilt Flora Medal).

Messrs. J. GRULLEMANS AND SON brought a large collection of Dutch-grown blooms, but they were mostly weather stained and, though of sufficient size, only moderately well shaped. Of those shown, we selected the following as being the best: Cardinal Manning, Dainty Maid (a pretty flamed bloom), Bronze Queen, Daybreak, Vulcan and La Turenne (Silver Flora Medal).

Messrs. G. BUNYARD AND SON arranged Tulips with Irises in the form of a "garden" on the floor, but it was not a happy inspiration, though all the blooms were good. (Silver Banksian Medal).

Messrs. E. H. KRELAGE AND SONS brought over from Holland a selection of novelties, of which two received Awards of Merit.

Messrs. R. H. BATH, LTD., arranged a very attractive collection of Tulips. The many varieties included excellent vases of *Gesneriana lutea*, *La Tulipe Noire*, and the nearly black *Philippe de Commines* and *Picotée* (Silver Flora Medal).

ROYAL NATIONAL TULIP.

MAY 11.—This Royal and Ancient Society still exists but, judging from its annual show, which was held on this date in conjunction with the R.H.S. fortnightly meeting, in little more than name, for the show, which is always the outward and visible sign of a floricultural society's

activities, has almost reached the vanishing point. Seven more or less decorative classes were arranged, but failing to draw entries, were abandoned.

There were three exhibits of 12 Rectified Tulips, of which the best was by Mr. J. W. BENTLEY, Middleton, whose best blooms were Sam Barlow (flamed bizarre), Stockport (feathered bybloemen) both Premier blooms; Mabel (feathered rose), and Wm. Annibal (feathered bizarre). 2nd, Mrs. J. H. HOLDEN, Llandudno, who had good blooms of Wm. Annibal, Sam Barlow (fl. biz.), and Carbuncle (fl. byb.). 3rd, Mr. W. PETERS, Cambridge. Mr. PETERS was awarded first prize for 6 very good Rectified blooms, which included Sam Barlow, both, fr. fl. biz.), Mabel (fl. rose), and Mrs. Jackson (fl. byb.). Mr. PETERS was also awarded 2nd prize for 3 Flamed Tulips and was 1st for 3 Breeder blooms, which included fine examples of Adonis, bright purple and Sulphur, deep rose. 2nd, Mr. H. S. BARTLETT, with a good bloom of Goldfinder. Mr. BARTLETT was also first for 6 Rectified and 3 Breeder blooms.

NATIONAL AURICULA AND PRIMULA Midland Section.

APRIL 30, MAY 1.—The annual exhibition of the above Society, held at the Edgbaston Botanical Gardens on this date was smaller than usual and the quality of the flowers below that of previous years. With few exceptions, competition was disappointing, due principally to the abnormally early season.

The most successful exhibitor in the open Division for Show Auriculas was Miss WINN, Selly Park, Birmingham (gr. Mr. T. T. Sheppard), who secured eight first and two second prizes, the runner-up being Mr. C. S. YEOMANS, the energetic Secretary of the Society. Miss WINN's first prizes were awarded for (1) eight varieties, which included sturdy examples of Edith Winn, Shirley Hibberd, Eucharis, Mrs. Henwood and George Lightbody. (2) Six varieties, the best flowers being Mrs. Potts, Queen of Spain and Mrs. Henwood. (3) Three varieties open only to local growers. (4) One green-edged variety with Mrs. Henwood. (5) Grey-edged with George Lightbody. (6) White-edged with Eucharis. (7) Self with Harrison Weir. (8) Self, reserved for yellow, primrose or buff with Edith Winn. Mr. C. S. YEOMANS won second prizes for (1) eight varieties. (2) Six varieties. (3) Grey-edged, and (4) local growers' class. Mr. C. REEVES was placed first in a class for four varieties, and in another for two varieties. Mr. J. D. WILLIAMS being second in each class. The last named exhibitor beat Miss WINN in a class for three selfs, with pleasing specimens of Mrs. Potts, Harrison Weir, and Miss Willmott. Mr. RAKEN was a successful maiden grower and Mr. A. E. KEELING excelled in the class reserved for young amateur growers.

There were five classes for seedling show Auriculas, but there was competition only in one of them, viz., Self. The premier award went to Mr. R. HOLDING, who had an exquisite specimen of Jean Holding. 2nd, Mr. C. S. YEOMANS, with Yellow Hammer.

ALPINE AURICULAS

Miss WINN had the best eight varieties and six varieties. The winning exhibit of four varieties came from Mr. R. HOLDING. The leading pair of plants in another class was staged by Mr. J. D. WILLIAMS, who also won first prize in the class reserved for local growers. Mr. C. REEVES showed the best gold centred variety, and Miss WINN sent the daintiest light centred flower. Mr. J. H. CAMM and Mr. SAUNDERS were pronounced the best maiden grower and young amateur grower respectively.

SEEDLING ALPINE AURICULAS.

The leading exhibit of four varieties came from Mr. A. GILBERT, who was closely followed by Mr. J. D. WILLIAMS. Mr. C. REEVES had the winning pair of plants with Landrail and Miss Maid Shepherd; 2nd, Mr. A. J. WADLEY, whose plant of Winnie Darby secured for him the 1st

prize in the class for a light centred variety.

Mr. J. FREEMAN showed the best gold-centred variety. Mr. C. S. YEOMANS won 1st prize for four pots of Polyanthus.

PREMIER FLOWERS.

Show Auricula *Henry Wilson*, exhibited by Mr. C. S. YEOMANS.

Seedling Show Auricula *Jean Holding*, a deep maroon self, exhibited by Mr. R. HOLDING.

Alpine Auricula *Doris*, exhibited by Mr. J. D. WILLIAMS.

Alpine Seedling Auricula *Mrs. Saunders*, exhibited by Mr. FREEMAN.

FIRST-CLASS CERTIFICATES.

Show self Auricula *Mrs T. E. Owens*, exhibited by Mr. C. REEVES.

Show self Auricula *Jean Holding*, exhibited by Mr. R. HOLDING.

Alpine Auricula *Mrs. Saunders*, exhibited by Mr. FREEMAN.

Alpine Auricula *Landrail*, exhibited by Mr. C. REEVES.

Seedling gold centre Alpine Auricula *Jennie Scott*, exhibited by Mr. A. GILBERT.

The Silver and Bronze Medals, offered by the Birmingham Botanical and Horticultural Society, were won by Miss WINN and Mr. C. S. YEOMANS respectively. The Ludford Silver Medals for show and alpine Auriculas went to Miss WINN and Mr. J. D. WILLIAMS in the order named. The Udale Silver Medal was won by Mr. J. H. CAMM.

HONORARY EXHIBITS.

A Silver-gilt Medal was awarded to Messrs. ARTHUR R. BROWN, LTD., King's Norton, for Violas, and a Silver Medal to Mr. C. S. YEOMANS, Wythall, for Calceolarias, Polyanthus and Wallflowers

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on May 6, the following members of the Committee were present:—R Ashworth, Esq. (in the chair), Messrs. A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, J. Howes, A. Hamner, D. McLeod, Dr. F. T. Paul, E. W. Thompson, and H. Arthur (Secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Cattleya Tityus var. *Royal Monarch* (Enid x Octave Doin), a large, deep self-coloured flower of perfect shape, with well formed deep coloured lip; *Laelio-Cattleya Luminosa aurea* *The Premier*, a large, well formed flower, with deep yellow sepals and petals and maroon coloured lip; *Odontioda Orphana*, a brilliant coloured flower; from S. GRATRAX, Esq.

Odontoglossum Pescatorei albens *Ogilvie's* var., a white flower of good substance, the column bright orange; from Mrs. GRATRAX.

O. Promerens var. *Duchess* (eximium x crispum), a large, well shaped flower, coloured light chocolate brown, the segments lighter tipped; from P. SMITH, Esq.

Odontioda Zenobia Houghtonii (Charlesworthii x pereultum), a large flower of good form and substance, intensely dark purple with small white lines on the edge of the lip; from F. HOUGHTON, Esq.

AWARDS OF MERIT.

Cymbidium Alexanderi vars. *Ideal* and *La France*, from the Rev. J. CROMBIEBOLMIE.

Od. excellens var. *Golden Dawn* and *Cattleya Marguerita* (intertexta alba x O'Brieniana alba), from S. GRATRAX, Esq.

Dendrobium venustum (primulinum x Picardii), from Capt. W. HORRIDGE.

AWARDS OF APPRECIATION.

Odontoglossum crispum Trojan (1st) and *O. Promerens Prince Henry* (1st), from S. GRATRAX, Esq.

S. GRATRAX, Esq., Whalley Range (gr. Mr. J. Howes) was awarded a large Silver Medal for a group; Messrs. CYRIL AND SONS, Cheltenham, also staged a group for which a Silver Medal was awarded.

MARKETS.

COVENT GARDEN, May 11th.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal saleemen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—Eds.

Fruit: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Bananas, singles	20 0-35 0	Valencia	200 } s. d. s. d.
doubles	30 0-35 0	240	} 40 0-48 0
Cape Fruit—		250	
—Pears, ..	14 0-18 0	Melons, Guernsey,	
—Grapes, white,	10 0-25 0	each	5 0-8 0
—Red Hancock,	10 0-25 0	Muscats, English,	per lb. .. 20 0-23 0
—English Hambro	5 0-8 0	Pineapples, each	2 0-6 6
Lemons—		—Naples 300's	17 0-28 0
—Oranges' Murcia		special	12 0-14 0
240	} 45 0-50 0	best ..	8 0-10 0
300		IL ..	5 0-6 0
ex. 500	55 0-65 0	Figs, forced per doz.	9 0-25 0

Vegetables: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Asparagus, English.		Mushrooms, per lb.	2 6-3 0
—Cavaillou, ..	1 3-1 6	Oatons,	
—Devoe, 100's ..	10 0-18 0	—Egyptian, very	
—Evesham ..	5 0-12 0	good, per bag	28 0-29 0
—Cambridge ..	2 0-6 0	—Spring, per	
— ..	1 3-1 4	doz. bunches ..	4 0-6 0
Beans, Guernsey,		Parsley, per doz.	
per lb. ..	2 3-2 6	bunches ..	2 6-2 0
—Worthing ..	2 0-2 6	Potatoes,	
Beets,		—Guernsey, per lb.	0 6-0 7
per cwt. ..	12 0-15 0	—Algerian, new, ..	0 4-0 5
Cabbage, per doz.	2 0-3 0	—1919 crop English &	
Carrots, per cwt.	12 0-18 0	Scotch, controlled,	
Cauliflower, per		per ton, (about)	£16-£18
doz. ..	6 0-10 0	—Irish, ..	£17- —
Cucumbers flats		Radishes, per doz.	
36's	} 18 0-23 0	bunches ..	2 0-3
42's		Rhubarb, forced	
48's		per doz. ..	3 0-3 0
Greens, per bag ..	2 0-3 0	Tomatoes, Tenerife,	
Herbs, per doz. bun.	4 0-6 0	Best, per bundle	35 0-40 0
Lettuce, English		—Guernsey ..	20 0-22 0
per doz. ..	1 6-2 0	—English, Pinks, ..	22 0-24 0
—Dutch ..	1 6-2 0	Pink & Whites ..	22 0-24 0
Mint, per doz. bun.	6 0-8 0	Blues ..	21 0- —
Mustard and Cress		Whites ..	21 0- —
per doz. punnets	1 6-2 0	Turritips, per bag	8 0-12 0
		Watercress, per doz.	0 9-1 0

REMARKS.—Business for some days has been rather slow, but at the time of writing prospects were brighter, and a good demand obtained for most produce available. New Potatoes have been particularly heavy in supply, with considerable depreciation in value for a few days, and prices are now in the neighbourhood of 6d. per lb. Cucumbers are also in supply, with little variation in prices from those ruling a week ago. A few days of warm weather have increased the available quantities of English Tomatoes, and although prices are fairly high, there is a great demand. Apples: Latest shipment of Australian Apples met a ready demand at full control price, although a few parcels of over-ripe fruit have been noted. South African fruit is in shorter supply, and the season is drawing to a close. Pears have been in excellent condition, but Grapes are variable. English Black Hambro Grapes are improving in quantity, but remain almost prohibitive in price. Forced Melons, both home-grown and Guernsey, are available. Finer weather has encouraged increased supplies of home-grown Asparagus. French Cavaillon is in erratic supply, and prices are somewhat low. Forced Peas are to be had in greater quantities, and prices have an easier tendency. Cauliflowers: Some excellent Cauliflowers are available from Holland, and prices realised are satisfactory. Cabbages and other greens remain plentiful, and larger quantities of new Potatoes from the Channel Islands, Cornwall and St. Malo being available, the demand for old crop will be lessened.

Plants in Pots, Etc.: Average Wholesale Prices.

(All 48's per doz. except where otherwise stated.)		s. d. s. d.		s. d. s. d.	
Aralia Stehldii ..	10 0-12 0	Hydrangeas,			
Asparagus plumosus ..	12 0-15 0	—white per doz.	24 0-36 0		
—Sprengel ..	12 0-18 0	—pink ..	24 0-48 0		
Aspidistra, green	48 0-72 0	—blue ..	30 0-60 0		
Boronia heterophylla ..	24 0-30 0	Lilium lancifolium			
Cacti, per tray		rnbrum 48's 22's 4's	3 6-4 6		
12's, 15's	5 0-6 0	Marguerites-white	18 0-24 0		
Erica Cavendishii,		Mignouette	21 0-24 0		
per doz. ..	30 0-36 0	Palms, Keotia	24 0-30 0		
—persulata ..	24 0-36 0	—60's ..	15 0-18 0		
—Wilmoreana ..	30 0-36 0	—Cocos ..	24 0-38 0		
—nigricata ..	30 0-36 0	Rhodanthes ..	15 0-18 0		
Genistas ..	24 0-30 0	—Rhododendrons	7 6-15 0		
		Spiraeas white	30 0-42 0		
		—pink ..	36 0-48 0		
		—Stocks, white,	18 0-24 0		
		—red, ..	15 0-21 0		

Ferns and Palms: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Adiantum		Nephrolepis, in	
caucatum 48's,		variety 48's ..	12 0-18 0
per doz. ..	12 0-15 0	—32's ..	24 0-36 0
—elegans ..	15 0-18 0	Pteris, in variety	
Asplenium 48's, per		48's ..	12 0-21 0
doz. ..	12 0-18 0	—large 60's ..	5 0- 6 0
—32's ..	24 0-30 0	—small 60's ..	4 0- 4 6
—nidus 48's ..	12 0-15 0	72's per tray of	
Cyrtomium 48's ..	10 0-15 0	15's ..	3 6- 4 0

REMARKS.—In this department there is a good selection of flowering plants, foliage and bedding plants. Rhodanthes are the newest line offered in flowering plants. Hydrangeas, blue, white and pink, make a great display. Fine plants of rambler Roses are to be had, and a few choice Ericas are still offered. White and pink Spiraeas and Funkias are available and in demand.

Out Flowers, &c.: Average Wholesale Prices.

s. d. s. d.		s. d. s. d.	
Anemons St. Brid-		—Flora plena	
get, per doz. bun.	4 0- 5 0	double white ..	8 0-12 0
Carnations, per doz.		—Orebide, per doz.	24 0-30 0
blooms, best		—Cattleyas ..	24 0-30 0
American var.	3 0- 5 0	—Cypripedium	
Cornflower, per		per doz. ..	4 0- 6 0
doz. bun. ..	5 0- 6 0	Paeonies, coloured,	
Gardenias, per		per doz. bun. 6's	12 0-15 0
box. 12's	8 0-10 0	Pelargonium, dou-	
—18's	4 0- 5 0	ble scarlet, per	
Gladioli, per bun.		doz. bun. 6's ..	15 0-18 0
—The Bride ..	5 0- 6 0	—white ..	12 0-15 0
—Blushing Bride	2 6- 3 0	Poppies, Iceland per	
—Peach Blossom	3 0- 3 6	doz. bunch ..	6 0- 8 0
Gypsophila, per		Richardia, (Arms),	
doz. bun. ..	12 0-18 0	per doz. bins.	9 0-15 0
Heather, white,		Roses, per doz.	
per doz. bun.	10 0-12 0	—General Jacqu-	
Iris, Spanish	5 0- 7 0	eminot ..	2 6- 3 0
—White, per bun.	2 6- 3 6	—Ophelia ..	4 0- 6 0
—Maude ..	2 6- 3 0	—Richwood ..	4 0- 6 0
—Blue, ..	3 0- 3 6	—Sunburst ..	4 0- 6 0
—Yellow, ..	3 0- 3 6	—Niphotos ..	3 0- 4 0
Lapagerias, per doz.		—W. Stevens ..	3 0- 4 0
blooms ..	5 0- 6 0	—Molly S. Crawford	3 0- 4 0
Lilium candidum,		—Lady Hillingdon	2 0- 3 0
long, per ..	0- 5 0	—Madame A.	
short ..	6- 4 0	—Chatenay ..	3 0- 4 0
Lilium longiflorum,		—Melody ..	3 0- 5 0
per bunch ..	8 0-10 0	—Stattie, mauve, per	
—short, per doz.	7 0- 8 0	doz. bun. ..	8 0- 9 0
Lilium speciosum,		—Stephanotis, per	
rubrum, per bun.	4 0- 5 0	72 pios ..	4 0- 5 0
Lily of the Valley		Stock, English,	
per bunch	1 6- 3 0	white, per doz bun	12 0-18 0
Narcissus, per doz.		Sweet Peas, white	
bunch		and coloured, per	
—Pheasant Eye,	8 0- 9 0	doz. bun. ..	12 0-24 0

REMARKS.—As regards white flowers, the conditions remain similar to those given last week, and prices remain firm for best cut blooms. Narcissus poeticus being now almost finished, prices advanced considerably on Friday and Saturday last. In spite of the increased supplies, prices for Narcissus flore plena double white remain unchanged. Arms (Richardias) are now almost over, and other Liliums are lessening in quantity. Irises, Cladiolus, Sweet Peas, Cornflowers, Iceland Poppies, and Paeonies are at present the most attractive lines. Single Pyrethrums are gradually improving in quality, and will be more in demand as the blooms become larger. Sweet Peas are getting more numerous, some excellent blooms being offered at 4s. per bunch. Limited quantities of Gypsophila elegans from home growers are selling freely. Stephanotis can now be added to the list of choice flowers. Paneratiums and Gardenias are also more numerous, and excellent in quality. Lily-of-the-Valley is sufficient for the demand.

THE WEATHER.

THE WEATHER IN SCOTLAND.

WHILE the mean temperature for the month was quite normal, the highest maximum was considerably above and the lowest minimum much below the average. The rainfall was also normal, but spread over more days than is usual for April. Bright sunshine showed a marked falling off from the average. Rain fell on 18 days to a total of 1.72 inch; the wettest day being the 19th, with 0.35 inch. The sunshine record for the month was 119.6 hours, being an average of 3.95 hours per day, and a percentage of 28; there were six sunless days. With a mean of 29.63 inches, the barometer varied from a height of 30.14 inches on the 23rd, to a lowest of 28.59 inches on the 16th. The mean temperature was 44° with a highest maximum of 50° on the 24th, and a lowest minimum of 27° on the 8th, giving an absolute range of 33°. Both the lowest maximum and highest minimum were 44°, the former on the 12th, and the latter on the 19th and 24th, while the means were maximum 51°, minimum 37°, showing a mean range of 14°. On two nights the temperature fell below the freezing point. For the month the relative humidity of the air was 82 per cent. On the grass the mean minimum temperature was 32°, with a lowest of 19° on the 5th; there was 12 nights of ground frost. At one foot deep, the soil temperature, with a mean of 44°, varied from 42° to 47°, being 45° on the 30th. The wind direction was very variable during the month, and never attained gale force.—James Mallock, Director of Studies, The Training College Gardens, Kirkton of Mauns, near Dundee.

TRADE NOTES.

MESSRS. THOMAS METHVEN and SONS, nurserymen, Edinburgh, have again been entrusted with the floral decorations at Holyrood Palace during the official residence of His Grace the Lord High Commissioner.

THE Secretary of the Royal Horticultural Society writes, concerning the conveyance of plants by passenger train.—I have just received from the Railway Clearing House the enclosed notice which may be of interest to your readers:—"In reply to your letter of 16th instant, I have to say that plants in owner's vans are, subject to prior arrangements being made with the Companies concerned, accepted for conveyance by passenger train, the charge being the same as for a 'Carriage.'"

ANSWERS TO CORRESPONDENTS.

A GARDENER'S NOTICE: *H. P.* We are not aware of any special custom which varies the usual rule that a month's notice on either side can be given at any time.

A TENANT'S PLANTS: "*Garden.*" Whatever is planted in the soil by a private tenant, becomes (according to strict law) the property of the landlord. In actual practice, latitude is taken by the tenant in connection with ordinary gardening operations, including the potting of plants. On the expiration of the tenancy, however, a private tenant has no right whatever to remove things which are growing in the soil. The rule is different in the case of nurseries, small holdings and allotments, and if the plot of land at the back of the house comes within any of these descriptions, you should consult a solicitor. Your new landlord is not bound by any latitude which his predecessor may have shown you.

APPLICATION FOR A PATENT: *H. E.* Application for taking out a patent for a new invention should be made to the Patent Office, 25, Southampton Buildings, W.C.2. You should ask for a form upon which the necessary particulars are to be supplied.

BLUE HYDRANGEAS: *T. C.* The preparation known as Cyanol will cause the flowers of your Hydrangea to assume a blue colour.

CHRYSANTHEMUM PLANTS DISEASED: *W. T.* The specimens reached us in such a condition that it was impossible to identify the disease. Specimens of this nature should be packed in a tin, with a little damp moss at the bottom.

EXTERMINATING EQUISETUM (HORSETAIL): *D. C., Ireland.* Rushes and Horsetails are amongst those plants, which indicate a wet or damp and sour soil. If your land is wet you should drain it by putting down a line of small pipes on each side of the Asparagus bed, and at a depth of 3ft. Then dress the ground with 4-6 ounces of quicklime to the square yard and work it in by forking or hoeing. The next best way to exterminate the weed is to cut the stems below the surface with an old knife early in the season and repeat it as often as the shoots appear on the surface. These young shoots are produced at the expense of food stored up in the under-ground rhizomes during the previous year, and the more often they are cut the more rapidly the plants will get exhausted and cease to appear. If the ground were trenched 3ft. deep and all the rhizomes and roots that can be seen were taken out, the weed would be reduced to very small dimensions by the one operation. This cannot be done while the Asparagus is still bearing well, and must not be dug up. The first two operations above described should be carried out this season. The draining and liming will make the ground unsuitable for the weed; but if spores get carried on to the ground from wild plants and seedlings appear, cut them repeatedly below the surface, and

they will soon cease to appear. At this early stage the work of cutting will only take a few minutes for all the beds.

FIG FRUITS SHRIVELLED: *J. R.* We fail to find any signs of disease in the fruits. The hollowness is due to a shrinking of the tissues after the fruits have ceased growing. Fig trees in pots very frequently cast their fruits when hard forced, but seldom so late in the season as this. Although fermenting material is not essential to success, it plays a most important part. It is difficult to account for the failure, unless the trees have received some check. A bottom heat of 70° to 75°, with a thin wall of turf around the pots and the intermediate spaces filled with fermenting leaves, would produce the desired effect the first season. Keep the roots thoroughly moist, but not too wet, and be guided by the state of the weather in the use of the syringe, as an excess of moisture on the fruits with a low temperature may cause them to turn yellow and fall at the most critical stage.

MARKET BUNCHES OF MINT, ONIONS, PARSLEY AND RADISHES. *R. R.* Mint, for market purposes, is put up into bunches weighing from 8 to 12 ounces. Bunches of Parsley weigh about 1½ or 2lb. Of spring Onions there are from 12 to 20 dozen in a bunch, and of Radishes, from 2 to 4 dozen per bunch.

NAMES OF PLANTS: *A. P.* 1, Baccharis salicina; 2, Tamarix gallica; 3, Spiraea Anthony Waterer; 4, Elaeagnus pungens var. variegata; 5, Thuya dolabrata; 6, Cupressus Lawsoniana.—*A. Neal.* 1, Magnolia Lennei; 2, Halesia tetraptera; 3, Cydonia japonica var. rosea; 4, Maclura aurantiaca; 5, Berberis vulgaris; 6, Cryptomeria japonica; 7, Purshia tridentata; 8, Clematis montana; 9, Viburnum tomentosum; 10, not recognised; 11, Linum perenne; 12, Boronia elatior. *W. C. M.* 1, Escallonia punctata; 2, Lithospermum arvense; 3, Narcissus Jonquilla; 4, Salvia leucantha.—*H. B. M.* 1, 2 and 3, varieties of Dendrobium densiflorum; 4, Dendrobium fimbriatum oculatum; 5, Dendrobium thyrsiflorum.

ORCHID LEAVES DAMAGED. *W. W. F.* The injury is due probably to an excessively dry atmosphere. It is, of course, possible that the plant was damaged during transit; gas fumes will produce a somewhat similar effect upon the leaves.

PARADISE STOCK: *E. M. S.* The Paradise Stock used for the propagation of Apples is a varietal form of the common Apple. It is naturally of dwarf habit and produces roots that grow near the surface of the soil. It is known that the Paradise stock was in existence in 1536 and is probably of French origin.

PEACH TREES DISEASED: *D. B. W.* and *W. B.* The specimens are affected with Silver Leaf. Up to the present no remedy has been discovered, but the disease may be held in check by cutting out all affected parts.

ROSE SHOOTS DISEASED: *E. E. W.* The Rose shoot is attacked in several places by the fungus Botrytis, which has almost certainly got in through a wound or injured area. It is possible that the shoot may have been injured by the spray from the sea, but not probable, judging from the general appearance of the specimens.

SUCKER FROM A PEAR ROOT: *H. P.* It is probable that the sucker would produce very inferior fruits. You could use it as a stock for grafting a superior variety next spring.

VINE LEAVES INJURED: *T. R.* and *P.* There is no evidence of any specific disease on the leaves sent; the injury is probably due to scalding.

Communications Received.—W. H. M.—C. R.—W. J. H.—C. W. A.—J. E. R. N.—J. K.—S. M.—R. W. T.—G. F. C.—A. E. S.—E. B.—H. S.—A. H.—A. S.—S. R.—H. S.—B. D. J.—D. C.—P. A.—W. T.—J. P.—Dr. V.—J. M. S.—W. A.—E. G.—H. R. D.—W. J. W.—R. A.—C. H. C.—E. F.

THE Gardeners' Chronicle

No. 1743.—SATURDAY, MAY 22, 1920.

CONTENTS.

Alexandria, horticultural in.....	250	Greenwich Park in spring time.....	250
Alpine garden, the.....	253	Horticultural demonstration train.....	249
Gentiana exersa.....	253	Horticultural Education Association.....	249
Synthyris reniformis.....	253	Margaret, Crown Princess of Sweden, the late.....	250
Books, notices of—		Obituary—	
The American Rose Annual.....	251	Caldier, John S.....	260
The Nursery Manual.....	251	McClure, William James.....	260
Bulb garden, the—		Paris Spring Flower Show.....	250
Lily, a new hybrid.....	255	Potato spraying.....	258
Scilla italica.....	255	Rosary, the.....	251
Scilla filio-lyanthis.....	255	Roses, early.....	251
Chamber of Horticulture, new secretary of.....	249	Silver leaf disease.....	258
Harfield Rectory, Yorkshire, the garden of the Rev. Walter Stonehouse, in 1640.....	256	Societies—	
Dryllam, Walton-on-Thames.....	257	Horticultural Club.....	249
Edinburgh, Harrison Park.....	250	Kew Guild.....	250
Fairchild lecture, the.....	249	Royal Horticultural.....	249, 259
Florists' flowers—		United Hort. Gen. and Prov.....	260
Baldias for garden decoration.....	258	Women's Farm and Garden Union.....	250
Fruit garden, the market.....	254	Trade notes.....	260
Gardeners' Chronicle, seventy-five years ago.....	250	Trees and shrubs—	
Glasgow, proposed new park for.....	250	Nuttallia cerasiformis.....	253
Ghent, International Horticultural Commercial Conference at.....	259	Trentham, sale of the estate of.....	250
Week's work, the.....	252, 253	Women's institutes.....	250

ILLUSTRATIONS.

Clelia St. Nicholas.....	251
Dryllam, water garden and rockery at.....	258
Lily, a hybrid, raised from Lilium regale and L. Saranbae.....	255
Nuttallia cerasiformis.....	253
Rhododendron Loder's White.....	257

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 54.19.

ACTUAL TEMPERATURE:—Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, May 19, 10 a.m.: Bar 29.8, temp. 60°. Weather—Bright.

Horticultural Demonstration Train. The Ministry of Agriculture, which have had in preparation for some time the organisation of peripatetic demonstration by means of a specially equipped train, announces that their arrangements are now complete and that demonstrations in the East Anglian district will be given during the coming month. From the official syllabus it will be seen that the programme of demonstrations and lectures is an admirable one, and it is to be hoped that the public interest aroused by this method of propaganda will be so great as to justify its extension to other parts of the country. The educational venture has a special degree the approval of the Minister of Agriculture and, indeed, it is owing to Lord Lee's initiative that the often-discussed proposal of a demonstration train has been put into practice. The demonstration train is intended to play the part of a pioneer—to arouse interest and to create a demand for further instruction—and its success is to be measured not only by the numbers which it attracts, but also by the numbers who attend the subsequent courses of lectures and demonstrations arranged by the County Horticultural Committees. Only experience will show whether the programme contemplated is, or is not, too large. In America it has been found that a "one object" demonstration train succeeds best; but conditions here are very different from those in America, and we think that the Ministry have done wisely in providing an intellectual entertainment consisting of many star turns.

The programme of route, lectures and lecturers is as follows:—St. Ives; May 31, Mr. G. C. Bough, B.Sc., of the

Ministry of Agriculture and Fisheries: Plant Sanitation. Wisbech; June 5, Mr. F. R. Petherbridge, M.A., of the School of Agriculture, Cambridge; Fruit Pests and Spraying. Stowmarket; June 10, Mr. H. Herrod Hemsall, of the Ministry of Agriculture and Fisheries; Bee-keeping. Norwich; June 10, Mr. R. Robson, M.Sc., of the East Anglian Agricultural Institute; Soil Sterilisation. Broxbourne; June 20, Dr. E. J. Russell, F.R.S., of Rothamsted Experimental Station; Soil Sterilisation.

Mr. C. H. Middleton, Mr. W. H. Jenkins, and Mr. Vincent Banks, of the Ministry of Agriculture and Fisheries, will accompany the train as demonstrators on the following subjects, respectively: (1) Horticultural and plant diseases; (2) Allotment cultivation and bees; (3) Fruit and vegetable preserving.

The exhibits include specimen Apple trees, showing method of top-grafting, four years' worked, two years' worked, and one year worked respectively; specimens of Apples (up to four years old) showing method of pruning to form bush and half standards; specimen of patent plough for "Orcharding"; specimens of garden implements and small garden (collapsible) frames for garden and allotment cultivation; photographs of cordon and half-standard Apple trees in bloom, showing correct methods of training and of pruning, and other descriptive photographs; charts and descriptive diagrams of model allotments, etc.

Bees: Hive building; bee driving and swarming demonstrations; display of "W.C.B." bee hive, complete with tiers and internal fittings; display of honey extractor.

Plant diseases: Winter treatment of orchards; grease banding of fruit trees; samples of bands; samples of greases; samples of raffia; demonstration of the correct and incorrect methods of banding; old bands, showing trapped insects.

Winter washing of fruit trees: Caustic soda (sticks); caustic soda (powder); Buxton lime; lime sulphur.

Bush Apple tree in pot, sprayed with lime wash (with an unsprayed tree for comparison).

Summer spraying: (Fungicides)—liver of sulphur, lime sulphur; ammonium polysulphide; flowers of sulphur; green sulphur; copper sulphate (powder); copper sulphate (crystals). (Insecticides)—by poisoning—arsenate of lead; Hellebore; Pyrethrum. By contact: nicotine; pyridene; soft soap, Quassia chips; Quassia solution.

Display of insects and fungi: (Fungi): Wart disease of Potatoes; Corky Scab of Potatoes; Common Scab of Potatoes; Skin Spot of Potatoes; Dry Rot of Potatoes; Club Rot of Brassicæ; Onion Smut; Brown Rot of Apples; Brown Rot of Plums; Pear Scab on fruit and wood; Silver Leaf; American Gooseberry Mildew; Apple Canker. (Insects): Cases of Specimens, Garden Pests: The Magpie Moth; The Cabbage Butterfly; The Cabbage Moth; The Yellow Underwing Moth, and The Turnip Moth, with their destructive caterpillars; Daddy Longlegs and Leather Jackets; Onion flies and grubs; Cabbage root flies and grubs; Celery flies and grubs; Click Beetles and Wireworms; Chafer beetles and grubs; garden weevils and grubs; Pea and Bean weevils with grubs and damage done; Flea beetles; Turnip Gill weevils, with photo of damage. Orchard Pests: The Winter Moth, with pictorial representation of Apple blossom at safe and unsafe periods for spraying; The Mottled Umber Moth and larvae; The Lackey Moth with eggbands and larvae; The March Moth and wingless female and eggband; The Apple blossom weevil with damaged blossom buds; The small Ermine Moth, with bunch of cocoons; The Raspberry

Beetle. Pests of the Osier; destructive beetles and moths and their larvae. Cages of living insects: Winter Moth caterpillars; Mottled Umber Moth caterpillars; Magpie Moth caterpillars; Millipedes; Woolly Aphis; cage containing Ladybirds. Other specimens: Wood of fruit tree attacked by Mussel Scale; Black Currant bushes in pots; (a) clean bush; (b) infected with "Big Bud." Diagrams: The Normal life history of an insect; life history of and damage done by the Apple Sucker, Winter Moth, Capsid Bug, Black Currant Mite (Big Bud), and Bean Aphis respectively (also showing the parasite of the Bean aphid); caterpillar attacked by Leconteon Fly. Specimens of branches, showing correct and incorrect removal of dead wood.

Display of spraying machines; hand sprayer; hand powder machine; knapsack sprayer (copper); knapsack sprayer (tin lined); small power machine.

Photographs showing neglected and clean orchards; Posters, Notices, Leaflets, etc.

Fruit and vegetable preservation: Display of bottled Raspberries, Loganberries, Gooseberries, Currants, Pears, Plums, etc. Display of bottled Peas, Beans, Celery, Sea-kale, Cauliflower, Rhubarb, etc. Display of dried fruits and vegetables: Apparatus: Types of bottles; cans; oven; steriliser. Demonstrations: Fruit bottling; vegetable bottling; fruit and vegetable drying; cold method of preservation of stone fruit by means of sulphur fumes; methods of canning; various methods of sealing ordinary jars.

Royal Horticultural Society's Meetings.—There will be no further meeting of the Royal Horticultural Society during May. At the summer exhibition, to be held in the grounds of the Royal Hospital, Chelsea, on June 1 the various committees will meet, the times being as follows:—Fruit and Vegetable Committee, and Floral Committee, 12 noon; Orchid Committee, 11.45 a.m.; Narcissus and Tulip Committee, 10.30 a.m.

Horticultural Club.—The annual dinner of the Horticultural Club will take place on Tuesday, June 1, at 7 p.m., at the Club, R.H.S. Hall, Vincent Square, Westminster. After the dinner a musical programme will be rendered by the following artistes:—Miss Pamela Baselow, Miss Ethel Royston, Mr. Charles Coborn, Mr. Walter Montagu, Mr. Arnold Stoker and Mr. Sinclair Mantell (accompanist).

New Secretary of the Chamber of Horticulture.—We understand that Major C. M. Matthews, brother to Sir Herbert Matthews, Secretary of the Central Chamber of Agriculture, has been appointed Secretary of the Chamber of Horticulture.

The Fairchild Lecture.—The "Fairchild" lecture will be delivered on the 26th inst., at 11 a.m., by the Rev. Joseph Jacob, M.A. The lecture is delivered annually in Shoreditch Parish Church, according to the terms of the will of Thomas Fairchild, gardener at Hoxton, and author of *The City Gardener* and other horticultural works. Fairchild was a Freeman of the Gardeners' Company, and in recent years this Company has associated itself with the annual service at which the lecture is delivered.

Horticultural Education Association.—The Horticultural Education Association, which now numbers nearly 100 members, will hold a general meeting at the Chelsea Show on Wednesday, June 2, at 1 p.m., in the Conference tent. Service conditions, a salaries programme, and rates of subscription are among the subjects to be discussed. The meeting will be preceded, at 11.30 a.m., by a lecture on School Gardens in Educational Schemes, by Mr. H. E. Haig Brown, who will deal specially with the extended system of education under the 1918 Act.

Kew Guild Dinner.—This annual gathering of past and present Kewites will be held on Wednesday, June 2, the second day of the R.H.S. Chelsea exhibition, in the Holborn Restaurant. The dinner will be preceded by the annual meeting, which is fixed for 6 p.m.

Proposed New Park for Glasgow.—The Parks Committee of the City of Glasgow has agreed to recommend to the Town Council that it should purchase the estate of Frankfield as an additional park for the city. Frankfield is on the north-east of Glasgow, near Millerston, and its extent is about 312 acres. Should the acquisition be completed it will provide a valuable space for building in addition to park purposes. The suggested scheme provides, among other things, for an 18-hole golf course and accommodation for other forms of recreation.

Harrison Park, Edinburgh.—Edinburgh Town Council, at a meeting on May 12, had under consideration the report of the Parks Committee, recommending the purchase of the Harrison Park, at present held by them on lease from the Merchant Company for recreation purposes. The proposal was that the Corporation should enter into possession in 1930; that the purchase price should be £10,000, and that until possession was secured, the Council should pay a rental of £350 against the present rent of £199 10s. In addition to the sum of £10,000, the Council was to pay £3,500 which had been the outlay of the Company for the formation of roads, sewers, etc. Some opposition was raised to the price, which was said to amount to about £858 per acre, and after considerable discussion the question was remitted back to the Parks Committee for further consideration.

The Women's Farm and Garden Union.—The Women's Farm and Garden Union has acquired a farm in Surrey, where a colony of women smallholders will be established in the autumn. The Union is arranging a reception for two lady delegates from the affiliated society in the U.S.A., who are coming to this country during the present month, and also planning a tour the delegates propose to take among the agricultural and horticultural schools and colleges and visits to the Royal Horticultural Society's and Royal Agricultural Society's shows.

Horticulture at Alexandria.—The Alexandria Flower Show (Egypt) has just been revived after a lapse of five years owing to the war. The Horticultural Society has suffered a great loss in the death of Judge Saunders, and in memory of him and of the late Sultan Hussein, who was one of the founders, it has instituted two annual prizes. The chief winners at the recent exhibition were Mr. P. W. Carver, who, among other things, exhibited a specially fine group of *Amaryllis*; Mr. S. R. P. Carver, Mr. R. C. Abdy, a new exhibitor; Mrs. Crafton and Mrs. G. C. Foster. Mr. Theirard and Mr. Salvago won prizes for fine displays of Palms and shrubs. The Municipality sent a magnificent group of shrubs and other plants.

Greenwich Park in Spring Time.—Notwithstanding its position within the Metropolitan area and its proximity to very congested districts, Greenwich Park is extremely beautiful at this season of the year. In addition to its wonderful old trees and its famous Thorns, there is a very charming display of spring flowers, provided by Mr. Hay, the enthusiastic superintendent. No fewer than 15,000 Wallflowers, embracing all modern varieties of excellence, gratify the senses of sight and smell, while fine groups of Rhododendrons and Azaleas are now in the height of their beauty. Considerable improvements have been effected in The Dell, and there is no longer any evidence of the exigencies of war time. To a lover of trees and shrubs, Greenwich Park is a source of special interest, as it contains many kinds whose rarity precludes their entry into many other parks and gardens.

"Flowers, Very Many Flowers."—The late Crown Princess Margaret of Sweden, known as the Flower Princess, left directions that her obsequies should be dominated by music and flowers; "there must be no black in the church,

only flowers, very many flowers; and music all the time," was her last wish. In fulfilment of her wishes, the coffin was covered in flowers. The whole interior of the church was a floral bower. Roses and Lilies, Danodis and Narcissi were in profusion in front of the altar. The choir stalls were decked with purple and green, the nave and transepts garlanded and wreathed.

Trentham.—The announcement that the residue of the fine old Stafford estate of Trentham has been sold for £10,400, making a total sum of £555,400 realised for the domain, recalls the times when Trentham was one of the show gardens of the country. Former Dukes of Sutherland maintained the pleasure grounds in a high degree of efficiency. The terraced garden front was especially imposing; indeed, with the exception of Chatsworth and Alton Towers, Trentham was, in the 'nineties, the most elaborately laid-out place in the country. The pleasure grounds extended both sides of a large lake, and were some 80 acres in extent. The kitchen garden contained an enormous quantity of glass, and the decorative plant-houses were filled with a great variety of exotic species, many of the plants being very large specimens. Trentham was also celebrated for its collection of Orchids, and other houses were devoted to Caladiums and Lapagerias; as many as 3,000 flowers of the latter have been cut in one day.

Spring Flower Show in Paris.—It is unfortunate that the Spring Flower Show of the National Horticultural Society of France will clash with the Chelsea Show. The exhibition in Paris will open on Wednesday, June 2, and continue until June 8 inclusive. The French Society will hold a Conference at 9.30 a.m. on June 5, at its rooms, 84, Rue de Grenelle; and on the same day, at 4 p.m., the National Federation of French Horticultural Societies will meet. On the following morning, at 9.50 a.m., the members of the French Rose Society will meet in conference; and in the afternoon of June 4, the delegates of the various horticultural societies will discuss the question of proprietary rights in new plants and flowers, and the best means of establishing such rights. There are reunions on June 5 and 6, and, altogether, our French conferees appear likely to have a very busy time during the first week of June.

Children's Playgrounds in the London Parks.—The London County Council has decided to extend a scheme, inaugurated last year in Victoria Park, of arranging play centres for school children during the summer holidays, in the public parks. The following is a list of the parks in which play centres will be opened:—Battersea, Bethnal Green, Deptford, Greenwich, Highbury Fields, Kennington, Peckham Rye, Ravenscourt, Ruskin, South Park (Fulham), Southwark, Vauxhall and Victoria Park. School playground centres have also been selected in the very poor districts, such as Whitechapel, Bow, Stepney and in the neighbourhood of the docks. The park centres will be open for a month, from July 26, with days and times as follows:—Mondays to Fridays, 10 a.m.-12 noon and 2.50-4.50 p.m.; Saturdays, 10 a.m.-12 noon.

Women's Institutes.—The Women's Institute is of Canadian origin. Twenty-two years ago a little group of Dominion countrywomen met to discuss the question of lightening the loneliness of their lot on the remote farmsteads. They thought that something could be done to make life better and brighter both for themselves and their children, and thus the Women's Institute came into being. The movement spread through Canada and thence into the United States. In 1915 it reached Great Britain by way of Wales. The first Women's Institute in this country was started in September, 1915, at Llanfairpwll by a British-Columbian, Mrs. Watt, under the direction of the Agricultural Organisation Society. The Institute movement made rapid progress and in April, 1919, there were 885 Women's Institutes in England and Wales. This number has now risen to 1,600, and will certainly increase, for these centres of

industry and recreation have given village life just the stimulus it required. Towards the close of 1917 the Board (now the Ministry) of Agriculture took over the propaganda of the movement and placed the organisation under the Women's Branch of the Food Production Department. During the war the Institutes mainly concerned themselves with the production, conservation and economy of food, and while these important activities are being continued, the work is steadily extending in other directions in order to meet local requirements. In October last the Ministry relinquished control of the movement, and the whole propaganda and headquarter's work of Women's Institutes is through an Executive Committee elected by the Institutes themselves.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Gardeners at Exhibitions.*—At the outset I wish it to be clearly understood that I consider it a breach of decorum for any one to loiter in the tents, to the obstruction of the visitors at the horticultural exhibitions; and now that the ground is clear, a word to a "Fellow of the Horticultural Society." Tickets of admission are given only to those who bring objects for exhibition, and, generally speaking, these are collections. From the day that the shows of the last season ceased, these collections have been the objects of solicitous care and thought both by day and night. The filthy fumes of tobacco, sulphur, etc., have been endured whenever it has been necessary to destroy insects that would injure the beauty of the foliage of the plants; and, at last, the eve of a new series of exhibitions arrives. From an early hour in the morning the gardener is busy with preparation, packing his plants, etc., and, in very many instances, after eating a hasty meal and taking a little sleep, he is to be seen on the road, whilst "F.H.S." and the vast concourse of visitors are buried in comfortable repose. Arrived at the gardens, he takes his turn for a place to unload. Then comes the removal of all the various appliances which have preserved his plants from injury in their transit; there he is to be seen arranging them in the most judicious manner, here a little alteration, there another. Then there is the procuring tickets to attach to them, then the obtaining his ticket for admission, and by the time he has had a hasty walk through the tents, the appearance of the police proclaims the hour to withdraw. This is a true picture of the engagement of the bulk of the exhibitors. I myself, as one, with three men to assist my gardener, never could find time to examine the different contributions to these grand displays. Obligated therefore, to defer doing so, until after the general admission, we cannot be surprised if sometimes the fault is committed of lingering too long before objects of peculiar interest, and I believe it is a very rare occurrence for gardeners so offending not to acknowledge it by immediately moving when spoken to in a proper manner. I wish I could say as much for some who claim superiority over the poor gardener, who, from a variety of causes, has had hitherto to content himself after his retirement from the garden with bread and cheese, porter and an Onion. Only last year some ladies requested a sight of my collection, and the space before it being fairly taken possession of by persons of high standing in society, it was with difficulty I obtained it for them, after requesting the policemen in the seedling tent to see that the rule to move on was enforced. I have had an opportunity of being acquainted with a great many gardeners for several years past; and I maintain that, as a body, their conduct at these exhibitions is admirable, and always improving.—*An Exhibitor and also an F.H.S., Gard. Chron., May 24th, 1845.*

Publications Received.—*Orchid Review*, Edited by R. Allen Rolfe, Marshall Bros. Ltd., 24-25, Paternoster Row, E.C. 1s. nett. *Electrification of Seeds by the Wolfgram Process*, Martin H. F. Sutton, Sutton and Sons, Reading, 2s. 6d. nett. *Germination of Barley Pollen* By Stephen Anthony and Harry V. Harlan, Government Printing Office, U.S.A., Washington.

THE ROSARY.

EARLY ROSES.

Roses are delightful always, but those which bloom the first are doubly welcome.

Before June, the month of Roses, arrives, we have the dainty sprays of the Banksians of white and yellow in profusion, climbing wide and high on the south front of the house, where they are allowed their own way, and the only pruning required is to remove some of the exhausted wood in July, leaving all the long young growths intact, for these are very floriferous later. Many gardeners, in their desire for flat tidiness, cut back these Chinese Roses just as they would the larger varieties, such as Gloire de Dijon, with the result that these exquisite wreaths are destroyed, and only a few flowers are produced.

Before the Banksian Roses are over, the porch is covered with the lovely blooms of Lady Waterlow, one of the best of the modern climbing Roses, in shell pink. Few of the larger Roses produce such a mass of blooms as this variety, and the effect is very fine in May.

A second season of flowering is usual in August, when many other Roses are resting, and a few late sprays may be cut almost up to the end of the year.

Madame Falcot presents us with delicately-tinted "button-hole" buds in May, but the flowers are poor when fully open.

Under glass, there are the rich red Roses of Reine Marie Henriette from March onwards, which are so far finer in tint and in shape than those of this fine old Rose when grown in the open air. Niphetos, the snow-white Rose, is rarely without a bloom under glass throughout the year, the last bud of autumn and the first of spring meeting in February, but in April and May the plant is covered with flowers, if given a little warmth early in the year.

A plant of Gloire de Dijon, which is always to the fore, in a south-east porch, provided from fifty to sixty fine blooms at the same time. *I. L. Richmond.*

NOTICES OF BOOKS.

The American Rose Annual.

The American Rose Society has just published its Annual for 1920*, in the form of an octavo volume of 188 pages containing numerous short articles on Roses and Rose growing, and 20 plates, three of which are coloured.

The attempt to obtain something like a scientific valuation of different varieties of Roses for garden purposes, on which we commented last year, is continued by Messrs. A. P. Greeley and Jesse A. Currey. Mr. Greeley gives a three-year record of the blooms produced by plants of varieties which he divides into five groups, those giving over 50 blooms, those giving 25 to 50, those giving 15 to 25, those giving 10 to 15, and those giving 5 to 10 blooms. The group giving over 50 flowers contains eleven names—G. Nabonnand, a plant of which in 1917 gave 482 flowers (the highest record); Earl late, Lady Ursula, George Elger, Eugenie Lamesch, Mme. Eugenie Marliit, Leonie Lamesch, Antoine Rivoire, Lucullus, Winter Gem and General-Superior Arnold Janssen.

Mr. Currey's system of testing is rather more elaborate, and involves a comparison of varieties under different methods of cultivation. The subject is also dealt with by Mr. M. L. Mulford in a report on the National Rose Test Garden.

Mr. A. W. Greeley has an interesting and original note on the measurement and comparison of the night and day growths of Roses, in which he arrives at the conclusion that Roses make from 60 to 80 per cent. of their growth at night, i.e., between 7 p.m. and 7 a.m. He gives a chart of the growth of a plant of Lady Pirie which made over 63 per cent. of its growth at night, and only something over 36 per cent. during the day. From this he deduces an explanation of the fact he had independently ob-

served—that watering Roses in the morning is more beneficial to them than watering them in the evening.

Among other observations, he finds that the best conditions for Rose bloom and growth occur when the temperature ranges between 60° and 85° F.; a fall of temperature below 60° and a rise above 85° causing a stoppage of Rose growth. Contrary to some views that have been recently expressed, he states: "The temperature relation appears to be so dominant that its influence persists, regardless of the influence of other factors such as sunshine, cloudy days and rainfall."

The volume contains a good deal about new Roses, some 150 new varieties being recorded and described. New English Roses are described by Mr. Courtney Page and Mr. Wettern, those

Nursery Manual only deals with propagation; Certain Elements in Nursery Practice; and The Nursery List. It is written by an American author, and the subjects are treated in a manner best suited to American readers, for the climate of the United States is very different from that of this country. The chapters on propagation are good, and extensively illustrated, but they add very little to our nursery knowledge of increasing plants, except in certain technical terms which we have become acquainted with for the first time, and are not particularly impressed with. Thus "the practice or process of multiplying plants by cuttings, with all the craft and science pertaining thereto, a denominated cuttage." Layerage is also dealt with, and on p. 95 Mr. Bailey writes "silver sand."



FIG. 116. —CLIVIA DE NICHOLAS
R.H.S. Award of Merit, May 11, 1920 (see p. 21)

of France by Mlle. Therese Turbat; while the Editor, Mr. J. Horace McFarland, gives a comprehensive survey of new Roses from America, Great Britain, France, Canada, Holland, Germany and Australia. He has a useful criticism on the demerits of many catalogue descriptions, and promises us in the 1921 Annual, certain standards of colour description "using a novel method of no complexity by which the lines of any Rose may be accurately described."

The volume concludes with a list of American Roses.

The American Society is to be congratulated on the excellence of their publication and the original lines on which it is being developed. *White Rose.*

The Nursery Manual.*

There is a real need amongst the multitude of gardening books for a work dealing exhaustively with nursery matters and methods, but *The*

Nursery Manual, by L. R. Bailey (Macmillan and Co., price 1s.

is not now considered so essential to successful propagation as it was formerly, and fully as good material may often be found in a common sand-bank. Opinions differ, but we do not think that there is one propagator in this country who would agree with this assertion. The 44 pages devoted to "Certain Elements in Nursery Practice" deal with such subjects as land suitable for a nursery; grades of trees; stocks for grafted fruit trees; pedigree trees; trimming and storing trees; and diseases and insect pests of fruit trees. No mention is made as to the best methods of handling young stock after it has been propagated, which is one of the most important operations in nursery work. The handling of seedlings in particular varies according to the class of plant, and anyone who wishes to deal with seedling (as if not Hobbs, Yews, etc., in the same manner as seedling Oak, Beech, Larch, etc.), would soon to his considerable loss of the evergreen subjects and the rare plants one would expect to be fully dealt with in a "Nursery Manual."

*The American Rose Annual, 1920. Edited by J. Horace McFarland. The American Rose Society, Box 655, Harrisburg, Pa., U.S.A. Not available to non-members.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Maor, Lingfield, Surrey.

The Orchard House.—All fruit trees in unheated houses are much more forward than usual this season, and those who have late varieties of Peaches, Nectarines and Plums, should bear this in mind, and endeavour to prolong the season so far as possible by giving as much ventilation as can be afforded with safety both day and night. There has been no frost to do serious harm in cool houses and all fruits have set freely. A close watch should now be kept on the trees for greenfly and other insects. When only one or two trees are affected they should be carefully syringed with an insecticide. Another important operation, after the fruits are well set and swelling, is to syringe the trees vigorously with soft water, warmed to the same temperature as the atmosphere of the house. This will cleanse the foliage, and assist the flow of sap after closing the house on fine days. Liberal supplies of water and stimulants should be given the roots until the fruits are nearly ripe. In the case of pot-trees, top dressing and feeding the roots are most necessary as trees with roots pot-bound are almost entirely dependent on food given in this way. Later, when several waterings daily become necessary, rich nitrogenous stimulants often cause too much foliage to develop and tend to souring of the soil. Highly concentrated fruit fertilisers capable of feeding the fruits and forming firm, short-jointed wood are safer and better to use. A full crop of fruit is of greater consequence than earliness, and no attempt at forcing should be made, as these late fruits are as valuable as the early ones. As soon as all the fruits are thoroughly set, commence the joint operation of thinning and disbudding. In stopping, the length of the shoots should be regulated by the size of the trees, and the space at disposal. Pinch the lateral shoots at about the third or fourth leaf so as to induce fruit spurs to form and remove the points of strong shoots, allowing the leading growths to extend where there is room for extension. Of two evils, it is better to have the shoots thin than crowded, as future success depends upon short-jointed growths fully exposed to sunshine and air. In thinning the fruits, it is wise to retain sufficient to permit of a subsequent thinning, but all inferior fruits should be removed forthwith. It is better to have one dozen fully developed fruits, than double the number with the stones sparsely covered, and of inferior quality. In the case of Pears and Apples, retain fruits which appear most likely to take the lead, and remove all others; later, the number may be reduced to one on each spur, and the crop further reduced if large specimens are desired. These trees, also Plums and Cherries, often become infested with weevils, which do much damage in a short time. Hand picking whenever a curled leaf is seen is the best method to adopt to get rid of them.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. IRVING, Wenvoe Castle, near Cardiff.

Thinning Seedlings.—Thinning the various crops should be commenced as soon as the seedlings develop their rough leaves, and before the plants become crowded in the row. This is an important operation, and, apart from giving the plant sufficient room to develop, keen judgment is required in selecting the seedlings which are to remain to form the future crop. Generally speaking the strongest seedlings are inclined to give coarseness, and better quality is obtained when those of a medium size are retained. It is not advisable that thinning should be finished at one operation, especially in the case of vegetables sown at intervals in the row: leave two plants at each station and

make the final selection when the plants are large enough for the grower to decide which will prove the more satisfactory. Retain the seedling which, by testing with a slight pull, has a firm hold of the ground and does not rock about at the touch. Having thinned the seedlings, draw a little soil up to the plants to keep them in an upright position. Onions do not require excessive thinning, and if left about two to three inches apart they will become somewhat crowded in the autumn. This will cause a strain on the roots, which is an aid to early ripening, an important factor for long-keeping varieties. After thinning, stir the soil deeply between the drills with the Dutch-shoe.

Brussels Sprouts.—The earliest Brussels Sprouts which were sown in February are ready for planting, and as these will occupy the ground for a long time, they should be grown in an open position in soil which has been well manured and deeply dug in the autumn or winter. Set them 3 ft. apart each way, and plant firmly. If the Cabbage root fly has recently attacked previous Brassica crops take measures to prevent this year's plants from being infested. Spread a layer of ashes which has been impregnated with paraffin around each plant, one foot outwards from the stem. The paraffin will prove distasteful to the adult fly, which will not lay its eggs near the ashes. As the smell of the paraffin evaporates, it is necessary to renew the heap of ashes occasionally.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Phalaenopsis.—The small-leaved species, such as *P. Esmeralda* and *P. Ludde-manniana*, may be grown in small pots or pans, filled three-parts of their depth with drainage material. For a few weeks after the plants have been repotted or top-dressed they must be protected from strong sunshine, and the roots watered sparingly with a fine-rose watering pot. The rooting material should be on the dry side before more water is given; then the roots will enter the fresh compost freely, and remain in a healthy condition. Care in watering is one of the secrets in the successful cultivation of *Phalaenopsis*, but no hard and fast rules can be laid down, for much depends upon the district and situation of the houses. The atmosphere of some greenhouses keeps moist for a longer period than that of others, whilst those situated in exposed positions need extra damping. The soil should never be soaked with water two days in succession, for if it remains in a saturated state for several days, and the weather is dull, the roots invariably decay. *Phalaenopsis* are very floriferous plants, and this is no doubt one cause why they often deteriorate a few years after being imported. The spikes, therefore, should be cut soon after the last flower has opened; small, weak plants should not be allowed to produce a scape until they regain some of their former vigour. With such plants the spike is removed directly it can be pinched out, but if the plant persists in producing a spike, it will be best to allow one or two flowers to develop, or one will emerge from the centre of the growth, which is not desirable. Few insect pests trouble these plants, but the leaves should be sponged twice or thrice each year to cleanse them. Cockroaches and slugs are partial to the thick, succulent roots; the former pest may be destroyed by poison placed about their haunts, and the latter trapped with Lettuce leaves or slices of Potato.

PLANTS UNDER GLASS.

By JOHN COTTIS, Foreman, Royal Botanic Gardens, Kew

Selaginella.—Many species and varieties of *Selaginella* are useful for decorative work in doors. The well-known *S. kraussiana*, of which there are several varieties, is generally used for carpeting beds in plant houses, or, in fact, wherever a green carpeting plant is required. The variety *aurca* is also a general favourite, and

in suitable receptacles is very useful for table decoration. Other species and varieties specially useful for decorative purposes include *S. Willdenovii*, a climbing, stove species, growing from 12 to 20 feet in length, of a bluish colour with a beautiful metallic sheen, the long sprays being unique for decorative work; *S. uncinata*, which has the same bluish colour as the last species, but of dwarf, slender growth, somewhat resembling the well-known *S. kraussiana* in habit; *S. caulescens* and its var. *amoena*, both of tufted growth and upright habit, and very useful for decorative work when grown in small pots; *S. emiliana*, *S. Martensii* and its numerous varieties. These plants may be easily grown in a stove or greenhouse, and do best in shady conditions. They are readily propagated at any time (except during the winter) by cuttings or division, and healthy young stock should be provided by the propagation of successional batches. The plants grow well in ordinary light, well-drained compost.

Coleus thyrsoides.—Stock plants of this beautiful blue-flowering subject should be allowed to develop, to ensure plenty of strong cuttings for rooting next month; if necessary, for this purpose the plants may be grown in a little extra heat.

Auriculas.—As Auriculas pass out of flower the plants should be shaken out and repotted, shortening the old root-stocks to allow of their being potted close to the bottom leaves; this annual shaking out and low potting, to ensure the development of fresh roots from the stem, is essential for success with these plants. The compost should consist of good, medium loam, lightened with coarse sand and old mortar rubble, with the addition of flakey leaf-soil, collected, if possible, from under Beach or Oak trees. The plants enjoy a shady position during summer, but should have a free circulation of air about them.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Vines on Wall.—Vines in the open require disbudding. First remove all the weaker shoots, and eventually reduce the number to one on each spur, selecting the shoot which is likely to produce the best bunch of Grapes. Last season's growth left for extension should be disbudded about eighteen to twenty inches on either side, retaining the strongest and best placed shoots. Other growths may be pinched at two or three leaves beyond the bunch, and the laterals may be removed with the exception of two. These should be stopped at the first leaf. The failure of outdoor vines is sometimes due to drought. It is therefore advisable to examine the border occasionally and, when found necessary, to give the border a thorough watering.

Red Spider.—This pest is sometimes troublesome to vines in the open, but by syringing with clear, soft water late in the afternoons and attending carefully to watering the borders this pest may be kept in check.

Mildew.—Vines are subject to attacks of mildew, and should be sprayed with a suitable specific immediately the disease is detected. If the vines are in an advanced stage of growth when attacked, the leaves may be dusted with flowers of sulphur.

Insect Pests.—The recent cold, wet weather has been favourable to the spread of all insect pests on fruit trees, and the trees should be sprayed, bearing in mind that cleanliness leads to fruitfulness.

Thinning the Young Canes.—The young stems of Raspberries of the current season require thinning; remove all weak shoots, leaving only sufficient growths to form fruiting canes for next year. This will allow the remaining canes to grow with more vigour, and, moreover, they will have a better opportunity to become well ripened. Where autumn-fruiting Raspberries are breaking freely, some of the weaker of the new growths should be removed. There is nothing gained by crowding the growths.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Colour Relief.—In tasteful flower-gardening, white flowers are used to afford relief and bring into prominence those with rich shades of colour, also to promote an effect of lightness. For this purpose a few white flowers go a long way, whereas too many spoil the effect. It is advisable to arrange them either as a carpet, or edging, to flowers of light tones, and some little distance from the more sombre shades. An exception to this is permissible in some cases, as, for instance, an artistic effect is secured by associating *Alyssum Little Dorrit* with the true black Pansy. In a spot surrounded by naturally-grown trees, a scheme of white within its leafy environment is cool and refreshing during the hot days of summer. Silver-grey foliaged species may be used extensively with plants providing a combination of colour, and should be planted in close proximity to soft, but clearly-defined shades. It is remarkable how a copper bowl, or figurine, which has become

TREES AND SHRUBS.

NUTTALLIA CERASIFORMIS: THE OSO BERRY.

BEING a dioecious shrub and having, therefore, the sexes separated on different plants, the fruits of the Oso Berry are not very frequently seen in gardens. The female plant is, in fact, rather uncommon. A group of plants near the Cactus House at Kew in which both sexes are represented gives a crop of fruits nearly every year. Sometimes, as may be seen by those illustrated in Fig. 117, they are abundant. The fruits, however, are too bitter to be edible, nor are they particularly ornamental, resembling small Damsons in shape and size, but not so highly coloured, although purplish. They are, moreover, very much concealed by the foliage.

It is as an early spring flowering shrub that the *Nuttallia* is chiefly valued in gardens. Usually it is at its best in early or middle March, but in this precocious season it was fully in

THE ALPINE GARDEN.

SYNTHYRIS RENIFORMIS.

Mr. T. W. BRISCOE, who writes of this pretty blue-flowered plant on p. 203, will be interested to learn that it has been several times exhibited this year at Vincent Square, and was also noted in good bloom in the Kew rock garden in mid-February. I do not think the plant is rare in the true sense, though it may not appear in plant lists so freely as formerly. To some extent that may be due to the fact that many hardy plant growers are giving selections of plants rather than full collections, owing to the cost of paper and prunting. At the time of its flowering, the *Synthyris* is pretty and effective, while few plants could exceed it in freedom of flowering. The flowers are tubular, and of a blue or violet tone, and the anthers are similarly coloured. The plant may be increased by division, and, if hand pollinated in mild seasons, yields seeds in moderate numbers. The Castleford example is, however, a particularly well-flowered one. *E. H. Jenkins.*



FIG. 117.—FRUITS OF NUTTALLIA CERASIFORMIS.

weathered, will enhance the effect of an expanse of pink flowers; whilst any colour may be used without misgiving in the vicinity of very old red brick walls.

Contrasts.—That harmony should obtain in all floral displays is obviously necessary. Still, one colour, the true blue, need not of necessity be so treated. In fact, an immediate contrast is, in some instances, absolutely necessary, especially in general rock-gardens. *Lithospermum prostratum*, Heavenly Blue, overhanging *Arabis haida*, variegata, and accompanied by *Cheiranthus Allionii*, makes an admirable combination. In formal bedding, to obtain pleasing contrasts, do not interplant; to be precise, arrange the colours separately and in definite design. *Tagetes pumila*, in the foreground, with *Salvia patens* or *Pentstemon hydrophylla*, is pleasing; whilst a more daring contrast may be had by planting *Marigold Diadem* and *Viola Royal Scot* in adjacent beds. Endeavour to arrange contrasts of colour in such a manner as will allow of them being toned off to more distant beds, to avert an unbecoming contrast.

bloom in February. The plant is deciduous and forms a dense thicket of slender, erect stems up to 3 feet or more high. The flowers are borne on the leafless shoots in stiffly drooping racemes 2 inches or so long; they are quite small, the petals white, but largely covered by the green calyx. Produced in profusion and of graceful appearance, the flowers render the shrub a very attractive object during those early months, added to which is their pleasing Almond-like scent. The *Nuttallia* may be considered one of the best of very early flowering shrubs. Where only one plant is grown it should be of the male sex, which is certainly the more ornamental. It is perfectly hardy and the flowers endure a few degrees of frost without much injury. Propagation is easily effected by dividing up old plants or by taking off pieces from the outside.

The Oso Berry is a native of California; it was introduced to this country in 1848, and is a near ally of *Prunus*. It is named after Thomas Nuttall, a famous botanist (1786-1859). The plant has been placed in the genus *Osmaonia* by American botanists, and is described under that name in the new American *Standard Cyclopedia of Horticulture*.

GENTIANA EXCISA.

I AM indebted to the late Sir Frank Crisp for this good plant which, to those unacquainted with it, may be described as a big, bold, tall-stemmed *G. acaulis*, more sumptuous-looking even than that well-known species. It is in capital flower as I write—April 24—and the flowers show to advantage on the stiff, six inches high stems. The blooms are more solid-looking than those of the *Gentianella*, and more richly coloured; the central parts of the corolla lobes are intense indigo blue, their margins merging to deep purple. The leaves are harder, more coriaceous, and decidedly larger, and, so far, every leading growth has given a flower. The weak point of this strong and good plant is slowness of increase, in which respect it is far behind the old kind, which, however under identical conditions, does not yield anything like the same number of good flowers per plant. My soil is light and sandy, with lime added. Last year, *G. excisa* failed to set seed, so I am resorting to artificial pollination this season, and hope for success. I am anxious to have a bed of it. *E. H. J.*

EDITORIAL NOTICE.

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Local News.—*Our readers will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.*

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THE MARKET FRUIT GARDEN.

THE kindly character of the spring was maintained throughout April in this Sussex district. The weather was, for the most part, of the mild, showery type usually associated with April, though by no means always experienced during that month. There were gales from the 13th to the 15th, and strong, rather cold, north-westerly winds from the 27th to the 29th, but, beyond scattering the fruit bloom petals and tearing the young leaves in exposed position, they did little harm. Vegetation received no serious check during the month, and fruit trees and bushes looked well at the close. The thermometer fell to freezing point or below it on six occasions, but the only frost worth mentioning was one of four degrees on the night of the 5th. The total rainfall at my place was 2.45 inches, which is above the average, and this amount fell on no fewer than twenty days. The frequent showers interrupted ground operations, notably hoeing to kill the abundant legacy of weeds left by the mild winter, but were ideal for fruit trees, helping them to grow ahead of insect enemies, and probably to set their crops.

FRUIT PROSPECTS.

It can already be seen that Plums have set well. Even Victoria and Pond's Seedling, which carried such heavy crops last year, look like bearing moderate crops. Monarch, which was almost a failure last season, promises to yield heavily, whilst Early Rivers, President, Black Diamond, and Belle de Louvain have set plenty of fruit. Ozar bloomed too profusely, and looks exhausted in consequence, and will probably drop a lot of its fruit. Present indications point to a good crop of Plums, but nothing can be known for certain until the stoning period is passed. There is, unfortunately, a rather severe attack of the leaf curling Plum aphid, a difficult pest to deal with; and if this increases it is quite likely to cause much of the fruit to drop.

The earliest of the Apple bloom was open on April 9, but blooming was not general until the latter half of the month. At the time of writing some of the bloom is falling, but it is not yet possible to tell how much of it has set. There was more bloom than I expected to see after last year's great crop, which, with the prolonged drought, must have been a heavy strain on the trees. Some of those varieties that yielded most are taking a partial rest this season, notably Allington Pippin, Lane's Prince Albert, Gladstone, and Bramley's Seedling; but Beauty

of Bath and Worcester Pearmain again bloomed profusely, and Cox's Orange Pippin gave a very fair display. The weather during the time when the Apple bloom was open was showery, and there was a good deal of rough wind; but it was mild. Several growers have expressed the fear that the rain may have washed away the pollen and prevented fertilisation; but I hope that the fine, sunny intervals, if somewhat short, were sufficient for pollination. I believe that mild, showery weather is more favourable to the setting of fruit bloom than the bright, dry weather with easterly winds that we so often get at the time fruit trees are flowering.

Pears and Cherries, grown only in the private garden bloomed profusely, but for some obscure reason have set only light crops. Black Currants are blooming well, and all other bush fruits look promising.

THE SEASON'S PESTS.

Reference has already been made to the leaf-curling Plum aphid. This pest is reported as being prevalent in many other districts. The proper treatment for this aphid is spraying just before the bloom buds open, to destroy the mother queens, which are then fully exposed; but as they can seldom be seen on the trees, probably few growers carry out this operation. Failing this, spraying should be done immediately after the fall of the bloom, if the pest is present. If delayed, the insects increase with wonderful rapidity and are quickly protected in the curling leaves. They start to feed near the edges of the leaves, which immediately curl inwards over them, making it very difficult to reach them with spraying fluids. I did not detect the presence of this pest so soon as I might have done, but sprayed with nicotine and soft soap in the somewhat faltering hope of doing good. The result was much better than I expected, many of the insects being killed even in badly-curved leaves. This I attribute partly to the wash being applied forcibly from a power spray and partly to the fact that showers fell shortly afterwards. There is no doubt that, provided the wash has a chance to dry on after application, rain following soon afterwards is a great advantage. It wets the soap again and causes it to run into the curled leaves, reaching pests which would otherwise escape. This refers only to contact washes containing soap. With other spraying fluids rain following their application is a drawback.

BUD MOTH CATERPILLARS.

The only other insect pest doing serious damage so far in my orchards is the bud moth caterpillar on Apples and Plums, chiefly the former. This season it seems to have attacked the leaf bud rather than the fruit buds. The leaves springing from many of the terminal buds are seen to be spun together, and on parting them the olive green maggot-like larva is found. As the caterpillars grow they become reddish-brown, with dark heads.

The young larvae of this pest winter on trees in little silken larval cases attached near the axils of the buds. In these cases they seem to be protected even against spraying with strong caustic soda wash, as many of my trees had this spray in February, and yet are attacked by bud moth. This fact has been noted also by Theobald.

LITTLE SPRAYING DONE.

Apart from the pests mentioned above, fruit trees are remarkably clean this season. I have

never seen the Apple bloom trusses so free from pests, the entire absence of *Aphis malifoliae* on most varieties being a notable and very welcome feature. Caterpillars of the winter moth group are not numerous in my orchards, and it is evident that there is not to be a repetition of the plagues of the last three years, though reports from some other districts are less favourable. Most of the Apple trees look remarkably healthy, the leaves being round and of good colour, instead of curled by aphides and lacerated by caterpillars, as they often are at this time. So few were the insect pests that I did no spraying at all before the opening of the bloom, an operation which, I believe, has never been omitted before in this place. It is fortunate that it was not required, as the weather gave little opportunity for the work, owing to high winds and rain. As soon as the bloom has fallen some varieties will be sprayed for bud moth and other caterpillars. This escape from much of the spring spraying has been an untold boon, as it has allowed good progress to be made with other work. Never before have I had pruning so well up to date. It is now almost completed, and all hands will be available for hoeing as soon as the weather is dry enough to make this work effective.

SUBSOILING FOR FRUIT TREES.

The usual advice as to the preparation of land for planting commercial orchards is to subsoil; and a great point is usually made of it. I have always carried out this recommendation, but have sometimes doubted whether it is really desirable with a wet subsoil like mine. I do not want the roots to get into the subsoil, for it is obvious that when they do so canker and other troubles set in with certain varieties. Evidence that subsoiling is not advisable on all land was produced by Capt. J. C. Blofeld, of Wrexham, Norfolk, in his paper read at the recent Fruit Conference at Wye College. In his district subsoiling is the custom, but in the preparation of his orchards time prevented him from completing the work, and part of the land was only ploughed 7 in. deep. On this part the Apple trees were planted on the surface, soil being thrown up to their roots from the surrounding land. Measurements taken some years later showed that these trees were larger in girth of stem, height, and spread of branches than those planted on the subsoiled land. In the discussion which followed the reading of this paper this result was attributed by the speakers to the height of the water-table in the land of the Wrexham district.

POLLINATION EXPERIMENTS.

It has several times been suggested in these notes that some of the investigators who carry out pollination experiments are riding their hobby too hard. I have been reading a report of experiments made in Oregon which resulted in 59 varieties of Apples out of 87 being recorded as self-sterile, whilst 13 others were only partly self-fertile, leaving only 15 fully self-fertile. The method of testing was to enclose the bloom in paper bags, or in some cases to cover the whole tree with a cheese-cloth tent. It is obvious that in neither case could insects or other natural agents carry out pollination. We are not even told that it was done by artificial means, though presumably it was. In any case, I do not consider that the setting or non-setting of bloom in a paper bag or muslin tent is a true indication of what would obtain under natural conditions in the open. *Market Grower.*

THE BULB GARDEN.

A NEW HYBRID LILY. L. IMPERIALE.

HYBRID Lilies of authentic origin are singularly rare, and among the trumpet-flowered species, apart from this new one, I only know by repute of one other, said to be a cross between *L. regale* and *L. sulphureum*. Like many other good garden plants, this new Lily is a chance hybrid. Since the spring of 1911 Messrs. R. and J. Farquhar have had growing virtually side-by-side in a field at Roshudale, Mass., U.S.A., many hundreds of *L. regale* and *L. Sargentiae*, and each year a crop of seeds of the first named has been harvested and seedlings raised. In 1916 the foreman in charge, Mr. William Metcalfe, noticed among the seedlings flowering for the first time two or three which seemed to be intermediate in appearance between *L. regale* and *L. Sargentiae*, and drew my attention to them. These plants were separated and kept under observation. During 1917 and 1918 I was away in the Far East, but in the summer of 1919 I saw three of them in flower. In the autumn these were lifted, placed in pots, and they flowered under glass in the beginning of April, 1920. The strongest bulb produced four stems, as the photograph reproduced in Fig. 118 shows, and bore ten flowers. In the photograph the resemblance to *L. regale* shows strongly, but as a matter of fact the hybrid is intermediate in character. The stem is grey-green and wry, like that of *L. regale*, but the leaves are from 1 to 5-nerved, perfectly smooth on the underside, and the topmost bear bulbillae in the axils. The flower-bud is like that of *L. Sargentiae*, some 14 cm. long, and the expanded flower is open-funnel-shape, the colour of *L. regale*, with the apices of the segments rather wider and more recurved than in that species. The anthers are orange-brown. The influence of *L. regale*, the mother parent, is conspicuous in the general appearance of the hybrid, but the more numerous nerves in the leaves, the presence of bulbillae, more open flowers and the colour of the anthers all denote the influence of *L. Sargentiae*. Having in mind the fate which overtook such remarkable hybrid Lilies as the original *L. Parkinsonii* and *L. kewense*, one hesitates to prophesy of the future value to gardens of this new Lily. As we know it to date, it combines the best qualities of both parents and is worthy of the name I have bestowed upon it. *E. H. Wilson, Arnold Arboretum, U.S.A.*

SCILLA LILIO-HYACINTHUS

ALTHOUGH abundant on the Pyrenees, this *Scilla* is far from common in gardens, and the white variety, *alba*, is still less frequently met with. It has been long known in British gardens, and was described and figured in Parkinson's *Paradisus*. Parkinson calls it "*Hyacinthus stellatus Libifolia and radice caerulea*," the popular name of the time being the "blewe Lily-leaved Star Jacinth." As usual, Parkinson is very particular in his description of the plant, and were it not for considerations of space one would gladly quote it at some length. He tells us of the short, broad green leaves, like those of a Lily, also of the scaly, Lily-like yellow bulb, of the leaves resting on the ground "of the hollow between them where the stalk emerges afterwards"; and of the stalk a foot or so high, with many stary flowers. The illustration is also good, and those who have the pleasure of possessing the *Paradisus* will find a considerable amount of interest in the quaint old gardener's account of the plant. He tells us that the flowers are of a good blue, and also notes what some of us have experienced, that there is a variation in the shade of this colour, some plants having much lighter coloured blooms than others.

Parkinson was also acquainted with a white variety, which he calls "*Scilla stellata Libifolia alba*." This is a variety which is apparently

scarce and possibly even rare in gardens. It first came to the writer's notice in an old garden in Scotland many years ago, where its name was unknown, but it was traced as the white variety of *S. lilio-hyacinthus*. It must have been in that garden for a great number of years, and it had increased so much that many bulbs had been put out into the woods. Needless to say, one had pleasure in acquiring this variety. A bluish or flesh-coloured variety, "carnes," is recorded by Parkinson, but he had not seen it, and the present writer has not been any more fortunate.

SCILLA ITALICA.

I NEED not write anything of the desirability of other Squills, the gloriously blue *Scilla praecox*, the dainty *S. lufolia*, and its still dauntier white form, or of the many other good Squills, in estimating the value of the one I am now about to recommend. It has at least three good points to recommend its wide adoption. One is its colour, which Parkinson, the first to describe it, calls "a very pale or white blew"; then it is remarkably sweet, which the same authority was aware of; and last of the good



FIG. 118.—A HYBRID LILY, RAISED FROM *LILIUM REGALE* AND *L. SARGENTIAE*.

Parkinson says of it that "I heard of one that should have flesh-coloured flowers, but I have not yet seen any such." Philip Miller, however, records a red-flowered variety, *flora rubella*. The cultivation of this *Scilla* appears to present no difficulty, and it increases quickly in ordinary garden soil, but should be divided every few years, as the flowers are much better when the clump is not too large. About half a dozen bulbs in one or two apart seem to give the best results. I have divided the clumps when the plants were in flower in April, or after they have bloomed, without any apparent detriment the following year. I plant them about three inches deep. *S. Arnott.*

points I wish to indicate is that it succeeds splendidly on grass, which I do not find the earlier sorts above named do. It, of course, flowers later than the others named. Moreover, it reproduces itself from seed freely enough to form masses of grey blue in the course of a few years. There is a curious habit which some of these Squills have of forcing themselves—that is, the bulbs deep into the soil, which demonstrates the advisability of deep planting. Anyhow, *S. italica*, having a large bulb, must not be planted so shallowly as the proportions of smaller-growing varieties would lead one to adopt unless aware of the above propensity. *R. P. Brotherton.*

Lilium imperiale, Wilson n. hybrid *Lilium regale*, Wils. x *L. Sargentiae*, Wils.

THE GARDEN OF THE REV. WALTER STONEHOUSE AT DARFIELD RECTORY, IN YORKSHIRE, 1640.

(Continued from page 241.)

[** The spelling of the names of plants in the following list is as in the original manuscript.—Eds.]

- *Castanea. G.T.
*Claustrum Clusii.
*Cerasus avium, fructu nigro and rubro
... sylvestris Tragi, vel Chamæcerasus
(Gesneri, Machabeo Germanis. ?
*Cerasus syl. vulg.
... forte (perhaps) Merasus Clusii
in agro Costrensi (found in Cheshire,
near Stockport, Merrett Pinax!). The
Merry-tree.
*Cratogeomys, Siliqua ex Guinea. G.
*Chamaedaphne vid. Terræ Glades.
*Chamaedryas lactinatis foliis.
*Chamaecris latifolia purpurea. G.
... cœrulea versicolor.
... angustifolia maior. G.
*Chamaecris repens petraea.
*Chamaecris mezerion vulg.
... fl. rubro.
*Chamaecris. G.
*Chelidonium maximum Canadense,
... deacon of Jacobo Cornuti, Ranunculus
albus Virginianus in Parkinson.
*Chondrilla cœrulea. G.
*Chrysochloria. G.T.
*Chrysochloria, Jacobaea marina. G.
*Chrysium Anglicum. In Duckleton Lottes
in Berkshire.
... minus. L'Obelii.
*Chrysochloria Rosmarini folio.
*Chrysochloria Daphnoides maior. G.
... minor fl. albis, cœruleis
et pur.
*Chrysochloria Anglica, sive Viorna. G.
... peregrina fl. rubro. G.T.
... fl. rubro. G.T.
... purpureo simpliciter.
... Pannonica. G.
*Chrysochloria alba Clusii.
*Chrysochloria Anglicum fl. purpureo
... fl. variegato T. Ha
Mr. William Pickering his close neere his
Parsonage house at Swillington in York-
shire.]
*Chrysochloria Anglicum flore albo. G.T.
... versicolor.
... Pannonica purpurea. G.
... flore trifidato. T.
... pleno. T.
*Chrysochloria Jovis. G.
*Chrysochloria vulgaris.
... scorpioides. T.
*Chrysochloria mas. G.T.
*Chrysochloria. G.
*Chrysochloria Matthioli. G.T.
*Chrysochloria flore pleno.
*Chrysochloria, sive Umbilicus Veneris vulg. G.
... minor montana. 3 Matthioli.
*Crassula maior. G.
... minor. *Sedum minus Officinarium.
*Crithmum chrysanthemum.
*Creosmum sativum.
... minus luteus flore aureo
... fl. pallido.
... minus luteus fl. pallidior.
... luteus versicolor vulg.
... minus.
... striatus vulgaris.
... Turcius.
... albus versicolor.
... minus minor.
... Moesiacus *fundo violaceo
... purpureo versicolor.
... minor.
... maior.
... Neapolitanus cœruleus.
... Episcopalis.
... elegantior.
... Pyrenæus purpureus Autumnalis.
Cyperus. G.T.
Cyanus maior. G.T.
Cyclamen. G.T.
Cymbalaria Italica
*Cyrtoglossum fl. albo.
... minus flore viride. T.
*Cyperus. T.
D.
Deus Caninus flore purpureo. G.
Dentaria minor Ger. emac. p. 1585.
*Dentellaria Rondelii. Plumbago Phoen.
T.
*Doronicum. Vid. Calandula Alpina.
... Americum majus; Ed.
Morgan. T.
*Draba repens.
*Dryopteris Adversariorum.
... nigra. Onopteris mas.
Tragi. Ger. emac. p. 1835.
(† I consider that the true Dryopteris
Tragi, or Filicum arboreum, is the same
as that described in the Adversariorum
of L'Obel, see Tragus, p. 538; and
Bauhin Pinax, p. 358. A § 5
† This note is entirely in Latin in the MS.)
† Stonehouse visited Stockport in 1639.
obinson Mercurius 1641.)

- *Ebulus. G.
Epimedium. G.T.
*Erica bacifera.
... sive Oenanthe aquatica.
Erygium vulgare maritimum. G.T.
... mediterraneum. G.
... planum montanum, Pannoni-
cum. G.T.
Enonymus Theophrasti. G.
E.
*Eruca latiore folio.
Ficus indica. G.T.
Filipendula vulgaris. G.
... sive Oenanthe aquatica.
*Flanula Jovis surrecta. T.
Fragaria fructu aculeato or hispido. T.
Fragaria varietates.
*Fragaria vulg. G.
... fl. albo. T.
Fritillaria vulgaris fl. purpureo maculato.
... maxima purpurea
... Pyrenæa.
... atro-rubens.
... alba.
... flore luteo puro. T.
Fumaria tuberosa.
... G.
Galega flore purpurascente.
... albo.
Gelsominum, sive Jasminum vulgare. G.
... Americum max: fl. pheniceo.
Pseudopocymum Vir-
ginianum in Parkinson.
*Gentiana Hispanica Spartium. G.T.
Gentiana maior. G.T.
Gentianella verna.
... autumnalis. Pnemonanthe.
*Geranium Haematoides.
... alterum, Colum-
bini folii obtusius
crinitis.
... Romanum.
... Batrachoides longius radicatum.
... pullo flore.
... fl. cœruleo.
... albo.
... purpureo.
... variegato.
Gladulus Carbonensis. G.
... flore rubente.
... albo. T.
Byzantinus. T.
... palustris Cordi Juncus floridus-
caux vulgaris. Hedyarum glycyrrhiza-
tum. G.
... Dioscoridis.
... exigua maritima. G. cruciata in
earlier list. G.
Glycyrrhiza. G.
*Gnaphalium montanum fl. argenteo. G.
[Found in Scosby Lees, near Donkster.
Gnaphalium maritimum. G.
Americum. G.
*Gossypium.
... seriei instar, ex Guinea
Græneo striatum. G.T.
... Patnassi. G.
Gratiola. G.T.
*Grossularia vulg: fructu rotundo et oblongo.
... T.
... fructu rubro etc. T.
... viridi spinoso. T.
H.
*Hedera arborescens. G.T.
*Hedera, seu Vitis Virginiana.
Helicium. G.
Helleboraster. G.
Helleborine, fl. toris herbaceo, intus
purpureo, 3. Clusii Pannon.
Helleborine, fl. albo purpureo maculato.
prima Gerardi emac.
Helleborus albus. G.
... Nigro. G.
Hepatica nobilis fl. cœruleo simpliciter. G.
... pleno. T.
... fl. guani rubente [†
incarnato in earlier
list].
... flore albo. G.T.
*Herba minus, ex Guinea.
... Paris. G.
... Doria. G.T.
*Herniaria.
*Hesperis flore simplici.
... pleno.
Hippoglossum. G.T.
Hippophastrum vulgare.
... rotundifolium.
Hormium Lavandule flore.
Hyacinthus Botroides minor cœruleo-
... obscurus. G.T.
... albus. G.T.
... cœruleus amoenus. G.
... comosus maior purpureus. G.T.
calamistratus.
... orientalis fl. purpureo.
... fl. pallide purpureo.
... flore albo. G.T.
... præcox fl. purp.
sativo.
... fl. duplici sub-
cœruleo. †.
... stellatus præcox cœruleus.
... Byzantinus fl.: Bora-
ginis. G.
... maior Beticus, sen
Peruanus.
... Anglicus flore albo. G.
... rubello. G.
... autumnalis minor. G.

- *Hyacinthus Botroides maior muscatus, sive
Muscari flore cineritio.
... Muscari, fl. luteo. T.
I.
*Hlex. T.
Iris palustris lutea. G.
Iris latifolia purpurea vulgaris. G.
... maxima purpurea.
... Chalcedonica, sive Susiana maior. G.
... minor.
... alba Fiorentina. G.
... maior versicolor.
... Dalmatica maior. G.
... violacea. G.
... Pannonica.
... Cameraria.
... lutea versicolor. Varia caulifera Clusii.
... angustifolia maior flore pleno.
... minor versicolor Clusii.
... bulbosa latifolia Anglica cœrulea. T.
... fl. candido.
... argentea.
... angustifolia, minor alba.
... subcœrulea labris
luteis.
... flore vario.
... bulbosus crinis coloris elegantioris.
... alba labris luteis.
... aurea, sive lutea Hispanica.
... purpureo cœruleo: obsoleta labris
luteis.
... alba versicolor, foliis erectis
purp. striatis.
... tuberosa. Hermodactylus Matthioli.
J.
*Jacea Austraca capitulis hirsutis Eodii.
*Jacea maior fl. carneo v. albo.
Juglans Novæ Angliæ. T.
*Juniperus vulgaris. [? minor F.]
K.
Keyri flore luteo pleno vulg. T.
... elegantiore.
... pleno ferrugineo. T.
L.
Laburnum. T.
Lanum Pannonicum. G.
Lathyrus vulgaris latifolius. G.
... maior angustifolius fl.: purpureo.
G.
Lauro. G.
Lauro-cerasus. T.
Laurus vulgaris.
... Tinus. G.T.
... Alexandrina. Chamædaphne
Dioscor. I.
Lepidium. G.
Limonium bulbosum præcox minus. G.T.
... majus. G.T.
... serotinum polyanthe-
mum.
*Libanotis Theophrasti maior ?T
Liliastrophelus seu Lilium non bulbosum
luteum. T.
... flore phœniceo.
Lilium album vulgare. G.T.
... rubrum. G.
... flore luteo. G.T.
... eruentum bulbiferum. G.
... convallium vulgare.
... floribus rubellis. G.T.
Limonium majus. G.
... minus. G.T.
Lithospermum vulgare.
*Lotus arbor. G.T.
Lychis chalcœdonica flore carneo.
... fl.: simplici miniat.
... fl.: miniat pleno
... coronaria fl.: rubro simpl.
... variegato.
... albo simpl. G.
... maculato.
... pleno rubro. G.T.
... marina Anglica. G.
... sylvestris fl.: pleno rubro.
... candido.
Lysimachia lutea vulgaris. G.
... cœrulea, vel galericulata. G.
galericulata minor. Gratiola 3
Gerardi.
... spicata cœrulea. G.
... Virginiana.
M.
Macrotana hortensis. T.
... maior Anglica
Madya hortensis: fl.: simpl. et pleno
... albo, purpureo, suave rubente, etc.
... indica arborea
... arborescens. G.T.
... moschata Indica.
*Malus Persica flore multiplici.
... aurantia. T.
... hibernica. T.
... Punicia. G.T.
Mandragoras mas. T.
Martagon flore rubro.
... carneo.
... imperiale. G.
... flore luteo.
... albo puro.
... maculato. T.
... Pomponium angustifolium. T.
*Matricaria, sive Parthenium fl.: pleno. T.
*Medica frutescens, sive flavo fl.: Clusii.
*Melissa. G.T.
*Menstruum niveum Anglicum.
*Mentha sativa rubra.
... Romana.
... radice tuberosa.
... Cattaria. Nepeta.

- Menum. G.
*Millifolium fl.: luteo.
... rubro. G.T.
*Moly montanum latifolium primum Clusii.
G.
... flore luteo.
... triflorum fl.: albo.
Moras fructu rubro. T.
Muscus clavatus. Lycopodium.
... foliis Cupressi.
... ex Uramio humano (from the skull
of a man).
Myrica. Tamariscus.
Myrtus. T.
N.
Narcissus Non-parvulus. F.
... totus albus. T.
... Dnie Mattenses. T.
... medio luteus vulgaris. G.
... purpureus serotinus. G.
... multiplex.
... junceifolius luteus magno calice.
... vulgaris.
... fl.: albo.
... flore pleno luteo. T.
... Autumnalis maior.
... marinus, sive tertius Matthioli.
T.
* Nerium sive Oleander. G.T.
Nymularia. G. fl.: albo. T.
O.
*Oleander. G.T.
*Onobrychis maior.
OphioGLOSSUM. G.
Ophris.
Orethos odorata. G.
... Melittias. G.
... Myodes.
... Priocelis.
... Testiculus Psychodes.
... Cynosorchis morio foetina.
[† Found by Stonehouse on Scosby Lease.
MS.—Note by How.]
Orchis Cynosorchis minor Pannonica.
*Origanum Heraclioticum, seu Hispanicum.
T.
Ornithogalum majus spicatum.
... minus spicatum.
... Neapolitanum. T.
... vulgare.
Osmunda aquatica. Filix florida.
Oxalis maxima Hispanica.
... Romana.
... sive Aetosa Indica vesicaria.
Oxys.
P.
Peonia flore rubro multiplex.
... pleno minor.
... carneo multiplex. T.
... foetina flore simplici carneo. G.T.
... mas. vulgaris. G.T.
[† Found growing in Mr. Field's Well close
in Darfield, which thoughtfare from any
house, I believe it came first out of a
Garden with some Dung.]
*Peonia mas Vera.
*Panax Coloni.
... splendens, Anglica bacifera.
... Heraclium. G.
Paralysia hortensis flore pleno.
... flore geminato. T.
... et calice crispo. T.
... viridante simplici. T.
... fatuo. T.
... viridi roseo calamistrato.
... minor flore rubro.
... fl. purp. Americana.
... minor flore albo.
*Parietaria latifolia Amandi Lusitani.
Pentaphragmum. facie.
Perilymennum perfoliatum. G.
... rectum, primum Parkinsoni.
... 4 Gerardi emac.
*Periploca. G.T.
Phalangium Adhæroicum. T.
... ephemerum Virginianum.
Tradesantii. T.
Phyllitis vulgaris. G.
... multicaulis. G.
Pilosella aurea. Pulmonaria Gallorum
Hieratii facie L'Obelii.
*Pimpinella Americana max. fl. albo.
... sanguisorba hortensis max.
... maior et minor. T.
*Pinsulea. G.
Pinus sativa.
Pinus sylvestris montana. G.T.
Pinoaster maritimus maior. G.T.
Pisum maritimum Anglicum.
Platago rosea. G.T.
Polemonium sive Tritium frutescens. G.
*Polium montanum. G.T.
Polygonatum majus vulgare. T.
... flore maiore.
... minus latifol. G.T.
... angustifolium. T.
... Virginianum. T.
†
Portulaca cœrulea.
Primula veris flore pleno vulgaris.
... suave rubente folio
... amplo rufo. [And
other varieties.]
... albo. T.
[Stonehouse found them most plenti-
fully mixt with Pinguicula, in a very low
and squalid meadow near Knasborough.]
(To be continued.)

[DRYNHAM, WALTON-ON-THAMES.

DRYNHAM, the residence of John Osborne, Esq., is situated between Walton and Weybridge, in one of the most beautiful parts of the Surrey Pine district, where many imposing residences, with extensive gardens, have been erected in modern times, forming an important residential suburb. The road from Walton station to Drynham is past a number of these—what may be termed "minor"—estates; and, as the method of laying out the grounds attached to these houses varies considerably, the gardens present an interesting diversity. The grounds of Drynham are larger than those of the average, and the place itself strikes a more distinctive note than the rest, for it is at once obvious to the visitor that the grounds have been laid out by some keen lover of gardening, who especially appreciated not merely variety, but the beauty of many rare and uncommon plants seldom employed in suburban gardens. It is also obvious that the designer knew how to make the most of the limited area at his command, for the place is only some five acres in extent, and yet it has been made to include refreshing lawns, an imposing Rose garden with broad, flagged paths and a Lily tank; extensive shrubbery borders, large plantations of Rhododendrons and Azaleas dry-wall gardens, terraces, and an exceedingly fine rock garden, the latter covering an area of about one acre. Beside all these, there are the usual kitchen garden and fruit plantations, together with a modern range of glasshouses for the special purpose of indoor fruit culture, and a little show house containing decorative plants, both flowering and foliage, of such as are commonly employed for the dwelling house. Whilst everything is so pleasing in this little model garden, the most important feature to the horticulturist are the numbers of rare and interesting plants which confront the visitor at every turn. Very many of the best of the newer introductions from China and other parts in recent years are to be found at Drynham, whilst the number of species of Alpines on the rock garden is very extensive, and a list of the plants would occupy more space than we have available.

Before we describe the rock-garden, however, it will be well to refer in detail to some of the general features of the place. The garden is screened from the road by a beautiful Holly hedge—evergreen hedges are common to most of the gardens in this district, and they are certainly well-tended and in good condition generally. The soil of the district seems to be very favourable to arboreal vegetation, and Rhododendrons especially do uncommonly well. The approach to the house is past a shrubbery in which *Arbutus Unedo* occupies a prominent position, and on the wall of the house, facing a little lawn, is a magnificent plant of *Ceanothus Veitchianus*, which grows up to the eaves of the windows, some thirty feet above the ground, and no further, for the owner very wisely refrains from hiding the architectural features of the building beyond a certain point, with climbing plants. The *Ceanothus* is one of the finest specimens of its kind we have seen, and at the time of our visit was a mass of delicate lavender-blue flowers, so numerous as to completely cover the plant from the ground upwards. In the little lawn referred to are some unusually large standard Roses, quite the largest specimens we have seen. They have stems some four inches through, and the heads are large in proportion, so that in summer they give a profusion of blooms and their fragrance adds an additional charm to this pretty shrub-enclosed quarter. In the shrubbery borders round about are well-grown examples of some of the more uncommon shrubs; against a background of dark green Conifers, which do remarkably well in this place, a tall plant of *Halesia tetraptera* laden with the creamy-white blossoms showed to fine advantage, and near by is a big specimen of *Stanhylea colchica*, equally pleasing in flower. The way to the garden proper is along a winding path, broken up by tall mounds at intervals in which scope has been offered for making some very beautiful floral pictures. At each turn a new feature

presents itself, and just now there are large splashes of bright colours provided by colonies of *Alyssum saxatile* which, notwithstanding that it is generally considered a "common" plant, has glorious flowers of the richest golden colour; big clusters of *Aubrietia* in a variety of bright colours; patches of *Iberis Little Gem*; Alpine *Phloxes*, *Frises*, *Campanulas*, *Arenaria montana*, and other subjects of a similar nature, interspersed with clumps of *Irises* and *Tulips*. Earlier in the season other bulbous flowers had contributed to the floral effect, and, judging by the great length of the *Crocus* foliage and the numbers of these plants, the *Crocuses* alone must have been wonderfully pretty. The lawns are partly sunken, and approached by a short flight of steps on either side of which are splendid specimens of *Retinospora obtusa* *lycopodioides*.

The scene across the lawn is enchanting, for the eye meets a big shrub border in the foreground of which is a wide band of the beauti-

flowers which remained, it must have been a remarkable sight earlier in the season. In this border, too, is a very large clump of *Abutilon vitifolium*; several of the branches had grown to a height of twelve feet or more, and they were carrying numerous flower buds. Other plants deserving of notice in this quarter are *Enkianthus campanulatus*, *Gaultheria nummularifolia*, which still carried a few of its pink berries with which it was covered in winter; *Sarcococca ruscifolia*, smothered with its pretty little white flowers; *Erica australis*, growing in tall feathery sprays and furnished with soft, pink bells; *Berberis carolina*, an orange-flowered species, after *stenophylla*, but denser and more compact in growth than that species; *Osmanthus Delavayi*, which was just passing over; *Grevillea sulphurea*, *G. rosmarinifolia* and *G. longifolia*, all of which escaped damage from cold during the past winter; *Berberis hyemalis*, a plant superior to *Bealei* with brighter and larger flowers; *Correa ventricosa*, *Desfontainea spinosa*.



FIG. 119.—RHODODENDRON LODER'S WHITE FLOWERING IN THE SHRUB BORDER AT DRYNHAM.

ful Pink Pearl Rhododendron, not quite open at the time of our visit, but the buds showing in great profusion, and we could well believe the statement of the gardener, Mr. W. A. Cook, that the effect in summer is magnificent. As stated, Rhododendrons are extensively planted in these gardens, and they do surprisingly well. Loder's White variety (see Fig. 119), which many consider the finest of the white Rhododendrons, was in bloom, and others we noticed doing well were *R. Iverianum*, one of the best red-flowered Rhododendrons; *R. micranthum*, *R. compactum multiflorum* (a fine clump of which showed to advantage on a prominent corner); *R. Lascombe's Hybrid*, which develops its large pink flowers in bold tuesses; *R. Alice*, deeper coloured than Pink Pearl, which some regard, and others do not, as a variant of that variety; *R. intricatum*, one of the dwarfs of the family; and *R. quinquefolium*, the foliage of which is prettily tinged with bronze. Beside the Rhododendrons, great plantations of Azaleas have been made, and these very floriferous shrubs also grow and bloom with freedom. At the back of the border containing the majority of the Rhododendrons, is a splendid tree of *Cornus Nuttallii* from which the specimens that gained the First Class Certificate at the R.H.S. meeting on April 13, 1920, were cut. The tree was past its best, but from the faded

Viburnum rhytidophyllum and *V. tomentosum Mariesii*. Beside all these, there are many ornamental *Acers*, *Lilacs*, *Cherries*, *Magnolias*, *Euonymus europaeus purpureus*, *Fagus Selandri*, and *Hibiscuses*, disposed at points of vantage to display their flowers or foliage as the case may be.

The stone-flagged Rose garden is enclosed by a well-kept hedge of Yew, in which nooks have been made to accommodate seats, and there is an ample and ornate tea-house in one corner. The garden itself is made in six sections and the beds are planted to give distinct and separate colour effects. Surrounding the Rose garden, under the Yew hedge, is a dry wall, and the shade of the Yews prevents the glare of the sun from depreciating the fine colours of the Alpines, which also seemed to enjoy the cool surroundings. Everything appeared perfectly at home, the masses of *Arabis*, *Alyssum*, *Iberis*, *Pinks*, *Saxifragas*, *Phloxes*, *Daphne Cneorum*, *Sedums* and *Spanish Gorse*, all lending themselves to the general pleasing effect.

The rock garden, of which a glimpse is shown in Fig. 120 is the chief feature of the place, and is of the style that met with such approval at the Chelsea exhibition in 1912, when Mr. J. Wood, of Boston Spa, struck a new note in this popular phase of gardening. It is made of the weathered grey York stone which is so natural

in appearance, and harmonises so well with Alpines. Beside the pool shown in the illustration there are several smaller ones in which are varieties of Nymphaeas and other aquatics, with bog-loving plants on the margin. The picture will convey better than any description how enchantingly beautiful is the association of tree and shrub, water and rock-garden in this comparative small area of one acre. The plants on the rock-garden embrace a very wide selection; and in it are found the best of the commoner things as well as novelties and rarities. It is a difficult matter to select from such a wealth, but the following dozen plants represent a few which specially appealed to us:—*Cynoglossum nervosum* (the flowers of the prettiest possible shade of blue), *Phlox Laphamii*, pale heliotrope; *Saxifraga muscoides*, looking sweetly pretty in a clump comprising literally thousands of flowers; *Cheiranthus Allionii*, bright orange; *Potentilla alba*; *Primula sikkimensis*, primrose yellow; *Haberlea Ferdinand Coburgii*; *Primula Sieboldii* alba; *Dryas minima*, with flowers like those of a big white Anemone; *Ranunculus granineus*; *Tiarella cordifolia*, a colony of which was growing on a summit bordering a little ravine, through which a miniature stream flowed; and *Hutchinsia alpina*.

These notes are somewhat lengthy, but we have not exhausted by any means all the beauties of this charming little domain, which is under the skilled care of Mr. W. A. Cook, for many years gardener to the late Sir Edmund Loder at Leonardslee. Mr. Cook is thus thoroughly at home among rare and choice plants, and the general condition of Drynham gardens is evidence of his capability.

FLORISTS' FLOWERS.

DAHLIAS FOR GARDEN DECORATION.

DAHLIAS, in one or other of the many forms of the flower, are adapted to almost any scheme of garden decoration, and they are especially valuable where a wealth of colour is appreciated in early autumn. Beds planted with varieties corresponding in vigour to their size are at their best when most summer-flowering subjects are on the wane, while in conjunction with other early autumn blooming subjects such as Michaelmas Daisies, *Chrysanthemums*, *Salvia patens* and the Japanese Anemone, an imposing effect may be produced. Other positions that will suggest themselves as being the brighter for the presence of these plants, include the annual border, the newly planted shrubbery, and among rough grass as bold clumps. With evergreens for a background, the lighter coloured varieties of the decorative section show to great advantage, and in cases where an annual screen or hedge is desired, the robust growers will prove most serviceable.

Tubers started in gentle warmth in March or April soon make headway, and if it is necessary to increase the stock, it may be done either by means of cuttings or division of the largest roots. For the more prominent positions in the garden it is an advantage to have the plants well established in suitable sized pots sufficiently early to permit of them being gradually hardened off ready for planting out early in June. New varieties secured as pot tubers also benefit from being potted on and grown for a little while in an airy plant-house. While the plants are under glass a free circulation of air should be allowed, and fire-heat sparingly employed in order to produce sturdy growth.

In some gardens it is evident Dahlias do not incite much enthusiasm, the reason chiefly being due to earlier experiences not coming up to the desired standard. Lateness of flowering is a common complaint; another, and which perhaps matters most is that which arises from the failing of some varieties, notably among the Cactus type, to display their blooms to the best advantage. Amongst some of the older kinds especially it is generally admitted there was room for improvement in this respect, but in many cases the fault was with expecting too

much from purely exhibition varieties in the garden. Raisers, however, are to be congratulated on the progress they have made towards eliminating all that is undesirable from amongst those varieties which are recognised as being suitable for those who plant for effect. As to the first grievance, it is a matter of cultivation mainly. To plant in a heavily manured or rich soil of any kind is to favour the growth of too much leaf and stem, with consequent delay in blooming and scarcity of flowers, but strong plants, firmly planted in a well worked though not rich soil, rarely fail to bloom freely. In a dry season watering is necessary and weak liquid manure may be used on occasions.

There are many types of Dahlias suitable for garden decoration. Certain varieties of tree-flowering habit and moderate height are Red, and White Ensign, Richard Box (yellow), Sportsman (scarlet), Louvain (pale yellow), Sophocles (terra cotta), Star (orange), Reliance (brick red), Sweet Briar (pale pink), and Mrs. C. Foster (rosy pink). From a bedding point of view, with or without an edging in the shape of foliage plants like *Centaurea candidissima*, the Mignon type is worthy of



FIG. 120.—WATER GARDEN AND ROCKERY AT DRYNHAM.

attention. The plants average about 1½ ft. in height, are tree-flowering, and have single flowers which are carried well above the foliage. Pleasing varieties include Pembroke (yellow), Lancer (bright scarlet), Agnes (purple), Albion (white), and Olive (orange). The decorative varieties are noteworthy for their strong habit and handsome, flat petalled flowers. They are very striking arranged in bold groups. Good varieties are plentiful; a few of the best are Loveliness (pink), Warneford (white), Reginald Cory (scarlet), and Caribel (purple). Varieties of the Collette type make an effective display in any position. Varieties of unusual brightness include Daadem, Henri Farman, Matilda, Eden, Gold Tip, Dora Fisher and Scarlet Queen. Paeony-flowered varieties are amongst the most popular for planting in the shrubbery and other positions where a screen is desirable. For general usefulness, however, the singles should not be overlooked, for not only are they a serviceable border type, but they are valuable for supplying cut blooms. Those of the Star section, with semi-double flowers on long stems, are also useful for indoor decoration. *F. T.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Potato Spraying.—On p. 182, *M.* gives very good advice upon this subject, and points out that spraying is an insurance. This it always would be, no doubt. *M.* also says that weight of crop is materially increased. This, I believe, however, is not always the case, and I am interested to discover what the conditions are when the sprayed portion of a crop gives a smaller yield than the unsprayed portion, both growing on the same ground under precisely the same treatment. I am aware that this result is possible, but not from experiments under my own hand. Can it be that under certain conditions the Potato plant is poisoned? I am not aware that this question has ever been dealt with, but it would be interesting and perhaps very important to know what the explanation may be when spraying is condemned by results—perfectly skilled work being understood. From what I know, I believe there are such cases and there may be views and experiences that could be put to the test experimentally. Will readers who have any experience

against spraying kindly communicate with *The Gardeners' Chronicle*? *R. Irwin Lynch, V.M.H., Torquay.*

Silver-Leaf Disease (see p. 235).—I read with great interest your leading article on Silver-Leaf Disease of Plums, and the antiseptic injections into trees by Messrs. Brooks and Bailey. In 1907 I tried injections of various substances into trees, but the results were unsatisfactory. Both Sir Daniel Hall and Dr. Russell have shown that the plant is obliged to take up some thing of everything which is dissolved in the soil water quite regardless whether the ultimate effect is good, bad or indifferent. If the antiseptics used by Messrs. Brooks and Bailey were given in conjunction with nitrate of soda and a complete fertiliser during active growth the plant is obliged to take them up. The results can be noted with far greater precision than by injections. It is essential that the plants or trees be watered first, then the solutions given in sufficient quantity to insure their reaching the root-hairs. It was upon these lines that I discovered the nitro-hydriarg, perchlor treatment of eelworm disease in Daffodils, which has quite recently been put to a prac-

tical test with complete success. Eelworms were found alive, healthy and very lively in the leaves of growing Daffodils. These were treated and, when the identical Daffodils and leaves were examined under a high-power microscope the week following the treatment, the pests were dead. As the plant is plasmodomous and both animals and fungi plasmodiophagous, corrosive sublimate will kill the two latter forms of life, while leaving the plant unharmed. I have found it successful in the cure of Saxifraga and vines (under glass) attacked with fungous diseases. I feel sure, if properly tried, that it would kill Stereum purpureum equally as well. In fact, I believe it to be the specific in all fungous and animal diseases of plants in which the internal tissues are attacked. I have had no opportunity to try it on Silver-Leaf disease, but anybody is free to do so. *C. A. Jardine.*

SOCIETIES.

INTERNATIONAL HORTICULTURAL COMMERCIAL CONFERENCE.

Beautiful spring weather attended the opening of the second meeting of the Federation Horticole Professionnelle Internationale, held at the Casino, Ghent, on May 10 and 11. Many Britishers are familiar with the Casino buildings as these have been used in past years to hold part of the great Ghent Quinquennial Exhibitions.

Mr. Arthur de Smet, President for the year, opened the proceedings at 9 a.m., and there were present the following representatives:—Belgian, M. Arthur de Smet, President; M. A. Callier, President of the Royal Agricultural and Horticultural Society of Ghent; M. C. Pynaert, M. E. Delaruye, M. F. Spaë, M. E. Puret, M. S. Van Acker, M. Louis van Houtte, M. V. Toeffaert, M. L. Kerkevoorde, M. Jadsul, M. Buyl, M. Walraet, M. V. van de Weyke, M. O. de Coster, M. Albert de Smet, M. A. Wytendaele, M. Beernaert, and M. A. Gallet; with M. H. Van Orshoven, representing the Horticultural Section of the Belgian Ministry of Agriculture. French—M. Graindorge, M. Turbat (general secretary), M. René Barbier, M. Boyer, M. L. Levassasseur and M. Gauthier. British—Mr. Geo. Monro, Junr., President of the Chamber of Horticulture; Mr. G. W. Leak (President) and Mr. Chas. H. Curtis (Secretary). British Florists' Federation; Mr. C. G. L. Du Cann, Secretary of the Horticultural Trades Association; Mr. Robt. H. Page, Mr. E. M. Merryweather, and Miss Hamilton.

The minutes of the Paris Conference of 1919 were accepted, as they had already been published. M. Turbat, the Secretary of the International Federation, reported that although the Federation had progressed, many hopes had not been fulfilled because reconstruction of business was occupying the whole attention of nurserymen in the allied countries. In the absence of M. Sauvage, the Treasurer, M. Turbat presented the financial statement, which showed an income of 2,826 francs, 65 cents., including the balance brought forward from the old Federation, and 500 francs each from the Belgian, French and British Chambers of Horticulture. Expenses, including printing, amounted to 481 francs, 25 cents., thus leaving a balance of 2,345 francs, 40 cents.

The greater part of the morning session was occupied by a discussion of the position of the horticultural trade in Europe, and with special reference to the prohibition order issued by France which excludes imports of plants and flowers from all countries. The Belgian growers are greatly troubled about this order, as it closes one of the openings for their trade in Azaleas, Rhododendrons, Hydrangeas, Palms and other pot plants. Their representatives pointed out that many of the articles prohibited are kinds which are needed in the process of business reconstruction in the devastated areas of France; further, that pot plants and flowers were now purchased and used by all grades of

society, and therefore could not correctly be described as luxuries.

The French representatives stated that the various horticultural associations had not been consulted on this matter, and the first they knew of the order was its publication. They were distinctly against prohibition for horticultural produce, as they had already felt the effect of American prohibition and they desired to work amicably and freely with allied countries. The British delegates showed that the export of flowers and plants to France was not of great moment, whereas the imports from France were very considerable, and if a question of retaliation arose among the governments France would suffer more than England from prohibition.

Mr. George Monro presided over the afternoon session.

The question of admission of neutral countries to the Federation raised many interesting points, but eventually it was agreed they should be admitted and, indeed, invited to join under the existing rules. The admission of enemy countries was left for consideration next year.

In connection with the perennial subject of the protection of raisers of novelties, it appeared that the French and Belgian growers were in accord and had drafted regulations. These latter were submitted and discussed by the British, and a general agreement was arrived at but the final decision will not be given until the British associations have considered them in detail. The principle of a registration bureau was established, and as soon as M. Turbat has rules and regulations in order, the Press will be asked to notify the opening of the bureau so that all who wish to register new plants may send for the registration forms. The charge for registration, which includes the advertisement by publication in all countries within the federation, will be 10 francs.

The Conference endeavoured, and with considerable success, to regularise a method of sale and payment in horticultural matters, so that, for instance, the same scale of discount and similar credit should apply in the allied countries. Naturally, many items were discussed in this connection, but there was a fairly general agreement.

Miss Hamilton brought forward the question of the International transport of live plants, and dealt very fully with quarantine arrangements, fumigation, inspection of nurseries, inspection of consignments, and the scheduling of insect pests and diseases.

That the labour question is as acute on the continent in commercial horticulture as in Great Britain was made quite plain during a lengthy discussion which took place immediately after M. Graindorge took the chair at 9.15 a.m. on May 11. As a consequence of the enormous demand for labour in the devastated areas of France and Belgium, where reconstruction is proceeding, wages have increased enormously in certain districts.

There was a general feeling that dumping of nursery stock, and the subsequent sale of plants at a low rate, at auction, was not in the best interests of the trade. There were differences of opinion on this subject, as also concerning the best method of putting a stop to dumping. Eventually, after urging that preventive regulations should be applied in the country whence dumping is practised, the Conference agreed to defer further consideration of the subject pending reports from various organisations in the allied countries.

On behalf of the British trade, Mr. Monro brought forward the "Dutch bulb question." Traders are more or less familiar with this subject and know that the Dutch bulb exporters have not met the British objections as to prices, charges for packing and carriage, liability and other points. This subject is of little interest to French and Belgian traders, except in the Paris district, where the Dutch dealers have imposed very severe conditions upon a number of small growers, who are protesting very strongly. The Britishers were thanked for placing the question so clearly before the Conference, and the Conference agreed to stand by the conditions of sale already adopted by the F.H.P.I. If a Dutch exporter will not make a proper allow-

ance for unsatisfactory bulbs, his name will be placed before purchasing members of the Chamber of Horticulture and its federated societies.

At the conclusion of general business, Mr. Arthur de Smet was appointed President d'Honneur of the Federation; Mr. George Monro, Junr., President for 1921, and Mr. Chas. Pynaert, Vice-President; the conference to be held in London that year, probably immediately after the Chelsea Show. MM. Turbat and Barbier were reappointed Secretaries and very heartily thanked for the able services they had rendered.

The members of the Conference were then entertained to luncheon by the members of the Committees of the Chambre Syndicale des Horticultures Belges and the Syndicat des Pépiniéristes Belges. This proved a very pleasant function, and Mr. Monro expressed the hope that in 1921 the British trade would have the pleasure of returning in London, the hospitality extended to it in France and Belgium.

ROYAL HORTICULTURAL.

Scientific Committee.

APRIL 13.—*Present*: Mr. E. A. Bowles in the chair; Messrs. J. Ramsbottom, C. E. Shea, W. Hales, Hosking, Baker, Page, Odell, Arkwright, Worsley, Elwes, Rolfe and Chittenden (hon. sec.).

Certificate of Appreciation.—A Certificate of Appreciation was unanimously recommended to Mrs. Backhouse for her work with Daffodils.

Various Plants.—Mr. H. J. ELWES referred to plants as follows: Plants in a Cotswold garden 530 ft. above sea level. During 48 years I can never remember a spring so early and so free from East wind and frost as the last month has been. The number of flowers out and coming out is quite unusual, and as I may never see the like in April again, I will mention a few of the most beautiful and less common. The three flowering shrubs, not at their best, though most beautiful, are Berberis Darwinii, which was nearly killed three years ago; Viburnum Carlesi, which has not as yet gone through a real Cotswold winter; and Prunus nana, perhaps the choicest and neatest little bush that ever came here from Bitton. Anemone scythica is seeding itself everywhere, and is one of the most beautiful and least harmful weeds in cultivation. Anemone alpina from seed, is not yet fully established, but seems to like a rich border; Corydalis bracteata, another beautiful weed which comes up everywhere, but is not very easy to pull up; Daphne Mezereum and var. albun, which comes true from seed and comes up in many places, but not long-lived here; Daphne Blagayana, nearly over (keep on earthing up the young growths); Euphorbia polychroma, E. myrsinites and pilulifera, all pretty early and hardy border or rock plants; Armeria caespitosa; Sedum Palmeri and Sedum Treleasei, both very pretty and doubtfully hardy; Geum Rossii, a New Zealander, pretty, but not very floriferous; Androsace sarmentosa, the earliest of its section and one of the best; Paeonia Mlokosevitchii, the best and earliest yellow Paeony; Paeonia Cambessedesii, the best and earliest purple Paeony; Paeonia cretensis, the best and earliest white Paeony; none of these is fully out, but the buds show colour; a frost would ruin them now, but they are so good and rare that they are worth protection; Orisia macrophylla, close under a north wall, shows precious buds; it is doubtfully hardy here; Smilacina paniculata, a wonderfully strong plant already in bud and 4 ft. high. This was raised from seed that I gathered at Niagara Falls; Arnebia echioides, a month before its usual time; Dentaria pinnata, a very beautiful plant, but the white variety is even better. Stylophorum japonicum, which grows well in my garden; Jeffersonia dubia, a very pretty plant which, however, does not thrive on my soil, but succeeds at Kew; Epimedium sp., which I have under the name of sulphureum; Potentilla alehemilloides, a pretty, dwarf, white, rock plant from the Pyrenees; Primula Zoeszi,

more curious than beautiful; in a frame. *Ramondia nataliae*, which is not so good as *R. pyrenaica*; *Haberlea Ferdinandi* (Coburg) and *H. virginialis*, pure white and very pretty. Among *Megaseas*, the most showy is a fine form of the old Siberian *M. cordifolia* which is much more floriferous on the top of a dry rock, as I saw it in the Altai Mountains, than in a border; a pretty pink one which I raised from Chinese seed, would, as Mr. Bowles thinks, be called *Stracheyi*, if it comes from the Himalayas. Bulbous plants in flower are too numerous to mention. Among the best are *Scilla lilio-hyacinthus* and its var. *alba*, which I owe to the late Mr. Boyd, of Faldonside; why it is uncommon I know not, for it increases fast, and is very hardy. *Muscari macranthum*, best, perhaps, in a frame, where its very fragrant flowers are more numerous than outside; a plant I have had for 40 years, and which has very large bulbs that do not increase like most of the *Muscari*. *Tulipa dasystemon*, a free flowering and pretty little species, has a better constitution than any Tulip I know, except *T. saxatilis*, which spreads and increases much more freely than it flowers; *Coelogyne flaccida*.

Veronica lobelioides.—Mr. FRASER showed specimens of *Veronica lobelioides* (v. "Blue Gem") and commented upon the history of this plant, which was sent to Kew on April 28, 1862, by Mr. J. A. Henry, the raiser, and to Messrs. J. Veitch and Sons, with the statement that its parentage was *V. decussata* × *V. speciosa*. It was awarded a F.C.C. in 1862, when shown by Mr. Warren, a nurseryman, of Salisbury.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.

THE monthly meeting of this Society was held in the R.H.S. Hall on Monday, May 10, Mr. Arthur Bedford in the chair. Two members were allowed to withdraw double the amount of their interest, amounting to £6 14s. 8d. One member was granted 2s. 6d. per week for life from the Distress Fund. The Treasurer, in giving the financial statement, reported that the trustees had invested £1,000 during the month. The sick pay for the month, on the private side, amounted to £67 14s. 3d., and on the State side to £36 13s. 4d., and maternity claims to £21.

Obituary.

John S. Calder.—We regret to learn of the death, at his home, Dovehill, Uphall, Luthgowshire, on May 9, of Mr. John S. Calder, in his 76th year, and after the long service of 42 years as headmaster of Uphall Public School. Mr. Calder was an enthusiastic amateur gardener and did much to keep alive the taste for horticulture, not only in his own district but, through his numerous friends and correspondents, in many parts of Scotland. Mr. Calder was one of the old school of *Auricula* growers and retained to the last his affection for these flowers, but his tastes were broad, and other hardy flowers shared his care and attention.

William James McCabe.—Mr. W. J. McCabe, gardener to the Rt. Hon. L. A. Waldron, Marino, Killiney, Co. Dublin, was cruelly cut off in his comparatively youthful gardening career on the night of the 12th inst., during Sinn Féin raids in the neighbourhood. He was previously trained in the Viceregal Gardens, had been in charge of the small but splendidly kept gardens of the picturesque residence directly overlooking Killiney's beautiful Bay, and there made his mark as a clever, enthusiastic cultivator. Of retiring and unassuming disposition, he rarely left his loved work, and on the night in question did so to visit a confrère but little more than a stone's throw away. After leaving his friends towards 10 p.m., shots were heard outside, and going out they found him dead on the roadside.

TRADE NOTE.

A MEETING of creditors of the estate of W. H. Russell (trading as John Russell) took place on Monday, May 17, in Messrs. Protheroe and Morris' rooms, 67-68, Cheapside, E.C. A long and detailed account was given by the Receiver, Mr. J. B. Slade, of the arrangements being made to carry on the business.

A statement was in the hands of the creditors of the trading accounts comprising the period from November, 1915, to the present date, in which it was shown that the position of the business had lately much improved, a profit of over £700 having been made in the period 1st January, 1920, to 31st March, 1920.

It was now proposed to form the business into a limited company with a capital of £6,000 Preference shares and £1,000 Ordinary shares. It was suggested that the Preference shares should be offered to the creditors nominally at par in complete settlement of their claims; the £1,000 Ordinary shares being purchased out of some property held by Mrs. W. H. Russell and handed over to her. Very small creditors would be paid in full, and with regard to those whose accounts were ten or twelve pounds, an effort would be made, if they so desired, to purchase their shares at 50 per cent. of their face value.

The Receiver, who had not hitherto asked for any remuneration, proposed that he now make a charge of £105 a year for the five years he had spent in nursing the business, but was willing to take the amount—£525—in Preference shares. It was agreed that he be a director of the company, and represent the interests of the Preference shareholders on the Board, Mrs. W. H. Russell to be made another director.

The committee of three of the largest creditors, which had previously acted, were re-appointed.

ANSWERS TO CORRESPONDENTS.

CUCUMBERS WITH INJURED STEMS: *B. D.* There is no organic disease present in the plant to account for the trouble. The foreign matter on the stem is probably the vomit of some small animal such as a mouse, or even a cat.

DODDER ON SALVIA SPLENDENS: *J. B. B.* The parasite upon *Salvia splendens* Fireball is a Dodder (a species of *Cuscuta*). If other specimens are attacked they, together with the parasite, should be burned to prevent further spreading of the parasite which is propagated by means of seeds.

GLOXINIAS DISEASED: *J. Mc.* Probably the tubers were weakened by being stored during the winter in a moist atmosphere, but the present trouble appears to be due chiefly to an excess of moisture coupled with a low temperature. The potting compost would have been improved by the addition of leaf-mould.

HORTICULTURAL COLLEGE: *N. C. C.* Apply for particulars to the Director of the Royal Horticultural Society's Gardens, Wisley, Ripley, Surrey; and to the Superintendent, Horticultural Department, University College, Reading.

INSECTS IN HARD WATER TANK: *B. W. B.* The specimens in the sample of water sent are a species of *Podura*. This insect, which is in the adult state, belongs to the lowest group of insects, a group which is characterised by never bearing wings either as young or adults. In many other respects, also, their structure is primitive. All the groups consist of small, inconspicuous insects, and many are found in damp places—on the surface of water, on the seashore, and in similar moist conditions. They are credited with living on decayed vegetable matter and seldom, if ever, do any noticeable damage. Their body is covered with a waxy coat, which enables them to float. If it is desired to get rid of them from the water-tank, a very few drops of petrol may be placed

on the surface of the water, taking care to add it drop by drop and well distribute it over the water. This should only be done when the houses can be opened so as to get rid of the petrol, which quickly evaporates. The water should not be used for plants until all the odour has disappeared, which it will do in about a day, and only sufficient petrol is necessary to make a film over the surface of the water.

NAMES OF FRUITS: *E. F.* 1. Gooseberry Apple; 2. Scarlet Nonpareil.

NAMES OF PLANTS: *H. W. T.* *Freesia*, species not recognised.—*C. C.*: *Prunus Padus* (Bird Cherry), *Circis Siliquastrum* (Judas Tree).—*V. B.*: *Crimm* species, send when in flower.—*J. A. C.*: No. 1, *Viburnum rhytidophyllum*; No. 2, *Populus*, probably *P. monilifera* (syn. *canadensis*). *H. B. G.* 1, *Pieris floribunda*; 2, *Rhododendron racemosum*; 3, *Berberis stenophylla*; 4, *B. Darwinii*; 5, *Forsythia viridissima*; 6, *Spiraea Thunbergii*; 7, *Pyrus floribunda*; 8, *Rhododendron Russelianum*; 9, *Magnolia* sp., probably *M. conspicua*, but too withered to identify; 10, *Berberis Aquifolium* var.—*Jarkie*. 1, *Tussilago fragrans*; 2, *Acer palmatum*; 3, *Phillyrea decora*; 4, *P. angustifolia*; 5, *Pittosporum undulatum*; 6, too withered to identify.—*E. Field*. *Acer platanoides* var.—*J. B. B.* 1, *Picea excelsa*; 2, *Pinus Pinaster*; 3, *Cupressus macrocarpa*; 4, *C. Lawsoniana* var. *erecta viridis*; 5, *C. L.* var. *lutea*; 6, *Sequoia sempervirens*.—*J. A.* *Phillyrea decora*. The "Pepper-tree" or "Sweet Pepper-bush" of North America is *Clethra alutaha*. *M. and Co.* *Muscari comosum* var. *monstruosum*.

PEACH DEFOLIATION: *A. W.* The leaves were infected with a shot-hole fungus, the species of which could not be determined, as the material afforded no fructifications of the fungus. All fallen leaves should be carefully collected and burnt. If the trees are under glass, special care should be taken that an abundant supply of water is given (as defoliation is sometimes due to lack of water), and, in addition, the houses might be sulphured with Campbell's vaporiser at intervals of 14 days, at least two or three times, and the treatment continued, if necessary, until just before the fruit begins to colour. On no account should the sulphur be allowed to ignite. If the trees are in the open, spraying with the following mixture has been recommended: Copper carbonate, 1 oz.; ammonium carbonate, 5 oz.; dissolve these in one quart of hot water and then add 16 quarts of cold water. Spray the trees on two or three occasions at intervals of 14 days. The fungicide should be applied very cautiously on account of the susceptibility of the Peach to scorching.

WAGES FOR JOBBING GARDENERS: *E. J. H.* There is no regulation governing the wages for jobbing gardeners, consequently the rate of pay varies in different districts; 1s. 6d. per hour is being paid in some localities.

WEEVILS ON PEAR TREES: *C. C.* The Weevils appear to be specimens of *Otiorynchus sulcatus*, commonly known as the Clay-coloured weevil. The pest is capable of doing a great deal of harm to various plants both in its larval condition and in the adult stage. Every effort should be made to dispose of the weevils so as to prevent them from laying their eggs at the end of the summer. If a white cloth or white paper is laid under the tree, and the latter is sharply jarred, many of the weevils will fall and may be captured and burnt. A very bright light thrown upon the tree at night will also cause many weevils to fall. Keep the surface soil thoroughly hoed around the tree and apply dressings of soot at intervals of two or three weeks.

Communications Received.—*C. E. P.* S and S. T. B. A. W. J. S. J. A. H. S. J. J. P. B. J. E. R. W. K. E. G. A. H. S. R. J. D. C. G. F. C. F. S. M. H. R. D. W. T. N. M.

THE
Gardeners' Chronicle

No. 1744.—SATURDAY, MAY 29, 1920.

CONTENTS.

Agricultural workers' wages.....	261	"Gardener's Chronicle" seventy-five years ago.....	262
Alpine garden, the— Anemone blanda scythica.....	265	Gardeners' Company, the	261
Erimis alpinus.....	265	Green crops cut as food for dairy cows.....	261
Gentiana verna angulosa.....	265	Labels, garden.....	270
Oxytropis pyrenaica.....	265	Monashire, damage by sand-storm in.....	262
Synthyris reniformis.....	265	Orchid notes and gleanings— Odontioda Gloss.....	263
America, Association of Kew Gardeners in	262	Odontoglossum Eden.....	263
Apple Alfriston.....	270	Odontoglossum Phillip.....	263
Anemone St. Brigid.....	270	Odontoglossum Phil-lipsianum antrum.....	263
Arnold arboretum, effect of the severe winter in.....	266	Orphan Fund, Gardeners' Royal.....	271
Begonia manicata.....	269	Potato spraying.....	270
Books, notices of— Roses, their History, Development and Cultivation.....	263	R.H.S. Garden's Guild Shrewsbury, spring flowers in the Quarry Park.....	262
Barley, the cultivation of.....	262	Silver leaf disease of Plums.....	270
Chelsea Show to Wisley gardens by charabanc.....	261	Societies— Manchester & North of England.....	272
Darfield Rectory, York-shire, garden of the Rev. Walter Stone-house at, in 1640.....	268	Strawberry, "Red Plant" in.....	269
Edinburgh bowling greens.....	261	Sulphate of Ammonia, prices for.....	262
Farrer's, Mr. Reginald's exploration in Asia.....	270	Trees and shrub— Pyrus auricularis.....	267
		Week's work.....	264, 265
		Whitsuntide hoboays, the.....	261

ILLUSTRATIONS.

Cremathodium sp. (Farrer's).....	266
Erimis alpinus.....	265
Myosotis dissitiflora Roll of Honour.....	263
Pyrus Aria.....	269
Pyrus auricularis.....	267

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 55.7°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, May 26, 10 a.m.: Bar. 29.8, temp. 70°. Weather—Showery.

Green Crops for Dairy Cows.

The changing conditions of Agriculture—the shrinkage in the area of grass land, the increased demand for milk and the high prices of feeding-stuffs—are imposing on farmers the necessity for modifying their traditional practice of adopting new methods. Of these methods, that of the partial or complete substitution of arable land for pastures, the source of food-supply, is, although not new, one of the most interesting. This system, often known as the "soiling" system, has been strongly advocated by Mr. Wibberley in his interesting book *Farming on Factory Lines*. This book is bound to make a strong appeal to cultivators accustomed to forms of intensive cultivation, but it is probable that the average farmer's conversion to the "soiling system" will only be effected by complete and local demonstration of its superiority to the commoner system of husbandry. It was with the object of testing this system as applied to local conditions that Prof. White, of the Department of Agriculture of the University of North Wales, began, in 1916, a series of experiments, the results of which are now reported.* In that year a field was sown in October with a mixture of 4 bushels of Oats (Bountiful) and 1 bushel of winter Vetches per acre. A heavy crop of green food was cut in June, 1917, and the land, after ploughing and cultivation, was sown at the end of July with White Turnips which yielded 14 tons to the acre. The crop was fed on the land by sheep in winter and was cleared by February, 1918. In the following season the fields were

sown with Spring Oats, Peas, and Vetches, partly at the beginning and partly towards the end of April. The heavy crop obtained provided green food for dairy cows from the end of June to the end of July, with a surplus which was made into hay. After the hay crop was harvested the land was disc harrowed and sown broadcast, partly with Rape, and partly with White Turnips, in the third week of August. These provided good food for ewes and lambs in the following April. The drought of the spring of 1919 interfered with the success of the experiment by making it impossible to secure a satisfactory tilth for the succeeding crop. In another field, after early Potatoes had been lifted in August, Rape was sown as and when the Potatoes were cleared. That sown up to the middle of August proved successful, but Rape sown later made but little growth during the Autumn. In another field Maize was sown. Two methods were employed. In one it was sown in rows and the seed covered by splitting the ridges. It failed. In another it was sown in every other furrow and covered by the plough, which was set to give a furrow two inches deep. This method proved completely successful. The Maize, which grew strongly, was ready for cutting at the beginning of October, and although dairy cows which had access to pasture scarcely touched it when it was thrown out to them, cows kept indoors ate it greedily. Unlike Maize, Cabbage thrown on to pastures was readily eaten by cows, and would seem, therefore, preferable for use as an Autumn crop. Early Drumhead Cabbage, drilled at the same time as Mangels and thinned to about 2 feet apart, produced a heavy crop ready for use from September to the end of November. These experiments were necessarily of a preliminary nature, but the results they gave led to the planning of a more systematic method of cropping for 1919. It is obvious that farmers on heavy land in districts of large rainfall encounter great difficulties in autumn sowing. Thus, in North Wales the autumn and winter of 1918 were so wet that no sowing could be done until the end of April 1919. Farmers beset with this condition were inquiring of the college with respect to the possibilities of the soiling system, and hence it was decided to use their co-operation in the experiment. The details of the cropping adopted at the different centres are too numerous to be dealt with here; but the general conclusion to which the results point may be mentioned:—Mixtures of Oats and Peas or Vetches supply a succession of green food in July and August serviceable in supplementing the failing pastures. For later use White Turnip and Cabbage were available and are even more certain in the North Wales climate than is Maize. Rape sown before the middle of August is ready in November, but if sown later does not come in until spring. Systems of cropping which supply green food in supplement to failing pastures are of great value on most dairy farms and serve to maintain milk flow more cheaply than does the use of purchased cake.

The Gardeners' Company.—Permission has been granted to the Gardeners' Company by the Court of Aldermen of the City to increase their Livery from 160 to 250.

From Chelsea Show to Wisley Gardens.—If the present delightful weather continues we feel sure many visitors to the Chelsea Show will take advantage of the arrangements which have been made for those Fellows of the Royal Horticultural Society who wish to visit the Gardens at Wisley on Thursday, June 3, the third day of the Chelsea Show, to be conveyed by motor char-a-banc at the cost of 10s. a head.

The car will start from the Embankment entrance to the show ground at 1.30 p.m. and return to reach London by not later than 8 p.m. Those who wish to avail themselves of this opportunity of visiting the Wisley Gardens are requested to send their application, together with remittance, to the Secretary, The Royal Horticultural Society, Vincent Square, Westminster, as soon as possible.

R.H.S. Garden's Club.—A meeting of the R.H.S. Garden's Club will be held at Wisley on Saturday, June 5th. A train leaves Waterloo at 10.34, arriving at Byfleet at 11.24. A short service in memory of those students who fell in the war will be held in Wisley Church at 12.30. Light luncheon will be provided in the Laboratory at 1 o'clock, followed by a general meeting.

Programme of the Chelsea Show.—At the Royal Horticultural Society's great spring exhibition, to be held in the grounds of the Royal Hospital, Chelsea, on June 1, 2 and 3, judging will commence on the opening day at 10 a.m. The Fruit, Floral, Orchid and Tulip Committees assemble at the Committee tent at 10.30 a.m. (and not as stated on p. 249), and the show will be opened to the public at 12 noon. The Scientific Committee will meet at 4 p.m. On June 1 Dr. E. J. Russell will lecture on Some Modern Aspects of Scientific Manuring; on June 2, Dr. A. B. Rendle will discourse on Plants of Interest in the Exhibition; and on June 3 Capt. H. J. Page will deliver a lecture on Green Manuring—its possibilities in Horticulture. These lectures will be given in the Lecture tent at 3 p.m. Provincial readers may be interested to learn that the exhibition ground is about ten minutes' walk from Victoria Station and about five minutes from Sloane Square District Railway Station. Omnibuses from many parts of London and its suburbs run along King's Road, Chelsea (which borders the estate on the north side), and Picnic Road, and over Chelsea Bridge to Sloane Square. These directly connect the exhibition with Liverpool Street, the Bank, Fleet Street, Piccadilly, Westminster, Victoria, Islington, Holloway, Shepherd's Bush and Clapham Junction.

The Whitsuntide Holidays.—The weather prevailing throughout the Whitsuntide holiday was of a quality generally described as "glorious." Alike on Saturday, Sunday and Monday, the sun shone brilliantly and the heat was tempered by a gentle breeze. Holiday makers spent most of the time out of doors, allotment holders and amateur gardeners were busy everywhere, and not a few people, believing summer had arrived, planted out their summer-bedding plants, as well as Tomato, Marrow and Runner Bean plants, as though late May frosts never occurred. The public parks, with their beauty of flower and foliage, were thronged with people throughout the long days, while the River Thames and the cricketing centres afforded recreation for the more energetic of Metropolitan folk, and the gardens at Hampton Court and the Royal Gardens, Kew, were visited by thousands of people interested in flowers and plants. It is gratifying to learn that the weather in most parts of the country favoured an outdoor holiday and that the majority of holidaymakers spent the long days in the open air.

Edinburgh Bowling Green Charges.—At a meeting of the Games' Sub-Committee of the Edinburgh Parks Committee, the question of the charges for the bowling greens was under consideration in view of the boycott of the players against the increased rates. It was agreed, subject to the approval of the Parks Committee, to reduce the rate for rink play to 2½d. per hour per player; the charge for singles and pairs to be at the rate of 4d. per hour and 2d. per half-hour.

Wages of Agricultural Workers.—At a recent meeting, the Agricultural Wages Board considered the motion of the representatives of workers that the minimum wage for adult male agricultural workers be increased to 50s. per week throughout England and Wales, together with the reports which had been received from the District Wages Committees on the subject.

* *Growth of Green Crops on Arable Land for Dairy Cows.*—Univ. Coll. of N. Wales.

After prolonged discussion it was decided, on the suggestion of the "appointed" members, that in view of the fact that the consultations between the Agricultural Wages Board and the District Wages Committees showed that a very large number of the Committees had declined to consider an increase of wages without knowing the policy of the Government with regard to agriculture which was expected to be contained in the Bill which was shortly to be published, the consideration of the general increase of the rates of wages for adult male workers should be adjourned until the meeting of the Board to be held on June 1.

Association of Kew Gardeners in America.—A meeting of the Association of Kew Gardeners in America was held in Boston, Mass., on March 25, 1920. Mr. W. H. Judd acted as chairman and Mr. E. K. Thomas as secretary for the occasion. Those present were Messrs. J. McGregor, T. D. Hatfield, J. Brown, H. E. Downer, F. Cave, C. Van der Voet, and J. B. Reardon. Letters were read from Messrs. M. Free and S. R. Candler tendering their resignations as President and Secretary respectively. After some discussion, the resignations were accepted and Mr. W. H. Judd was elected as Permanent Secretary-Treasurer. It was agreed that for mutual benefit Kewites should form local organisations at centres nearest to them, especially in New York, in Philadelphia and in Boston; that they should endeavour to meet once or twice a year, and at their annual meetings appoint a chairman for the particular occasion. The report of the retiring Treasurer, showing a balance of \$25.89, was read and accepted. An enjoyable evening was spent.

Spring Flowers in the Quarry Park, Shrewsbury.—Many of our readers who are familiar with the Quarry Park, Shrewsbury, as the site of so many extensive and wonderful exhibitions of flowers, fruits and vegetables, will be interested to learn that this delightful open space has been particularly attractive of late. Mr. A. J. Ward, the park superintendent, provided a very delightful display of spring flowers which was the admiration of all Salopians and the many visitors to the town. The most attractive floral combinations seen at the Quarry this year included Blood Red Wallflower with Tulip Prince of Austria; Myosotis with Tulip Pink Beauty; Cloth of Gold Wallflower with Tulip Keizerskroon; Double Arabis with Tulip Chrysolora; Purple Queen Wallflower with Tulip White Hawk; Yellow Wallflower with Tulip Sir Thomas Lipton; Orange Bedder Wallflower with Tulip La Remarquable; Fire King Wallflower with Tulip White Hawk; Polyanthus with Tulip Dusart; and Vulcan Wallflower with Tulip Chrysolora. The Quarry Park—which, after a lapse of six years will again be the site of a great Floral Fete in August—with its magnificent avenues of Lime trees some 160 feet in height and frontage over a mile on the River Severn, is one of the finest natural parks in the country.

Prices of Sulphate of Ammonia in 1920-21.—The Ministry of Agriculture and the Board of Agriculture for Scotland have come to an agreement with the great majority of the makers of sulphate of ammonia with regard to the maximum prices to be charged for this fertilizer in the season 1920-21. These prices are the maximum net cash prices for sulphate of ammonia containing 24½ per cent. by weight of ammonia, in makers' 2-cwt. bags, delivered in quantities of not less than 4 tons to the purchaser's or consumer's nearest railway station or wharf in Great Britain, or f.o.b. British port in the case of sales to Ireland, Isle of Man, or the Channel Islands, and are subject to a trade discount in the case of sales to manure mixers, agricultural merchants, dealers and Co-operative Societies.—Delivery in June, 1920, £23 10s. per ton; July, £23 10s.; August, £24; September, £24 10s.; October, £25; November, £25 10s.; December, £26; January, 1921, £26 10s.; February, 1921, £27; March, April and May, £27 10s. The other conditions of sale remain the same as during the past season,

except that the additional charges authorised for each additional quarter of 1 per cent. of ammonia, for sulphate of ammonia containing less than 0.025 per cent. of free acid, and for sulphate of ammonia specially ground at the purchaser's request have been raised 5s. 6d., 7s. 6d. and 7s. 6d. per ton respectively; and as the basis scale of prices now applies to minimum quantities of 4 instead of 2 tons, an additional charge of 5s. per ton is authorised for deliveries of 2 tons and over, but less than 4 tons.

Violent Sandstorm in Morayshire.—The sandstorm which visited Morayshire during the week ending May 15 was the most violent experienced for many years. The surface soil was very dry, especially in the districts where the soil is light. When the storm was at its height the sand began to drift like snow, cutting the young cerea plants and laying bare the seed in many places, while in others it covered up the growing plants with a layer of sand which they will not be able to penetrate. Grass seeds recently sown have in many instances been lost, and it will be of little use to attempt re-sowing. There are large breadths of sandy land in Morayshire, and the tillers of the soil there are quite accustomed to these sandstorms. They suffer these heavy losses with a philosophic calm which they do not receive full credit for. This latest storm however, affected much of the better class of land that had never previously been affected. The systematic planting of shelter belts in districts thus affected by blowing sand seems desirable to counteract the trouble. Those interested all agree as to this desirability, but evidently it seems nobody's business to take the initiative. Some proprietors have done a little in this direction, but the pity is these shelters have not always been planted in the proper place to mitigate the trouble and form an efficient wind break. Perhaps the Scottish Board of Agriculture may take action and arrange for systematic planting of wind-breaks. That it would pay goes without saying, for the damage done by these sandstorms must amount to many thousands of pounds; and there must also be considered not only the hardship entailed on those who own and cultivate the land, but also the great loss of valuable foodstuffs.

Buckwheat.—Although Buckwheat (*Fagopyrum esculentum*), in spite of the excellence of the cakes made therefrom, is not likely to be grown largely as a grain crop in this country, it is worthy of the attention of experimentors as a green manure crop. For, as pointed out by Mr. Clyde, in *Leighly** it thrives on poor thin land in the climatic conditions are suitable and is, moreover, a good soil disintegrator—making hard soils friable. Buckwheat grows well on soils poor in lime and is remarkably efficient in absorbing lime and also potash from such soils. It needs, however, a moist, cool climate, as visitors to Brittany may know who have admired the late summer crimson tints of fields of Buckwheat. Although intolerant of cold it may, by reason of its short season of 10-12 weeks, be grown, if sown late, in high altitudes. The chief drawback to the use of this crop for grain is the damage done to its yield by drought, or hot weather, but this does not apply when it is to be used for green manuring. Analyses show that Buckwheat, although grown on poor soil, is a very efficient collector of mineral substances—absorbing per acre about 40 lb. of nitrogen, 12½ lb. of phosphoric acid, nearly 50 lb. of potash and as much lime. Beside the several varieties of *F. esculentum* (Tartary Buckwheat) *F. tartaricum*, or "Rye" Buckwheat, is also grown and is stated to resist frost better and succeed in the poorest land. In addition to its other virtues, Buckwheat is an excellent weed killer. The practice of sowing Buckwheat and Rye together is one which deserves testing. When done for the purpose of green manuring the former crop, which keeps the Rye in check, is harvested and the Rye left to stand over winter and ploughed in in the spring.

The Cyder Industry.—The work of the National Fruit and Cyder Institute, Long Ashton, Bristol, is given in the *Journal* issued by

the Bath and West and Southern Counties Society. The work of the Institute suffered severely during the period of the war, yet its position is stronger to-day than in 1914, while there are prospects of further developments in the near future. The improvement of farm orchards in the West of England is naturally regarded as being of fundamental importance in relation to the future of fruit growing and the cyder industry, and the Horticulture Division of the Ministry of Agriculture is co-operating with the Institute to remedy the frequently unsatisfactory state of the orchards. Old-fashioned methods of making cyder are gradually being superseded by more scientific processes, which ensure a sound, matured, and palatable cyder, the value of which is added to by its good keeping qualities. Arrangements have now been concluded for the purchase of Fenswood Farm, which adjoins the Institute, at Long Ashton. The Development Commissioners recently intimated that they were prepared to recommend the Treasury to make a grant from the Development Fund, amounting to one-half of the capital required, provided that Bristol University was prepared to find the other half. The University accepted the offer of the Treasury, and sanction for the grant having been received, steps to complete were forthwith taken. "Acquisition of the farm will," says the report, "provide an additional 200-odd acres of land for experiments in fruit culture, and will remove all further anxiety in that direction." Seeing the great advance in the value of cyder of late years, and the inevitable further increase in prices ahead, the work of the Institute will undoubtedly be more closely followed by the general public than has been the case hitherto.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Exhibition at Chiswick.*—Whoever had the good fortune to be present at the Exhibition of Flowers and Fruit last Saturday, in the Garden of the Horticultural Society must, if he was at all acquainted with gardening, have been most especially struck, not only by the great quantity of beautiful specimens, but also by the general absence of bad ones. Only a few years ago exhibitors were proud of one single finely-grown plant in a collection of forty; now they are ashamed of an indifferent one in the same number. In the beginning of these annual meetings, people claimed credit for that sort of skill which consisted in producing a few forced *Kalmias* and a dozen miserable *Roses* flowering in pots; no gardener could now venture to face the ridicule which their exhibitions would produce. As this change has been visibly connected with the competition at Chiswick, it shows conclusively how important are the effects eventually produced by a judicious distribution of rewards to deserving men; and that public bodies should not be discouraged if their first attempts at producing improvements are unattended with all the success which sanguine persons might anticipate. It is evident that the true course to take in all such cases is, first to determine what it is desirable to accomplish, and then to persevere in offering premiums until the object sought for shall have been gained. Doubtless, money is apparently wasted in this operation; and sums may at first be paid which are far beyond the merit which they reward. But the mere fact that moderate success gains in public immoderate distinction is sure to excite ambition, and to stimulate to the utmost whatever talent the country may contain. But this is very far from being the only great result. It may be doubted whether it is even the most important. Another effect is to render common that kind of skill which, without public competition, would continue to be confined to a few, as it always was before the system of great annual exhibitions was acted upon. Publicity is fatal to the laggards who abound in all walks of life. A dull witted or incapable gardener, who goes on in the ancient fashion, letting alone what he calls "well," and never striving after improvement, is either ruined by the activity and skill of his neighbours, or is roused into exertion and bestirs himself to equal them.—*Gard. Chron.*, May 31, 1845.

* *Farmers Bulletin* 1062 U.S. Dept. of Agriculture.

NOTICES OF BOOKS.

A Book on Roses.

MR. PEMBERTON has brought out a second edition of his well-known book on Roses* published some 12 years ago.

Those to whom this book is familiar will remember that it is divided into two parts, the first descriptive of the Rose in its wild and cultivated forms, the second part dealing with the cultivation of Roses, while an appendix contains a list of selected Roses recommended for cultivation in the garden.

In the second edition no very great changes appear in the body of the work. The author has added to the first part of the book a couple of paragraphs on the Hybrid Musk Roses, a group on which he has himself worked with conspicuous success, and rather more than a page on the group raised by M. Pernet Ducher, which he now calls the hybrid lutea, but which, with a misplaced pedantry, the National Rose Society was induced to label Pernetiana.

The second part of the book, dealing with cultivation, has a few alterations of minor importance, particularly in those chapters which relate to diseases of the Rose, which are thus brought up-to-date.

The Selected List in the Appendix has been rather drastically altered, as might be expected, and perhaps one of the chief interests in the second edition is to see how the author has dealt with this part of his subject. The author warns us that the list is not to be regarded as a catalogue; it contains upwards of 160 varieties and it would be unfair to treat it as more than a list of the author's favourites amongst Roses. It must not, therefore, be pressed further than it is intended to go. Nevertheless, its omissions strike one at first sight as a little startling. First, nearly all well-known exhibition varieties are omitted—Bessie Brown, Dean Hole, William Shean, Gloire de Chedane-Guinoisseau and the rest of them; the author has no further use for them. Next, he has removed nearly all the hybrid Perpetuals—Horace Vernet, Victor Hugo, Commandant Felix Faure, and the like, no longer find a place. Last, he has removed nearly all the Bedding Teas—perhaps this is the most curious feature of the list. Mme. Lambard, Mme. Antoine Mari, G. Nabonnand, Lady Plymouth, Corallina, Mme. Jean Dupuy, even Alexander Hill Gray, are all excluded.

It is true that of recent years we have had no addition to the groups of bedding Teas, and possibly this may be taken as some indication that their popularity is on the wane, but if so it is unfortunate, for we have nothing to replace them for their special purpose.

There is no complaint, as so often heard among visitors to Rose shows, that the new Roses exhibited are deficient in fragrance. This is not altogether true, as witness the delicious perfume of Mrs. Elisha Hicks. Mrs. George Norwood and a few others, but there can be little question that as a class the Hybrid Tea, which has become so popular of late years, is far from the old Hybrid Perpetual in the quality of fragrance. At the recent spring Rose show of the National Rose Society the delightful perfume that used to fill the air and greet the exhibitor at the entrance to the show was conspicuous by its absence, and the driving of the Hybrid Perpetual into banishment is largely responsible for this defect.

The H.P. was more difficult to grow well than the H.T.: a larger proportion of its flowers were poorly formed, and to secure a few good blooms a larger number of plants had to be grown and a longer period elapsed between its summer flowering and its reappearance in autumn; but it had some good qualities. It is hardy; a well-grown flower is beautifully formed and it has the damask fragrance we now so often seek in vain. It may, therefore, be too early to banish it from our gardens until we can get something that will replace these delightful qualities.

The public are themselves to some extent to blame in the matter, because nurserymen natur-

ally grow the varieties they expect to be in most demand. These are the varieties they grow and exhibit (and a visit to any Rose nursery will show how small is the area allotted to the hybrid perpetuals). That they will ultimately disappear altogether, like the hybrid Chinas, may, or may not, be probable, but it is much to be desired that this will not take place till we have in their stead popular Roses with the damask perfume often called the true Rose scent.

It is an interesting exercise to try to analyse the various perfumes of different varieties of the Rose, and one in which Mr. Pemberton has himself indulged. Besides the damask, there are the Tea perfume, the musk or honey scent, the fruity odour and, it may be, others; but however we may refine upon them and define them, the only really satisfying fragrance of the Rose is that connected with the damask or its derivatives.

Mr. Pemberton's book is well illustrated and has proved a reliable guide in the hands of all who have worked with it.

Phillipsianum (eximium × luteo-purpureum Vuylstekeanum), in which all the parents seem to be blended in the most effective manner. A good O. crispum is the foundation, but the yellow ground colour and firm substance come from O. triumphans, whose presence is also disclosed by the crest of the lip, which has a fringed white front and basal chestnut-red blotch. The sepals, and equally broad petals, are claret-red, with the yellow ground colour appearing in small markings, and at the margins and tips. In this, as in most other hybrids, it is interesting to note the persistent assertion of the primary species in the progeny.

ODONTIODA GLOSS.

ODONTIODA GLOSS (triumphans × Charlesworthii), for which Mr. Ashton obtained an Award of Merit at the last meeting of the Royal Horticultural Society, with its uniformly orange-red flowers and shining surface, points to a fact now well demonstrated, of the potency of Oda. Charlesworthii in securing self-coloured



FIG. 121.—MYOSOTIS DISSITIFLORA ROLL OF HONOUR. R.H.S. Award of Merit, May 11, 1920 (see p. 245).

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM PHILLIPSIANUM AUREUM.

In their group at the Royal Horticultural Society's meeting on May 11, Messrs. Charlesworth and Co. showed a remarkable form of this cross between O. eximium and O. luteo-purpureum Vuylstekeanum, with light yellow flowers in which the brown blotching usually inherited from the species only appeared in a slightly darker yellow shade, as in the form of O. luteo-purpureum used as a parent. In crosses with varieties in which colour suppression occurs the progeny frequently show the markings of the type, but occasionally produce, as in this case, examples closely following the colourless parent, and in such varieties the form of the flowers coincides.

ODONTOGLOSSUM PHILLIP.

PANTIA RALLI, Esq., Ashtead Park, Surrey (Orchid grower Mr. Farnes), sends the first inflorescence of a very beautiful cross between O. harvegense (crispum × triumphans) and O.

flowers. These known facts should be borne in mind by raisers.

ODONTOGLOSSUM EDEN.

UNDER the above name, Pantia Ralli, Esq., Ashtead Park, Surrey (Orchid grower Mr. Farnes), showed three examples of a cross between O. Eva (cirrhosum × polyxanthum (Kegejani) and O. eximium xanthotes (ardentissimum × crispum), at the Royal Horticultural Society's meeting on May 11, the exhibits showing interesting variation. Two were fine, broad-petalled, white flowers, heavily blotched with dark-reddish purple, showing much of the blotched O. crispum in the best forms of O. eximium, notwithstanding the fact that in this case the albino form, with occasional chrome yellow spots, was used. The third variety bore no resemblance to the other two, the pale yellow O. Kegejani dominating in the colouring and also in the form of the flower, which had narrower and more angular segments. The blotching in all the ancestors was suppressed also, and only an occasional reddish spot, following the distribution of the markings in O. eximium xanthotes, appeared.

* *Roses: Their History, Development and Cultivation.* By the Rev. Joseph H. Pemberton, pp. 334; 2nd Edition, 1920. London, Messrs. Longmans, price 15s.

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Raspberries.—The canes are usually tied to stakes or wires, and they should now be examined to see if any of the ties have been broken or loosened by boisterous winds. Where necessary, the canes should again be made secure, using tarred fillis or string.

Horizontally-trained Pears.—Young, horizontally-trained Pear trees that have been planted within the past two or three years need attention with regard to training the leading shoots. The wood should not be allowed to become hard and brittle before this is done, otherwise the growths may be broken. Young shoots in the centre of the plant may be pinched when they are about eighteen inches long, which is generally the space allowed between the branches. I have found that by stopping shoots in the summer the buds break more evenly than by allowing the centre growths to develop unchecked until such time as the winter pruning takes place. Pear trees that have filled their allotted space, and are making a lot of growth from the spurs, may, at intervals, have some of the shoots removed. I am not in favour of early pruning, but I think it is desirable to thin out some of the growths where they are crowded. Summer pruning proper should be deferred until August.

Fruit Prospects.—There is every prospect of good fruit crops, notwithstanding that the month of April was very wet when most of the trees were in bloom and that on April 5 six degrees of frost were registered. Most of the Apple trees were in bloom at that date, yet they do not appear to have taken harm. Pears on walls have set well, and in some cases the fruits will require to be thinned, but standard and bush Pears, which gave great promise earlier, will, I fear, in a great many cases, prove failures. I do not remember Peach and Nectarine trees so studded with fruit as they are this year. Plums and Gages on walls have set far too many fruits. Standard and bush trees of Victoria and Early Rivers' Plums promise to bear good crops, but other varieties have only a moderate number of fruits. Damsons are good. Morello Cherries are excellent, but Sweet Cherries will, I fear, be a thin crop. Gooseberries were never so plentiful and the fruit is very early. Black and Red Currant bushes are well laden with fruit. Strawberries, Raspberries and Newberries all promise to give excellent crops.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Vines.—The next two months are an anxious time for those who have charge of an extensive range of vineries. Work in every house is at full pressure, and many with depleted staffs will find great difficulty in keeping up to date with operations. Avoid hard forcing of the earliest house if the Grapes are causing any anxiety as to finishing satisfactorily. Careful surface feeding, with a slight reduction of temperature and a little extra night air, will all assist in bringing about the desired result, according to the stage of the vines. Red Spider often appears on the vines at this stage, owing chiefly to the extra fire-heat and little ventilation used to hasten the ripening of the crop. A careful watch should be kept on dry corners, and solitary leaves attacked by the pest should be sponged, but once red spider infests a vinery it is difficult to exterminate the pest until the Grapes are cut. Pipes painted with sulphur are unsightly; when sulphur is used in this way the pipes should be made very hot towards night, and all ventilators and outlets closed. The ventilators should be opened early next morning

and all available parts syringed. The pipes, when cool, may be washed free of the sulphur with tepid water. Campbell's sulphur vaporiser is easily used and offers an excellent method of destroying red spider or attacks of mildew.

Successional Vineries.—Later houses in which the Grapes are swelling need attention. The borders should have liberal supplies of water and liquid stimulants. Admit air when the temperature reaches 75° and gradually increase the amount, always with a rising temperature, until a maximum of 85° is reached. Similarly, with a falling temperature the amount of ventilation should be reduced. Close the vinery early in the afternoon, with plenty of atmospheric moisture, allowing the thermometer to reach 90° for a short period, using a little artificial heat, sufficient to allow the temperature to drop gradually to 70° at 9 p.m. and 65° the following morning. The work of thinning the bunches will be finished with the exception of looking over large bunches and large-berried varieties. Pinch strong laterals and regulate others to maintain a free circulation of air amongst the foliage.

Muscat Grapes.—The berries having been finally thinned, Muscat vines need similar treatment to those for succession, except that the temperature may be a few degrees higher than for Black Hamburgh; Gros Colmar will enjoy the same temperature as Muscats. See that the roots are kept in a healthy and active condition and maintain a genial atmosphere, with plenty of fresh air; in these conditions the Grapes will make rapid progress and keep clean. Lady Downe's and other late Grapes require the same treatment in regard to heat, airing and atmospheric moisture. Many condemn shading at any time, but where the vines are not in good health a light shade may be used on bright days.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs JENNER, Welwyn
Castle, near Cuddie.

Dwarf Beans.—Sow French Beans in deeply-worked, rich soil on a warm border to obtain pods early. Make the drills two feet apart, and place two seeds at intervals of one foot, covering them to a depth of three inches.

Broccoli and Savoy.—Make a sowing of late varieties of Broccoli to provide supplies in the late spring. A sowing of the smaller varieties of Savoys should also be made at the same time, as this crop will prove very useful if grown on ground becoming vacant after an early crop of some other vegetable.

Potatoes.—Whilst there is danger of Potatoes being injured by frost, attention must be given to drawing the soil up to the haulm, as it shows above the surface. This should be done in the mornings so that the soil may dry during the day, as damage from frost is more likely to occur if the shoots are damp.

Runner Beans.—It is now safe to plant, in the open, Runner Beans which have been forwarded in pots. Plant firmly in the prepared positions, and in such a manner that an inch of stem below the seed-leaves is clear of the soil. Staking should be done at the time of planting—the most satisfactory method is to use tall, slender poles about twelve feet in height: two to each plant. These upright stakes should be supported in position by tying similar poles in two horizontal lines at a height of four and eight feet, finally tying cross-pieces to maintain the double lines at the same distance apart at the top as at the base. When training the leading shoots it should be borne in mind they will only climb in the reverse direction to which the sun travels. Water the roots after planting and spray the seedlings overhead in the evening in dry weather.

Vegetable Marrows.—Plants to supply the summer and autumn crops should be planted out-of-doors. Marrows require rich soil and should be planted in prepared stations. Take out the soil in an area three feet in diameter, a spit deep, and substitute a mixture of loam and decayed manure in equal proportions. Three plants should be planted at each station.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens,
Kew.

Euphorbia (Poinsettia) pulcherrima.—Stock plants should be introduced to a warm house, to obtain cuttings for rooting next month, which is soon enough to start propagating. Many cultivators make the mistake of propagating this plant too early. The rose-coloured form is worth propagating in quantity, while the white variety is of little decorative value, although a plant or two may be grown for greater variety.

Carnations.—Plants of Souvenir de la Malmaison Carnations in flower require shading, or the flowers will not last long and soon lose colour. Young plants intended for layering later should be relieved of some of the weaker shoots to allow the plants to grow strong and sturdy.

Canna.—Plants of the earliest batches are flowering, and those of later batches just developing their flower spikes. They should be assisted by frequent applications of dilute manure and soot water, as the Canna is a gross-feeding plant. Continue to pot on younger stock for successional blooming; six-inch or seven-inch pots are sufficiently large for specimens required for furnishing the stages in the conservatory. Large plants, grown in twelve-inch pots, are useful for furnishing large conservatories, for, with good cultivation and liberal feeding, they continue to produce their flowers until the season of the Chrysanthemum.

Chrysanthemum.—The compost should be prepared for the final potting of the general collection of Chrysanthemums, as it is an advantage to have it turned several times before it is required for use. The loam should be chopped up roughly, and, unless it is of a very heavy character, it is not desirable to include too much leaf-mould. A portion of old Mushroom bed manure may, with advantage, be used instead of leaf-soil. The same discrimination should be exercised in adding sand or other material for rendering the compost open and porous. In mixing potting soils for Chrysanthemums, or any other class of plants, it is not desirable to add large quantities of highly concentrated and soluble manures, as they will be washed out of the soil before the plants have developed sufficient roots to take advantage of them. Apply fertilisers when the pots are filled with roots. A good general manure consists of 45 lb. of super-phosphate, 35 lb. of fine bone meal, 15 lb. of sulphate of potash and 17 lb. of sulphate of ammonia. The ingredients should be mixed together and passed through a fine sieve several times. The bone-meal will prevent the mixture from hardening and caking together; and it is best to mix only small quantities for more or less immediate use. This mixture may, with advantage, be used in the potting soil for the general collection of plants, at the rate of a 48-sized potful to every three bushels of soil. Dry wood ash is a good substitute for sulphate of potash, which is still difficult to obtain.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSOEH, Esq.,
Castleford, Cheshire.

Cattleya citrina.—The peculiar habit of this species renders it unique in the genus Cattleya, for it always grows and flowers in a downward direction. In no other way will it succeed, therefore the plants should be made secure to teak-wood rafts or blocks of wood and suspended head downwards from the roof rafters of the intermediate house. It usually produces its Tulip-like flowers in May, which, having a thick texture, remain in full beauty for two or three weeks. After the flowers are removed, and when roots appear at the base of the current pseudo-bulb, fresh rooting material may be given, but if the roots are firmly attached to the raft there is no necessity to disturb the plant. Remove as much of the old soil as possible, and substitute fresh peat and Sphagnum-moss. Plants that have lost their roots and are in consequence unhealthy may be removed, and arranged securely on another piece of wood or raft. Throughout the growing period a liberal

supply of moisture is needed, but when the pseudo-bulbs are fully developed, the roots should be kept on the dry side—in fact, the plants need not be given water for several weeks, and no harm will result.

Laelia pumila.—When this charming little Laelia and its varieties begin to root, the plants may be top-dressed or repotted. The plants should be grown in shallow pans filled half their depth with broken potsherds for drainage. Only a small quantity of soil is needed, consisting of Osmunda-fibre or peat, and a small quantity of Sphagnum-moss. Suspend the plants from the roof rafters of the intermediate house, and shade them from strong sunlight. Although the roots need a liberal supply of water, during the plants' period of active growth it must not be given in excess, and when the plants are at rest the compost should be kept only sufficiently moist to prevent the tiny pseudo-bulbs suffering harm from drought.

Selenipedium.—The members of this group of the Cypripedium family, embracing *C. caudatum*, *C. Schlimii*, *C. grande*, *C. Sedenii* and *S. Schroederiae*, continue to bloom for a long period. Large specimens may easily be obtained, and big plants possess decorative value. Annual repotting is not necessary, but where plants are in need of additional root space the present is a suitable time to repot them. The compost should consist of good fibrous peat and Sphagnum-moss, but the strong-growing kinds, such as *S. grande*, will benefit by the addition of a little loam fibre. After repotting, apply water sparingly, and afford the plants a little extra shade until the roots take possession of the new soil. A light spraying overhead twice or thrice each day in hot weather is beneficial. When the plants are well established they enjoy copious supplies of water and a moist atmosphere; at no time should the roots become absolutely dry. These Orchids are not exacting in regard to temperature, and may be grown either in the warm house or Cattleya division.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Garden Walks.—Red shale, which is obtainable at the head of some coal-pits, is an inexpensive material for forming garden walks. However, unless the adjoining buildings and walls are constructed of red bricks, the shale should not be used. Generally speaking, gravel of a soft brown colour is preferable for garden pathways. Neatly-kept walks attract the eye pleasantly.

Begonia.—All Begonias are partial to leaf-mould. Previous to planting, afford the beds a good dressing of flaky leaf-mould and a dusting of Clay's fertiliser. These ingredients should be thoroughly forked into the soil. Shallow planting should not be practised on light, sandy soils, unless it is intended to conserve the soil moisture by mulching. Manure from a spent Mushroom-bed or other suitable material may be employed for the purpose.

Veronica.—The lavender-coloured *Veronica Hulkeana* is a very pretty and distinct plant. It is an admirable shrub for planting on a south wall and for other decorative purposes; it is also a most valuable pot plant. Grouped on a wide ledge, formed by rocks, and planted in good, fibrous loam, the plant is here making a fine contrast against *Berberis stenophylla*. In northern districts it is advisable to grow *Veronica Hulkeana* in pots until it has made hard wood before planting it in the open. It may be propagated by cuttings inserted at the present time.

Masonry.—It is not unusual, although deplorable, to see mullioned windows and other fine architectural details almost entirely obliterated by climbers, chiefly belonging to the genus *Ampelidæe*. There is yet time to curtail last season's rampant and undesirable growths of *Vitis* species without lasting injury to the plant; in fact, a little bleeding of the vine will act as a deterrent to an over-luxuriance of growth.

THE ALPINE GARDEN.

SYNTHYRIS RENIFORMIS.

Mr. T. W. BRISCOE (page 205) has given an attractive account of *Synthyris reniformis* as grown at Castleford, Chepstow, and the photograph supplied an excellent picture of this valuable little plant. It is almost unnecessary to say more about it than to express entire agreement with Mr. Briscoe in his commendation of this flower. It is quite hardy and is the best of the three species of *Synthyris* which seem to be now in cultivation. I understand that it grows in moist places, generally near streams and little rivulets, in north-west America, and a white variety has been spoken of by those who have seen it growing wild. So far as I know, the white variety has not been introduced and it is doubtful if it is in commerce at all. The earliness of *S. reniformis* makes it especially useful either in the open or in the Alpine house. *S. Arnott*.

ERINUS ALPINUS.

The charming little alpine illustrated in Fig. 122 is the variously coloured *Erinus alpinus*, which Mr. Irving referred to in the issue for April 3 last, p. 171. The plant is shown grow-

ing up the face of a rock-wall, a situation best suited to it, and the floriferous nature of the species is apparent from the large number of inflorescences the small specimen is bearing.

GENTIANA VERNA ANGULOSA.

EVERY lover of Alpine plants should grow this delightful *Gentian* in pots or pans, if not on a more generous scale suitably colonised in the rock garden. To say that it is a taller, larger flowered, and even more beautiful plant, perhaps, than *G. verna*, and of much easier cultivation, only does it scant justice. Its winged, or acutely-angled, calyx is also distinct. A huge panful of the plants, with a few dozens of the brilliant blue flowers, was far and away the best Alpine shown at the R.H.S. meeting on April 15. It was in Mr. Tucker's collection. The plants were seedlings in, I believe, their fourth year, having first flowered when two years old. The plant is in flower near me as I write, and seedlings from last year's seed sowing are already appearing. The seeds should be sown within a month of harvesting; it is the only royal road to obtain a maximum crop of seedlings. The plant thrives in light, turfy loam, leaf-mould and sand. *E. H. J.*

ANEMONE BLANDA SCYTHINICA.

Those who have plants of this good form of



FIG. 122.—ERINUS ALPINUS FLOWERING ON A ROCKERY WALL.

ing up the face of a rock-wall, a situation best suited to it, and the floriferous nature of the species is apparent from the large number of inflorescences the small specimen is bearing.

OXYTROPIS PYRENAICA

OF the species of *Oxytropis* in cultivation, one of the greatest favourites of the few who cultivate them is *O. pyrenaica*. It suffers from the reputation of difficulty of culture which has been acquired by many of these plants, but it is easier than some, and growers who have failed with certain species have often succeeded with *O. pyrenaica*. My own losses of these plants have been mainly through the attacks of slugs. *O. pyrenaica* is a neat, dwarf plant, growing only a few inches high, and having pleasing, pinnate leaves, which are freely clad with silky hairs. The heads of brilliant, purplish-lilac or blue-purple flowers are of the characteristic form of the Leguminosæ. The best plants of *O. pyrenaica* I have met with were growing on low rockwork, facing north-west, but receiving a fair amount of sun. Sandy soil is the best. Wooster figures this species in the Second Series of his *Alpine Plants*, but the specimen shown

the Grecian Windflower (*A. blanda*), and are desirous of increasing the stock by means of seeds, must be ever alert as the period of the maturing of the fruits draws near. At flowering time the blossoms are fully presented to view, but, as the period of the ripening of the seeds approaches, the heads arch over and, hiding themselves away amid the leaves, valuable seeds—the earliest and best—are shed and lost before the cultivator is aware that they are ripe. The seeds are closely arranged on a dome-shaped cushion, or disc, and in the process of developing and maturing—their attachment with the dome-like disc being exceedingly minute—they are forced away by the slightest touch or pressure. In this way those earliest formed are displaced by the oncoming crowd, often while they are quite green. As even the experienced suffer loss from the same cause, it is advisable in order to prevent it to draw the seed heads to the outer edges of a clump soon after flowering is over, and place saucers or other receptacles in position to receive the seeds when they fall. The seeds should be sown at once, and the seedlings will flower in eighteen months. *J.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.
 Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

MR. REGINALD FARRER'S SECOND EXPLORATION IN ASIA.*

18.—THE BOUNDARY.

I HAVE rarely seen a more magnificent sight than the meadow slopes immediately under Sabiya Kaw Pass in August. This country suffers from its lack of empty spaces as a rule; and, when you do attain them, it is usually in the form of short, high Alpine lawns, velvety and windswept, rather than fields of rich and flowery herbage, such as those which yield *Primula Purdomii*, *Meconopsis pumica* and *Aster limitaneus* on the Tibetan Alps, or *Paradisea Liliastrum*, *Campanula rhomboidalis* and *Aster alpinus* on the European. But the last three hundred feet of the Sabiya Kaw Pass handsomely make good this deficiency, and amply compensate one for the long, arduousness of the climb, for the lower stages, in August, are comparatively dull, and superlatively tiring. The *Primulas*, Big and Little Blue, are long since gone to bed beneath a sea of *Balsams*, and nothing is now discoverable beneath the Bamboos but that surf of dark, uninteresting foliage. Down below, in the gullies, indeed, the pearly *Thalictrum* still lingers, and there now appears an *Adenophora* with stumpy bells of a blue, so pale as to be merely a whitish grey; while on the mossy boulders and tree trunks there glitter here and there the white stars of a most charming little high alpine *Utricularia*, replaced a hundred feet higher, in similar places, always in shallow moss, by an even tinier twin, of lilac-manve, with long tails to the blossom.

But otherwise, only memories and hopes enliven the climb. Up and up the traveller wearily toils, and, after many a steep, suddenly turns a corner and comes out over a shoulder of cliff, on to the full glory of the open meadow, as far as the eye can sweep, one simultaneous riot of colour, laid on, not in dottings and pepperings, but in the broadest and most massive sweeps, such as might satisfy even the most opulent day dreams of a herbaceous borderer. The flowers blend by the acre, not by the dozen, or even by the hundred: there are solid furlongs of tender pink *Geranium*-yellow *Globeflower*, crimson *Polygonum*, citron *Primula*, violet *Delphinium*, golden *Anemone*, golden *Saxifrages*, golden, fragrant *Corydalis*, and a soft, pale blue *Lactuca* like a softened *Cichorium Intybus* with pendent flowers. The whole picture combines in such a vast, unbroken blaze of colour, that even from far away below, down in the camp, the hillside is seen to be painted all over with an indefinite luminosity which distance is unable to determine. And this is only the broad general picture; dozens of other species give splashes of detail. Here is the azure of *Corydalis curviflora*, and there the purple of a cluster-headed *Aster*, just beginning: dotted over all the slope are the dark clumps and rarer spikes of the pale yellow *Gentian*, while frequent blobs of colour are provided by a very handsome mono-

carpic Umbellifer of two or three feet high, with enormous hen-and-chicken heads of blossom, pink in their promise and white in the performance. Then there are pink *Garlics*, pale blue, thorny *Poppies*, the dark violet of *Salvias*, the pendent globular whiteness of the big *Cremanthodium*, and the comparatively plebeian lilac-purple of a *Hedysarum*: with many other beauties, too numerous to conjure up, and too tedious in the mere enumeration. But in this Alp-wide rainbow, where the green foundation of grass is hardly discernible, one note emerges above the rest, shrill and clamorous, giving point and relief to the brilliant blur of the whole. This is provided by yet another *Cremanthodium* (see Fig. 123), intermediate in stature between its predecessors, but with flowers, this time, of a clear and luminous pale citron-yellow. Their ragged, fringed heads, depending, have, from afar, a delusive suggestion of a *Primula*: and, as they occur in solitary glory only, their innumerable myriads, peppered over the confused blaze of colour, stand out as vividly as singleton *Daffodils* over a field.

The Cairn on the actual Pass is a grey islet in a sea of pink and yellow, among which modestly occurs another precious little novelty, in the



FIG. 123.—CREMANTHODIUM SP., WITH YELLOW FLOWERS.

form of a delicate *Dicranostigma*, or *Cathcartia-Meconopsis*, of ten inches or so, annual-biennial, with lyrate leaves, and four-petalled (normally) flowers of palest milky blue, varying occasionally to white or pink. But true *Meconopsis* is disappointingly ill-represented in these ranges. I take it that the race requires the neighbourhood (at least) of ground running to about 15-16,000 feet, and that the mere thirteens of these Alps are therefore not enough for any such lavish range of species as is afforded by the mountains of the Likiang bend. Anyhow, my only *Meconopsis*, so far, is a "replacant" of *M. Pratii* and *M. racemosa* on the open high Alps, in the turf lawns and rocky places, seeding down to the river beds below. It is no less handsome than they, an aculeate *Poppy*, possibly new, and certainly unpublished, standing nearest to *M. sinuata*, with long, narrow leaves sinuate lobate, bright green and brown bristled, but palely glaucous below; four-petalled (normally) flowers of very soft Cambridge blue, with blue stamens and yellow anthers, and long narrow capsules, very strict up the scape in fruit, of a darkly glaucous tone, like the scape itself. Otherwise these hills give only *M. Wallichii*, and that but in its ugly vinous-

coloured form, varying very rarely, and only to a rich lavender-purple, which would be really desirable, if one could rely on it. But the flowers, I confess, are fine and large.

You will see *M. Wallichii*, tall and stalwart, down on the slope that descends to China, in great luxuriance among other old friends. But the Chinese side, by covenant, is prohibited ground to me, as is the Burmese to Mr. Forrest and his numerous assistants. So it was only disinterestedly, and without prejudice, that I descended to its laps of marsh, one below the other, and there, to console me, saw nothing new and notable, unless it were wide sweeps of a *Geranium* similar to that above, but of even a tenderer, purer pink. So back I toiled again, up the infinite steeps of the climb, to the Pass once more. From the Cairn, the frontier runs sharply up, along an arête like a broken stairway of turf and boulders. It is a trying stretch, and with no new flowers, for still the ornata-*Gentian* of these elevations is hugging its buds closely and clearly does not mean to unfold them till October. So that the scramble, though arduous, is barren; until you attain the summit Cairn, some 800 feet above the Pass. And there, whatever floral barrenness there be, is made good at once by the unbounded richness of the prospect. On the west, and northward, the panorama of the "Burmese" Alps, solemn, void, Northumbrian in their colouring, and green with a close vesture of fine lawn that is really all Bamboo; on the other side, glens falling away beneath wild barren crags into China, down into the undiscoverable profundities where the Salween runs, so close below, that you get no glimpse of it but once, very far down, in open country towards the south. But above its invisible bed, away and away into the east, China unfolds her immeasurable panorama of highlands and Alps, long rolling lines, and rosy-blue downs of cultivation, with paths like white cobwebs trailed along the darkness of her fells. The view rolls clean and clear for a hundred miles or more; but nowhere, north, south, east, or west, is there the smallest gleam of ice or snow to be seen. *Reginald Farrer.*

TREES AND SHRUBS.

EFFECT OF THE SEVERE WINTER IN THE ARNOLD ARBORETUM.

THE winter of 1919-20, although less destructive to plants in the neighbourhood of Boston, Mass., U.S.A., than that of 1917-18, has been exceptionally severe. Once in December, before the ground was protected by snow, the thermometer at the Arboretum fell to 12° below zero; later heavy and numerous falls of snow buried and protected plants less than three or four feet high. Unfortunately, the snow rested on a layer of ice, which did not thaw until the disappearance of the snow at the end of March. This ice layer injured smaller plants, and this, or the cold nights in December, killed in the nursery the seedling plants of *Juniperus Pinchotii*. This native of the Panhandle region of north-western Texas is a handsome tree with bright red fruit. Recently introduced into gardens by the Arboretum, it was hoped that a tree which grows naturally in a region of excessive winter cold would thrive in New England.

The heavy snow and high winds have broken the branches of several trees and shrubs, and the destruction of the fine specimens of the dwarf form of the Norway Maple (*Acer platanoides* var. *globosum*) by the weight of the snow on the branches is a serious loss. This plant was imported from Germany in 1888.

Field mice, which have destroyed during the winter, by girdling, thousands of young trees in New England orchards and nurseries, have done comparatively little damage in the Arbore-

* The previous articles by Mr. Farrer were published in our issues for June 21, June 28, July 12, August 9, August 23, September 6, September 27, October 18, November 1, November 22, December 6, 1919, January 3, January 17, February 7, February 28, March 20, and April 24.

tum. A number of shrubs have lost branches; a ring of bark has been entirely removed from the stem of one of the three plants of a Chinese Box Elder, *Acer griseum*, and this plant will probably not recover. Other interesting young trees which have been badly injured by mice are *Acer mandshuricum*, the great Box Elder of northern Korea and Manchuria, and *Acer Davidii* from western China. *Rhododendrons*, *Kalmias* and broad-leaved Evergreens are generally in good condition.

A few conifers have suffered, but the damage to these plants is less serious than it was two years ago, and, judging by reports from Long Island and the Middle States, the Arboretum conifers have suffered less than those in some of the collections further south. The young Cedars of Lebanon, raised from seeds gathered in Asia Minor, and for many years believed to be proof against the rigors of the New England winter, have lost, or will lose, many leaves as they did for the first time two years ago.

valuable tree finds its northern home on Staten Island and Long Island, New York, it will probably never grow to a large size here or prove itself important for the decoration of northern parks. The oldest specimen in the collection was raised here in 1879 from seeds collected at the Peaks of Otter in Virginia, and has suffered less than the younger trees raised from Staten Island seeds.

Young plants of the Mexican White Pine (*Pinus Ayacahuite*), which have been growing in the Arboretum for several years and have not before been injured by cold, look as if they had been browned by fire, and will probably die. Small plants of *Abies magnifica*, the great Red Fir of the Californian Sierra Nevada, and *A. cephalonica* var. *Apollinis*, from south-eastern Europe, both trees of doubtful hardiness, are killed; and of the three trees of the Californian form of *Abies concolor* the *A. Lowiana* of English nurserymen and the *A. Parsonsii* of some American gardens, the leaves of two are for the

Plantarum. The plant has been in existence for more than three hundred years, and is a hybrid between the common Pear (*Pyrus communis*) and the Whitebeam (*P. Aria*), therefore uniting two very distinct groups of the genus. Ordinarily it flowers in early May, but, like nearly all spring-flowering trees, was much earlier this year. A tree in the collection at Kew bears every season a fine crop of blossom, and a photograph of a spray from it is illustrated in Fig. 124. Several large trees are to be found in old gardens; the largest at Kew is about 30 feet high, but there is, or used to be, one at Bramford Hall, Ipswich, 60 feet high; another is at Arley Castle, which the late Robert Woodward, in *Hortus Arleyensis*, gave as 59 feet high; and Mr. Elwes mentions one at Beauport, in Sussex, 43 feet high. At the present time the Bollwyller Pear is not frequently obtainable from nurserymen, which, considering its interesting origin, as well as its floral beauty, is



FIG. 124.—PYRUS AURICULARIS: THE BOLLWYLLER PEAR.

Photo. by E. J. Wallis

The buds appear to be uninjured and the trees will undoubtedly put out new leaves.

Two years ago the numerous specimens in the Arboretum of the Black Pine of Japan (*Pinus Thunbergii*) lost much of their foliage and the trees look even worse now than they did two years ago. The buds are generally alive, but it will be a long time before these trees regain their former vigour. This Black Pine is a southern, sea-level tree, and in this country is more picturesque than beautiful. In Tokyo, however, and by the sides of the great southern Japanese shore highway, there are magnificent specimens. Raised at the Arboretum from seeds planted in 1895, *Pinus Thunbergii* was never injured here until the cold of the winter of 1917-18 ruined its foliage. The short-leaved southern Pine (*Pinus echinata*) has lost many leaves again, as it did two years ago; and, although this

first time badly browned, while those of the third are uninjured. Here and there a branch with brown leaves appears in the Pinetum, but on the whole the collection of conifers is in better condition than might have been expected.

By the first of April the frost was out of the ground here and there was every prospect of an early spring, but April was a cold and rainy month, with little sunshine, and most spring flowers are opening nearly two weeks later than in normal seasons. From the *Bulletin of Popular Information, Arnold Arboretum, Jamaica Plain, Mass., May 6, 1920.*

THE BOLLWYLLER PEAR (*PYRUS AURICULARIS*).

So long ago as 1650 this remarkable hybrid was figured by Johannes Baubin in *Historia*

to be regretted. It is said to have been found originally in a hedge near Bollwyller, in Alsace, early in the seventeenth century. In foliage it follows more closely the Whitebeam (see Fig. 125), the leaves being clothed beneath with a greyish white felt; in shape, size and tooting they also approach that species, but the lateral ribs are not so prominent. The illustration gives a good idea of the inflorescence, which is a corymb 2 to 3 inches across, each flower $\frac{1}{2}$ inch wide, pure white with rosy stamens. Like many hybrids between related species, it is not very fertile, but it does occasionally produce fruits. These are yellow, one inch in diameter and pear shaped. A variety called bulbiformis was raised from its seed fifty years or so ago in Austria; this more nearly approaches the Pear than the original hybrid. W. J. B.

THE GARDEN OF THE REV, WALTER STONEHOUSE AT DARFIELD RECTORY, IN YORKSHIRE, 1640.

(Continued from page 256.)

[** The spelling of the names of plants in the following list is as in the original manuscript.—Eds.]

Primula veris flore viridi simplicij. G.
" " " pleno viridi. G.T.
" " " viridante et albo simp. T.

[Found by Mr. Hesketh in a Wood called Capdale three miles from Settle, in Yorkshire.]

* Primula veris Virginiana fl. purpureo. Pseudo-narcissus Anglicus vulgaris.
" " Pyrenus.
" " Anglicus flore pleno, or multiplex Gerardi.
" " aureus max: Angli Wilmeri.
" " Gallicus minor fl. pleno. Hispanicus fl. albo medius.
* Pharmica fl. pleno. G.
" Imperati.
* Pyracantha. G.T.
* Pyrola. G.

Quercula minor Chamaedryis. Quinquifolium Tormentilla facii.
Palstre purpureum.

Radix cava, maior et minor. T.
" fl. purpureo. G.
Ranunculus globosus, Flos Trollius Clusii G.
" Anglicus maximus fl. pleno.
" albus fl. pleno. T.
" Creticus fl. argenteo.
" Asiaticus fl. rubro pleno. T.

Rapuntium minus. Reseda vulgaris.
" maior Italica. G.T.

Rha Barbarum verum Antiquorum. Rhamnus primus Dioscoridis. G.
Rhodia radix. G.T.
* Rhus Virginiana.
* Ribes fructu albo, rubro, nigro. G.T.
" Sylvestre Trag.

Rosa Anglica alba. G.
" alba plenifera et paulum rubente fl.
" Anglica rubra.
" Marmorata, vel Rosa vitrea Belgica.
" incarnata. T.
" Sine spinis. (=without thorns).
" Damascena. G.T.
" variegata, exproptia industria.
" Provincialis alba. Quid? G.T.
" Hollandica, seu Provincialis Damascena.
" Austriaca.
" Provincialis rubra. T.
" Holoserica multiplex. G.T.
" Chrysellina.
" versicolor, Yorke and Lancaster.
" Cinnamona plena. G.T.
" Virginiana. T.
" lutea simplex. G.T.
" semper vivens. T.
" lutea multiplex. T.
" altera elegantior.
" moschata multiplex. G.T.
" altera, vel Cinnamona flore pleno albo. 19a in Parkinson.

" Franco furtensis. T.
" Sylvestris odora, sive Eglenteria.
[Grows wild in divers hedges by Darfield, but with more smooth shining leaves than the Garden kind: this is like that of Parkinson, p. 107 but that the leaves are sweet as well as the flower].
" Sylvestris flore duplici.
" Pimpinella folio.

Rosmarium coronarium vulgare. T.
" auratum. T.
" Sylvestre.
Rubia tinctorum.
Ruscus.
Ruta hortensis? T.

Sabina sterilis.
" baccifera. G.? T.
Salix latifolia odora, nondum descripta. (not yet described).
Salvia maior oris crispis. T.
" variegata elegans. T.
Sambucus aquatica. G.T.
" rosea. G.
" laciniatis foliis. G.T.

Sauicula vulgaris. G.
" guttata. G.T.
" altera foliis rotundis.
" Satyrium, bulbosum et palmatum.
" abortivum, sive Nidus avis.
Saxifraga alba. G.
" aurea. G.T.
Scabiosa montana maxima.
" minor, sive columbaria.

* Scabiosa rubra Indica. T.
" alba, Indica, apicibus purp. T.
* Scilla maior rubra, sive Pancratiium Clusii.
[In a pot of sand, which had first been dipped in brine and then been allowed to get nearly dry. Nevertheless it put forth other leaves nine inches long. It did this twice in two years, and bloomed from the middle of November to the end of March.] (This note has been translated).

Scordium. G.
Scorodoprasum. G.
Sedum majus vulgare. G.T.
" minus off. vid Crassula minor.
" serratum.
" petraeum hirsutum.
" Alpinum, primum Clusii. from Pen-maen-maur.
" tertium Clusii. minus fl. albo.

* " minimum Alpinum muscoides.
" tridactylites.
Scrophularia citrarium. G.
* Sessili Aethiopicum frutesc. G.T.
Smyrnum Creticum. G.
* Solanum Virginianum.
Soldanella marina.
" Alpina.
Solidago Saraceniica Gerardi. G.
" vera

* Sochus arboreseens. Spartum marium Anglicanum.
" Austricum.
Staphylo-dendron. T.
[Woods on the further side of Yorkshire. (Johnson, Mercurius 1641)].
* Strychno-dendron. Anomum Plinii.
" coerulea.

Telephium semper virens. G.
* Terrae glaudes Americanae: ex nova Anzlia.
Thalictum minus vulgare. G.
" Hispanicum.
* Thymum vulgare. moschatum.
Tithimalus cupressinus.
" Paralius. G.
* Trachelium minus fl. albis et sub coeruleis.
" " albo pleno. T.
" minus. G.
" gyganteum fl. coerulea et albidis. G.

Trichomanes. Triolium paludosum.
" fl. viridi foliis elegans.
[In mine owne Orchard at Darfield. It grew with me one yeere plentifully but I have not since observed it].

Tripolium. G.
Tulipa Persica.
Tulipa varie species. G.*
Cloth of gold.
Cloth of sylv.
Gabeze.
Gillo-flower.
Duke.
Brancion Duke.
Testament Brancion.
Prince.

Apple-bloome.
Straw-colour'd Hollas.
* Zea-bloome.
Switzer.
Ris-waker.
Donvile.
Yellow Crown of France.
White Crown of France.
Brewers Paragon.
Phoenix.
Potte-Baker.
Chrystall.
Darcy and Gollah.
Oudenard.
Gewall du Mayen.
Brewers Toy.
Gawdy.

[Many other varieties, whites, yellows, reds, purples and these colours mixed, but not invariable.]
(Translated):
Doulman.
Ratta-baker.
Yee-flaw.
Cuckow-baker.
Agate.
Dove-colour'd Prince.
Autre Du Mayen.
Queens Tulip.
Maccons Prince.
Ragged Staffe.
The Parrot.
The Golear.
The Mistake.
The Comet.
Turritis, vid. in Annus (see under Annuals)

Valeriana minor sylvestris.
" hortensis.
" graeca fl: coeruleis et albis. T.
" rubra Dodonaei. Ben rubrum et Ocimastrum Valerianthos
" L'Obel: Ad.
" sive Ocimastrum Valerianthos fl: albis (not described).
Verbascum Matthioli Salvia foliis. G.T.

* Vernicularis frutex.
Veronica mas. G.
" recta spicata fl: coeruleo.
" " rubro.
Vetonica atilis flore pleno.
Vetonica atilis fl: simplicij varietates.
Viola martia purp. et alba: fl. simplicij. G
" " " fl: pleno.
" " palustris.
[Undescribed found neere Darfield.]

Viperaria, seu Scorzonera Hispanica.
Virus aurea Arnoldei de Villa nova. G.
Virus auro Virginiana, seu Mexicana.
* Vitis Jdea rubra, sive Vaccinia rubra.
" palustris.
* Ulmaria peregrina. T.

W.
* Wisack, sive Unicornium Indianum, vid. Apocynum Syriacum Clusii

X.
Xyris. G.
Xylosteum vid. Periclymenum rectum.

Z.
Zizyphus Cappadocia. G.
Su [Total]—651.
[Original Note, erased.]
[Su ma—450. Aug. 27, 1640.]
The total is stated as 422 on Aug. 26, 1640, in the earlier list.

PLANTE ANNUE ET BIENNES EX. SEMINIBUS ORIUNDE.

(ANNUALS AND BIENNIALS RAISED FROM SEED.)

A.
* Aconos Anglica Clusii.
* Aethiops. G.
Aloca Veneta. G.T.
* Amaranthus vulg. Tricolor et paniculis longiss. G.T.
" coccineus elegans max. Parkinson. Theatr. p. 753.
" folio viridi.
* Anagallis foemita (l.) flore coeruleo. G.T.
* Angelica sativa. G.T.
* Antirrhinum minus fl: albo. G.T.
" minus fl: rubro.
" medium fl: albo.
" minus fl: rubro.
" minimum repens.

* Aracus minor Lusitanicus.
" maior Boetius Boelii. T.
* Asperula fl: coeruleo. G.
Astragalus marinus Boetius vel *Lusitanicus Boelii. G.T.
Actractylis. G.T.
* Atriplex baccifera. T.

B.
Baccharis Monspensium.
* Belvidera Italorum.
Blattaria fl: luteo. G.T.
" fl: albo. G.T.
Botrys. G.T.
* Brassica marina monospermos. G.
" sativa crispa.

C.
Calendula flore pleno. G.T.
" fl. pleno prolifera. T.
Camulina.
* Cannabis spuria elegans.
* Capsicum Indicum. G.
* Carduus benedictus.
" Chrysanthemum Narbon: (l.) Scolymus Theophrasti et Eryngium luteum Monspel. G.
" solstitialis. St. Barnabes Thistle.
" sphaerocephalus maior.
" eriocephalus.

Cartbamus.
† Carum. G.
* Caulalis vera.
" fl: albo cecchinato semine.
" nodosa echinato semine.
* Cerinthe maior floribus luteis et subrufris. G.
Chamaedrys mas. G.
* Chondrilla purpurascens foetida. G.T.
* Cier arietinum.
Citrullus.
* Cochlearia rotundifolia vulgaris.
" minima.
[From Anglesey on the Rocks at Landhwin Dwyne (How. p.29).]

* Colocytis vulgaris.
* Convolvulus minor Hispanicus.
" maior fl: coeruleo.
" minor Hispanicus fl: albo et fl: pallido.
" maior vulgaris.
" ma: Hisp. fl: purp.
Coriandrum.
Crapina. T.
* Cucumer asinus and *vulgaris. G.T.
* Cyanus orientalis, Flos Sultani
" minor variorum colorum. G.

D.
Delphinium fl: simplicij variorum color.
" " pleno variorum colorum. T.
" surrectum.
Digitalis flore albo. G.T.
" ferrugineo. G.T.

E.
* Echium Lusitanicum. ?T.
* Elaine. G.
Ervilla Dodonaei.

F.
Faba veterum, seu Graeca. G.
Ferulago. G.
Flos Adonis. G.
" Africanus minor fl: simplicij et pleno. G.T.
" Africanus maior fl: simplicij et pleno. G.T.
" solis maior semine nigro. G.T.
" semine fusco.
" " albo.
" maculato ramosus.
Foenum Graecum. [?Foeniculum T.]
* Frumentum Turcicum, sive Indicum maiz. [Millium Indicum G.] T.

G.
Gentianella fugax.
Geranium Creticum. T.
* Gigidium Hispanicum. G.?T.
Gramen Lupuli glumis. Phalaris pratensis maior.
" tremulum alterum, "found at Peasley."
[In a hollow lane, betwixt Peasley and Mansfield in Nottinghamshire.]

H.
Hedysarum maus.
" clypeatum. G.T.
Hieracium falcatum alterum Hedynolis facie L'Obelii.
" medio nigro.
" stellatum.
* Intubaeum fl. rubente. 10 Clusii.
" parvum Creticum. Clusii. Sive Chondrilla purpurascens foetida Bathlini.

* Hyoscyamus luteus. G.
J.
Jacea, sive herba Trinitatis fl. luteo. G.T.
["Neer Eldenhole in the Peake, and about Buck-stones in Darbyshire. It is in some gardens about London."]
K

* Kakile Serapiouis, eruca marina.
Kali spinosum. Tragum Matthioli.
Keyri fl: albo.
" luteo maximo simplicij.

L.
Lactuca nigra Romana.
Lapathum palustre folio acuto, flore aureo. Lathiris.
Lathyrus aestivus fl. luteo. Pisum segetum regium Italorum. *Lathyrus Boetius fl. luteo Parkinson.
" Aegyptiacus, vel Boetius flore coeruleo Boelii.
" Annus siliquis Orobli.
Leucium fl. simpl. et pleno variorum colorum. T.
" fl. luteo.
" purpureum marium. T.
" melancholicum.

* Linum umbellatum minus peregrinum.
* Luocaria minor. G.
Lupinus sativus flore albo. G.
" maior coeruleus, seu Virginianus.
" Sylvestris fl. coeruleo. ?T.
" luteo. ?T.
Lychnis coronaria fl. albis, rubris, maculatis, simpl. G.
" plenis rubris. G.T.
Lysymachia vera.
" Intea Virginiana.

M.
* Malz ex Nova Anglia. [Millium Indicum. G.]
Malva crispa. G.
" Hispanica.
Medica cochleata vulgaris.
" tornata major.
" cochleata pericarpio lato.
" spinosa maior. G.T.
" Boetica spinisintortis.
Melanthium Romanum.
" Damascenum.
" Hispanicum.
* Melilotus Italica. G.T.
" India Orientalis.
" Hispanica fl. albo.
* Melissa Turcica. G.
* Melo Muschatellinus et Aquaticus Virgin.
* Mercurialis mas et foemina. G.
* Milium album. T.
" Africanum, ex Guinea.
Mirabilia Peruviana. G.
Muscipula L'Obelii.
" fl. albo.
Myagrum monospermum. T.

N.
Nasturtium Indicum. Galls Capuchon (In French). G.T.
" hortense crispum. G.
" Petrosilini foliis, petraeum.
O.
Oclum sativum.
* Oxy fl. luteo.

P.
Panicum.
Papaver ativum fl: simpl. et plenis var. colorum.
" cornutum fl. luteo. G.T.
" " rubro. G.
" rneas flore cineritio, vel columbino.
" " pleno. T.
" spinosum.
* Pepo ex Nova Anglia.
[?Pepo Americanus. T.]

- Perfoliata vulgaris. - G.
- " pappifolia. 4
- [Apparently grew wild at Darfield (How. p. 90)].
- Persicaria siliquosa.
- *Petum, sive Tabacco latifolium.
- ? Tabaco. G.J.
- *Phalaris vulgaris. G.
- " minor Boetica.
- *Phaseolus Iodicus flore phoeniceo.
- " " fructu albo, purp. et variegato.
- " " Indicus forte (perhaps) 2. Clusii.
- " " Bonaria.
- " " alter Indicus fructu lato variegato.
- " " Indicus incomptus.
- Pisum maculatum Boelii. T.
- " " quadratum. T.
- Pomum amoris minus. ?G. T.
- Psyllium. G.
- *Ptarmica Imperati.
- Q
- Quiona Clusii. Amaranthus panicula sparsa. T.
- R.
- *Rleious. G.
- S.
- Scabiosa maior Hispanica. G.T.
- " " " Indica l. rubris et albis. T.
- " " " moschata.
- Scorpioides maius.
- " " minus hirsutum.
- " " " siliqua gabriori.
- " " " Mattholi. G.
- Securidica minor. G.T.
- " " " siliquis planis deofatis.
- Sesama Tragi.
- Silybum minus Boeticum, sive "flore nutate Bochi.
- Sium minus impatiens. vid. *Cardamine Per.
- *Speculum Venris maius et minus. G.
- Stoebe Salamaotica. G.T.
- Stoechas. G.T.
- Stramonium flore albo. G.T.
- " " " coeruleo.
- " " " T.
- Thlaspi minus. G.
- " " Dioscorides, seu Draba folio.
- " " " clypeatum. G.
- " " " Creticum flore albo.
- " " " " rubello.
- " " " " variegatum.
- Tragopogon flore purpureo. G.
- " " " xerampelino medio luteo purpuris apicibus.
- " " " " luteo minus. ?G.
- " " " " luteo minus. ?G.
- " " " " resivum l. suaverrubente.
- " " " " variegatum sive Intem minus elegans purpura striatum.
- Tragopyrum.
- Trifolium odoratum.
- " " " bituminosum. G.
- Tarritis vulgarior.
- " " " maior.
- V.
- Valeriana Alpina angustifolia.
- " " " rubra Mexicana. G
- Viola Mariana. G.
- " " " tricolor.
- U.
- Urtica Romana. G.T.
- W.
- Wall-flower vid Keyri.
- X.
- Xanthium, sive Aretium. G.
- Z.
- Zoopyrum.

[Total of both Lists] Summa—215
 Suma ntriusque Catalogi 866*
 De quibus hodie
 heu! restant pauca
 Novamque despero coloniam 1652

**The sum total of both lists is stated as 537, on Aug. 26, 1640.
 (Fo be conclude!)

BEGONIA MANICATA.

THIS fine Begonia is one of the best species for the large conservatory or greenhouse, and is beautiful all through the winter. Few cultivators seem to have realised the possibilities of this plant. At Kew the flowering plants were placed in the greenhouse on January 4, and as late as the middle of May they were still fresh and in good condition. The plants are in their second year and are potted on into twelve-inch pots. They have large spires of flowers some six to seven feet high. The secret of success with this plant is generous cultivation in an intermediate temperature in their growing season; and removal to an ordinary, cool greenhouse temperature when the flowers show signs of colour. In a warm temperature the blooms quickly lose their bright colour and only last in good condition for about a month. The delicate pink flowers are charming as cut blooms for table decoration, lasting for several days in a fresh condition. This

plant depends for its floral display on the large number of female flowers produced; and the Kew plant is really a selected seedling of more vigorous growth, with larger and deeper coloured flowers than the typical *B. manicata*. There are several forms of this plant, one with maculated leaves and one with cristate foliage. This Begonia is readily propagated from cuttings inserted at any time during June, and, given liberal feeding when potted on into six-inch and seven-inch pots, it is very useful in its first year for the conservatory stages, and in positions in the dwelling-house where large, handsome foliage combined with flowers are appropriate. J. C.

Altogether the plants assume a characteristic stunted, reddish condition in marked contrast to normal healthy plants. The trouble does not appear to spread from plant to plant, and once a bed is more than one year old, from casual observation, there seems to be little or no extension amongst the healthy plants. It is most troublesome in newly formed beds and it may immediately be assumed that the gradual increase in the trouble is caused by planting runners from affected plants. This can hardly be the case, for most growers now go carefully through those of their beds from which they propose to take runners and hoe out all the doubtful plants. Even so, it is quite common to



FIG. 125.—PYRUS ARIA, ONE PARENT OF P. AURICULARIS (see p. 267).

"RED PLANT" IN STRAWBERRIES.

THIS trouble, thought to be found wherever Royal Sovereign Strawberries are grown, is fast becoming a serious menace to the early Strawberry growers in the Tamar district of Cornwall. The symptoms are briefly as follow:—The leaves instead of becoming large, remain very little larger than those of the wild Strawberry (*Fragaria vesca*). The plant produces a fewer number of leaves than normally and the petioles remain short. Many of the mature leaves instead of having a fresh green colour, become tinged with red and have a dull, stunted appearance. Both the blades and petioles of the young leaves have a bright red colour and the blades when partially extended have a peculiar curl. The crowns instead of being thick and stocky become thin and elongated, but the plants produce runners fairly freely. Many plants are quite barren, but a few produce one or two short flower trusses. Some of the flowers mature fruit, but more generally the pistils are quite abortive.

find 10 per cent. of affected plants in a new bed. Some suggest that eelworm attacks cause the trouble, but the symptoms are quite different to those usually associated with attacks of this pest. Can it be that the trouble is a form of reversion similar to that now so common in Black Currants? I have never noticed the trouble in any other variety than Royal Sovereign. This variety is now about 40 years old. Can it be then a form of deterioration? I have no doubt that many readers of *Gard. Chron.* have "Red Plant" in their Strawberry beds, and it would be interesting to know whether they find it extends in old beds and whether it has been noticed in other varieties. The disease is a problem of great economic importance and urgency in many early Strawberry growing districts, particularly in East Cornwall, Cheddar and Southampton, where Royal Sovereign is still the most profitable variety for this purpose. It is to be hoped, therefore, that an investigation into the causes of the trouble will be made as rapidly as possible. R. Wellington.

CONCERNING LABELS.

LABELS may be divided into the permanent, the semi-permanent and the temporary; there are also labels legible, and labels illegible. It needed but a few years' experience to discard the ordinary wooden slips from the list of "temporaries"; without a smear of paint, and indeed with it, their life is short; they become rotted or illegible too soon, and it is a nuisance to have to resort to paint-pots whenever a label is required.

As a substitute, for the last 12 years I have used white xylonite (celluloid) of the thickness known as 50-1,000; written on with an ordinary pencil the legend remains good for at least a season in the open and, depending on the pencil used, will often remain good for another year, but it is advisable to go over them in case of a wash-out. My standard size is $3\frac{1}{2}$ by $\frac{3}{4}$ inch, these may be used direct in pots and pans, but the immersed part is liable to get discoloured from absorption of iron material from the earth; consequently, also from the point of view of economy, the slips are perforated (as with a hot wire) near one end and supported by means of a wire, at the end of which a loop or eye is formed to slip through the hole. For the open ground the wires are of 10 to 12 gauge, galvanised, and about a foot or rather more long. For these it is advisable to mount the slip with an intermediate 8-shaped link of wire, for after some years' exposure the xylonite becomes brittle and an inadvertent kick or blow is apt to break off the tag, as it must be thoroughly free to swing, a condition which is satisfactorily attained by the link. For pot and pan work, two sizes are used, one of half the above dimensions, the other only one-quarter; these are directly mounted on 14-gauge wires of about 9 inch and 5 inch lengths respectively; as these are not liable to kicks and blows, the use of a link has not shown itself to be needful. On plots where experimental observations are being carried on, I use some rather larger plates of the xylonite, for instance, 3 x 3 inches or larger; it is very handy to be able to make a note on the spot, which at a later date may be transferred to the notebook. There was also an intention to get sheets coloured in different shades to mark off different experiments, but as this has never been carried out I am unable to say whether the colours are sufficiently permanent for the purpose.

In order to cut the sheets neatly a score is made by a knife point and the material bent back over the edge of a table, when it parts asunder; the handiest way of getting uniform slips is to clamp down the sheet level with the table edge and do the scoring with a carpenter's gauge. In the fresh plastic state it can be cut with a pair of shears or strong scissors. Sheet of thinner gauge can, of course, be used, but I prefer the thicker. With care in collection and avoidance of the bonfire (which has an extremely destructive action!) the labels last for an indefinite time. If a moistened rag fails to cleanse off an old inscription, a touch of whiting on the pad will give the desired result at once.

Xylonite also lends itself for use as permanent labels; I have some wall Pear trees thus named, of which the labels are in as perfect condition as when put on 10 years ago. In this case the writing was done with Chinese ink and then varnished with xylonite varnish. It may be noted that varnish does not adhere well to old-exposed xylonite, which therefore should be fairly fresh for this purpose, and still plastic. This varnish is prepared by dissolving a few bits of celluloid film, (e.g., from photo negatives) in acetone or amyl acetate, or a mixture of the two, the latter being preferable, as acetone alone evaporates too readily, to a syrupy consistency; chips off the white sheets may also be used, but the white pigment should be allowed to settle out to get a transparent varnish; it is well to soak the cork of the containing bottle with glycerine, which prevents its sticking; it may be noted that no grease is fit for this purpose, as it would be dissolved by the solvent. In attaching these or other labels to trees, the wire should be firmly twisted on the label, or otherwise it will cut through with the movements caused by the play of the wind. Copper-wire is suitable, and

so is lead; in either case where fixed around a trunk or branch which is liable to grow an inch or two of the wire should be zigzagged—WWW, or wound round a pencil corkscrew-like; this permits the fastening to be firmly attached to the tree and allows for expansion of the shoots.

Quite useful labels can also be made of the miniature luggage tags with eyed holes; we often use them for temporaries, and if varnished once or twice with xylonite varnish they become at least semi-permanent. If attached with wire rather than string they are not liable to get free.

Zinc labels on which the inscription is made with a solution of copper sulphate or acetate become illegible in a few years, and even if varnished they are liable to last but little longer; the sheet zinc, however, if not too thin, lasts well. This is not the case with aluminium; some quite thick sheet which was deeply stamped with the name, after a few years has become almost illegible.

Sheet zinc on which the inscription is stamped with letter punches and mounted like the xylonite on galvanised wires stands well and such labels are useful on the rockery, for they are not obtrusive and yet can be found and read when required. We cut them down to a small size so that they just contain the legend. Generally speaking, copper-wire should not be used for attaching zinc labels to trees, for an electrolytic couple is formed and destruction of the zinc ensues; still, if the zinc be fairly thick, specimens will last for a number of years. Where acids from smoke abound in the air, it may be well to protect zinc labels with a coating of varnish (e.g., xylonite).

Zinc has the disadvantage, if alkaline or copper-containing spray-washes are used, of becoming rapidly attacked and corroded, and, all things considered, it appears that lead is the most suitable metal for fruit-tree labels. It may be attached by means of lead wire or thin strips of sheet lead, which should be bent to allow for expansion, as has been described above. The name is impressed by means of letter stamps and necessary holes are readily made, for instance, with a wire nail of suitable size. A set of letter stamps is a most useful addition to the horticultural armamentarium; for lead the rather cheaper ones for wood-workers are sufficient, but harder metals like zinc require the dearer ones "for metal"; as lead is so soft a slight tap with a hammer is all that is needed to make a good impression. Lead has another advantage over the other metals, since any odd piece of scrap may be melted easily, poured on a flat surface, and readily hammered out to the desired thinness.

With a little practice quite a number of lead labels may be turned out in some odd quarter of an hour, and when attached well to a tree, one has the satisfaction of knowing that they will remain legible for probably more than one lifetime.

In many a garden how often one would have derived more benefit had lasting labels been attached; true, the labels are often there, but endeavours by the owner or his gardener to decipher the fabled words are usually piteous and unavailing. *H. E. Durham.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Apple Alfriston.—May I remind those who are trying to bring this old Apple again to the front that, though it has its good points as a cropper, it is one of the poorest fruits from the standpoint of culinary quality on the whole list. The fruit turns brown when cooked and is dry and flavourless. I have met an eccentric who preferred dry, brown fruit in a pie, but I think the majority will de well to let this variety rest in the obscurity into which it has deservedly sunk. *Chas. E. Pearson.*

Anemone St. Brigid.—This is one of the most useful flowers for cutting, the blooms lasting a long time in water. I obtain the best results from seedlings, and sow a batch every year in April, May, or June, in boxes of soil placed in a cold frame. Planting the seedlings in a well-prepared bed takes place in August or September, and the plants are placed 9 inches

apart, in rows 12 inches apart. Instead of planting single seedlings, I find it best to plant from three to six in a clump, without separation, as the roots dislike a check. The soil should be firm, well hoed, and kept free from weeds. The St. Brigid type of Anemone deserves to be more largely grown, if only to provide flowers for cutting. *J. P.*

Potato Spraying (see p. 258).—Under this heading, Mr. R. Irving Lynch raises the question that, under certain circumstances, the spraying of Potatoes has a detrimental effect on the cropping qualities, and solicits an explanation. If the spray remains on the foliage for one or two days it renders the plant immune to late blight disease for a period varying from a few days to a month, according to the weather. In fine periods the spray remains on the foliage, and that on the upper portion of the leaves retards photosynthesis on account of its colour, blue, and that on the under sides of the foliage clogs up the stomata, hindering transpiration, respiration, as well as photosynthesis. After the beneficial results of the spray have been effected it is an advantage to the plant to receive rain certainly within 48 hours of its application which washes the spray off and thus enables the foliage to resume its functions. In a year like 1919 it was a waste of labour and materials to spray Potatoes except in those localities where sufficient wet weather favoured the development of disease, when spraying became not only a necessity, but undoubtedly an insurance. In wet seasons, when the spray is most needed, an interval of rainless weather should be chosen to carry out the operation in order to allow the spray remaining on the foliage a sufficient length of time to benefit the plant. When prolonged, inclement periods prevail and the spray is washed off the foliage as fast as it is put on, it is again a waste to continue the treatment, as in this case nothing that can be done will prevent disease. Here again, the French have reduced this fact to a "finesse," and refrain from throwing good money after bad. Such conditions rarely arise, but when they do, spraying is hopeless. Even in very bad conditions, if there is a cessation of rain for a day or two, spraying should be carried out because it means the difference between a crop and no crop. Potato disease generally appears late in the season, so there is no necessity to spray early in the year unless there is much rain, but later it is an insurance against loss in most instances. Last year I had a good crop lifted from an acre in the West of England, which had not been sprayed at all, and although there was disease in the neighbourhood, it was evaded by lifting the crop fairly early. The fact that the disease has a hold on the foliage late in the season does not mean that the tubers will be affected unless left in the soil. It is detrimental to spray Potatoes on the commencement of a spell of fine weather, but beneficial to do so the moment the dry period ends and inclement conditions are indicated. If a few days elapse before the bad weather sets in, the spray will have rendered the plant its maximum service. *C. A. Jardine.*

Silver Leaf Disease of Plums.—In your leader of May 15 you refer to Silver Leaf Disease, and make certain suggestions regarding sanitary measures as an experiment in the control of this disease. A demonstration orchard such as you suggest might fulfil its purpose if there were no affected trees within a considerable distance, as the spores of this disease, like those of other diseases, are easily borne by the wind and other means of conveyance. Plant hygiene would have to extend to the hedgerows as well as to other areas to enable a demonstration orchard such as that suggested to get a fair trial. I am prompted to make these observations as a result of certain discoveries of my own, and the experiences of others. In the case of Silver Leaf, I may mention that on May 16 I gathered specimens from a common Sloe, or Blackthorn, growing in a hedgerow at Hayles; last season I found similar specimens in a hedgerow on limestone soil in Ireland. At Calstock recently I found the common Hazel very badly affected with big bud and, later, when examining these buds with the compound microscope, I found innumerable eel-worms as well as mites

present. In Ireland, where the presence of American Gooseberry Mildew is an indictable offence, I have found wild Gooseberries covered with the disease. It is also well known now that the wild Celery and other plants act as hosts for diseases during the period that the cultivated plants may be out of the ground. A further pest of growers, and one which is seriously affecting their returns, is that of eel-worm; like the Silver Leaf disease, it seems incurable. In the Tamar Valley district the growers are troubled by a malady in their Strawberry plants, which causes the plants to become blind and to turn reddish in colour, and in the case of old plants a gradual shrivelling up takes place, ultimately resulting in death. In some few of these plants, taken at random, I found countless numbers of eel-worms, pests which were also present in the bulbs grown as under crops among the Apples. So far, all that one can suggest is a heavy dressing of sulphate of potash, as this fertiliser is reported to have a deterrent effect on the pest. Whether experiment will find a cure remains to be seen. In any case, this pest is sufficiently destructive to warrant a prize of £10,000, by growers' associations, for a cheap and effective cure. It is just possible that the rather free use of various organic, nitrogen fertilisers, combined with a lack of potassic fertilisers, may have encouraged the kind of growth that is most susceptible to attack by Silver Leaf. Wm. H. Johns, County Hall, Truro

SOCIETIES.

ROYAL GARDENERS' ORPHAN FUND.

MAY 19.—The annual festival dinner of this Institution was held on the 19th inst., in the Prince's Galleries, Piccadilly. Owing to the exigencies of the war the Committee was compelled to suspend the holding of these annual festivals during the past five years. These functions have always been the source of a considerable part of the revenue of the fund, which has suffered much financial loss in consequence of their cessation, and necessitated the sale of a portion of the invested funds that, regrettably, realised far less than they were originally purchased for. It was deemed to make a special effort on the revival of the festival this year and hopes were entertained of establishing a record list of contributions, and we are happy to announce that the endeavours of the promoters were realised. The Committee was fortunate in obtaining the consent of Lady Astor to preside at the dinner, and there was a large gathering of persons interested in the fund and in gardening generally to support her. Amongst those present we noticed Sir William Lawrence, Bart.; Col. Sir Reginald Rankin, Bart.; Sir Harry J. Veitch, Rev. Canon Edgar Sheppard, Dr. and Mrs. F. W. Keeble, Mr. Ed. Sherwood, Mrs. J. W. Campbell, Mr. Leonard Sutton, Mr. L. N. Sutton, Mr. and Mrs. G. Monro, Junr., Dr. Carrington Sykes, Mr. and Mrs. Ed. Mannering, Mr. W. E. Churcher, Mr. D. Ingamells, Mr. W. Poupert, Mr. G. E. Messer, Mr. and Mrs. J. F. McLeod, Mr. Whitpaine Nutting, Mr. G. H. Cuthbert, Mr. and Mrs. F. G. Ridley, Mr. and Mrs. Ed. Parsons, Mr. and Mrs. H. L. Wright, Mr. and Mrs. G. F. Tinley, Mr. and Mrs. J. Collingridge, Mr. and Mrs. C. R. King, Mr. and Mrs. Joseph Rochford, Mr. and Mrs. H. J. Jones, Mr. and Mrs. Bridgeford, Mr. and Mrs. H. Miles, Mr. and Mrs. G. H. Barr, Mr. and Mrs. J. W. Barr, Mr. P. R. Barr, Mr. J. L. Kinnell and Mr. J. Cull.

After the usual loyal toasts had been given, Lady Astor proposed that of "The Royal Gardeners' Orphan Fund." Her ladyship's remarks were followed with much interest, and her speech was marked with many witty observations. She said that gardening was one of the most popular of all hobbies indulged in by British people, and that poets had sung about gardens as much as they had of love, whilst lovers had dreamed about them, and the first

lovers had been turned out of a garden. Whenever the British people went they made gardens, and she believed our soldiers would have had gardens in the trenches if the soil had been suitable for the purpose. Women were interested in all tender things, and especially plants and children, and it was on behalf of the latter that she was present with them that evening. "I am going to ask you," she said, "to give liberally to this Orphan Fund." The world is not an easy place even for those who are most favourably situated, and how difficult it must be for those who have not the love and care of a father or mother in their infant days. She was glad to know that the fund assisted in maintaining the children in their homes, for this she considered was a much better plan than keeping them in institutions. Many people had beautiful gardens which had been cultivated by the fathers of those for whom she asked help, and although it was not a pleasant task always to ask and sometimes not pleasant to give, she pleaded the case of these gardeners' orphans. The loss of a father's or of a mother's love was a great hardship on a child, for human love taught the love of God. She appealed for a sum of £1,700, which was necessary to meet the year's liabilities of the charity. The country was under a great debt to gardeners who had devoted so much energy to the production of vegetables and other food-crops during the war.

The toast of "The Visitors" was proposed by Mr. Leonard Sutton, who said that the dinner served a double purpose. It was an extremely pleasant function at which friends might gather annually, and it was also an opportunity of considering and meeting the claims of the orphans of gardeners. He expressed the pleasure the management felt in seeing so many visitors on this occasion, and he hoped that they had so thoroughly enjoyed themselves, and were already so fully in sympathy with the object of the dinner, that they were ready to respond generously to the appeal of the Chairman.—Mr. F. Ridley, the Master of the Fruiterer's Company, replied on behalf of the visitors, and expressed his admiration of a charity which did so much to assist the helpless. "It was," he said, "the duty of everyone to make the world a happier and brighter place for those who came after, and there could hardly be a better method of fulfilling this duty than by subscribing generously to a charity whose object was to feed, clothe, and give a start in life to the orphans of those who have beautified the earth by their labours." He was quite sure the visitors would show their appreciation of the excellent dinner and entertainment provided by dipping more deeply into their pockets than they had originally intended.

At this stage of the proceedings, Mr. Brian Wynne, the Secretary of the Fund, presented the subscription list which he said was a record one. The following is a list of the principal donations: Her Majesty Queen Alexandra, £10; Duke of Bedford (President), £20; Mr. Wm. and Mr. Edward Sherwood, £200; Messrs. Sutton and Sons, £100; Mr. David Ingamells (Covent Garden list), £250, including 10 guineas each from Mr. Ed. Parsons, Mr. H. L. Wright, Mr. J. Collingridge, Mr. J. W. Baker, Mr. H. Miles and Mr. D. Ingamells; Messrs. Forster and Robins, £15 15s.; and Mr. G. Monro, Junr., 25 guineas; Mr. G. Messer, £20; Mr. G. H. Cuthbert, £50; Mr. H. J. Jones, £75; Mr. Reginald Cory, fifty guineas; Mr. Whitpaine Nutting, £50; Mr. J. M. Bridgeford, £40 (including 10 guineas from Mr. Alfred Watkins); Messrs. G. Bunyard and Co., Ltd., £31 8s.; Mr. A. Chalmers, £30; Mr. C. R. King, 30 guineas (including ten guineas from Mrs. Probyn); Mr. J. Cull, £26 15s. (including 10 guineas from Mr. E. Stevens); Sir Harry J. Veitch, 25 guineas; Sir Marcus Samuel, Bart., 20 guineas; Mr. David Swain, £20; Mr. Joseph Rochford, 20 guineas; Mr. W. Duncan Tucker, £20; Mr. G. F. Tinley 17 guineas (including 5 guineas from *The Gardeners' Chronicle*); Mr. W. Poupert, £18 6s. 6d.; Messrs. Barr and Sons, £15; Mr. J. F. McLeod, £15 15s.; Mr. F. C. Stainsby, 14 guineas; Mr. J. Clayton £14; Mr. Geo. Reynolds, £12; Mr. W. Howe, 11 guineas;

Mrs. J. W. Campbell, 10 guineas; Sir Thomas Mackenzie, 10 guineas; Col. Sir Reginald Rankin, Bart., 10 guineas; Mr. Ed. Mannering, 10 guineas; Messrs. Cory and Co., Ltd., 10 guineas; Mr. R. B. Leech, 10 guineas; Mr. Raymond Rochford, 10 guineas; the following each contributed £10:—Mrs. Swyford Erdott, Mr. A. W. Page, Mr. L. Oppenheimer, Mr. A. W. Metcalfe and Mr. J. E. Dixon. These sums, together with numerous smaller contributions, brought the Chairman's list up to £1,800.

Mr. Edward Sherwood, Treasurer of the Fund, who presided after Lady Astor had left to attend the House of Commons, replied to the toast Lady Astor had given previously. He considered the success of the festival dinner was due chiefly to the presence of Lady Astor in the chair, and on behalf of the Officers of the Committee he desired to thank her for her presence and sympathy. He did not propose to give them a statistical statement, but he reminded those present that the fund was started in 1887 and had always enjoyed Royal Patronage. It had disbursed not less than £40,000 in assisting gardeners' orphans, and there were at present 150 children on the funds, in addition to many who were on the waiting list receiving a modest amount of assistance until such time as they were successful at an election. Mr. Sherwood pleaded for more regular annual subscriptions as the income from this source was at present only £300 per year. He thanked the local secretaries for their efforts on behalf of the fund, and urged that the managers of local flower shows should render assistance by means of sales of flowers and by collections. Mr. C. R. King, requested Mr. Sherwood to form a small committee which would have for its object the raising of a sufficient sum of money to replace the stocks and shares which had been sold, before the next festival.

In a graceful speech, Dr. F. W. Keeble proposed a vote of thanks to Lady Astor for the charming way in which she had presided and for the very human and sympathetic note she had struck in her appeal on behalf of orphans. Lord Astor responded on behalf of Lady Astor, who was unable to return from the House of Commons.

PATH AND WEST AND SOUTHERN COUNTIES.

THE five days' exhibition of this West of England agricultural society was held on May 20, 21, 22, 24, 25, at Salisbury. The number of entries were satisfactory, and the special tent devoted to floral exhibits was well filled. This section of the exhibition has for several years past been under the able stewardship of the Rev. A. T. Boscawen, and he was assisted on this occasion by Mr. A. Williams.

The horticultural exhibits were staged in a spacious and lofty pavilion, about 100 feet long by 50 feet wide, with excellent arrangements for ventilation. A central stage was arranged in tiers. On the topmost tier were some magnificent Ferns loaned from the gardens of the Earl of Pembroke and the Earl of Radnor, and around the sides staging was erected for displaying the exhibits of cut blooms.

In addition to several good exhibits from private gardens in the locality of Salisbury, many nurseries staged representative groups. There was no competition.

The following is a list of the principal exhibits: The Earl of PEMBROKE, Wilton House, Salisbury (gr. Mr. W. Butler), staged a group of well-grown Clarkias and herbaceous Calceolarias arranged with Ferns and Asparagus. Capt. G. R. C. WYNDHAM, Clouds (gr. Mr. H. A. Fullford), exhibited a group of cut Souvenir de la Malmaison Carnations in considerable variety, daintily arranged. He showed a fine golden Calla—a seedling from Elliotiana—in this group, which attracted a great deal of attention, the spathe being nearly twice the size of that of the parent.

Richard GERARD, Esq., Millford Manor (gr. Mr. W. Scirell), showed a beautiful group of Orchids arranged with Cistaceus (Crotons),

Lilium longiflorum, pink and white Spireas, and Adiantum Ferns.

Messrs. SUTTON AND SONS, of Reading, had a magnificent display of Darwin, May-flowering and Parrot Tulips in a wide range of colour, those of bronzy shades being exceptionally good.

Messrs. ALLWOOD BROS., Wivelsfield, staged Perpetual Carnations and Alwoodii Pinks. Among the Carnations were fine blooms of Mary Allwood and Edward Allwood. The Pinks showed a great diversity of colour, and in addition there was the beautiful white variety Harold.

Mr. ELLISON, West Bromwich, had a choice group of the rare exotic Ferns and a pretty little batch of the white-tipped Aracaria, a pleasing touch of greenery amidst the masses of flowers.

Mr. W. H. GORREY, Exmouth, staged an effective group of his fine strain of Schizanthus, which has a wonderful range of colour, also a remarkably well-grown group of Pelargoniums, prominent among which was a new variety, "Dazzler," a brilliant scarlet flower.

Mr. W. F. GULLICK, Salisbury, exhibited Pyrethrums and Lupins, adopting a somewhat distinctive method of staging, using bowls and putting up sufficient blooms of each variety to arrest attention. Among the Pyrethrums were Queen Mary, Yvonne Cayeaux, Langport Scarlet, and Pink Pearl; and of the Lupins, roseus and Moerheimii were used with telling effect. This exhibitor also staged a group of well-grown plants of Rex Begonias, set off with Asparagus plumosus.

Messrs. JARMAN AND CO., Chard, had an exhibit of cut Zonal Pelargoniums in variety, also well-grown Roses and a fine range of Violas of the gracilis and cornuta types, with a variety of hardy herbaceous plants.

Messrs. STUART LOW CO., Bush Hill Park, Enfield, exhibited Orchids and Perpetual Carnations. Prominent among the latter were the varieties Violet Mond, Winter Glow and Czarina.

Messrs. RAMSBOTTOM AND CO., Geashill, Ireland, staged a beautiful exhibit of St. Bridget Anemones making a brilliant display.

Messrs. RICH AND CO., Bath, exhibited herbaceous flowers in considerable variety, also a collection of Violas and Tulips; Geum Mrs. Bradshaw, Pyrethrum Vivid and Thalictrum dipterocarpum were particularly good.

Mr. J. STEVENSON, Wimborne, exhibited Sweet Peas, prominent among which were his novelties—Brilliant, Fair Lady, Lavender Belle and Scarlet Glow. This charming exhibit was daintily arranged.

Messrs. R. VEITCH AND SON, Royal Nurseries, Exeter, staged a most effective display of plants in pots; prominent among these were Lotus pelycynchus, Iilium regale, Edwardsia grandiflora, Cytisus Dallimorei, Magnolia Watsonii and Leptospermums in variety. They also had choice rock plants arranged in boxes.

Messrs. WALLACE AND CO., LTD., Colchester and Tunbridge Wells, staged a group of Azalea mollis and a beautiful, varied collection of hardy herbaceous and rock-garden plants. The Sir Michael Foster type of Iris is worthy of special mention, as also were the fine spikes of Eremuri, Trollius and large Poppies.

Messrs. J. WATERER, SONS, AND CRISP, LTD., Bagshot, made a brilliant display with Rhododendrons arranged in a semi-circle group at the end of the tent. There were many standard plants from 6 feet to 8 feet in height, and bushes of various sizes, all profusely flowered.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

THURSDAY, May 6, Committee present:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, E. Cooper, D. A. Cowan, J. C. Cowan, A. Hammer, Dr. R. N. Hartley, J. Howes, D. McLeod, J. McNich, E. W. Thompson, and H. Arthur (Secretary).

Awards.

FIRST-CLASS CERTIFICATES.

Odontoglossum Virginale Princess Mary; Odm. Hellenense (Harvingtense × crispum), a noble flower with sepals and petals of a rich yellow colour, heavily blotched reddish brown; *Odontioda Chertieker var. Plumbea*, a finely-

shaped, rich scarlet coloured flower; *Cattleya Mendelii albina The Queen*; from S. GRATRUX, Esq.

Odontoglossum Phillipsianum var. aureum (luteo-purpureum Vuyilstekeanum × eximium xanthotes), probably the finest of the yellow Odontiodas yet flowered, the whole of the flowers being of a rich yellow colour, heavily spotted with deep yellow (a Silver Medal was also awarded this novelty); *Odm. Duren var. majesticum* (eximium × Empress of India), from P. SMITH, Esq.

Odontoglossum crispum Leoniae (Britannia × Leonard Perfect), a grand form, the flowers heavily blotched with reddish brown, from Mrs. GRATRUX.

Odontioda Gladys var. Eucharistess (Oda. Bradshawiae × Odm. Pescatore), a fine plant bearing a spike of 15 flowers, sepals and petals blotched with red on a white ground and margined with magenta, lip almost white; from Messrs. SANDERS.

AWARDS OF MERIT.

Brasso-Cattleya Trium var. Victory, from Mrs. GRATRUX.

Odontoglossum Amazon, Brasso-Cattleya Joan var. Golden Wren, Laelio-Cattleya Moonbeam var. Radiance, Cattleya Mossiae grandis, from S. GRATRUX, Esq.

Odontoglossum eximium xanthotes var. Snowball, from P. SMITH, Esq.

AWARDS OF APPRECIATION.

Cypripedium Goveianum Gratricianum (Lawrenceanum Hyeanum × Curtisii Sanderæ) (1st class), from S. GRATRUX, Esq.

Odontioda Madeline var. Nerline (trispum Graticianum × Charlesworthii) (1st class), and *Odontoglossum Pioneer* (Vulturia × crispum) (2nd class), from P. SMITH, Esq.

GROUPS.

S. GRATRUX, Esq., West Point (gr. Mr. J. Howes), staged a group for which a Silver Gilt Medal was awarded.

P. SMITH, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), was also awarded a Silver Gilt Medal for a group.

Other exhibitors were Mrs. GRATRUX, West Point (gr. Mr. J. Howes), Messrs. SANDERS, St. Albans, and Messrs. ARMSTRONG AND BROWN, Tunbridge Wells.

The annual general meeting of the Society was held at 2.50 p.m., the Rev. J. Crombleholme presiding.

The minutes of the previous annual meeting, May 8, 1919, were passed, and the report and balance sheet as submitted were adopted.

The officials, including the members of the Committee, were reappointed for the ensuing session.

The prizes were presented to the successful competitors. S. GRATRUX, Esq., was the winner of Messrs. Charlesworth and Co.'s prize for New Awards; J. and A. MacBean, for *Odontoglossums* and *Odontiodas*; Hassall's, for *Cattleyas* and *Laelio-Cattleyas*; J. Cypher and Sons, for arrangement of group; Evans', for *Dendrobiums*; A. Hammer's, for most points; and J. J. Bolton's, for *Cypripediums*. His gardener, Mr. J. Howes, won the gardener's prizes in each case. He was also awarded the 2nd prize offered by Mr. W. Pickup, for varieties not provided for. He also won A. R. Handley's 2nd prize for Cultural Certificates, and Mr. P. Smith's 2nd prize for groups. The Botanic Society of Manchester's Gold Medal was awarded to Mrs. Bruce and Miss Wrigley, who also won Mr. W. Pickup's prize, offered for varieties not provided for; Mr. A. Burns won Mr. A. A. Handley's prize for Cultural Certificates, and Mr. P. Smith's prize for groups. The prize offered by Messrs. Sanders, for cut flowers, was awarded to Rev. J. CROMBLEHOLME. (Gardener's prize to Mr. E. MARSHALL.)

All the above prizes have been offered for competition during the ensuing season with the following alteration. Mr. J. Evans will give the prizes for *Odontoglossums* and *Odontiodas* in lieu of Messrs. J. and A. MacBean, and in addition, S. GRATRUX, Esq., and Mrs. Gratrux (jointly) will offer a cup, and prize to gardener for *Cymbidiums*.

ANSWERS TO CORRESPONDENTS.

BONUS AND RESERVED PAY: J. S. In the absence of a proper agreement, you would find it difficult to enforce your claim for bonus and reserved pay, especially as the claim has never been allowed, though, apparently, verbally admitted. We consider your best plan would be to consult a solicitor, who, on the evidence you are able to bring forward, would advise you as to the best course of action.

MINIMUM RATE OF WAGES FOR GARDENERS: T. H. C. We have pointed out on several occasions that gardeners in private establishments do not come under the provisions of the Corn Production Act, and, therefore, a minimum rate of wages is not fixed for them, as for agricultural workers.

NAMES OF PLANTS: L. S. A. 1, *Berberis vulgaris*; 2, *Anthriscus sylvestris*.

PAEONIA DISEASE: C. R. The plants are affected with the fungus *Botrytis paeoniae*, and it is by far the most common and destructive disease of the Paeony so far as is known at present. The disease is very prevalent during wet springs. Eradication methods offer the most promise of success in the control of the disease. Prompt removal and burning of wilted stalks, cutting close to the crown, are important. The fungus threads spread from stalk to stalk through the soil. Removed soil should be substituted by fresh, clean soil, and the crown of the plant should be dusted with flowers of sulphur. The foliage and flower-buds may also be affected, and to keep the disease in check it is necessary to remove all spotted leaves or parts of leaves and all flower-buds which have turned brown or black. Burn the diseased shoots, leaves and buds. It is also important to remove all old stubble in the early autumn. If you have but a few plants, it would pay you to lift them in September, thoroughly cleanse the roots, cut away the diseased portions and replant in soil which has not been previously occupied by Paeonies. Keep manure away from the crowns.

POND WEED: W. J. C. The weed is *Elodea canadensis*, but as this is a very strong-growing species we doubt whether the copper sulphate treatment will kill it, consequently we advise you to continue the method of eradication by means of rakes.

TULIP DISEASE: H. E. J. The Tulips are affected with the "fire" disease caused by *Botrytis parasitica*. It is too late in the season to obtain good results from remedial measures. Affected leaves, or parts of leaves, should be removed on the first signs of infection, and by this means much good may be done to keep the disease in check. Hail, heavy rains and winds injure the foliage and in this way the disease may gain entrance in the plants. If you wish to grow the bulbs next year, lift them in July and retain all the biggest specimens. One method of overcoming the disease to some extent is to plant late—say in November. The foliage is late in coming through the ground, and thereby the danger of injury from external sources is minimised. The disease is far more prevalent in the Darwin than any other section, and this year, doubtless owing to the very wet spring, the disease has been very common.

VINE DISEASE: E. F. The vines are affected with the *Botrytis* form of *Sclerotinia Fuckeliana*. The fungus can only thrive in a moist atmosphere, and in controlling the red spider you have evidently set up conditions in which the disease can flourish. Ventilate the houses early in the morning and spray with a solution of ½ oz. of potassium sulphide dissolved in 1 gallon of water. Infected leaves should be removed and burnt.

Communications Received.—W. T.—F. G.—J. C.—A. G.—J. F.—E. J.—W.—G. I.—J. J.—W. T.—M. R.—L. J.



IRIS LAEVIGATA, FISCHER

THE
Gardeners' Chronicle

No. 1745.—SATURDAY, JUNE 5, 1920.

CONTENTS.

Agricultural training for disabled ex-service men .. 273	Cymbidium T-Ansonii .. 274
Artist, a forgotten botanical .. 274	Laelia monophylla .. 275
Begonias, fibrous-rooted .. 277	Odontioda Camden .. 274
Calceolarias, herbaceous .. 277	Odontoglossum .. 275
Cambridge degree in horticulture .. 273	Owenium .. 275
Dalkith .. 274	Seeds, the germination of .. 273
Dumfries Municipal bowling green charges .. 273	Societies—National Horticultural of France .. 273
Gardeners' Chronicle seventy-five years ago .. 274	Royal Horticultural Society's Chelsea Show .. 279
Iris laevigata .. 274	Strawberries, marketing by aeroplane .. 274
Obituary—Monro, George .. 287	Sugar, shortage of .. 274
Orchid notes and gleanings—	Sweet Peas in the West Indies .. 274
Brasso-Laelio .. 275	Trees and shrubs—Rhododendron glaucum .. 275
Cattleya Jupiter .. 275	Water Lilies .. 275
Cirrhopetalum .. 275	Week's work, the .. 276
	Wyllie, Mr. G., retirement of .. 274

ILLUSTRATIONS.

Begonias, group of fibrous-rooted .. 277
Calceolarias, Messrs. Sutton & Sons exhibit of .. 282
Lilium Farreri .. 284
Monro, the late Geo. V.M.H. .. 287
Odontia Gladys .. 279
Papaver orientale Lord Lambourne .. 280
Polystichum angulare divisilobum plumosum robustum .. 283
Rhododendron glaucum .. 275
Saxifraga Tutubling Waters .. 281

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 57.40°.

ACTUAL TEMPERATURE:—Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, June 2, 10 a.m.: Bar. 30.2; temp. 71°. Weather—Showery.

On Germination. In a large number of seeds commonly grown by the gardener, germination is such a certain and rapid process that it is taken as a matter of course and excites no feeling of wonder. A little moisture, a moderate temperature, and some small supply of air are the only conditions necessary to quicken an ordinary seed. Yet, as those who have wider experience know, there are many kinds of seeds which show capriciousness and obduracy when planted, and the causes of that capriciousness are by no means always easy to understand. In some cases difficulty of germination, as in "hard" Leguminous seeds, is associated with a hard coat which it is necessary to scratch or file in order to induce the seed within to germinate. The seeds of some kinds of plants, for instance, Auriculas, may germinate at once if sown before they are ripened, but germinate badly or slowly if sown after they are thoroughly ripe. On the other hand, gardeners often claim to prefer old seeds of Melons, though whether because old seeds germinate better or produce better plants than young seeds we do not know. To use old seed of some plants scarcely matters—Legumes as a class generally produce seeds which retain their germinative powers unimpaired for many years, and it is the seeds of Legumes which hold the record for the longest latent longevity—some eighty years or more. Of course there is the ever-recurring claim of mummy Wheat to be capable of sprouting after thousands of years spent in mummy cases; but though the claim is undying, the mummy Wheat died long ago and no serious

record is known to us of the seed of a plant having survived a hundred years. It may be that in the earth seeds do retain their vitality for very long periods. The Foxgloves and other flowering plants which spring up when coppices are cut are sometimes cited as examples. Nor is it impossible that the seeds of these plants have lain dormant in the soil for many years. For it is known that dormancy is often brought about in a seed automatically, as it were, by the accumulation of carbon-dioxide in its outer tissues. When these tissues are charged with carbon-dioxide they become very impermeable to the ingress of oxygen and water and in that state they may lie dormant for a long time. Yet when the carbon-dioxide is removed the seeds begin to grow again; the carbon-dioxide acting like the crust of the pie in which the birds were baked, and only when the pie was opened did the birds begin to sing. Some have endeavoured to show that the germination of a seed or the sprouting of a Potato is due to the formation and action of enzymes; and that one of these, a diastase, sets the magic work going by changing starch, which is a solid and so useless as such for food purposes, into sugars, which are soluble and of immediate use as foods. It is claimed, for instance, that old seeds—for example, those of Tomatos—which are refractory to germination, may be quickened by soaking in solutions of diastase or other enzymes. But the expert seed raiser knows that there are many other substances which may be used successfully to overcome the refractoriness of seeds. Mr. Grove, we believe, has used potassium iodide solution of iodine with success in the case of certain Lily seeds, and others find hydrogen peroxide a good stimulant for sluggish seeds. Freezing and thawing are often resorted to and not without success, as for example with certain Primulas. Hence it would seem probable that the diastases or other enzymes are not the agents which wake up the seed. Yet possibly they do play a part—albeit indirect; for it has been shown recently that an enzyme such as diastase does not work single-handed very well, but requires a co-enzyme—a sort of partner—to stir it up to activity, and it may be that the germinative process after a period of rest is brought about by the formation in the protoplasm of the plant of this activating co-enzyme. Even so, however, it remains to ask what causes it to form. To that question we know at present no answer.

Coloured Plate.—The subject of the coloured supplementary illustration included with this issue is *Iris laevigata*, Fischer. Mr. W. R. Dykes, a great authority on Frises, contributes a note on this species, and this will be found on page 274. Readers should see that their newspapers deliver the coloured plate with the present number.

Official Changes in the National Horticultural Society of France.—Mons. D. Bois, Editor-in-chief of the *Revue Horticole*, having been recently appointed Professor of Culture at the Natural History Museum in Paris, has resigned his position as Secretary and Editor of the National Horticultural Society of France, a position he has ably filled since 1894. Mons. Bois had succeeded Prof. Duchartre, a member of the Academy of Science. Mons. Guillaumin, assistant professor at the Natural History Museum, has been nominated Secretary and Editor to the National Horticultural Society of France in the place of M. Bois.

Dumfries Municipal Bowling Green Charges.—Prior to the public opening of the Dumfries

Municipal Bowling Greens recently a meeting of the bowlers was held at which it was agreed not to play on the greens unless the increase in the charges was cancelled or a satisfactory explanation given by the Town Council, in view of the financial statements which have been published by that body. A committee was appointed to meet the Council. As no meeting with the latter had been arranged, only ten players took part in the first game after the opening ceremony, but afterwards it was shown that there had been a loss almost every year and last year the deficit amounted to upwards of £60. Under the circumstances, while protesting against the statement which had been issued, the bowlers agreed to pay the increased charges.

Agricultural Training for Disabled Ex-Service Men.—The Ministry of Agriculture's Scheme for training disabled ex-Service men in agriculture is making sound progress. Since August last, when the Ministry took over responsibility for the vocational training, some 2,200 disabled men have been placed, and allowing for the men who have completed their course or have discontinued it for other reasons, nearly 2,000 are being taught at present. As a general rule, the instruction is given at training centres, where accommodation is provided for numbers of men, varying from 10 up to as many as 100. Forty-three centres have actually been started, while seventeen others are approaching completion, and will be ready for pupils within the next month or so. These centres are spread over 32 different counties in England and Wales. In one county (Middlesex), as many as six centres have been established, in order to provide for disabled men from the Metropolitan area. Constant improvements are made both in the nature of the instruction and in provision for the general welfare of the men. Four centres are devoted chiefly to poultry keeping, and courses in this subject are also being arranged at practically all centres, to supplement the main training in general agriculture or market gardening. At nearly every school the men have started a recreation and sports fund, to which each member contributes a small weekly sum for the upkeep of games, supply of newspapers, and similar requirements. The fund is supplemented by a grant from the Ministry for the initial purchase of cricket bats and other aids to recreation. These grants are much appreciated by the men. The training given by the Ministry to a disabled man lasts, as a rule, for a period of twelve months. During this time each man receives allowances equivalent to his maximum disability pension, together with, in certain circumstances, "away-from-home" and travelling allowances if he has been placed at a distant centre. When a disabled man finishes his period of instruction, his training allowances stop, and he reverts to his ordinary disability pension.

Cambridge Degree in Horticulture.—One of the problems at present confronting the Ministry of Agriculture is the provision of advice and supervision for the smallholder. This problem has become more acute now that so many of the men settling on the land are lacking, either partly or altogether, in knowledge of the theory and practice of horticulture. When the question arose of appointing organisers to instruct these men and to look after their interests, it was found that the number of candidates qualified to fill such posts was extremely limited. This may sound rather a sweeping statement to make in a country celebrated for the excellence of its gardens; but it must be remembered that the methods adopted in private gardens are not wholly applicable to horticulture practised on a commercial scale. Moreover, a man who is to organise the horticultural instruction of a county should have a knowledge of the scientific side of the subject as well as of its practical side. Hitherto such knowledge has not been easily obtainable; while we have excellent schools of agriculture in various parts of the country, where both science and practice are taught, and where research work is carried on, and though there are several schools of gardening in

existence, we have at present no school definitely devoted to the study of commercial horticulture. Quite apart from this question of supplying instructions for smallholders, it is obviously desirable, in view of the rapidly increasing importance of horticulture in this country, that the prospective fruit-farmer or market-gardener should be able to obtain instruction in his subject as scientific and comprehensive as that which can be so readily obtained nowadays by the prospective agriculturist. In order that such instruction may be available, the Ministry of Agriculture have made it possible for the University of Cambridge to establish a degree in horticulture and a post-graduate diploma. The course for the degree will extend over three years, and will consist of instruction in the theory and practice of commercial fruit and vegetable growing, the practical side of the subject being treated no less fully than its theoretical aspect. It is hoped that the course for the diploma will provide men qualified for research work in horticulture. Hitherto there has been a dearth of such men owing to the difficulty in obtaining suitable training, and research work in connection with an important industry has therefore been greatly hampered. Both the courses mentioned above will commence in October next, and information concerning them can be obtained from the Secretary, School of Agriculture, Cambridge.

Shortage of Sugar.—There is a world shortage of sugar and a general advance in the retail price of 4d. a lb. came into operation on the 17th ult. The new prices vary from 1s. a lb. for moist, to 1s. 2½d. for loaf, and 1s. 2½d. for castor sugar. The price of sugar for domestic preserving is fixed at 1s. 2d. per lb. The advances have been made to obviate a loss to the State of £20,000,000, which the old price of 10d. per lb. would have entailed. In consequence of the limited quantity of sugar which it has been found possible to allot this year for domestic fruit preserving out of stocks imported by the Royal Commission on the Sugar Supply, large growers of fruit may not be able to obtain an adequate supply of sugar for preserving, and wastage of fruit grown by private persons may in some cases arise. The Food Controller announces that it has, therefore, been decided to relax the restrictions on the sale of privately-imported sugar, and to allow such sugar to be sold either by wholesale or retail for the express purpose of the domestic preserving of fruit. Any person purchasing supplies of privately-imported sugar must give a written undertaking that it will be used for domestic jam making, and for no other purpose. Sales of privately-imported sugar merely to supplement the ordinary domestic ration are not permitted.

Retirement of Well known Aberdeenshire Forester.—After a service of well-nigh fifty years, during which he served three generations of the Nicols of Ballogie, Aberdeenshire, Mr. George Wyllie, head forester and overseer, has entered into well-earned retirement. Entering the service of Mr. James Dyce Nicol, grandfather of the present laird, in 1872, Mr. Wyllie served him, his son, Mr. W. A. Nicol, and his grandson, Captain Randall J. Nicol, the present proprietor, right well and faithfully. The respect and esteem felt for Mr. Wyllie by all classes—proprietors, the church, tenants and employees—were fully manifested by the large gathering which assembled on Wednesday, 26th May, at the mansion house of Ballogie to do him honour. The company, which included many of the surrounding landowners, was presided over by Mr. David Stewart, Bahacraig. The presentation took the form of a wallet, well filled with treasury notes, and a magnificent silver salver from the tenancy, employees and friends, a silver candlestick and silver calendar frame from the minister and friends at the Church of Bisse and the Kirk Session; and a silver, three-panelled frame from Capt. Nicol, with photograph of himself, his father and grandfather. Mr. Wyllie suitably responded, and in doing so reviewed the changes which had taken place in the district since 1872.

Dalkeith.—According to the daily Press, the Duke of Buccleuch is seeking a suitable tenant

for the gardens at Dalkeith. Presumably, as no mention is made of the residence being offered, these famous Scottish gardens will be used for the growing of crops for market, in which case they must necessarily lose their ornamental character. This beautiful old Scottish domain was formerly one of the show places of the country and many famous gardeners have been responsible for their care. To be trained at Dalkeith was the eager desire of many a young gardener and some of the most skilled craftsmen in gardening have claimed it as their Alma Mater. It is to be hoped that the decision to let is only a temporary measure and that Dalkeith will soon revert to its once proud position in the gardening world.

Marketing Strawberries by Aeroplane.—A consignment of Strawberries from Paris reached Covent Garden on the 29th inst., by aeroplane, within four hours after being dispatched from the French capital. They reached here in excellent condition and sold for 10s. per box of a little more than 1 lb. Mr. Charles Wilkinson, the consignee, states that it is his intention to have constant deliveries of fruit and choice vegetables from Paris by aeroplane.

Sweet Peas in the West Indies.—According to a statement in the *Agricultural News* (xix., No. 468), Dr. S. C. Harland has been successful in inducing Sweet Peas to flower at St. Vincent. Although the blooms produced in the West Indian plants were small and scentless, the fact that their hitherto refractiveness to flowering in that country has been overcome is worthy of record; for it gives hope that new races may be evolved which will enable West Indian gardeners to enjoy the beauty and perfume of this flower. It is to be presumed that the cause of failure to flower is the high temperature which prevails during the growing season, or that the sum of external conditions favour vegetative as opposed to reproductive growth. It would be interesting to know whether any of the novel expedients to check vegetative growth, for example, by confining the root-run, have been tried with Sweet Peas in the West Indies.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Electric Agency applied to Horticulture.*—I have lately made some experiments nearly similar to those described by "A" in a late number, but with very different results. First, having selected two well-rooted Fuchsia cuttings of exactly the same size, etc., growing in 5-inch pots, in one of them I placed a plate of copper and a plate of zinc, each 3 inches square, bent so as to fit exactly the opposite sides of the pot, and connected at the top by a copper wire soldered to their upper edges; I then placed them side by side in a small forcing-house, and took care that they should be treated in every respect the same. At the end of the first week there was no perceptible difference between the two plants, but at the end of a fortnight the ungalvanised plant was evidently in advance of the other, and continued so for four weeks, when it was an inch taller and appeared rather more healthy. On turning the galvanised plant out of the pot, I found that no roots had grown through that side of the earth on which the zinc plate was. Secondly, in the earth on the top of one of Rendle's tanks, I placed, 10 inches apart, a zinc and copper plate, each 9 inches square, with their upper edges level with the surface, connected by an arch of copper wire. On one side, and touching their edges, I placed a pane of glass, 14 inches in length, and of sufficient depth to reach to the bottom of the earth, and 2 inches above the surface. On each side of the glass I sowed some common Cress seed. The seeds came up on both sides of the glass at the same time; and at the end of ten days there was not the slightest difference in their height or appearance, except that a few plants which were close to the zinc looked a little unhealthy. Thirdly, I placed the same plates in the open ground, about 5 inches apart, on each side of some Peas that were just breaking the ground. They have been there eight days, but I cannot perceive that the Peas between them are either better or worse than the rest of the row.—*A. H. G., Gard. Chron., June 7th, 1845.*

IRIS LAEVIGATA, FISCHER.

The fine Iris which forms the subject of the coloured supplementary illustration to this issue has only come into cultivation in this country in comparatively recent years, but, now that it is at last available, no bog or water garden should be without it, for the blue-purple of its flowers is of a shade that occurs in no other Iris. The plant is of easy growth and flourishes in rich, light soil where the water supply in summer is abundant.

That *I. laevigata* is not well-known is partly due to the fact that the botanists have long confused it with *I. Kaempferi*, from which, however, it is entirely distinct. The most obvious point of difference in the growing plants lies in the leaves. Those of *I. laevigata* are smooth and broad, while those of *I. Kaempferi* are comparatively narrow and have, also, a very conspicuous, raised midrib. Moreover, the capsules and seeds of the two species are very dissimilar, the seeds of *I. laevigata* being large, flattened and smooth, very like those of our native *I. Pseudacorus*.

Difference of colour in the flower is, of course, no certain indication of specific difference in plants; but, however, the wild *I. Kaempferi* always apparently bears red-purple flowers, while those of *I. laevigata* are always blue-purple. The whole flower is of the same shade of colour, except for a narrow streak of pale-greenish yellow that runs along the haft of the falls and out on to the blade. There is also in cultivation a pure white form, while another, in which the falls are blotched with blue-purple on a white ground, was described in the *Bot. Mag.*, t. 7511, as a species, so long ago as 1896. This last form, probably arose in cultivation in Japan, where there is also grown a monstrosity with double flowers. A curious fact is that the alba-purea form comes true from seed, in so far as all the seedlings bear flowers mottled with blue-purple on a white ground, although the amount of mottling and the shade of the purple colour vary considerably.

The confusion between *I. laevigata* and *I. Kaempferi* probably arose because the two species both come from the same districts. They are found in swampy places near Lake Baikal and from there eastwards through Manchuria and Northern China. They also occur in Corea and probably also in Japan, though it is a little difficult to feel certain that they are really wild in the latter country. *I. laevigata* was first discovered by Pallas in his journey through certain provinces of the Russian Empire about 1770. His specimen is now in the Herbarium of the Linnaean Society at Burlington House and was collected in the swamps near Lake Baikal. In 1829 Turczaninow found the plant growing there very freely, and it was from his specimens that it was described as *I. laevigata* by Fischer in 1837. *W. R. Dykes.*

ORCHID NOTES AND GLEANINGS.

ODONTIODA CAMDEN.

EXAMINATION of a flower of this handsome cross, shown by E. R. Ashton, Esq., Broadlands, Tunbridge Wells, between *Odontioda Coronation* (which is supposed to be between *Oda. Vuylstekeae* and *Odm. eximium*), which has also been shown as *Oda. Queen Mary*, and *Odontoglossum illustrissimum*, demonstrates another example of the value of *Oda. Coronation* in giving fine shape and attractive markings to the resultant hybrid. It is a parent of some of the best varieties, such as *Oda. Joiceyi*. The flower approaches in size a good, broad-petalled *O. crispum*, the inner parts of the sepals and petals being red with a bright gold shade, the margins and tips white. The lip is white in front, the crest yellow with ruby-red markings.

CYMBIDIUM FANSONII.

A FLOWER of the original imported type of this very distinct but puzzling Cymbidium, sent by Sir Jeremiah Colman, Bart., Gattin Park, in support of the remarks on the subject in the

Gard. Chron., March 27, p. 155, fails to disclose any new points bearing upon it. There is little doubt that the several forms appearing under different names, but now identified with it, were all imported specimens, and it is possible that it may be a sparsely-distributed species. The fleshy-white lip, covered with minute papillae, and bearing only a pale shadow of a zone in the front, arranged as in *C. Lowianum*, and the arrangement of the column, fail to indicate any feasible combination of species growing together.

The interesting *Cymbidium gattoneae* (*Tracyanum* × *Lowianum*), for which Sir Jeremiah Colman received an Award of Merit, January 28, 1908, being home-raised, quite disposes of the parentage assigned to *C. l'Ansonii* as a natural hybrid, but its position is yet undetermined.

ODONTOGLOSSUM OWENIANUM, ROLFE.

It is interesting to record the flowering of this rare *Odontoglossum*, which was described in *Gard. Chron.*, September 10, 1892, p. 178, in the gardens of Mrs. Bischoffsheim, The Warren House, Stanmore. It belongs to the smaller-flowered set, and in general appearance it recalls *O. Wallisii purum*, though larger, having a similar arching inflorescence, in the present case, of eight flowers. The lanceolate-acuminate sepals and petals are pale yellow with reddish-chocolate markings on the sepals, and there is an occasional small spot of the same colour on the petals. The unguiculate lip, which is white, has an abruptly-deflexed apex.

Odontoglossum Owenianum is an elegant hybrid, although not of the broad-petalled, showy class. The specimen at Warren House is supposed to have been acquired about 1913, with other *Odontoglossums*. It flowered indifferently in 1914 and was classed with *O. Andersonianum*, from which, however, it is very distinct.

BRASSO-LAELIO-CATTLEYA JUPITER.

A LARGE and handsome flower of a new cross, raised between *B.-L.-C. Veitchii* (*B.-C. Digbyano-Mossiae* × *L. purpurata*) and *C. armainvillierense* (*Mendeli* × *Warszewiczii*) is sent by the raisers, Messrs. Hassall and Co., Southgate. In effect it has some resemblance to *B.-C. Cliftonii magnifica* (*B.-C. Digbyano-Mossiae* × *C. Trianae*), but it is larger, and, in the labellum especially, the influence of *C. Warszewiczii* is very marked. The sepals and petals are bluish-white; the lip, which is very broad and crimped with slight fringing at the margin, is coloured rosy mauve, with white base and pale yellow centre.

CIRROPETALUM

CIRROPETALUMS are closely allied to *Bulbophyllum*, and require the same cultural treatment. The majority are dwarf-growing, but *C. robustum* is an exception, and requires a generous root space to secure the best results, while a decided rest is needed after the completion of the pseudo-bulbs. Such small-growing plants as *C. Rothschildianum*, *C. appendiculatum*, *C. Makoyanum*, and *C. ornatisimum* may be grown in baskets or small pans, and they will succeed in the intermediate or Cattleya house. *C. robustum* and *C. picturatum* should be placed in the warm division. *B.*

LAELIA MONOPHYLLA.

This pretty, dwarf-growing *Laelia* should be re-potted or top-dressed as the necessity arises. Large receptacles are not needed; a pan should be chosen which will just hold the roots. If the plants are over-potted, the soil remains in a saturated condition for several days, and the roots often decay in consequence. Careful watering is essential at all times, and even when at rest the roots should never become really dry or the small pseudo-bulbs will suffer injury. The plants should be grown in the intermediate house, and should be suspended or brought near the roof-glass by arranging them on inverted flower pots.

The flower spikes should be removed from weak specimens directly they appear. *T.*

WATER LILIES.

VERY few pools show the flowers of *Nymphaea* to such advantage as do irregular, medium-sized ponds, partly surrounded with, but not overhung by, trees. Growing in the vicinity of water, trees promote an effect of calmness, which adds to the effectiveness of *Nymphaeas*. The mud, or silt, of natural waterways is in some instances very rich, and in such a medium a few varieties of *Nymphaea* may produce large quantities of foliage at the expense of flowers. Where this occurs, the plant may be lifted in May, placed in a tub, and the latter sunk in the desired position. Good, strong loam is the best soil in which to plant the roots. The artificial Lily tank has much to recommend it in places where natural waterways are absent. When constructing a tank, do not allow the retaining sides to project above the general ground level. Harmony with the level lines of the water is of paramount importance, and the surface of the water should not be more than

beautiful pale yellow *N. pygmaea* Helvola, with rich brown mottled leaves, is happy under a covering of 6 inches of water.

TREES AND SHRUBS.

RHODODENDRON GLAUCUM.

ONE of the dwarf Himalayan *Rhododendrons*, this species (see FIG. 126) is also one of the hardiest. It was introduced to cultivation about 1850 by Sir Joseph Hooker, who found it in Sikkim up to elevations of 12,000 feet. It is a native also of Bhotan. In the home counties it is not often seen more than 4 feet high, but it grows twice as tall in the south-west, and is nearly always of neat, compact habit. It is one of the scaly or "lepidote" group, to which so many distinct and beautiful additions have been made in recent years from Western China, the leaves and young shoots being thickly covered with flat, circular scales. The leaves are



FIG. 126—RHODODENDRON GLAUCUM.

12 inches below that of the retaining sides. At the deepest end of the tank 3 feet of water is ample for general requirements. However, whilst many varieties of *Nymphaeas* are suited with a moderate depth of water, the leaves and flowers of vigorous kinds will become unduly spread if the roots are planted too shallowly, especially in natural ponds. Simplicity is the keynote of planting; do not mix varieties, or even use too many kinds closely together; also refrain from obtaining immediate contrasts in colour. In tanks, or ponds of even outline, place the plants a reasonable distance from the water's edge to insure a good water margin, as this creates a desirable idea of spaciousness; moreover, care should be taken not to plant in straight lines, but in uneven and unequal patches. One of the best native waterside plants to associate with architecture and *Nymphaeas*, is *Alisma Plantago*. Of *Nymphaeas* requiring a depth of 4 feet, or considerably more, of water, are *N. Gladstoniana* and varieties of the *Marliacea* hybrids, including *N. variegata*, *N. rosea*, *N. albida*, *N. lucida*, and *N. globosa*. Those of the *Laydekeri* section are suitable for growing in comparatively shallow water, and the

aromatic, oblong or narrowly oval, $\frac{3}{4}$ inch to $2\frac{1}{2}$ inches long, $\frac{1}{2}$ inch to 1 inch wide, dull green above, glaucous or sometimes pale brown beneath. The flowers, which expand in May or even at the end of April in early seasons, are borne in trusses of usually six or seven blooms. The corolla is from $\frac{3}{4}$ inch to 1 $\frac{1}{4}$ inch wide, the five lobes rounded and spreading. The colour is a pretty, rosy red, with little or no purple in it, but Hooker, in his original description, called the flowers "pinkish purple," and this has been copied in most of the descriptions published since. It may, of course, be that the flower colour shows a certain measure of variation under cultivation, but, so far as I have seen, it is as described above and lacks purple almost entirely. The calyx is unusually large for *Rhododendron* flowers of this size, and has five ovate lobes $\frac{1}{2}$ inch long. Both calyx and corolla are slightly scaly on the outside. It is one of the hardiest of the Himalayan species and thrives very well in the Home Counties. It is one of the parents of the hybrid, "Rosy Bell," a pretty plant with larger flowers than *R. glaucum*, which have been very abundant this spring. *W. J. B.*

The Week's Work.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CALN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Morello Cherries.—These trees require attention in the matter of training in the new growths. This Cherry bears fruit on the wood made the preceding season, therefore as much new growth should be retained as possible to obtain fruiting shoots for next season's crop. Remove all surplus growth by disbudding and pinching. In the case of young trees, make provision for extension, and see that they will be well furnished with new shoots. Morello Cherries are cropping freely this season and the fruits may require thinning, which may be done immediately it can be seen that the Cherries are swelling.

Plums and Gages.—Plum trees on walls have set far too many fruits, and the latter must be thinned. The Mealy Plum Aphis sometimes attacks Plum trees in June or July; this pest does not cause the leaves to curl, but collects beneath them in dense, mealy masses. The excreta given off by this insect does most damage as it falls from the leaves on to the fruit, depositing a sticky, black mass. A sharp watch should be kept for this pest, and the tree sprayed immediately it is seen, with a reliable insecticide.

General Remarks.—Strawberries, Cherries and bush fruit will soon require protecting from birds. Have all materials in readiness in order that the nets may be put on immediately the fruits approach ripeness. If stakes are used to raise the net above the plants, these should be placed in position. Wire or light poles may be used to hold up the net at the desired height; I find that 1-inch wire netting around the beds and slightly let into the ground gives better protection against blackbirds than nets that have to be made secure by the use of pegs.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady
NUNBURNHOLME, Warton Priory, Yorkshire.

The Dry Wall.—As a boundary to the pleasure orchard, or in the form of retaining walls to both kitchen and flower gardens, the dry wall is a medium of effective possibilities. On more pretentious lines, the judicious treatment of terraces with dry walling—whether of skilled or unskilled workmanship—gives a far prettier and more pleasing effect than the universal steep grass banks; moreover, the continuous mowing of these banks is a laborious task at this season. The contour of the ground should be considered before coming to a decision as to whether the wall needs to be more or less perpendicular, or set at a definite, but nowise oblique, angle. Steps call for sound judgment in construction; avoid steep, narrow flights, and allow a tread of not less than 15 inches. This will give a rise of from 4½ to 5 inches. Many choice plants that do not succeed on the flat, without a protective sheet of glass during the winter, are quite happy in the dry wall, as moisture cannot easily accumulate and become frozen in the crown of leaves. Plants which are attractive both in summer and winter include crusted Saxifrages, Rock Pinks and Achillea umbellata. In some instances the ground immediately beyond the wall top may be furnished with subjects both to give an impression of height and overhang the wall. For this purpose, Yucca, Forsythia suspensa, Olearia Huastii, Berberis, Rosemary, Cistus and Roses are useful plants; whilst dwarf Lavender, purple Sage, Ferns and Fuchsia gracilis may nestle at the foot of the wall. Seeds of Dianthus, Iberis odorata, Saponaria calabrica, Silene pendula, Sedum coeruleum and many others may be sown in the crevices as soon as they are ripe, as seedlings so raised will give more satisfaction than those transplanted.

PLANTS UNDER GLASS.

By JOHN CUTTS, Foreman, Royal Botanic Gardens,
Kew.

Hippeastrum.—In most cases Hippeastrum seed is ripe, and should be gathered and sown without delay. Fresh seed germinates readily in a warm propagating house. Young plants should be potted on as they require increased root room, while stock flowered this season should be kept growing actively by liberal feeding. As growth approaches maturity give the plants more fresh air. In about a month's time the earlier-started batches may be removed to cold frames, where water may gradually be withheld from the plants, and where they may be fully exposed to the sun.

Gloxinia.—The Gloxinia lasts a long time in flower in a cool house; if grown in cool conditions the plants may, during the summer, be used for the decoration of an ordinary greenhouse. Seed may still be sown, and the resulting tubers will make good stock for growing on next year.

Pot Roses.—As the plants pass out of flower they should be plunged in the open and given every attention as regards feeding and keeping them free from insect pests. Certain varieties, especially those of the dwarf, polyantha section, are easily propagated by means of cuttings, and shoots obtained from pot-grown plants are especially suitable for the purpose. Where it is desired to increase the stock, the plants should be kept indoors for this purpose. Young plants of the rambler section, in pots, should be encouraged to make good growth, removing them out-of-doors when growth is completed.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LISVIGT, Esq.,
Castleford, Chepstow.

Potting.—The pans or baskets should be filled half their depth with drainage material; the rooting medium should consist of fibrous peat or Osmunda fibre and Sphagnum-moss in equal parts. Fresh soil should be given when the roots are in active growth, and, for a few weeks afterwards, water should be afforded sparingly. Annual repotting is not desirable; in fact, provided correct cultural details are observed, a healthy plant will not need disturbance at the roots for two or three years. When, however, large specimens are overhauled, a number of the back pseudo-bulbs should be removed, reducing them to three behind each growing point. During the growing season a warm, moist atmosphere is necessary; the roots should also be liberally supplied with water, and the plants sprayed overhead daily in hot weather until the new pseudo-bulbs are fully matured. When they reach this stage most of the larger-growing species require a decided rest, but those of smaller growth should be given sufficient water to maintain their pseudo-bulbs in a plump and rigid condition. When at rest, expose the plants to all the light possible.

Odontoglossum Harryanum.—This Orchid is not always met with in a flourishing condition. The cause may often be traced to excessive moisture at the roots and over-potting. At this season any plants that need fresh rooting material may be given attention. The pots should be filled one-third of their depth with drainage material, and the receptacles chosen should only be just large enough to accommodate the roots. A sprinkling of partially decayed Oak or Beech leaves may be added to the usual mixture, and a few crushed crocks will serve to keep the compost open. After repotting, the plants may be arranged at the warmer end of the Odontoglossum house, where they should be given a little extra attention in regard to watering, shading and atmospheric moisture until the roots are re-established. The hybrids from this remarkable species constitute a beautiful series of flowering plants; moreover, they possess, as a rule, strong constitutions, and no difficulty will be experienced in their successful cultivation where other cool-house Orchids are grown.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Cucumbers.—Cucumbers may now be grown in box frames or pits, with two or three feet of any kind of fermenting material. The cucumber house proper may be planted with Melons, or put to other uses. After planting the Cucumbers in the frames, pinch off the male blossoms and the young fruits for two or three weeks. When fruiting commences close the lights early in the afternoons, with plenty of atmospheric moisture in the frame, and keep the foliage thinly trained and clean by the free use of the syringe.

Figs.—The earliest fruits are ripe or approaching that stage, and the syringe should be used sparingly, especially on dull days when a free circulation of air cannot be maintained. Its use cannot, however, be dispensed with, as the second crop is well advanced and the swelling of the fruits is favoured by plenty of atmospheric moisture. With a little forethought, those in charge may overcome these difficulties by careful ventilation and cautious syringings immediately after the ripe Figs are gathered. These remarks apply to light, well-ventilated houses in which the atmosphere is likely to soon get dry, a condition that favours the spread of red spider; trees growing in heavy, dark houses require much drier treatment. The application of root moisture should be regular and plentiful, assisted by stimulants, and, when the fruits are swelling, a brisk temperature should be maintained and regulated by day and night ventilation.

Successional Plants.—Where small pits are devoted to the growing of Melons in pots or planted out, a second batch of seedlings should be ready for planting when the last fruits are cut. Melons, being very subject to red spider after this date, every part of the structure should be again well cleansed. As the days lengthen and the sun increases in power, the amount of fire heat may be greatly reduced, and later, in good weather, almost dispensed with.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe
Castle, near Cardiff.

Tomatoes.—Plants sown as previously advised, and suitably hardened, may be planted in their summer quarters. The soil should be only moderately rich. In very fertile ground the plants will make an excess of foliage, and fruit will not set satisfactorily. The rows should run north and south, but the best results are obtained where the Tomatoes are planted at the foot of a wall or fence facing south or south-west. Set the plants eighteen inches apart and allow a space of three feet between each row, securing each plant to a strong stake four or five feet high. Restrict all growth to the leading shoot of the main stem, removing the laterals as soon as they appear. Water the plants copiously and do not allow the roots to become unduly dry, giving extra care in this respect where the situation is a dry one.

New Zealand Spinach.—This vegetable produces plentiful supplies in hot, dry weather, when it is difficult to maintain greenstuffs of other kinds. The plant requires a light soil and a sunny position. Seedlings forwarded in heat should be planted three feet apart each way, or seed may be sown the same distance apart and the seedlings thinned later to single plants.

Broad Beans.—To prevent the tops of Broad Beans becoming infested with Black-fly, it is customary to remove the tips of the shoots when sufficient flowers to form the crop have set. Broad Beans transplanted from pots or boxes usually require support and they should be staked when necessary. A late sowing may be made now, but it is seldom profitable to sow after this date.

Peas.—Sowings of late varieties of Peas should be made at regular intervals. Thin the plants before they are staked, leaving them about four inches apart.

HERBACEOUS CALCEOLARIAS.

CALCEOLARIAS are very showy during the early summer, lasting in great beauty for a considerable time. They may be grown without much fire heat, as cool treatment is necessary at all times to obtain the best results.

The seeds of herbaceous Calceolarias should be sown in pans on a fine surface of sand, and the soil should consist of loam, leaf-mould and peat in equal proportions, with sharp sand added to keep the mixture open. The pans should be plunged in coal ashes in a cold frame, where little sun can reach them; they should be covered with a piece of glass and the soil shaded from the sun. Watch carefully for the presence of slugs as the seeds germinate, and see that the surface of the soil does not approach dryness, this being fatal to germination. When moisture is required, stand the pans in a saucer of water up to the rims. June is a good month in which to sow the seeds. When the young plants have attained a suitable size transplant them, as Calceolarias need to be grown without a check. Transfer the seedlings to pans or boxes filled with a friable compost similar to that advised for seed sowing, with the addition of a little crushed charcoal. Do not allow the plants to become dry, and grow them in a cold frame on an ash bottom, facing east, if possible, and keep the surroundings cool and moist at all times. As the plants develop, pot them into 3-inch pots, using a little more fibrous loam, and a small quantity of fine, dry cow dung in the compost. Watch carefully for infestations of green fly. Repot the young plants as required, using a rich compost, and, about the end of October, remove them from the frames to shelves near the roof-glass in a cool glasshouse. Water the roots with extra care until the days lengthen and growth becomes more active, when more moisture is needed. If the plants are well rooted, they may be transferred to 6-inch or 7-inch pots at the end of February. Stand the plants on a stage covered with ashes and well syringe the bare spaces between the pots, as a dry atmosphere is detrimental to the plants at any period of their development. Have the house fumigated occasionally to check green fly, and, as the roots fill the pots, give the plants manure water (from cow-sheds or sheep or horse manure placed in a bag in a tub of water) about twice weekly, with alternate waterings with clear soot water. The plants may also be syringed occasionally with clear soot-water. As the flowers develop, remove them to the conservatory or greenhouse in as cool and moist a position as possible—the plants will last in bloom a considerable period, and they may also be utilised for the decoration of the mansion if placed in a fairly cool room or corridor. *H. E. Kemp.*

FIBROUS-ROOTED BEGONIAS.

BEGONIA SEMPERFLORENS well merits its specific name, and some forms of the plant are very popular for bedding purposes during the summer, and others for greenhouse decoration. The species has been extensively employed by the hybridists, and its continuous flowering qualities have, in many cases, been transmitted to its progeny. The following other species are worthy of note:—

BEGONIA COCCINEA, a tall grower with drooping clusters of bright red flowers. This plant is more a summer than a winter bloomer, though under favourable conditions flowers are often produced at this last-named season.

B. DRAGEI.—A species of upright growth with neat leaves, rather light green on the upper surface, and with a reddish tinge underneath. The flowers are white and freely borne. This species is of especial interest as being one of the parents of the universally grown Gloire de Louvaine.

B. FOLIOSA.—A neat-habited plant of slender growth with small, whitish flowers. Owing to its semi-pendulous nature and the flattened,

frond-like arrangement of the branches it is seen to considerable advantage when grown in a suspended basket.

B. FUCHSIODES.—A very old species, but still one of the most beautiful. It sends up tall stems clothed with deep green, ovate leaves, which, when young, have a reddish tinge. The deep scarlet flowers are borne in drooping panicles. The plant is a native of Mexico and, like most other Begonias, succeeds best in a warm greenhouse or house having an intermediate temperature.

B. GLAUCOPHYLLA, (syn. undulata).—This Brazilian species has long, creeping stems, glaucous green, wavy leaves, and salmon-red coloured flowers, which in the bud state are curiously mottled. It is a first-rate plant for furnishing large hanging baskets.

B. HAAGEANA.—A Brazilian species with large, hairy leaves, deep green on the upper surface and reddish beneath. It forms a bold specimen, which when laden with its massive clusters of flowers is very striking. The flowers are white, and the undersides of the petals as well as the entire plant are clothed with reddish hairs.

B. LYNCHIANA.—This species, which was introduced from Colombia over thirty years ago, was first known as Begonia Roezlii. It is a plant of tall, rather spare growth, with large panicles of deep scarlet flowers. Apart from its own

leaves of *B. Richardsiana* are far more divided than those of the other.

Of hybrids and garden forms there is quite a long list, the following being all good:—*B. Ascotensis*, a freely branched plant, with a profusion of pink blossoms. Its origin seems to be unknown—at least I can find no record of it; *Carminata* (a hybrid between *B. coccinea* and *B. Dragei*), with carmine-pink flowers. *Carrierei* (from *B. semperflorens* and *B. Schmidtiana*), of dwarf growth, with a profusion of small white flowers. *Corbeille de Feu*; this variety bears a great profusion of bright red flowers and is equally valuable in summer and winter. It is the result of a cross between *B. semperflorens* and *B. fuchsiodes*. *Dingwelliana*, of free yet neat growth, with pretty soft pink blossoms that though small are freely borne. *Gloire de Chateleine*, a dwarf, compact member of the *semperflorens* group, with a profusion of pleasing deep pink blossoms. *Gloire de Sceaux*, a fine ornamental Begonia that commences to flower early in the year. It forms a freely branched specimen, clothed with handsome bronzy-green leaves. The large, rose-coloured blossoms are very showy. It is said to have been raised from *B. socotrana* and *B. subpeltata*, but this is at least open to question. *Ingramii*, a useful Begonia which shows a good deal of the *fuchsiodes* character, with pretty reddish-pink flowers. It was raised at Frogmore so long ago as 1849, the parents being *B. nitida* and *B.*



FIG. 127.—GROUP OF FIBROUS-ROOTED BEGONIAS.

intrinsic merit, it has proved of considerable value to the hybridist.

B. MANICATA.—The stems of this species are short and very stout, while the leaves are large and curiously furnished on the undersides with red hairs. On the leaf stalks the hairs are arranged in whorls. The pink flowers are individually small, but borne in great profusion on branching panicles which well overtop the mass of foliage. There are two varieties remarkable for their leaf characters: one, *aureo-maculata*, which has the leaves blotched with yellow after the manner of *Senecio Kaempferi aureo-maculata* (*Farfugium grande* of gardeners); the other, *crispata*, the leaves of which are curled and crisped in a way suggesting some of the *Kales*.

B. NITIDA.—This is, I believe, the oldest Begonia in cultivation, having been introduced in 1777. It forms a decided stem a yard or so in height of an almost woody character. The leaves are smooth and particularly shiny, while the flowers, which are freely produced, are white or pinkish.

B. POLYANTHA.—A Mexican species that forms a freely branched specimen, and bears pink flowers in profusion.

B. RICHARDIANA.—This Begonia in general appearance much resembles *B. Dragei*, but the

fuchsiodes. *Knowsleyana*, a well-known garden form with pretty bluish-coloured flowers. *Lumineaux*, a good companion plant to *Gloire de Chateleine*, being of the same character, but with rich crimson blossoms. *Luzerna*, a tall grower with pretty reddish foliage and drooping clusters of pink flowers. It has been extensively grown within the past few years. *President Carnot*, raised by M. Crozy, is somewhat in the way of the preceding, but the leaves are greener and the flowers richer in colour. It is particularly handsome as a large specimen. *Semperflorens gigantea rosea* is one of the most useful Begonias we have, for if cuttings are struck in the spring and the young plants grown on freely, they will bloom throughout the autumn, winter, and early spring. It was raised by the late M. Lemoine, of Nancy, the parents being *B. semperflorens* and *B. Lynchiana*. *Woltoniensis*, one of the older hybrids and still one of the best. It is an upright growing plant, with stems of a succulent nature. These stems, as well as the leaf stalks, are reddish. The foliage is neat and pretty, and the pink flowers are borne in great profusion. It was raised by the late Major Trevor Clarke from crossing *B. Sutherlandii* with *B. Dragei*. Some 35 to 40 years ago *B. Woltoniensis* was extensively grown as a market plant. *Florist.*

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A FORGOTTEN BOTANICAL ARTIST: MISS CRABTREE.

IT is not perhaps so easy as it may seem at first sight to draw a hard and fast line between painters of flowers and botanical artists. An artist might conceivably be both, for in making a special feature of painting flower pictures his or her first instinct would be to study flowers with the same keenness as a portrait painter would study the human physiognomy. But probably no one would regard Jan Van Huysum, the greatest of the Old Masters so far as flower pictures are concerned, and still less Henri Fantin-Latour, the most popular of the moderns, as botanical painters whose primary aim is to portray a flower or a plant with an accuracy which would fulfil the exigencies of the botanist. Generally speaking, therefore, the painters of flowers appeal exclusively to the general public or to the lover of flowers to whom botanical accuracy is a matter of no moment; and the artists who fall into this group undoubtedly form the majority of those who take flowers as a special subject.

Whilst it would be only a matter of industry and time to go through Mr. Algernon Graves's *Royal Academy Exhibitors*, 1769-1904, and to extract from the eight quarto volumes the names of all those who have exhibited flower pictures at the Royal Academy during the first 135 years of its existence, such a compilation would not greatly help in drawing up a list of botanical artists. In the first place the indefinite entries, such as "Flower Piece," which long characterised the Academy cataloguing, would be a source of constant perplexity; and secondly, so many thousands of the exhibits have entirely disappeared, leaving no trace of their existence except the entries in the Academy catalogues, that the most enthusiastic student would abandon the almost fruitless and certainly inconclusive task.

A striking instance of the discovery of a totally forgotten botanical artist has recently occurred through the accident of the auction room in London. In 1786 and 1787, Philippa Crabtree of Bishopsgate, London, sent to the Royal Academy three exhibits all described simply as "Flowers from Nature." After 1787 she entirely disappears, and her name is not even recorded in any dictionary of artists. The same might be said of hundreds of other exhibitors at the Royal Academy and other exhibitions. But on February 5 last, Messrs. Hodgson sold a consignment of portfolios or albums from Sussex, which included many beautiful drawings of flowers on vellum by Philippa Crabtree and Elizabeth Crabtree, and drawings of landscapes and antiquities in England and on the continent by Elizabeth and Robert Crabtree; thus revealing the existence of a whole family of artists from the '80's of the

eighteenth century to well into the nineteenth. All the more important drawings of flowers were purchased by Mr. Francis Edwards, of High Street, Marylebone, who has kindly permitted me to take full notes. I may add that Mr. James Britten does not find the name of Crabtree in his lengthy list of botanical artists.

Such scraps of a biographical nature as I have been able to gather from many sources do not amount to much. I think Philippa Crabtree may be the child of this name, the daughter of John and Philippa Crabtree, who appears in the register of St. Vedast, Foster Lane, as born on November 17 and baptised December 29, 1764. The *Gentleman's Magazine* of March 1790, records the marriage of Mr. Slack, a Manchester warehouseman, of 35, King Street, Cheapside, to Miss Crabtree, of Bishopsgate; the latter was probably a sister, for Philippa does not seem to have married, at all events one of her drawings dated 1804 is signed with the initials of her maiden name. It may be noted that the London Directory of 1806 records the firm of Slack and Crabtree, cotton merchants, as being at 15, Newgate Street. At the latter part of the 18th century, and long afterwards, the City of London was still a residential quarter; but by 1808 the Crabtrees had removed to East Sheen, then a hamlet of Mortlake and chiefly occupied by suburban villas with extensive grounds. Here Mrs. Crabtree, aided doubtless by her talented daughters, established a ladies' boarding school, and it was at East Sheen that Mary Ann Crabtree painted her beautiful drawings (usually signed with her initials) about 1822. I had hoped to find some mention of the Crabtrees in the *Journals and Correspondence of the Misses Berry*, Horace Walpole's friends, who lived at Sheen, but they do not seem to be mentioned. Doubtless the Richmond Parish Registers would reveal some data concerning them.

The earliest dated drawing by Philippa Crabtree I have found is one, 1784, of *Narcissus tazetta*, which helps us to realise from what an indifferent type many wonderful varieties have been developed. Common garden flowers, such as Sweet Peas, Pinks, double Daisies, and so forth appear among Miss Crabtree's earlier work. In 1786 she extended her scope and was able to paint many exotic plants, possibly in Curtis's London Botanic Garden, in St. George's Fields, within easy walk of Bishopsgate Street, and to which the subscription was a guinea a year. The drawings of *Geranium (Pelargonium) lanceolatum* is dated 1786, about 11 years after it was introduced; in the same year also appears a British plant, *Melittis Melissophyllum*, and *Ipomoea Quamoclit*, which some years later was figured in the *Botanical Magazine* (tab. 244). Other interesting drawings followed: that of *Antholyza Cunonia*, introduced from the Cape some 30 years before, is dated 1788, thus preceding by many years the plate of the 10th vol. of the *Botanical Magazine*; and the same may be said of *Amaryllis undulata* (*Bot. Mag.*, t. 369) which Miss Crabtree painted in 1787. The date of her plate of *Ophioxylon serpentinum* (now referred to *Rauwolfia serpentina*) is not quite clear, it is probably 1787 or 1788 (*Bot. Mag.*, t. 784), and is possibly, as in other cases, the first British drawing of the plant. *Geranium (Pelargonium) cucullatum* is dated 1787; and *Bigonia radicans* (*Bot. Mag.*, 485) and *Bigonia catalpa* (?) date from 1786. One heath, *Erica abietina*,* is dated 1790; and in connection with another, *E. longiflora*, undated, it is doubly

* I find this species mentioned in the "Catalogue of Heaths," cultivated by R. Williams, at Turnham Green, attached to the *Bot. Mag.* t. 363, dated June 1, 1795.

interesting to point out, first that with the drawing of a flowering branch there is also a section of the flower showing the stamens and the pistil, and secondly, that this drawing seems to have preceded by some years the date of 1812, when the plant is said to have been introduced into this country.

In what may be termed the iconography of exotic plants, dates are undoubtedly a most important feature. With one definite exception I should say that all Philippa Crabtree's drawings were done before the end of the 18th century. The undated ones include many interesting examples, such for instance as various *Rhododendrons*, *Passifloras*, *Roses* and various bulbous plants. Occasionally two subjects are done on one page, e.g., *Sophora microphylla* and *Hibiscus Malvaviscus* (*Bot. Mag.*, 2,305) appear together, as do *Passiflora maliformis* and *Mahernia pinnata*. In one instance at least four subjects are painted on one sheet, *Scilla*, *Helleborus nyemalis*, *Galanthus nivalis* and *Cyclamen*.

Among the 50 drawings by Philippa Crabtree there are, besides those already mentioned, the following, in which the artist's nomenclature is preserved, *Ixia crocata*, *Illicium floridanum*, *Columnea humilis*, *Kalmia latifolia* and *K. angustifolia*, *Volkameria inermis*, *Fuchsia coccinea*, *Passiflora quadrangularis* and *Sophora tetraptera*. Both Mary Ann Crabtree and Elizabeth Crabtree confined themselves chiefly to popular garden flowers, often adding to the effect by painting a butterfly or a moth. Among the drawings of the former, there are two fine ones of what was probably one of the most popular of the *Arniculas* of the time, "Arden's Empress of Russia"; one of these is shown growing in a flower pot. Their drawings range in date from about 1816 to 1822.

It is difficult to believe that Philippa Crabtree more particularly devoted herself to botanical flower painting, for which the demand would have been very limited, as a mere hobby. It is a very obvious suggestion that these drawings, manifestly executed with the greatest care and with every effort to be accurate, were done for a specific purpose, and one wonders if they may not have been reproduced in some of the botanical or horticultural books of the period, with the artist's name suppressed and till now forgotten. The point could only be satisfactorily settled by a side-by-side comparison of these drawings with published reproductions of the same plants; and probably this could only be done at Kew or at the Natural History Museum, where, one hopes, some of the Crabtree drawings may eventually find their way. Who, it may be asked, was the artist or who were the artists, employed by Curtis for the earlier years of the *Botanical Magazine*? A large number of plates appeared without the name of any artist, and the assumption is that those to which the name of Sydenham Edwards is not attached were done by someone else. A similar mystery hangs around the artists of the *Floricultural Cabinet*.

The name of a contemporary botanical artist, Miss Mary Lawrence, at once suggests itself in connection with Philippa Crabtree, but Miss Lawrence was a professional "Teacher of Botanical Drawings," and her beautiful books, *A Collection of Roses from Nature*, 1799, and *A Collection of Passion Flowers*, 1799-1800, were partly in the nature of an advertisement. But the Misses Crabtree do not seem to have taken any such effective steps of perpetuating their name or of advertising their undoubted abilities. W. Roberts.

ROYAL HORTICULTURAL SOCIETY.

EXHIBITION AT CHELSEA,

June 1, 2 and 3.

The Council and officers of the Royal Horticultural Society are to be heartily congratulated upon the extent, beauty and interest of the great exhibition of plants, flowers, fruits and vegetables held in the grounds of the Royal Hospital, Chelsea, on the above dates. As yet the pre-war arrangement of tenting cannot be provided, consequently the exhibition proper was contained in five large tents, so placed that it was possible to pass from one to another without going out of doors—a matter of importance in the event of bad weather.

The Fellows of the Society are also to be congratulated upon the intense loyalty of those who, by their skill and enterprise, make such an exhibition possible. Of course, exhibitors would not exhibit if no one came to inspect and buy, nor would Fellows come to inspect if exhibitors failed them—it is a mutual arrangement and all concerned profit thereby.

A feature of special interest this year was the tent containing exhibits of scientific interest in connection with horticulture. At the end of this section a lecture tent was provided, and here important addresses were delivered by Sir Daniel Hall, Dr. A. B. Rendle and Capt. H. J. Page.

Fine weather—threatening at certain periods—continued throughout the three days, and at some periods it was insufferably hot in the tents. On the opening day the show was visited by Her Majesty Queen Mary, accompanied by Princess Mary, Princess Victoria and the Duke of Connaught, all of whom appeared to be greatly pleased with all they saw.

Of the exhibition itself, it is difficult to write without using an abundance of superlatives. It was a great show; one of the best of a fine series. Orchids made a grand and gorgeous display, but the groups were rather crowded, indeed, the small amount of space allotted them was a grievance of which most exhibitors complained. We believe Roses have been shown more extensively on previous occasions, but Sweet Peas were never finer, while Carnations and hybrid Pinks were represented in a style and extent never reached before. The rock and formal gardens were good without providing anything particularly striking, though an exception must be made in favour of Messrs. Wallace and Co.'s effort wherein Irises were displayed in a variety and manner altogether splendid. Rhododendrons and Azaleas were in good form, notwithstanding the late date; these, with other trees and shrubs and topiary, made up a capital section. Of hardy flowers there was a superabundance, and in many instances the crowding and duplication of plants was an obvious fault.

At the Press luncheon, held on the day before the show, Lord Lambourne said there were always those who grumbled no matter what the Society did, and it was the duty of the Society to show the grumblers they were wrong. We include the Press among the grumblers, and we think the Council and officers will find it difficult to show us we are wrong when we state that the horticultural Press were not granted proper facilities for carrying out their arduous duties. Some pressmen were unable to obtain a Press ticket until the morning of the show, and then only after wasting a great deal of valuable time. Further, the parsimonious attitude of the Council in connection with breakfast tickets for exhibitors' assistants, was the subject of severe comment by the Trade.

ORCHID COMMITTEE.

Present: Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. secretary), W. Bolton, A. McBean, Arthur Dye, J. Cypher, H. G. Alexander, Fred K. Sander, S. W. Flory.

Gurney Wilson, W. H. Hatcher, Stuart Low, R. A. Rolfe, J. Wilson Potter, Walter Cobb, H. J. Chapman, E. R. Ashton, Clive Cookson, and R. G. Thwaites.

AWARDS.

FIRST CLASS CERTIFICATE.

Odontioda Gatton Glory (Odm. King George V. × Oda. Colmanae), from Sir JEREMIAH CLEMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier). A very beautiful first cross of Oda. Colmanae, one of the finest and most distinct of Odontiodas, and very promising for future

AWARD OF MERIT.

Orchis foliosa, from Mrs. EVELYN HOLDEN, Goldwell, Newbury. A very handsome Madeira representative of our well-known British species. The pan shown had eight dense spikes of bright mauve-purple flowers, and their robust habit also secured a Cultural Commendation for the grower. Figured in *Bot. Mag.*, 5074.

Odontoglossum St. George var. *Albion* (eximium × Alexandra), from Messrs. CHARLESWORTH AND CO. A noble flower of rich claret colour, with white margins and tips to the segments.

Odontoglossum crispum-Solan var. *Kenneth*

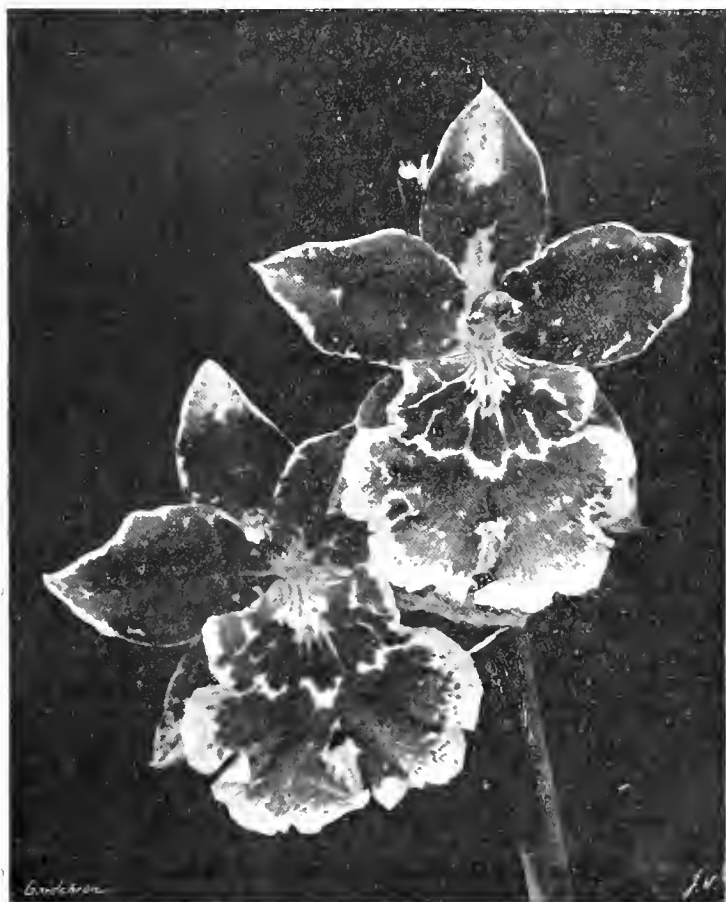


FIG. 123.—ODONTONIA GLADYS.
(See Awards by the Orchid Committee.)

developments in the same direction. Flowers formed like a good *Odontoglossum*, and of firm substance; clear canary yellow, with red blotches on the inner halves of the sepals and petals. The large lip is paler yellow, with a red blotch in front of the yellow crest.

Odontonia Gladys (*Miltonia Bleuana* × Odm. *eximium exquisitum*), from Messrs. CHARLESWORTH AND CO., Haywards Heath. Three fine crosses of *Miltonia Bleuana* were shown by Messrs. Charlesworth, all having the same general features, with much of the *M. Bleuana* form. All displayed their first flowers, and this form may be taken as the type. Ground colour rose-pink, in some of the forms white, all richly blotched with clear violet colour. When mature, they will form a very fine set.

(*crispum* × *Solan*), from Messrs. CHARLESWORTH AND CO. A charming flower, the segments being deep claret, with the white ground colour showing between the blotching.

Miltonia Memoria Crown Princess Margaret, from Messrs. SANDER, St. Albans. A beautiful seedling of this favourite class, with large, bluish-white flowers having a deep-claret mark at the base of the lip.

PRELIMINARY COMMENDATION.

To *Odontonia Dora* (*Miltonia Bleuana* × *O. Dora*), from Messrs. CHARLESWORTH AND CO. This seemed to be the most beautiful of the set of four shown by Messrs. Charlesworth; the fine, flatly-arranged flower, had much resemblance to *M. Bleuana*, the flower being bright mauve with white tips and margin.

OTHER EXHIBITS.

Thirty-six specimens were entered to go before the Committee, and most of those who staged groups with many special plants in them refrained from entering them in order to ease the work of the Committee—a very laudable view to take of the subject.

PANTIA RALLI, Esq., Ashted Park, Surrey (Orchid grower Mr. Farnes), showed *Odontoglossum Jasper*, Ralli's variety, one of the largest and best of the showy cross between *O. crispum* and *O. amabile*. The very broad flowers were white, with the inner halves prettily blotched with mauve. *O. eximium*, of fine quality, was also shown by Mr. Ralli.

In Messrs. STUART LOW AND Co.'s group, *Sophro-Laelia-Cattleya Beta* (S.-L. Psyche × C. Margie Raphael alba) was a good flower, with a

presenting showy hybrids, made a very interesting display of *Masdevallias* and *Epidendrums*, *Bulbophyllums* and other species.

G. GEALE, Esq., Elmsleigh Road, Wandsworth, sent a very pretty light form of *Brasso-Laelia-Cattleya Triune*.

Messrs. MANSELL AND HATCHER, in their group, presented *Phalaenopsis amabilis Rimestadiana*, with its scented pure white flowers; fine *Laelio-Cattleya San Juan* and some excellent *Odontoglossum*.

GROUPS.

Exhibitors of Orchids responded in much the same spirit as they have on former occasions at this great show, and the manner of staging their groups around the sides of the large tent was followed as on other occasions. But whether on account of reduced space

of amateurs in the group section, furnished the side at the entrance with a very handsome group in which many of the *Gatton* hybrids, as well as some uncommon species, were represented. At the back were tall plants of *Dendrobium illustre* and others of this class, and grouped in the middle and foreground were very beautiful *Odontoglossums* and *Odontiodas*, the best being *O. gatonense*, a beautiful flower of a rich rose-purple colour, with narrow white margin, and white front to the lip; and *Odontioda Gatton Glouy* (Odm. King George V. × Oda. Colmanae), a large, canary-yellow flower with red blotches on the inner halves of the segments; *Cattleyas*, *Laelio-Cattleyas* and *Brassavola* crosses were also well shown.

Messrs. CHARLESWORTH AND Co., Haywards Heath, followed with a splendid group, the centre of which was of their famous *Miltonia* hybrids, and of which the richly-coloured *M. Charlesworthii* holds its own as the best, as does the rich scarlet *Odontioda Charlesworthii*, in the fine selection of *Odontiodas* shown. Three new *Odontias* of fine quality were also shown, viz., *Odontonia Dora* (*M. Bleuana* × Odm. Dora), *Odontonia Gladys* (*M. Blenana* × Odm. eximium) and *Odontonia Vulcan*. The *Odontoglossums* in this group were very showy, and the home-raised forms of *O. crispum*, and the xanthotes forms of several classes were very effective. On the sides graceful *Thunias*, with *Laelio-Cattleyas*, and white *Cattleyas*, helped to make a very effective group.

Messrs. JAS. CYPHER AND SONS, Cheltenham, masters of the art of growing and staging showy Orchids, came next, the lightly-arranged back of their group having slender scarlet and yellow sprays of the *O'Brienianum* section of *Epidendrum* arching over showy *Cattleyas*, *Laelio-Cattleyas*, with specially good *L.-C. Aphrodite* and *L.-C. Fascinator*, and fronted by a bright arrangement of scarlet, mauve and other shades of *Masdevallia*, with the white *Cypripedium niveum*, a noble specimen of *C. Rothschildianum*, and the emerald green and white *C. Maudiae* varieties on each side. Forms of *Laelia purpurata*, from white to deeply coloured, are a speciality with the firm, and they were well shown; also fine *Odontoglossums*, *Anguloa Clowesii* and *Ruckeri*, *Cattleya Skinneri alba*, and other white *Cattleyas*; *Vanda teres gigantea* and a good selection of *Brasso-Cattleyas*.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, finished the side with a very remarkable and well-arranged group, in which was a bewildering selection of their hybrid *Odontoglossums* and *Odontiodas*, fine novelties of which were the new *Odontioda Armstrongii* (Oda. Vynstekeae × Odm. Armstrongiae), of a rich red colour; *Odontoglossum Aspasia* Orchidhurst variety (*Colossus* × Mars) and Odm. Ancre (*ardentissimum* × Mars), both showy flowers of fine form. Other specially fine things were *Laelia-Cattleya Tenca nobilior*, *Brasso-Cattleya Digbyano-Mossiae splendens*, the new *Laelio-Cattleya Ianthé* (*L.-C. Dominiana* × C. Warneri), with all the rich colour and good form of a fine *C. Warneri*; and, among the *Cypripediums*, *C. Goultemanum* Orchidhurst variety (*callosum Sanderae* × *Curtisii Sanderae*), a very fine and interesting cross. Among the best *Miltonias* were the noble *M. J. Gurney Fowler*, *Princess Mary*, *Frank Reader*, *Dreadnought* and the large pink *M. vexillaria* var. *Rev. W. Wilks*.

Continuing on the other side, Messrs. J. and A. McBEAN, Cooksbridge, had a fine group in which their skill in growing and flowering *Odontoglossums* was well demonstrated. Among the many handsome forms were some grand varieties of *O. crispum*, one of which bore a noble spike of seventeen large white flowers; and *O. eximium xanthotes*, of great beauty. At the back were *Cymbidiums*, various *Orchidiums*, and on each side *Cattleyas* and *Laelio-Cattleyas*, with showy sprays of *Odontiodas* between them. Great variety as well as excellence was shown by the *Miltonias* and *Odontoglossums* in this group.

Mr. HARRY DIXON, Spencer Park, Wandsworth Common, staged an effective group of good *Laelio-Cattleyas*, *Odontoglossums*, *Miltonias*, etc., with *Cypripedium niveum*, *C. callosum Sanderae*, *C. bellatulum* and other popular Orchids.



FIG. 129.—PAPAVER ORIENTALE LORD LAMBOURNE.
(See Awards by the Floral Committee.)

decided scarlet shade; *Brasso-Laelio-Cattleya Decia* and some new crosses not yet developed to their best were interesting.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, had two very remarkable varieties of *Cattleya Niobe*, with large delicately-tinted flowers; the new *Laelio-Cattleya Ianthé*, with showy flowers resembling *C. Warneri*; several new seedling *Odontoglossums* and *Odontiodas*, Odm. Ancre and Odm. *Aspasia* Orchidhurst variety being the best of these *Brasso-Cattleya Digbyano-Mossiae splendens* was the darkest in colour of any of that favourite cross.

Messrs. FLORY AND BLACK, Slough, had fine novelties in *Odontoglossum Dusky Maid*, *O. Eros* var. *Sentinel* and *O. plumptonense*.

Messrs. J. CYPHER AND SONS, while well re-

allotted to each, or to there being more exhibitors, and a larger quantity of exhibits, the general complaint among those who were arranging the groups was "not enough room." Certainly an inspection of the whole of the exhibits of Orchids showed that a much better effect, individually and collectively, could have been made if quite twice as much space had been allotted to each of the groups.

But, thanks to the liberal education which years of exhibiting at the Royal Horticultural Society's shows, with varying situations and amount of space, has provided, most exhibitors are adepts at making the best of the positions they have to occupy, and thus the show of Orchids this year, as in the past, was one of the most attractive features.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), sole representative

Messrs. MANSELL AND HATCHER, Rawdon, Yorks, staged a good and effective group of Miltonias, with many M. Bleuana, and good M. Charlesworthii, also Odontoglossums, Odontiodas, Cattleyas and Laelio-Cattleyas, among the last-named being some very fine L. C. Aphrodite and the showy L. C. San Juan.

Messrs. FLORY AND BLACK, Slough, staged a fine and interesting group containing a large number of new hybrids, the best of which were entered to go before the Committee. Of the latter-known we noted thirty albino Cattleyas of various sections; some very handsome Laelio-Cattleyas, Cattleya Helen Langley, C. Magali Sander, Sophro-Laelio-Cattleya Hanningtonii, and other Sophronitis crosses.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, staged a very fine group in which were numbers of Cattleyas and Laelio-Cattleyas of many different types, together with some half-dozen excellent and dissimilar forms of Brasso-Cattleya differing considerably in shape and colour. The best forms of Cattleya Mendelii were Gladys, Strawberry, Princess Mary and Hercules, showing a very remarkable range of form in one species; the C. Mossiae, from white to dark coloured, showing similar variety. Odontoglossums and Odontiodas were also finely displayed, and among species noted were the feather-lipped Bulbophyllum barbigerum, the white Diacrium bicornutum, Oncidium Papilio, and its ally Kramerii, Renanthera lmschootiana and various Dendrobiums.

FLORAL COMMITTEE.

Present: Messrs. H. B. May (in the chair), W. H. Morter, Jas. Hudson, J. W. Blakey, John Dickson, John Heal, Andrew Ireland, G. Reuther, A. C. Dorrien Smith, J. W. Barr, Chas. E. Pearson, Chas. Dixon, C. Williams, E. F. Hazelton, R. W. Wallace, W. Howe, E. H. Jenkins, Thos. Stevenson, H. R. Darlington, H. J. Jones, and the Rev. F. Page Roberts.

This Committee had a very busy session, as no fewer than 115 novelties were submitted for award. There were many beautiful and interesting plants, and twenty-six were granted Awards of Merit.

AWARDS.

AWARDS OF MERIT.

Saxifraga Tumbling Waters (see Fig. 130).—An exquisitely graceful Saxifrage and appropriately named. It is a hybrid between the popular *S. longifolia* and *S. lingulata lautoscana*. The rosettes of green, slightly mealy leaves much resemble those of *S. longifolia*, but young rosettes form around the flowering one, consequently the plant has not the biennial habit which characterises *S. longifolia*. The flower spikes, 18 inches to 20 inches long, arch in a most graceful manner, and for over two-thirds of their length are furnished with white flowers, from five to twelve together on the slender branchlets. The stamens are tipped with anthers and pollen of the palest gold, which adds to the beauty of the flowers. A fully-developed spike may, we estimated, carry from 300 to 600 flowers. Several plants were shown in a large pan and there were five lovely spikes. Shown by Mr. B. H. B. SYMONDS-JEUNE, The Chalkpit, Henley-on-Thames.

Polystichum angulare divisilobum plumosum robustum, Perry.—A strong, robust habited fern, and yet one which combines grace and beauty (see Fig. 132). The fronds, between 2 ft. and 3 ft. long, are almost 1 ft. wide at the base, and have finely-divided pinnae, each a perfect little frond, and these are elegantly plumose. A very fine, hardy fern. Shown by Mr. AMOS PERRY, Enfield.

Polystichum angulare divisilobum plumosum densum No. 2.—A very beautiful variety with longer fronds than the former and with the pinnae set a little more closely together. Shown by Mr. AMOS PERRY, Enfield.

Gum Lady Stratheden.—A charming new hardy plant and one of great garden and commercial value. As shown, it is not quite so tall and vigorous as the ever-popular orange-coloured Mrs. Bradshaw, but it is robust, nevertheless, and flowers with great freedom. The double flowers, each about 2½ inches across, are of a deep golden-yellow colour, with a group

of golden anthers in the centre. The anthers spread out flatly and so bring their brown anthers into a regular ring that gives a pleasing effect. Shown by Messrs. BAKERS, Codsall, Wolverhampton.

Gum Orangeman.—A handsome, tall-growing, hardy plant, with large double, clear orange flowers produced in great profusion. Shown by Messrs. T. GROVE AND SON, Sutton Coldfield.

Schizanthus roseum compactum.—A gorgeously coloured flowering plant that is sure to become a popular greenhouse subject. As shown, one plant in each 48-sized pot, it is about 2 ft. high (including the pot), broadly pyramidal in shape, and about 1 ft. through at the base. The habit is compact, densely branched, and the branches densely packed with butterfly-like blooms of a rich and bright rose colour, with red shading around the golden, red-flecked blotch on the "lip." Shown by Messrs. DOBBIE AND CO., Edinburgh.

Begonia Peace.—A wonderful double Begonia, with broad petalled blooms about seven inches in diameter, and of water-lily shape. The colour is a lovely shade of cream. The plant is very robust and carried three splendid blooms. Shown by Messrs. BLACKMORE AND LANGDON, Bath.

Papaver orientale Lord Lambourne.—A large-

"Clove," and it has the Clove fragrance. Each flower is a model in shape and borne on a stiff stalk, which may develop as many as five blooms.

Pink Mrs. Geo. Walker.—Another of this race, larger than the preceding, the colour a rich rose with darker base. Both shown by Mr. C. H. HERBERT, Acocks Green.

Carnation Lady Laverforth.—A very large, perpetual-flowering Carnation, almost as big as a "Malmaison," with rosy-salmon coloured flowers. The stalks are long and stiff; the calyx perfect and very short. The plant is very free and has a robust habit. Shown by Messrs. STUART LOW AND CO., Enfield.

Lilium Farreri.—A Chinese species of the Martagon section, with lanceolate, alternate foliage, each leaf about four inches long and half an inch broad, narrowing at both ends. The flowers are terminal, arising from a whorl of leaves. The pedicels are long, often twisted, and bear white flowers with numerous small violet-purple spots at the base of the segments. The anthers are deep-orange colour. The plants shown were pot specimens, about 3-4 ft. tall. Shown by F. C. STERN, Esq., Goring, Essex.

Picea Albertiana.—A charming dwarf Conifer, of conical shape, with pale green, stiff foliage, each leaf about half an inch long and curved. A



FIG. 130.—SAXIFRAGA TUMBLING WATERS.
(See Awards by the Floral Committee.)

flowered Poppy of brilliant scarlet colour, with a large blackish blotch at the base of each segment. The margins of the flowers are deeply fringed. Shown by Mr. AMOS PERRY, Enfield.

Dianthus Harold.—One of Messrs. Allwood Bros new race of hybrid Carnation × Pink named Allwoodii. The flowers are pure white, like a glorified Her Majesty Pink, and borne on tall, stout stems. The plant, shown in a pot, was about two feet tall, and it was furnished with some twenty open blooms and more than that number of buds. The foliage is glaucous.

Dianthus Jean.—Another variety of the Allwoodii section, smaller in size than the former, but very regular in outline, with violet-purple eye, the base of each petal being blotched with that shade, the ground being white.

Dianthus Rufus.—This variety, of the same origin as the two preceding, is of carmine pink colour, with deeper blotching at the base.

Dianthus Robert.—This variety is not so double as the one described above and is, in consequence, rather more elegant in the mass, each flower holding itself erect and displaying the clear, soft pink of the petals set off with a carmine-rose blotch at the base. The specimen, in a pot, was very decorative. These four plants were shown by Messrs. ALLWOOD BROS., Haywards Heath.

Pink Victory.—A hybrid Pink raised from the florists' laced Pink. The bloom is a miniature

suitable plant for the rock garden. Shown by Messrs. J. WATERER, SONS AND CRISP, Ltd., Twyford.

Rosco Humeana.—A new Chinese species, with broad, pale-green, overlapping foliage, from the centre of which arises six-inch long stems bearing purplish-mauve, hooded flowers. Each clump of leaves surrounds some six to eight flowers. Shown by Messrs. BEES, Ltd., Chester.

Iris Prospero.—A tall, bearded Iris, with flowers of exceptional size, indeed, the whole plant possesses remarkable vigour. The falls are violet-purple, paler at the edges, with basal reticulations about the prominent yellow beard. The standards are arching, broad and pale clear lavender in colour.

Iris Ann Page.—Another Iris of the bearded section, also with massive blooms, that are coloured lavender blue; the falls more deeply shaded towards the base, which is reticulated with brown. The broad segments forming the standards are a little paler tone. Both these Irises were shown by Messrs. R. WALLACE AND CO., Colchester.

Iris xiphium Voerman.—A lovely white Iris with broad segments. Each of the broad lobed falls has a clear yellow central mark. Shown by Messrs. BARR AND SONS, Taplow.

Iris Balaruc.—A lovely bearded Iris, bearing large white flowers. The crest is pale gold and at the base of the falls there are a few purple-blue lines. Shown by Mr. W. R. DYKES, Godalming.

Sweet Pea Hawkmark Lavender.—An already popular variety, with large, pleasingly frilled flowers of a soft shade of lavender. Shown by MESSRS. ALEX. DICKSON AND SONS, Belfast.

Sweet Pea Picture.—One of the largest-flowered of Sweet Peas. The flowers are waved and finely set on the sturdy stems. The colour is cream-pink, with a faint suspicion of apricot or orange. A grand variety.

Sweet Pea Tangerin. This is a bright orange-salmon coloured variety; the flowers are very lightly frilled and in the mass are very effective. These two varieties were shown by Mr. ROBERT BOLTON, Baythornend.

Sweet Pea George Sawyer.—A large-flowered variety, with bold, waved blooms of good substance. The colour is soft, orange-tinted pink, like a pale Edrom Beauty. It appears to fade quickly and consequently did not gain the approval of Sweet Pea experts. Shown by MESSRS. DOBBIE AND CO., Edinburgh.

was of dwarf polyantha varieties in various shades, such as the fine red Erna Teschendorff, Nurse Cavell, a large bloomed variety, the yellowish eye showing the glowing reddish-scarlet petals to advantage; Ellen Poulson, rosy pink, Baby Tausendschon, blush pink, Echo, a larger flowered Tausendschon, and Yvonne Barbier, white. The corners were massed with tall plants of Hiawatha, and the centre piece was of four splendidly flowered specimens of the fine pillar variety Mrs. F. W. Flight.

Messrs. PAUL AND SON, LTD., Cheshunt, exhibited a corner group of Roses in which a feature was made of standard plants, above a group of Hybrid Teas, mainly. The newer Augustus Hartman, with petals Geranium-red, showed conspicuously in the front row and near-by was the light salmon, Mrs. Henry Morse, a full, finely shaped Rose. Others of special merit were Mme. C. Chambard, of exquisite form, ivory-cream coloured, with faint blush centres;

Mrs. Elisha Hicks variety, a pale flower with exquisite fragrance; dwarf polyantha varieties, arranged with Adiantum Ferns, were utilised as an edging with excellent effect.

The Rev. J. H. PEMBERTON, Havering-Atte-Bower, Essex, showed his hybrid climbing Roses, notably Pemberton's White Rambler, Havering Rambler (pink), Star of Persia (a pillar variety) and Pax (a hybrid tea of ivory-cream colour).

Messrs. B. R. CANT AND SONS, Colchester, arranged a table exhibit of Roses, the grouping being sufficiently thin to allow each subject to be seen to advantage. At the back was a screen of Ramblers, and amongst the largest blooms were arranged pot specimens of the charming dwarf polyantha varieties. In the centre of the group was a number of choice blooms of Esmee, a full flower with very pale gold petals suffused with pink. Other choice varieties were Rev. F. Page Roberts, Colestria, Golden Ophelia and Covent Garden.



FIG. 131.—CHELSEA SHOW. MESSRS. SUTTON AND SON. EXHIBIT OF HERBACEOUS CALCEOLARIAS.

Roses.

Roses, the Queen of Flowers, were thoroughly well shown at this exhibition, and most of the sections into which florists have divided the almost innumerable varieties, were represented. For colour, form, grace and fragrance, few subjects equalled and none excelled the Roses.

Messrs. W. PAUL AND SON, LTD., Waltham Cross, exhibited a half-circular group of Roses in which splendidly flowered pillar varieties were used as foils. The plants were all in pots, and those of the Hybrid Tea and Tea varieties were excellent specimens, well furnished with blooms. The varieties Mrs. T. Hillas, cream-finished apricot, Willowmere, Ophelia, Portia, Ulrich Brunner and Viscountess Enfield are a selection. In addition, there was a new polyantha variety named Verdun, with fine bright red trusses and Eblusant, dwarfier and semi-double, the dark-red blooms lasting for a long time. As a centre piece, a group of the new hybrid of bractea named Seafoam, with lemon-yellow flowers, was very effective.

Messrs. W. CUTBUSH AND SON, Highgate, arranged a panel bed with Roses—one of the most effective groups in No. 1 tent. The group

Hoosier Beauty, of American origin; a fine dark crimson flower; C. V. Haworth, pale apricot gold at the base with pale salmon shading; Mrs. Dunbar Buller, light salmon-pink, and Mrs. Elisha Hicks. The tall stemmed standards were furnished with large heads that hung their flowers in festoons.

Mr. CHAS. TURNER, Slough, exhibited a group of Roses, the plants all of excellent quality and well staged. The rich golden flowers of Souvenir de Pierre Notting, showed conspicuously in this exhibit behind a group of the floriferous polyantha Jesse, Richmond, Clio, Dean Hole, Maman Cochet and Viscountess Enfield were others shown well, and the inclusion of tall standards added to the effectiveness of the whole.

Mr. ELISHA HICKS, Twyford, Berkshire, set up a large group of Roses, using staging to the more effectually display the plants. This arose tier by tier in the centre and was crowned with pretty pillar varieties, which were also used as corner pieces. These latter plants were magnificent specimens, each like a bold column of bright blooms, the varieties being Excelsa (two), Shalimar and Mimohaba. In the body of the exhibit was a large number of pot plants of

Mr. G. PRINCE, Oxford, made a pretty display with Roses arranged on tabling. The beautiful Irish Elegance variety was well displayed. They also showed Blush Rambler, Allister Stella Gray, Alberic Barbier, Richmond, Mme. Abel Chatenay, and other popular sorts.

Carnations and Pinks.

The popularity of Carnations and Pinks was amply demonstrated at Chelsea, and in this one department alone, the difference between a Chelsea show of 1920 and a Temple show of 1900 was most marked.

Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, filled one end of the largest tents with Carnations, and their hybrid Dianthus named Allwoodii. This very large exhibit was staged against a background of black velvet, which threw the bright colours of the flowers into bold relief, and the method of staging was in the best taste. The main features of this imposing group were a centre of perpetual-flowering varieties with banks of the Allwoodii type at either end. Altogether the exhibit had a frontage of nearly 100 feet. There were over 10,000 Carnations in this exhibit, apart from the Allwoodii flowers. Very pretty stands were

introduced at appropriate intervals to afford relief—the general effect was magnificent.

Mr. C. ENGELMANN, Saffron Walden, displayed imposing stands of perpetual-flowering Carnations, with a front row of tall glass vases filled with choice blooms of these flowers. The large stands, of which there were six, contained masses of fine blooms of Beacon, Jona, Mrs. C. Raphael, Saffron, Sunstar, and White Wonder. The general collection included some 80 varieties, the whole making an attractive and imposing group. Mr. C. H. TAYDEVIN, Willaston, Cheshire, showed perpetual-flowering Carnations, including a novelty named Robin Clover, orange ground with cerise markings. He also showed Saffron, yellow; Scarlet Carola, Kenneth, lilac, and Circe, mauve flushed with cerise.

Mr. JAMES DOUGLAS, Edenside, Great Bookham, showed superb blooms of Carnations of the border type. Each vase was a study of fine floriculture, for the blooms were of large size, faultless form, and of superb colours. A selection of the varieties includes Bookham Salmon, Lient, Shackleton, Annie Laurie, White Fox, Linkman, Grenadier, Mrs. Andrew Brotherton, and Grey Douglas.

Messrs. W. CUTHBERTSON AND SON, Highgate, exhibited a ground group of Carnations, a companion bed to their fine one of Roses. A few Spiraeas were used as relief and there were also batches of the border Pinks Nellie, mauve with darker eye, and Princess Christian, white, with crimson blotched centre, which were arranged on the ground. The corners and centre of the exhibit were of choice Souvenir de la Malmaison varieties. There were also many pleasing baskets of perpetual-flowering Carnations, some arranged on ornamental stands in fancy baskets. Of these last, there were splendid blooms of their new variety, Renown, pink. White Wonder, Lady Ingestrie, salmon, White Swan and Cecilia, yellow. The centre piece of Lady Ingestrie variety on a tall stand with other varieties grouped at the base, was very imposing.

Mr. K. LUXFORD, Sheering Nurseries, Harlow, Essex, staged a choice exhibit of perpetual-flowering Carnations. The exhibit, although not of large size was of remarkably fine quality and included such sorts as Triumph, Enchantress, Supreme, Circe (mauve), White Wonder and Aviator, the best scarlet variety of this flower.

Mr. C. H. HERBERT, Hazelwood Road, Acocks Green, Birmingham, displayed his pretty hybrid Pinks, raised from the florists' laced Pink. The plants are perfectly hardy and suitable for decorative purposes, either in the garden or as cut blooms in the house. A selection of the sorts includes Queen Mary, rose with deep red centre, Victory, clove coloured, with clove scent; Eclipse, salmon, Lyric, rosy-magenta, May Queen, old rose, and Mrs. George Walker, deep rose.

Messrs. STUART LOW AND CO., Enfield, showed perpetual-flowering Carnations in epergnes and vases, against a background of black velvet. The group was rich in novelties of the firm's raising, several of which have received awards. The more noticeable were Mrs. T. Ives, deep salmon; Winter Glow, cerise; Sunbeam, yellow; Red Ensign and Lord Lambourne, the last a vivid scarlet coloured variety of large size and with slight fragrance. The plant is of compact habit and makes an excellent pot specimen. Lady Inverforth, their newest novelty, is a variety of much promise. The colour is salmon-rose and the blooms are of very large size.

Sweet Peas.

In two of the large tents, Sweet Peas were displayed wonderfully well, the somewhat later date of the show having assisted exhibitors. A comparison of the size and varied colouring of these flowers, with those seen at earlier R.H.S. spring shows would serve to mark the progress made in these popular florists' flowers.

Messrs. ALEX. DICKSON AND SONS' exhibit was a superb effort and arrested the attention of all visitors. Growing plants cultivated on exhibition lines formed the background and a dozen varieties were represented, each a panel of beauty. In front of these were big stands, each filled with blooms of one variety, and the

sorts represented were President, John Porter, Elegance, Caress, Hawlmark Lavender, Melita, Improved, Hawlmark Cream, Hawlmark Pink, Cherub, Daisybud, one of the best; Hawlmark Scarlet, Britismad, Orind, Hawlmark Maroon, Royal Purple, Hawlmark King, and the exquisite King Manve. Below these again were vases and bowls of a large number of varieties, old and new, but all alike charming.

A large and wonderfully fine exhibit of Sweet Peas staged by Messrs. DOBBIE AND CO., was a great attraction, the flowers well developed, the colours pleasingly associated and the general arrangement excellent, though, perhaps, a little formal—the tall stands being filled a trifle too regularly. The fifty or so of stands and vases represented about three dozen varieties and among the latter a few of outstanding beauty were the new Claret Cup, which is deep old rose colour, the general effect very pretty, though hardly so deep in hue as its name suggests; Dobbie's Orange, a vivid shade; Royal Scot, a fine scarlet; Orchid, deep lavender; Mrs. A. Hitchcock, lovely soft cream pink, Mrs. W.

Peas and on this occasion showed a number of interesting seedlings and a new one named Picture, apricot-flushed pink, which Mr. Bolton considers the finest Sweet Pea he has raised. Of older sorts he exhibited Tangerine, Magic, Valentine, Myrtle (cerise), R. F. Felton, and Surprise, all of his own raising, the whole forming a pleasing group in association with Hawlmark Pink and Annie Ireland. In a smaller, but interesting exhibit, Messrs. S. BIDE AND SONS, showed fresh blooms of a number of well-known varieties as well as several seedlings of their own raising—Farnham Lavender, Rath Bide, Bide's Purple and Lady Hunter, the last a delicate combination of pale salmon-pink and softest rosy-heliotope.

Begonias.

Messrs. BLACKMORE AND LANGDON, Bath, associated their collection of splendid Begonias with equally meritorious Delphiniums. The Begonias were all double-flowered, tuberous varieties, of immense size, but free from the slightest suggestion of coarseness. Mrs. J. S. Bourton, of

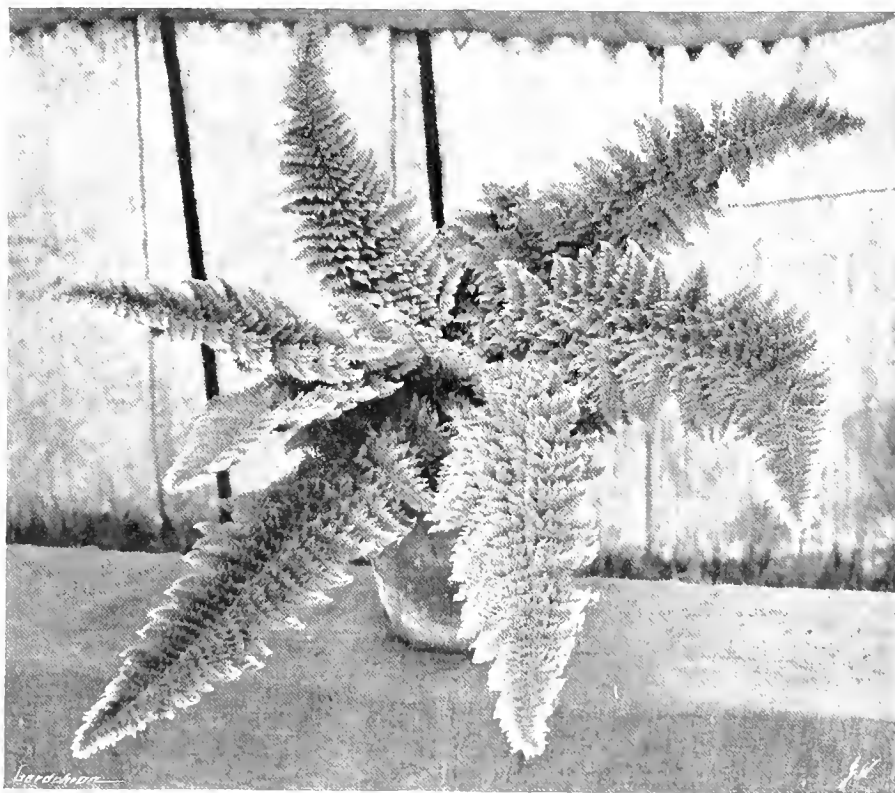


FIG. 132.—POLYSTICHUM ANGULARE DIVISILORUM PLUMOSUM ROBUSTUM, PERRY. (See Awards by the Floral Committee.)

Cuthbertson, bicolor; Mrs. Tom Jones, blue; the older, but fine Edson Beauty, and the lovely Pink Pearl—these were but a few of varieties in a glorious exhibit.

Mr. J. STEVENSON made a good display with these popular flowers and confined his attention chiefly to varieties of his own raising. He had bold stands of blooms of his Fair Lady, cream-pink; Lavender Belle, lavender-mauve; Scarlet Glow, Golden Glory, Liberty, Brilliant, Faith, Bacchus, cherry-red and old rose; Hebe, rose-pink; Splendour, mahogany-red; Charity, deep crimson; and some good orange coloured seedlings. Mr. H. J. DAMERUM, Hayling Island, contributed a small exhibit of Sweet Peas, the flowers all of large size and delightfully fresh. From among many varieties, we made special note of the bluish French-Grey variety, Lionel Clarke; White Perfection, new; Princess Patricia, a lovely new helio-blue; Mrs. McEwan, cream-pink; Marie Grosvenor, orange-salmon; Mrs. W. Hodges, white with lavender edge; and Miss E. Leggett, bright rose pink.

Mr. ROBT. BORTON, Baythornden, Essex, continues his good work as a raiser of Sweet

delightfully soft pink colouring, was suggestive of an unusually large Camellia, while not far away were salmon-coloured blooms of Princess Victoria Louise, which may well be likened to an exhibition Rose bloom. Mrs. W. Cuthbertson and Mrs. H. Moncrieff were splendid examples of the fringed varieties. The front was composed of a double row of especially good Gloxinias.

Messrs. SUTTON AND SONS included some especially fine double-flowered Begonias in their large exhibit, and these were the object of great admiration by the visitors.

Stove Plants.

Messrs. L. R. RUSSELL AND SON, Richmond, brought a representative group of stove and greenhouse plants. In the collection of Caladiums, Rose Lung, Mrs. L. R. Russell, Miss J. R. Box and William Roupel were noted, while among Dracaenas the newer varieties—Sir Douglas Haig, Wm. Taylor, J. L. Russell and Queen Mary were included. Crotons of very fine colour were also displayed, and Aloe.

asia argentea. *Acalypha Sanderiana*, *Ananassa sativa variegata*, *Tillandsia mnsaica*, and *Anthuriums* in variety were seen in excellent condition.

Specimen *Caladiums* were shown in a ground group by Messrs. JOHN PEED AND SON, West Norwood. Noteworthy varieties were *Marquise of Cinpden*, *C. Dingle*, *Gulmar*, *Candidum*, *Alexander III.* and *Garden Directeur Gerard*. Interspersed among the *Caladiums* were dot plants of *Crotons*, including the varieties *Golden Bracelet*, *Le Nain Rouge* and *Resplendent*. In another tent the same firm had a mound of greenhouse flowering plants consisting of their delightful strains of *Gloxinias*, *Streptocarpus* and a deep-purple, double *Petunia*.

From A. P. BRANDT, Esq. (gardener Mr. J. W. Barks), Bletchingley, Surrey, came a fine circular group of broad and fine-leaved *Crotons*. Outstanding varieties were *Lady Zetland*, *Mars*, *B. Comte*, *Massangeana*, *Gold Ring* and *Queen Victoria superba*: every specimen in the collection exhibited the standard of perfection and was remarkably well coloured.

Greenhouse Plants.

A wonderful exhibit of greenhouse and hardy annual and biennial plants was shown by Messrs. JAS. CARTER AND CO., Raynes Park, London. This exhibit occupied the whole width of the western portion of the Orchid tent and took the form of a semi-circular group. The background was composed of specimen Palms and Bamboos flanked by banks of finely-grown specimens of *Cactus Cinerarias*, the salmon-pink *Clarkia Brilliant Princess*, *Canterbury Bells* in white, pink and blue shades, and *Antirrhinums* in many shades of colour. Towards the front were mounds of *Carter's Victoria Prize Calceolarias*, *Schizanthus*, a beautiful strain of *Gloxinias* and fine double-flowered *Begonias*: the centre consisted of the rose-coloured *Petunia Queen of the Roses*. The whole exhibit was finished off with a border of grass surrounded with *Ageratum* and breadths of *Heliotrope*.

Messrs. WEBB AND SONS., Stourbridge, were responsible for an effective group of greenhouse plants. Four large mounds, consisting respectively of fine strains of *Clarkias*, *Cineraria stellata*, *Schizanthus* and large-flowered *Cinerarias* formed the feature of the exhibit, and these were interspersed with ground work masses of *Primula malacoides alba*, *P. m. rosea*, *P. obconica* in rose and pink shades, *Petunia Brilliant*, *Gloxinias* and *Mignonette Leviathan*, the whole being edged with a straight border of grass.

An effective and very artistic display of greenhouse plants was shown by Messrs. SUTTON AND SONS, Reading. The group was square in shape, the four entrances being marked with white wooden columns which were rendered still more pleasing with beautiful specimens of rose-coloured *Primula obconica* in pale blue pots. Hanging from the columns were festoons of *Asparagus plumosus*, and at the four corners were specimen Palms. In the centre of the group and surrounded by a broad path was a mound of *Salpiglossis*, over a ground work of the tall, white *Lobelia ramosa*. The four corners were occupied with triangular groups, each being an effective display in itself. *Clarkias*, in salmon shade, made a prominent feature of the display and added a good tone to the beautiful batches of *Schizanthus*, double-flowered *Begonias*, giant white *Streptocarpus*, large-flowered *Calceolarias*, *Primulas* and *Calceolarias*. In an adjoining tent the same firm staged a very large group of splendidly flowered *Calceolarias* representing an exceptionally fine strain of many colours and they had a third exhibit composed of *Antirrhinums*.

A fine bank of regal *Pelargoniums* was provided by A. P. BRANDT, Esq. (gr. Mr. J. W. Barks). The varieties *Captivation*, *Brilliant*, *John Bright*, *Eventide*, and *Sir Trevor Lawrence* were the pick of a very beautiful collection consisting of some twenty or more sorts.

Besides showing a magnificent group of stove plants, Mr. L. R. RUSSELL, arranged a group of greenhouse flowering plants, including *Crassula coccinea*, *Fuchsia Ballet Girl*, *Azaleas* in variety and *Pelargoniums*.

Messrs. STUART LOW AND CO., Enfield, showed Australian and greenhouse plants, and the rarer plants included *Aotus gracillima*, *Lotus pelio-rhynchus*, *Tremandra verticillata* and *Bauera rubioides*.

Mr. H. N. ELLISON showed greenhouse Ferns and foliage plants. *Adiantum fragrantissimum*, *Nothochloena sinuata*, *Polypodium glaucum* and *Araucaria Silver Star* were among the many good things staged, and a touch of colour was added by the coloured foliage of *Saxifraga sar-mantosa tricolor*.

Messrs. H. B. MAY AND SONS, Edmonton, set up a group of greenhouse Ferns and flowering plants. The former were represented by *Polypodium Mandaianum*, *Davallia fijiensis grandis*, *Doryopteris grandifolium*, *Blechnum coreovadense* and *Platyverium grande*. Small batches of *Hydrangea Mme. Mouilliere*, *Verbenas Ethereal* and *Miss Willmott*, and *Heliotrope Lord Roberts*, were among the collection of greenhouse flowering plants.

A brilliant piece of colouring was provided



FIG. 133.—LILIUM FARRERI.

(See Awards by the Floral Committee.)

by the circular display of the new *Pelargonium Victory*, by Messrs. W. S. WATNEY, LTD., Bealey Heath, Kent. This variety is very free-flowering and the colour is a charming shade of salmon, tinged with rose—a colour which is useful for effect in natural or artificial light. A large ground group, consisting solely of *Pelargonium crispum variegatum*, was displayed by the Hon. VICARY GRIBBS (gardener Mr. Edwin Eckett), Aldenham House, Elstree. The foliage of this variety is very small and edged with white, while the perfume resembles essence of lemon. The group was composed of large plants, dotted with smaller specimens trained in standard form, and edged with miniature plants in 3-in. pots.

From Messrs. GODFREY AND SON, Exmouth, came a display of a large-flowered strain of *Schizanthus* and regal and decorative *Pelargoniums* represented by some very fine new varieties, included amongst which were *Dazzler* (scarlet), *The Prince* (crimson), *Fascination* (pale-pink), and *Exmouthian* (rose, flushed with

salmon). Show *Pelargoniums* were displayed by AUBREY WOOLLEN, Esq. (gardener Mr. W. Lamson), Sunningdale, Epsom. The plants were exceptionally well-grown and included the varieties *Devonshire Cream*, *Black Prince*, Mrs. *Aubrey Wootton* and *Queen Mary*.

A table group of dwarf hybrid *Schizanthus* was exhibited by Mr. ALFRED DAWKINS, King's Road, Chelsea. The plants were of good, sturdy habit, very floriferous and of a wide range of colours. Messrs. JARMAN AND CO., Chard, exhibited *Zonal Pelargoniums*, together with *Violas* in many varieties.

Trees and Shrubs.

The DONARD NURSERY CO., Newcastle, Co. Down, were able to bring from Ireland a large collection of rare and uncommon shrubs, which they arranged in a circular group in a tent. *Pittosporum Mayii Silver Queen* formed an imposing centre piece, and this decorative variety was also represented by smaller plants. *Embothrium coccineum*, which is distinctly a shrub for favoured districts, was excellent in its gorgeous colouring. *Desfontanea spinosa*, *Tricuspidaria lanceolata*, *Osmanthus armata*, with broad, large spined leaves, and *Leptospermum Nicholii*, bearing red flowers, are the names of only a few of the valuable plants exhibited.

Messrs. WATERER, SONS AND CRISP had a very attractive arrangement of trees and shrubs in the open. *Clipped Box* and *Yew* were an important part of the exhibit, which was backed by a row of especially fine standards of *Cupressus obtusa Crippsii*. The many choice shrubs included *Nandina domestica*, *Leptospermums*, particularly *L. Nicholii*, *Ozothamnus rosmarini-folius*, varieties of *Ceanothuses* and *Genistas*, and these were also specially well grown.

Mr. L. R. RUSSELL, Richmond, exhibited many luxuriant Bays, both pyramids and standards, with *Ceanothuses* covered with filmy, blue flowers, *Wistarias* and an abundance of the fascinating *Azalea roseaeflora* as an edging. In a tent Mr. Russell used *Ghent Azaleas* in enviable variety. *Cordylone Albertii* and *Hydrangeas* in a good miscellaneous group.

The YOKOHAMA NURSERY CO., Kingsway, London, staged their usual collection of dwarfed Japanese trees, and on this occasion included several most charming examples of *Azalea indica "Kurume"* (*A. Kaempferi?*) a very variable plant of great decorative value. The soft pink coloured and also a salmon coloured form were particularly effective. *Quercus dentata*, labelled as 60 years old, though of stunted form, was particularly vigorous in leaf, while *Lagerstroemia indica*, just coming into leaf, was of delicate beauty.

Messrs. W. FROMOW AND CO., Chiswick, set up a delightful collection of Japanese Maples in the open. Altogether there were four large van loads of these interesting plants, which included all possible leaf forms and colouring.

Messrs. J. PIER AND SONS grouped many *Clematis* in bloom with silvery *Junipers*, various Japanese Maples and the climbing *Solanum jasminoides*, which thrives so well out-of-doors in the warmer parts of the country.

Mr. G. REUTHE, Keston, Kent, included several *Rhododendrons* and *Azaleas* with his collection of trees and shrubs. *Olearia oleifolia*, *Crevillea rosmarinifolius* and *Tricuspidaria lanceolata* were also of interest. Mr. ARTHUR TURNER, Slough, was still able to show good *Lilacs*, principally double-flowered varieties.

Mr. R. C. NORCUTT, Woodbridge, gave prominence to particularly well flowered *Kalmia latifolia* in his group of shrubs. *Brooms* in variety, *Ghent Azaleas* and Japanese Maples were also very attractive.

Rhododendrons and Azaleas.

These indispensable hardy shrubs formed quite a dazzling feature of the show and as they were to be found in several of the tents as well as out-of-doors, the visitors were enabled to appreciate to the full the glorious colours of these handsome shrubs. In spite of the dry period, only so recently broken, the late *Rhododendrons* were particularly fresh, and bore fine trusses of large flowers.

Messrs. WATERER, SONS AND CRISP arranged their famous Bagshot Rhododendrons in four adjacent beds with ample greensward between. In this magnificent contribution it was, perhaps, the pink varieties that attracted most admiration. These were especially numerous and included Lady Clementina Mitford, Mrs. E. C. Sterling and Duchess of Teck. Sweet Simplicity, most delicately tinted at the margins of the flowers; Mrs. Wm. Agnew, of glowing colour, Corona, of a dazzling pinkness, and the popular Pink Pearl, are the names of other desirable pink Rhododendrons, while Michael Waterer and the Marquis of Waterford, of rich crimson colour, were represented by bushes and standards in full bloom. Ted Waterer, the novelty of the exhibit, has blooms of uncommon bluish lilac shade, which becomes much deeper at the margins.

Messrs. FLETCHER BROS., Chertsey, contributed a circular group of well-flowered Rhododendrons, in which we especially noted Edward E. Rand, Lady Claremont, Doncaster, Florence, Everestianum and album elegans as being particularly valuable.

Azaleas formed the principal portion of the exhibit by Messrs. R. and G. CUTHBERT, of Southgate. The two beds contained many charming standards of these fragrant flowers, which were well set off by floriferous bushes of Genista Daisy Hill, G. flore albo and many bright coloured Japanese species. In a miscellaneous collection of shrubs, Messrs. J. CHEAL AND SONS, Crawley, included bushes of the delightfully-scented Rhododendron azaleaoides (syn. Azalea fragrans), and a couple of large examples of R. tenellum literally smothered with small deep-pink blossoms. Of the other shrubs, Zenobia speciosa, various Wisterias, Genistas and beautifully-coloured Japanese Maples were exceptionally meritorious.

Mr. T. LEWIS, Uxbridge Road, Hanwell, exhibited two large groups of Rhododendrons of the best varieties. The standards and bushes were very floriferous and added much to the brightness of the tent.

Messrs. ROBERT NEAL AND SON, Wandsworth, may be considered new exhibitors at Chelsea in such an extensive manner as this year. Immediately inside the Embankment entrance they had a glorious massed bank of magnificent Rhododendrons, which gave promise of the general excellence of their collective exhibit. The Rhododendrons were of up-to-date varieties and particularly well-flowered.

Topiary Exhibits.

For the first time for several years Topiary specimens were shown in quantity. Tastes may differ as to their value in the garden, but none could fail to appreciate the painstaking labour which must have been spent in producing the exact specimens which were on view.

A collection of trimmed trees does not exactly lend itself to effective grouping, even though each individual may be perfect of its kind, but Mr. John Klinkert of Richmond, contrived to make his exhibit quite attractive in a trim and straightforward manner. A pathway, bounded with slender pyramids in box, divided the collection into two gardens, both fronted by ball-shaped specimens. In these enclosures were clipped trees in all imaginable shapes and all as perfect as human skill could make them.

Messrs. J. PIPER AND SONS, Bayswater, grouped fine specimens near to their formal garden, which charmed so many visitors. The topiary was extensive and composed of spirals and crosses, pheasants and seats, pyramids and balls and many other shapes. Each was mathematically exact and of delightful fresh greenness.

Cutbush and "cut bushes" are appropriate terms for topiary specimens, and those exhibited by Messrs. WM. CUTBUSH AND SON, of Highgate, were fully equal to any that they have previously displayed. As before, there were perfect examples of every possible form and so grown as to be capable of being transplanted at any season.

Hardy Plants.

A very charming and effective exhibit of hardy Ferns and herbaceous and alpine plants was grouped by Mr. AMOS PERRY, Enfield. The hardy Ferns, grown in pots, formed a de-

lightful feature of the exhibit, the delicate green fronds contrasting with the splash of colour of the banks of Irises and Oriental Poppies arranged on either side. Among the Ferns were beautiful specimens of Polystichum angulare divisilobum foliosum, P. a. plumosum, P. a. d. densum, Osmunda gracilis, O. japonica, and Anthyrium plumosum cristatum. Among the Oriental Poppies, the fringed-petalled King George and Lord Lambourne, Countess of Stair (deep coral), Mrs. Perry, and the pale Princess Mary were noted; while bearded Irises were represented by fine flowers of the varieties Porcema, Mrs. H. Darwin, Cherubim, and Standard Bearer. Other good things were Roscoea caulioides, Geum Dolly Worth (brilliant orange) Lilium croceum \times davuricum luteum, L. croceum hybrid \times d. luteum and Erigeron Antwerpia.

Herbaceous and alpine plants were shown in delightful form by Messrs. BEES, Ltd., Liverpool, and the group contained such beautiful things as Roscoea Humeana, R. caulioides, Primula nutans and a good strain of long-spurred Aquilegias, together with Cotyledon simplicifolia, Saxifraga longifolia, Pyrethrums, Lupins and Delphiniums in many varieties. From Messrs. SUTTON AND SONS, Reading, came a very bold group of cut spikes of Antirrhinums shown against a background of black velvet. Large epergues of Sutton's yellow, Carmine Pink and Melrose, were arranged along the back and other varieties of merit were Coral Red, Fire King, Pure White, Deep Apricot, Giant Deep Crimson and Bright Pink.

Situated at one end of their wonderful display of Sweet Peas, Messrs. DOBBIE AND CO., Edinburgh, showed an equally creditable exhibit of Antirrhinums. The varieties Bon Fire, White Beauty, Rose Queen, Moonlight, Maize Queen, Fiery Belt, and Carmine Queen were very fine, and every variety shown was the model of perfection.

An exceptionally fine display of varieties of Lupinus polyphyllus was staged by Messrs. HARKNESS AND SONS, Bedale, Yorks. Moerheimii, Royalty, Treasure, Salmon Queen and Firefly were exceptionally fine varieties. Single Paeonies and Oriental Poppies were also shown by the same firm. From Messrs. REAMSBOTTOM AND CO., Geashill, Ireland, came a display of St. Brigid Anemones, and from Messrs. BAKERS, Wolverhampton, came a group of herbaceous plants, including the golden-yellow Geum Lady Stratheden, Pyrethrums, Lupins, Delphiniums and Poppies.

Messrs. LAXTON BROS., Bedford, showed a good strain of new hybrid Lupine, while in the exhibit from Mr. G. W. MILLER, Wisbech, Heucheras in variety, Erigeron B. Ladhams and Pyrethrum Queen Mary were included.

East Lothian Stocks, Violas and Pentstemons were shown by Messrs. JOHN FORBES, Ltd., Hawick, and a display of herbaceous and alpine plants came from the Misses HOPKINS, Shepperton-on-Thames. Messrs. MAXWELL AND BEALE, Broadstone, Dorset, staged a good collection of alpine, and Messrs. PIPER, Bayswater, London, were responsible for a neat group of herbaceous plants, amongst which Lychnis Arkwrightii, Campanula Telham Beauty, and Dianthus Gladys Cranfield were displayed. Dr. MACWALT, Duns, Scotland, showed Primulas in fine form. The baskets of Lissadell Hybrid, Veitchii (improved) and sikkimensis were exceptionally good. Very rare species were P. menziesiana P. chrysopa, P. gerardiana and P. palmieri.

Messrs. R. TUCKER AND SONS showed wonderful spikes of the striking blue Delphinium Blue Bird, together with Pyrethrums, Campanulas, Irises and alpine plants. Lupins and Delphiniums were also staged by Mr. G. R. DOWNER, Chichester. A group of hardy herbaceous plants was staged by Messrs. J. GIBSON AND CO., Bedale, Yorks; and Poppies, star Dabbias, Irises, Lupines and other herbaceous plants were shown in the exhibit by Messrs. J. CHEAL AND SONS, Ltd., Crawley.

Some very fine varieties of Iris, including many shades of colour and resulting from the original cross between I. xiphium and I. tingitana, came from Messrs. HERBERT CHAPMAN, Ltd., Rye, Sussex. Mr. G. REUBE, Keston,

showed choice alpine plants, hardy Orchids, Poppies, Eremuri, Irises and other herbaceous plants; while close by Messrs. B. LADHAMS, Ltd., Southampton, staged hardy border Pinks, Erigerons, Oriental Poppies and other seasonable herbaceous plants.

A star-shaped bed of bearded Irises came from Messrs. JOHN WATERER, SONS AND CRISP, Ltd., Twyford. Her Majesty, Prosper Langier, Sarpodon, Gaius, and Miss Maggie were varieties noted in this collection. The same firm also staged a bright group of alpine plants.

Magnificent spikes of Eremuri formed the feature of the display from Messrs. WM. ARTINDALE AND SON, E. robustus, E. Elwesii, E. himalaicus and E. turkestanicus, were represented. Pyrethrums, Heucheras and Delphiniums in variety were also included in the group.

A group of herbaceous and alpine plants came from Mr. MAURICE PRICHARD, Christchurch. Pyrethrum carminatum plenum Holstein (a unique flower), Delphiniums Mrs. Baker, Pride of Sumerville and the pale Moerheimii and Kniphofias in variety were particularly fine. An uncommon plant was shown in the form of Antholyza coccinea, while among alpine plants Campanula garganica hirsuta, C. muralis and Erodium cisticum occupied prominent positions.

Messrs. KENT AND BOYDON, Darlington, showed slightly raised beds of bearded Irises, skirted with a stone path. Good varieties included Plumeri, Mrs. Alan Gray, Lord of June, and Rosabelle. Daphne Cneorum, Azaleas and Primula pulverulenta occupied prominent positions in the same group.

Messrs. J. C. ALLGROVE, Slough, set up a display of hardy herbaceous plants, interspersed with specimen Acers and flowering shrubs. Anchusa italica Opal, Trollius Ledebourii, Eremurus robusta, the large-flowered Campanula Telham Beauty and a magnificent specimen of Saxifraga longifolia were noted in the group.

Messrs. BARR AND SONS, Covent Garden, London, showed a very fine group of early flowering Xiphium Irises; the flowers were of large size and represented by some charming varieties in Berkemeyer, C. Van de Windt, Vaillant, Roland Holst, Theodore de Bock, and Ten Kate. The same firm also exhibited a miscellaneous group of herbaceous plants, chief among which were Kniphofia caulescens, Allium albo-pilosum, Papaver unique, and Lupinus Taplow Yellow.

A pretty group of cut flowers was arranged by Messrs. GEO. BUNYARD AND CO., LTD. Lilium longiflorum mixed with white Astilbes formed the centre of the group and masses of bearded Irises, chief among which were Nithro, Emperor, Isolene, and Innocenza, completed a very charming display.

A circular ground group of herbaceous plants was exhibited by Messrs. R. H. BATH, LTD., Wisbech. Delphiniums were represented by the varieties Gladiator, Lilama, Mrs. Creighton and some delightful new varieties under number. Amongst the Paeonies, Electra, Golden Harvest, and Lord Kitchener were noted and Pyrethrums Aphrodite, La Niège, Queen Mary and Raphaela were included in the display. Messrs. G. JACKMAN AND SON, Woking, showed a fine collection of Clematis in pots, which made an effective background to the masses of herbaceous plants. Striking subjects were seen in Papaver orientale Goliath, Lavatera Olbia, Delphinium Rev. Lascelles, Irises in variety, Lupinus Prince's May, and Geum coccineum Mrs. Bradshaw.

Messrs. W. H. ROGERS AND SON, LTD., Southampton had a very charming group of alpine and herbaceous plants, together with flowering shrubs. Among the latter were Embotrium coccineum and Crinodendron Hookeri, while Sempervivums, Dianthus, and Erigerons were also seen in quantity. Alpines in pots were staged by Mr. REG. PRICHARD, Wimborne, and some interesting plants were Gazania montana, Silene radicans, S. alpestris plena, Dianthus Lansdownii, Campanula garganica emma, Pratia arenaria and Scutellaria indica japonica. From Messrs. W. WELLS, JUNR., came a table group of Delphiniums and other herbaceous plants, pots of alpine being arranged at the front of the exhibit.

Messrs. WHITEHEAD AND CO., Chislehurst, showed Saxifraga calabica, Edianthus pumilio, Erodium Reichardii and Asperula sub rosea, in

their display of alpine plants. The same firm also showed a pretty group of Liliiums, while from Messrs. WATERER, SONS, AND CRISP, LTD., Tytord, came a display of herbaceous and alpine plants.

Messrs. J. KELWAY AND SONS, LTD., Langport, showed Paeonies and Delphiniums. Among the former were the varieties Princess, Sea Shell, Territorial, and Duke of Devonshire, while Delphiniums were represented by fine spikes of Capt. Henderson, Splendour, Wellington, and Royal Blue. Mr. JAS. MACDONALD, Harpenden, made an effective group of lawn grass and ornamental grasses, the latter including Elymus glaucus, Eulalia zebrina, and Pheum aureum striata.

The Rock Gardens.

The various rock gardens occupied their customary place against the Embankment shrubbery. For the most part there is a great family likeness in the present-day style of arrangement. The very boulders all seem as though they came from the same quarry; each exhibit had a small stream tumbling more or less from the back centre and on by devious ways to a pool near the front. The pool, unfortunately, soon becomes stagnant and uninviting. Planting was rather more sparsely carried out than is expected at the great spring show.

Messrs. R. TUCKER AND SONS, Oxford, contributed a rock garden which harmonised well with its neighbours and the surroundings. The winding stream, flowing into a pool, was fresh and clear and the sides planted with Saxifragas and other alpines, while higher up dwarf Conifers were displayed.

Mr. CLARENCE ELLIOTT, Stevenage, built a much higher foreground than usual and so successfully broke the level of the collection of rock gardens. The planting included a group of Saxifraga alopecurum and other species, many Violas and perfect little specimens of the upright Irish Juniper.

Messrs. G. G. WHITELEGG AND CO., Chislehurst, Kent, had a long stretch of ground at the entrance to the rock garden quarter. The arrangement was the usual waterfall with stream and pool surrounded by boulders. In the pool were several Nymphaeas in full bloom, Azelea roseiflora, a beautiful little greenhouse shrub, was freely used. One end of the rockery was devoted to admirable dwarf Conifers in great variety.

Messrs. HAYES AND SONS, Keswick, made the type of rock garden visitors have become accustomed to expect at Chelsea, and they planted it rather more freely than was generally done this year. Besides a great variety of the customary alpines, they brought a collection of lakeland plants, including Ferns.

Mr. J. WOOD, Boston Spa, struck a novel note in his design. It might well be described as being the approach to a tor. It has become almost an axiom with certain garden designers that a deal may be done with rocks, grass and water. This is true so far as it goes, but more, much more, is needed to evolve the satisfying rock garden. Mr. Wood's design was simplicity itself and quite true to nature. Its failings were due to the restrictions of space. As an introduction to a large rock garden it is to be strongly recommended.

Messrs. WALLACE AND CO., Colchester, are past-masters in the art of setting boulders and fashioning streams and pools in a natural manner. Their latest effort was in the form of a conventional rock garden with waterfall, stream and pool, with appropriate surroundings. The planting was a trifle sparse, but sufficient to furnish the spaces between the boulders. In the background Rhododendrons in full bloom lined a path through the woods.

Mr. C. ELLIOTT, Stevenage, Herts, built an informal rockery on a table space in the tents. The boulders were nicely placed, interplanted with suitable flowering plants and miniature Junipers. A miniature dry wall and paved garden was contributed by Mr. A. D. THOMPSON, Adam St., London.

Formal Gardens.

Messrs. J. PIPER AND SONS, Bayswater, were particularly happy in their garden design. An old stone circular archway led into a sunken garden of most agreeable proportions and en-

closed by Cypress hedges. It was essentially a Blue garden and only plants bearing shades of that colour were used. The middle beds contained fine plants of Campanula Telham Beauty, while in the raised borders were Delphiniums, Larkspurs, Lupins, with the dwarfed Nepeta Mussini and many Aubrietias.

Mr. HERBERT JONES, Bath, made two separate, but adjoining gardens, primarily to illustrate the suitability of stone from his quarries for garden purposes. But he achieved more than this, and the gardens were the centre of a deal of deserved admiration. The fountain garden, enclosed by 6 ft. high Yew hedges, contained a generous fountain, around which Iris sibirica was planted. Paved walks, stone enclosures and pergola pillars with grass, comprised the second garden, which was cool and restful and altogether satisfying to the eye and mind.

Mr. H. BROOK, Streatham, made a small formal garden apparently to display his York stone paving and succeeded admirably. A sufficiency of flowering plants and shrubs, including two small Rose beds, brightened the garden.

Messrs. PULHAM AND SON, Newman Street, London, were quite successful in their garden schemes. In the foreground a simple Rose garden and pool, with fountain, led to small lawns and on to the rock garden, where they planted a pleasing variety of alpines.

Mr. E. DIXON, Putney, made a quaint, circular, sunken garden with dry stone walls and enclosure, which he furnished with many appropriate plants. In the adjoining tent Messrs. W. WALLACE AND CO. made a sunken garden in which a splendid variety of Irises were predominant. The raised borders were generously filled with a splendid variety of herbaceous plants, including Eremurus, Delphiniums, while at the back there was a row of fresh, green Cupressus erecta viridis.

TULIP COMMITTEE.

Present: Messrs. E. A. Bowles (in the chair), J. Jacob, Geo. Churcher, Jan de Graaff, Reginald Cory, Herbert Smith, G. Renthe, E. Krelage, Henry Backhouse, J. W. Jones, H. V. Warrender and W. Poupart, Miss E. Willmott, and Charles H. Curtis (hon. sec.).

Probably this was the first R.H.S. Spring Show at which Tulips were not shown. In most years the late Tulips have been finely represented by large groups, and the gorgeous colouring of the flowers has provided a distinctive feature. This year, however, owing to the hot weather and the seven days' later date, all Tulips were over.

FRUIT AND VEGETABLE COMMITTEE.

Present: Messrs. C. G. A. Nix (chairman), A. H. Pearson, Geo. F. Tinley, J. Basham, W. H. Divers, W. Bates, J. C. Allgrove, S. B. Oicks, A. Bullock, H. S. Rivers, J. Morrison, W. Poupart, G. P. Berry, F. Jordan, J. G. Kelly, W. Crump, J. G. Weston, A. W. Metcalfe and T. Coombor.

The only exhibit submitted for award was Apple Sandling Duchess, which it was stated had already received an Award of Merit.

The Award made on the previous occasion was confirmed. Shown by Mr. W. CRUMP, Malvern.

COLLECTIONS.

Messrs. T. RIVERS AND SONS, Sawbridgeworth, staged a group of 80 pot trees of Nectarines, Peaches, Plums and Figs. The plants were ideal specimens, dwarf, yet of compact build and bearing freely. The trees of Cardinal, Early Rivers and Lord Napier Nectarines, and Peregrine, Kestrel and Libra Peaches, were all cropping abundantly.

Messrs. LANTON BROS., Bedford, were the exhibitors of Strawberries, which they displayed in a very attractive manner. There were about a dozen varieties, mostly novelties, including Tit Bit, a large conical variety of bright red colour and of excellent flavour; Sir Douglas Haig, a large, early variety; Laxtonia, of first-class flavour and with firm flesh; The Duke, one of the best of modern varieties, an excellent cropper, a little earlier than Royal Sovereign, and a good forcing variety; and The Admiral, a main crop variety of excellent flavour.

Messrs. T. SPOONER AND SONS, Hounslow,

showed Cordon Currants and Gooseberries in the open.

Major the Hon. Sir J. H. WARD, Chilton, Hungerford (gr. Mr. C. Beckett), exhibited a table of choice dessert fruits, staged in the best exhibition style. The quality was first-rate and each dish in the best condition for the dessert table. There were sixteen bunches of Grapes, all well finished and including Black Hamburgh, and Foster's Seedling varieties. Nectarines were remarkably fine, especially those of Early Rivers. Peaches were represented by the variety Hale's Early. There were several fine Melons, good, brown Turkey Figs, Strawberries and Gooseberries.

Messrs. G. BUNYARD AND CO., Ltd., filled a long table with varieties of Apples. The exhibit included some forty dishes. The fruits were in excellent condition and many appeared as plump and as fresh as in November. The more notable varieties were Star of Devon, Ontario, Wagener, Encore, Cox's Orange Pippin, Heusinger's Golden Reinette, Alfriston, Annie Elizabeth, Belle de Pontoise and Sturmer Pippin. Ontario, Encore and Wagener were the three finest sorts.

The STATE OF VICTORIA, Australia, showed fruit from the colony, including Apples in boxes as packed for market, and Apricots, Cherries, Peaches, Currants, Pears, etc. in bottles.

AWARDS MADE BY THE COUNCIL.

Sherwood Memorial Cup.—This cup, presented by Messrs. Hurst and Son in memory of the late Mr. N. N. Sherwood, offered for the best exhibit in the show, was won by Messrs. WATERER, SONS AND CRISP, for a glorious display of Rhododendrons.

Daily Graphic Cup.—Offered for the best rock garden; won by Messrs. R. WALLACE AND CO., Colchester.

Gold Williams Medal.—To Messrs. CHARLES-WORTH AND CO., for Orchids.

Gold Medal.—To SIR JEREMIAH COLMAN, Bt. (gr. Mr. J. Collier), for Orchids; Messrs. ARMSTRONG AND BROWN, for Orchids; and to Messrs. J. AND A. McBEAN, for Orchids; Messrs. J. PIPER AND SONS, for formal garden; Messrs. R. TUCKER AND SONS, for rock garden; Messrs. R. W. WALLACE AND CO., for rock garden; Messrs. ALLWOOD BROS., for Carnations; Messrs. BLACKMORE AND LANGDON, for Begonias and Gloxinias; Messrs. J. CARTER AND CO., for flowering plants; Messrs. DOBBIE AND CO., for Sweet Peas; THE DONARD NURSERY CO., for new and rare shrubs; Mr. AMOS PERRY, for Ferns and Herbaceous; Messrs. T. RIVERS AND SON, for Fruit Trees in Pots; Messrs. SUTTON AND SONS, for Calceolarias and flowering plants; Messrs. R. W. WALLACE AND CO., for Lilies, Irises and Eremuri; the HON. WARD, C.V.O., (gr. Charles Beckett), for a collection of fruit; Messrs. WATERER, SONS AND CRISP, for Rhododendrons.

Silver Gilt Flora Medal.—To Messrs. J. CYPHER AND SONS; and to Messrs. FLOYD AND BLACK, for Orchids; Messrs. G. G. WHITELEGG AND CO., for rock garden; Mr. J. KLINKERT for Topiary; Messrs. WATERER, SONS AND CRISP, for trees and shrubs; Messrs. A. DICKSON AND SONS, for Sweet Peas; Messrs. DOBBIE AND CO., for Antirrhinums; Messrs. PAUL AND SON., for Roses; Messrs. W. PAUL AND SON, LTD., for Roses; Messrs. WEBB AND SONS., for flowering plants.

Silver Gilt Grenfell Medal.—To Messrs. ARTINDALE AND SON, for Erenhuri; Messrs. BARR AND SONS, for hardy plants and Paeonies. Messrs. BEES LTD., for Herbaceous and Alpine plants; A. P. BRANDT, Esq. (gr. J. W. Barks), for Crotons; Messrs. BEN R. CANT, AND SONS, for Roses; Mr. J. DOUGLAS, for Border Carnations; Mr. CLARENCE ELLIOTT, for Alpines; Mr. C. ENGELMANN, for Carnations; Mr. ELISHA J. HICKS, for Roses; Messrs. G. JACKMAN AND SONS, for Herbaceous plants; Mr. T. LEWIS, for Rhododendrons; Messrs. STUART LOW AND CO., for Carnations; Messrs. J. PEED AND SON, for Caladiums; Mr. G. REUTHE, for hardy plants; Mr. L. R. RUSSELL, for stove and other plants; Messrs. WATERER, SONS AND CRISP, for Alpines and hardy plants; Messrs. STUART LOW AND CO., and to Messrs. MANSELL AND HATCHER, for Orchids; Mr. HERBERT JONES, for

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Propagation by Cuttings (see p. 177).—I am very much obliged to my friend, Mr. E. H. Jenkins, for his interesting communication. I am greatly interested to know that Mr. Brown of Parker's Nursery, actually did strike cuttings of *Ipomaea Horsfalliae* by using restricted stock plants. I made a point of striking cuttings of this plant because it had the reputation in the trade of being always grafted. I believe upon *Batatas paniculatus*. Mr. Jenkins surmises quite correctly that I was well acquainted with Mr. T. Brown. It was his business to visit Kew for several years for exchange purposes, and it became mine to visit the nursery upon the same mission. He had a great reputation as a cultivator; he was at one time, I believe, a foreman at Kew, and the curator there gave him great credit as a grower of Heaths. In the nursery were many things of interest, and especially I remember a shallow frame of the *Cheilanthes* set of Ferns, I believe planted out, that I have never known equalled. This frame was against one of the houses, and though I do not remember what the treatment was, it is possible that some of these Ferns are harder than is usually believed, for Mr. T. Westcombe, of Worcester, the *Stapelia* specialist, used to grow *Notholaena Marantae* planted out with a bell-glass

plant must not be stopped, but a plan I may term the Cambridge plan is very effective. Mr. G. H. Banks, now of the Glasgow Botanic Garden, used to grow strong canes in, say, 32-sized pots, singly. These bore wreaths of good length which by standing the pots between the regular occupants of the stage and bench, could be protruded beyond the general level of foliage with great effect. Mr. Coatts, of Kew, in the issue of *Gard. Chron.* to which I here refer, gives valuable information for planting out and growing this plant well, and it may be of interest that many years ago I saw the back wall of a house, in a garden near Plympton, Devon, covered with wreaths from a planted-out specimen. In these days of span-roofed houses the value of a back wall is hardly recognised sufficiently, for the back wall often provides for developments that can be obtained in no other way. With regard to the cuttings of *Euphorbia Myrsinites*, that would callus without making root, I may mention that in the case of stove plants I have, I believe, found that the judicious breaking-up of the excessive callus with the thumb-nail induces the formation of roots. I have thought in the case of long-standing cuttings that the mere reinsertion in fresh soil and clean pots would sometimes result in the root development, but I believe the doctor often comes when the patient is about to get well of himself! *R. Irwin Lynch.*

Italian garden; Mr. C. ELLIOTT, for rock garden; Mr. J. MACDONALD, for Grasses; Messrs. J. PIPER AND SON, for Topiary and Japanese trees. *Silver Gilt Banksian Medal.*—To Mr. J. C. ALLGROVE, for Herbaceous and Alpine plants; Mr. R. BOLTON, for Sweet Peas; A. P. BRANDT, Esq. (gr. J. W. Barks), for Pelargoniums; Messrs. J. CHEAL AND SONS for flowering trees and shrubs, and also one for herbaceous plants; Messrs. W. CUTBUSH AND SON, for Roses and also one for Topiary; Messrs. G. GIBSON AND CO., for hardy plants; Messrs. KELWAY AND SON, for Delphiniums; Messrs. LAXTON BROS., for Strawberries; Messrs. J. PIPER AND SON, for Clematis and ornamental shrubs; Mr. MAURICE PRICHARD, for Alpines and Herbaceous plants; Mr. R. PRICHARD, for Alpines; Messrs. W. H. ROGERS AND SON, for Alpines; Messrs. R. TUCKER AND SONS, for hardy plants; THE GOVERNMENT OF VICTORIA (Australia), for fresh Apples; Mr. E. DIXON, for formal garden; Messrs. PULHAM AND SON, for formal garden and also for rock garden; Mr. S. R. HAYES, for rock garden; Messrs. W. FROMOW AND SONS, for Japanese Maples; Mr. L. R. RUSSELL, for ornamental shrubs.

Silver Gilt Knightian Medal.—To Messrs. G. BUNYARD AND CO., for Apples.

Silver Lindley Medal.—To Dr. J. MACWATT, for Primulas.

Silver Flora Medal.—To Mr. H. DIXON, for Orchids; Mr. HERBERT JONES, for formal garden; Messrs. G. BUNYARD AND CO., for Irises; Mr. A. DAWKINS, for Schizanthus; Mr. G. R. DOWNER, for Lupins and Delphiniums; Messrs. FLETCHER BROS., for Rhododendrons; The Hon. VICARY GIBBS (gr. E. Beckett), for Pelargoniums; Messrs. J. GODFREY AND SON, for Pelargoniums and Poppies; Messrs. B. LADHAMS, for hardy plants; Messrs. K. LUXFORD AND CO., for Carnations; Messrs. H. B. MAY AND SONS, for Ferns and greenhouse plants; Mr. G. W. MILLER, for herbaceous and rock plants; Mr. J. STEVENSON, for Sweet Peas; Messrs. SUTTON AND SONS, for Antirrhinums.

Silver Grenfell Medal.—Messrs. BAKERS, LTD., for hardy plants; Messrs. BARR AND SONS, for Irises; Messrs. S. BIDE AND SONS, for Sweet Peas; Messrs. R. and G. CUTBERT, for Azaleas; Messrs. WM. CUTBUSH AND SON, for Carnations; Mr. H. J. DAMERUM, for Sweet Peas; Messrs. HARKNESS AND SONS, for Lupins; Mr. C. H. HERBERT, for Pinks; Messrs. KENT AND BRYDON, for Irises; Messrs. LAXTON BROS., for Lupins; Mr. R. C. NOTCUTT, for flowering shrubs, etc.; Messrs. J. PEED AND SON, for Gloxinias, etc.; Mr. GEORGE PRINCE, for Roses; Mr. G. REUIHE, for flowering shrubs; Messrs. WATERER, SONS AND CRISP, for Irises; Messrs. W. S. WATNEY AND CO., for Geraniums; AUBREY WOOTTON, Esq. (gr. W. Lamson), for Pelargoniums; The YOKAHAMA NURSERY CO., for Japanese trees and gardens.

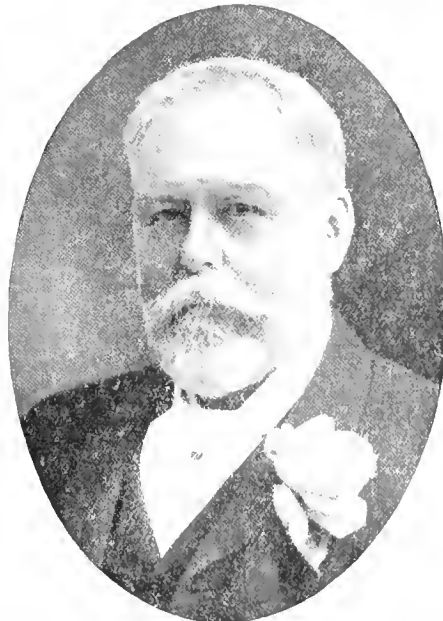
Silver Banksian Medal.—Mr. H. CHAPMAN, for Irises; Mr. H. N. ELLISON, for Ferns and Palms; Messrs. JARMAN AND CO., for Pelargoniums and Violas; Messrs. STUART LOW AND CO., for Australian and Greenhouse Plants; Messrs. J. PIPER AND SON, for Alpines; Mr. A. D. THOMPSON, for Alpines; Messrs. WHITELEGG AND CO., for Alpines, and to the same firm for Lilliums.

Bronze Knightian Medal. To Messrs. S. SPOONER AND SONS, for Gooseberry and Currant trees in pots.

Bronze Banksian Medal. To the Misses HOPKINS, for Alpines, and Mr. C. H. TARDVIN, for Alpines.

Scientific and Educational Tent.

Silver Lindley Medal.—To Professor V. H. BLACKMAN, Imperial College of Science, for exhibit of apparatus used in investigating plant processes, etc.; to Mr. A. HOSKING, John Innes Hort. Institution, for cultivation of fruit trees in pots, showing the effects of cross-fertilisation in cases of self-sterility, etc.; to Mr. BRIERLEY, Institute of Plant Pathology, Rothamsted, for culture of Fungi living in the soil; to W. F. BEWLEY, Lee Valley Experimental Station, for diseases of Tomatoes; to Mr. HATTON, East Malling Fruit Experiment Station, South-Eastern Agricultural College, for fruit stocks, experiments, etc.



THE LATE GEORGE MONRO, V.M.H.

over it in the open garden, under the slight shade of a tree, but how long the plant lived I could not, of course, say. On the use of cuttings with a heel, Mr. Jenkins makes very valuable remarks, in which he is more than justified, and, indeed, the advantage of such cuttings is not altogether limited to plants like *Onosma*, for woody plants are often a success rooted that way. In the case of *Onosma taurica*, the hint given by Mr. Jenkins should be borne in mind because it is one of the finest of rock plants, and one that in my experience is liable to "go off" and be lost. It was my intention in retirement to keep myself occupied to some extent in the propagation of difficult hardy plants, and I had my mind upon *Onosma*, but it is unlikely now that I shall have either power or opportunity. Mr. Jenkins interests me in referring to *Euphorbia jacquiniiflora*, now perhaps more properly called *E. fulgens*. He gives valuable hints in the striking of cuttings, but I am tempted now beyond that stage to speak of its further culture. One of the ways is to plant several examples in a pan, by which good specimens may be formed, for, of course, the

Obituary.

George Monro.—We learn with deep regret of the death of Mr. George Monro, senior, which occurred on Sunday, May 30. For the last few days of his life Mr. Monro's strength gradually failed; he became unconscious on Saturday night and passed away peacefully at 6 o'clock on Sunday evening. Mr. Monro was seventy-three years of age, and throughout his long business career he was engaged in commercial horticulture. From very small beginnings, in 1871, he founded what is now the largest firm in the Covent Garden trade. Very early in life he exhibited a genius for organisation, and this, coupled with fine business acumen and transparent honesty, enabled him to build up the wonderful business of which he became so justly proud. Until 1905 the firm was wholly under his personal direction and management, but in that year he converted the business into a private company, his sons, Mr. E. Monro, Mr. George Monro, Jr., and Mr. B. J. Monro, becoming partners and taking charge of distinct departments. Mr. Monro took a very wide view of his responsibilities and although engaged in a business requiring the closest daily attention, he was always ready to assist any movement for the improvement of conditions affecting the sale and distribution of fruits, vegetables and flowers. Because of his shrewd business ability and foresight he was chosen on dozens of occasions to appear before Parliamentary Commissions concerning the trade, of which he became the doyen. In 1901 he became member of the Parliamentary Committee to inquire into the condition of the fruit-growing industry in the British Islands and was appointed subsequently to the position of President of the Joint Railway and Parliamentary Committee, which had for its object the improvement of facilities for the distribution of fruits and vegetables. The high esteem in which he was held in the horticultural world was recognised in 1887 when the Royal Horticultural Society awarded him the Victoria Medal of Honour in Horticulture. Although many other distinctions fell to him, he retained an unaffected and kindly disposition throughout his long life. He was a generous supporter of the Gardeners' Royal Benevolent Institution, the Royal Gardeners' Orphan Fund, and other allied charities. For many years he assisted in the management of the former institution and also of the Horticultural Club. His favourite recreation was Chess. The funeral took place on Wednesday last at 2.30 p.m., at St. Andrew's Church, Finsbury, and afterwards at the Hampstead Cemetery, Fortune Green Road.

MARKETS.

COVENT GARDEN, June 1st.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in one day.—EDS.

Fruit : Average Wholesale Prices.

Table with columns for fruit types (Apples, Cherries, Figs, Grapes, etc.) and prices in s. d. s. d. format.

Vegetables : Average Wholesale Prices.

Table with columns for vegetable types (Asparagus, Beans, Carrots, etc.) and prices in s. d. s. d. format.

REMARKS.—There is a general briskness in the trade, and although quantities of produce are increasing prices show little sign of relaxing. Cucumbers displayed a marked increase in price during the earlier part of the week and the demand remains firm. English Tomatoes show little or no variation in quotation, although supplies continue to expand, but with many of the best-known marks available it is reasonable to assume that prices will shortly be easier. Supplies of new Potatoes are particularly heavy, and, as prices are comparatively reasonable, there is no difficulty in clearing stocks each day. Choice hot-house produce is more plentiful but with the demand usually experienced during Derby Week prices remain steady. Some excellent consignments of Peaches, Nectarines, Figs, Muscats and Black Hamburg Grapes are arriving each day. English and Guernsey Melons remain much in request. Forced English Strawberries are in shorter supply, but the earliest pickings from out-of-doors have been on the market. French Cherries have been unfortunately arriving in very variable condition and many parcels must entail serious losses to the grower. New shipments of Pines are to hand. Australasian Apples remain in good demand at the controlled rates. Forced Beans are slightly firmer. English Asparagus is more plentiful and selling well. Both forced and out-door Peas are on the market, and this week have been much in request. The warmer weather has resulted in a better demand for salads.

Ferns and Palms : Average Wholesale Prices.

Table with columns for fern and palm types (Adiantum, Nephrolepis, etc.) and prices in s. d. s. d. format.

Out Flowers, &c. : Average Wholesale Prices.

Table with columns for flower types (Carnations, Orchids, etc.) and prices in s. d. s. d. format.

REMARKS.—With the exception of Carnations, Lily of the Valley and Roses, supplies are considerably larger. The market on Saturday morning last was crowded with Pyrethrum, and at the close of the market many boxes of single varieties were left unsold. There is an abundant supply of white Pinks and Sweet Peas, the latter ranging from 6d. to 2s. per bunch. Other flowers which show a large increase are Cornflowers, Delphiniums, Gypsophila, Iceland Poppies, Gladioli, white Daisies, Stocks (white and mauve). In addition to the Paeonies from home growers, some very fine blooms are being received from France, and these are arriving in good condition and meeting with a ready demand. Richardias (Arums) are a very limited supply and generally poor in quality. Consignments of Lilium longiflorum are sufficient for the demand. Other choice flowers consist of Gardenias, Lapagerias and Stephanotis. Roses are expected to be more plentiful in a few days; there is a break in the crops at the present time.

Plants in Pots, Etc. : Average Wholesale Prices.

Table with columns for plant types (Aralia Sieboldii, Asparagus plumosus, etc.) and prices in s. d. s. d. format.

REMARKS.—Business continues very brisk in this department. Bedding plants are, of course, the chief feature. The most attractive lines in flowering plants are Pomonas, Ericas, Fuchsias, Pelargoniums, Hydrangeas, Heliotropes, Marguerites, white and coloured Stocks, Spiraeas and Verbenas. Ferns and other foliage plants have been reduced in numbers to make room for the increased supplies of bedding and other border plants.

SCHEDULES RECEIVED.

Richmond Horticultural Society.—Schedule of prizes for the Forty-second Annual Flower Show, to be held in the Old Deer Park, Richmond, on Wednesday, July 28, 1920. Secretaries, E. Skelton, 78, Townshend Terrace, Richmond, and J. Aikman, 69, Mortlake Road, Kew.

Heathfield and District Horticultural Society.—Schedule of prizes for the Summer Show to be held in the Crown Meadow, Heathfield, on Monday, August 2, 1920. Secretary, G. K. MacLean, Bonischester, Heathfield.

Bolton Horticultural and Chrysanthemum Society.—Schedule of prizes for the Thirtieth Exhibition to be held in the Town Hall, Bolton, on Friday and Saturday, November 19 and 20, 1920. Secretary, George Corbett, Heaton Grange Gardens, Bolton.

ANSWERS TO CORRESPONDENTS.

CULINARY PEAS UNHEALTHY: Vicarage. There is no evidence of disease in the Pea seedlings received, but there is a lack of lime in the soil, which may be, in part, the reason why the plants have failed to grow satisfactorily. The leaves and stems exhibit evidence that slugs and beetles have attacked the plants.

DISEASED DAFFODIL BULBS: W. H. The Daffodil bulbs are not affected with eelworm, the presence of which is determined by whitish, swollen areas in the foliage. The cause of the trouble is imperfect root action. This may have been brought about by unhealthy soil conditions, and bulbs left undisturbed have been known to grow out of the trouble. Horsfieldi is a variety which is particularly prone to this defect.

DISEASED TULIPS: R. W. R. The Tulips are affected with "fire," caused by the fungus Botrytis parasitica. If all the plants are in the same condition as those you send you can do nothing but remove the foliage and burn it, otherwise the fungus will travel down to the bulb. Lift the bulbs in about a month's time, and do not replant them early. November is quite soon enough, and by coming through the ground later the foliage escape much damage by frost and heavy rains. If some of your plants are but slightly affected, the disease may be held in check by removing those portions of the leaves which are affected.

NAMES OF PLANTS: F. W. M. Syringa Josikaea.—H. T. Ribes aureum.—H. A. M. Trollius europaeus.—L. S. A. 1. Polygonatum multiflorum; 2. Alyssum saxatile.—T. O. C. 1, Begonia sp. (send when in flower); 2, poor specimen, send again; 3, Epimedium Peraldianum; 4, send when in flower; 5, Centaurea montana; 6, Galega officinalis; 7, a Thalictrum (send when in flower).—T. J. H. The Tulip is probably The Fawn.

PEACH FRUITS SCALDED: C. A. B. The damage to the young fruits is due to what is generally known as scalding or scorching, and is caused by the action of bright sunshine upon the fruits while they are covered with condensed moisture. The Peach house should be ventilated very early in the morning on bright days in order that the excess of moisture on the fruits and leaves may disperse before the day has advanced far.

RED CURRANT FRUIT FALLING: M. J. N. It is not very likely that birds are responsible for the falling of the Currant fruits. We believe the trouble is due to late frosts and possibly also to the very dry condition of the soil.

SHOT-HOLE FUNGUS ON PEACHES: A. W. In the case of an attack by the Shot-hole fungus the affected leaves of the Peach tree should be gathered as they fall and burnt. If the attack is a slight one the affected leaves should be removed from the tree at once. The disease may be controlled by spraying the trees when the young leaves are expanding and at brief intervals subsequently. Bordeaux mixture is sometimes advised for spraying, but when this is used there is a danger of injury to the foliage; it is therefore better to use a self-boiled lime and sulphur compound.

SILVER LEAF DISEASE ON NECTARINE: T. H. Your tree of Stanwick Elruge Nectarine is suffering from an attack of Silver Leaf disease which is due to the presence of a fungus known as Stereum purpureum. Diseased branches should be cut back to a point where the wood shows no trace of the dark colouring which occurs in the diseased portion. Burn all the affected parts and cover the wounds with tar or styptic to prevent further infection. If the leaves of all the branches are attacked, the tree should be removed and burnt, great care being taken to remove every portion of root from the soil.

THE
Gardeners' Chronicle
No. 1746.—SATURDAY, JUNE 12, 1920.

CONTENTS.

Agricultural Wages Board, new Chairman of the...	289	"Gardeners' Chronicle" seventy-five years...	290
Allwood Bros., Gold Flora Medal awarded to...	289	Glasgow parks, salary of the Director of...	289
Apple packing...	289	Hardy flower border—	
Bean, a gigantic...	289	Anthemis eupamiana	291
Bononias from November to March...	298	Hyacinthis, "Cynthella"	290
Books, horticultural and botanical, forthcoming sale of...	290	Inclusio and Tithe Acts	290
Campanulas, hybrid...	290	Morgan Iridioides Johnsoni	297
Cardiff show, the R.H.S. Citrus inodorus...	289	Olatary—	
Darfield Rectory, Yorkshire, the garden of the Rev. Walter Stonehouse in 1640	286	De Candolle, Augustin	300
Edinburgh Botanic Gardens, notes from the...	294	Palms of the Riviera	291
Edinburgh bowling greens, boycott of the...	290	Pears, wild	297
Edinburgh, the Harrison park...	289	Potato spraying	298
Foreign correspondence—		Societies—	
Education of young gardeners,	291	Horticultural Club	299
Iris colouration...	291	Kew Guild...	300
Fruit garden, the market...	294	Royal Horticultural Society's Gardens' Guild	300
Gardening and food production	290	Wakefield and North-croft Tullis	300

ILLUSTRATIONS.

"Blue garden" at the Chelsea Show	293
Darfield Rectory, plan of the Saffron Garth at, in 1640	286
Darfield Rectory, plan of the new orchard at, in 1640	287
Iris garden at the Chelsea Show	295
Italian garden at the Chelsea Show	291
Rock garden at the Chelsea Show	299

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.18°.

ACTUAL TEMPERATURE.—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, June 9, 10 a.m. Bar, 30.0; temp 62°. Weather—Sunny

The appeal which the Horticultural College, Swanley, is issuing will, we hope, meet with a generous response on the part of all who desire to advance the cause of women's education. The College has been in existence for some thirty years, and during that time, and in spite of severe financial limitations, it has been the means of training some 1,000 women in horticulture. Of this number some have entered the ranks of professional gardeners, others have taken up positions abroad and are now doing horticultural work in different parts of the Empire—Canada, the Transvaal, Cape Colony, Natal, New Zealand, and elsewhere. The remainder have, perhaps, not applied the knowledge of horticulture they gained at Swanley to professional purposes, but we may be sure nevertheless, that they have been able as citizens to apply it to good purpose. Apprehension is sometimes entertained by professional gardeners lest the advent of women among them should affect adversely the position of men-gardeners. We think this apprehension is unfounded. Capable gardeners, of which this country can claim so large a number, will always be able to hold their own against no matter what class of competitor. It is to the interest of the profession of horticulture that the numbers of highly skilled gardeners should be yet further increased, and that the incompetent should be eliminated. In our opinion horticulture has far more to suffer from the pretensions of inadequately trained gardeners of either sex than from the competition of women. In any case, there can be no question but that the train-

ing in horticulture available for women should be as efficient and complete as that which is open to men. The educational facilities which are now in existence for men are gradually becoming adequate to the needs of the profession. The R.H.S., in establishing the School of Horticulture at Wisley, has not only been the means of training young gardeners, but has provided a model of what that training should be. The recent decision of the University of Cambridge to establish a School of Horticulture will, we hope, mean that promising young gardeners will be able to pursue advanced horticultural studies and qualify for the not inconsiderable number of posts which are being established in the counties. Training in horticulture is available at University College, Reading, for both men and women and other schools of horticulture also exist. It is, nevertheless, important that there should be in this country one or more schools of horticulture for women; schools in which women may develop their own methods and pursue them in all the many branches of horticultural art and science. If this is to be done endowment is essential, for no form of higher education can be self-supporting. The appeal on behalf of Swanley Horticultural College is supported by Lord Ernle, Sir Daniel Hall, Professor Farmer, Professor Keeble, Lady Northcliffe, and by Lady Falmouth, who is Chairman of the Governing Body of the College. At the meeting held at Chelsea House on Friday, June 4, in support of the appeal, Sir Daniel Hall announced that the Ministry of Agriculture is prepared to give assistance to Swanley to the extent of £10,000, on a pound for pound basis—that is, for every pound subscribed up to this sum the Ministry will provide a like amount. With this material help women who desire to help their own cause, and men who wish to help that cause, have reason to feel encouraged, and although the sum required for putting Swanley in a sound financial position, equipping laboratories, and providing hostel accommodation, is large and estimated at £50,000, the task of raising this sum should, we believe, prove possible of achievement. We hope the appeal will meet with a generous response, and that the meeting organised by Lady Falmouth will result in the provision of the funds necessary for enabling Swanley to continue and extend the admirable work which it has carried out with indomitable energy and under difficult conditions during the past thirty years.

New Chairman of the Agricultural Wages Board.—Mr. Collingwood Hope, K.C., C.B.E., has been appointed, by the Minister of Agriculture, to succeed Sir Ailwyn Fellowes as Chairman of the Central Agricultural Wages Board. Mr. Hope has been Chairman of the Essex District Wages Committee since its inception, and has considerable judicial experience as Deputy-Chairman of Quarter Sessions and Recorder of Bolton.

The Harrison Park, Edinburgh.—The Parks Committee of Edinburgh have agreed to ask the Merchant Company to accept £11,000 for the Harrison Park. The Town Council had been of the opinion that the price asked by the company of £15,000 for the park, including £3,000 for the drains and roads, was too high.

The late Dr. James W. H. Trail.—The late Dr. James W. H. Trail, Regius Professor of Botany at Aberdeen University, left estate of the gross value of £15,072. His bequests of his fine botanical collections, books, pamphlets, etc., which he made to the University he served so well and faithfully for 38 years, have already been noted in these columns.

Lilium giganteum at Wisley.—The colonies of the stately Lilium giganteum in the R.H.S.

Gardens, Wisley, are in capital condition this season. In a week or so there should be no fewer than 70 spikes of bloom, and to see these will be well worth a visit to Wisley; there are, however, many other attractions, notably a heavy crop of Apples in the upper orchard.

Gold Flora Medal for Messrs. Allwood, Bros.—We are informed that a mistake was made in the official list of Awards at the Chelsea Flower Show, and the President and Council have now amended the award given to Messrs. Allwood Bros. for Carnations to the higher Gold Flora Medal, instead of the Gold Medal mentioned in the list. We believe an award of the large and handsome Gold Flora Medal is of rare occurrence.

Salary of the Director of Glasgow Parks.—A committee of the Glasgow Town Council has had under consideration the salaries paid to the higher officials of the Corporation. Among those under review was that of the Director of Parks, whose salary is at present £700 with £150 bonus. The recommendation of the committee is that the salary be fixed at £850.

Weather Periodicity and Crops.—The latest of many attempts to demonstrate periodicity of weather is that made by Sir William Beveridge, Director of the London School of Economics. Sir William, however, goes further than his predecessors and claims corroboration for the regularly recurrent periods of bad weather in correspondingly recurrent periods of high prices attributable to food shortage. Examination of available records indicate a period of 15½ years as the interval between years of high prices, and evidence from meteorological records points to these years as having been characterised by bad weather. On the assumption of this cycle high prices may be looked for in 1924-25 or 26; if they are higher than at present the outlook is gloomy indeed.

A Gigantic Bean.—In the inventory of seeds and plants imported* reference is made to the Taguana, a gigantic Bean grown by an Indian tribe in the interior of Paraguay. Botanically it may be a variety Phaseolus vulgaris, but if so it is a remarkable variety, for the plant reaches a height of from 50 ft. to 60 ft. In cultivation, though it grows to a lesser height, it crops wonderfully freely—one well-grown plant yielding as many as 10 lb.—12 lb. of seeds.

Citrus inodorus.—Mr. B. M. Mathieson, Director of Queensland Intelligence Bureau, in a letter to the Sunday Times of Johannesburg, describes Citrus inodorus, the North Queensland Lime, which is named from the fact that the flowers are wanting in fragrance—a remarkable feature in a genus noted for scented flowers. "It is a new species and is well worth cultivation for its fruit, which is juicy, and of equal flavour to the West Indian Lime. In general appearance the tree resembles the Orange, having the same dark-green foliage. This tree would no doubt be useful to the world by its utilisation in the process of hybridisation, thereby eliminating Citrus disease from the orchard. The fruit is oblong, 2½ in. long, 1½ in. in diameter, showing eight obtuse ribs, the divisions of the fruit; pulp sharp, agreeably acid. Seeds, three lines long, two lines broad."

Cardiff Show.—At the Royal Horticultural Society's Summer Show, to be held at Cardiff on July 6, 7 and 8, the awards will include the Coronation Cup, Wigan Challenge Cup for Roses, Gordon-Lennox Challenge Cup, for fruit, and the new Cain Cup, for amateurs. These are in addition to the medal awards, and we are informed that the Society's medals will be struck in gold for any exhibits that deserve this honour. Arrangements are being made for securing accommodation for exhibitors and assistants; assistance will be given in the conveyance of exhibits from the railway station at Cardiff to the show ground in the Sophia Gardens, and if the impending reduction of facilities for conveyance by rail are imposed the Society will bear part of the increased cost.

* Bureau of Plant Industry, U.S. Dept. of Agriculture, Sept. 6, 1919

We are informed that entries for the Cardiff show will be accepted if they reach the secretary of the Royal Horticultural Society by first post on Monday, June 14.

A Gardener Golfer.—Mr. M. W. Seymour, of Forest Row, Sussex, gardener to Mr. S. Winkley Smith, was a competitor in the amateur golf championship, held at Muirfield, during the past week. Mr. Seymour is half-brother of Abe Mitchell, and he is described as a beautiful player with lots of power and a fine, easy style. We congratulate Mr. Seymour on winning in the first round by beating Mr. E. B. Tipping (Woodcote Park), by 2 and 1.

Apple Packing.—Those who attended the East Anglian Commercial Fruit Show, held last year at Cambridge, were greatly struck by the wide difference in packing shown by the exhibitors. As stated in our report, some were packed admirably and many were not. The representatives of the Horticultural Division of the Ministry of Agriculture who attended the Show decided to secure photographs of actual exhibits in order to demonstrate the advantage which follows good packing. These photographs have been published in connection with an article on Apple Packing in the January number of the *Journal of the Ministry of Agriculture*, and show at a glance how packing should be done and how it should not be done. In view of the importance of this subject, we suggest that enlargements of these photographs should be made and exhibited both on the Ministry's Demonstration Train and at all the important fruit shows.

"Cynthella" Hyacinths.—The majority of those who grow the "Miniature" Hyacinths for decorative purposes indoors know that the plants are merely three-year-old bulbs of the popular garden forms of the flower. To others, however, the term is misleading, and they purchase bulbs under the mistaken notion that they are miniature forms of the flower. Nurserymen find that the confusion causes disappointment among many of their customers and to prevent this, Messrs. Sutton and Sons offered a prize of £5 for a more suitable name. In response, some 465 names were submitted and the judges were Mr. Leonard Sutton, of Reading; Mr. H. Cowley, of *The Garden*; Mr. G. W. Leak, of the British Florists' Federation; Rev. Joseph Jacob, of Whitchurch; and Mr. G. F. Tinley, of *The Gardeners' Chronicle*. After much consideration it was decided to award the prize to the word "Cynthella," which was submitted by Miss C. Helen Rottenburgh, of Downhill Gardens, Glasgow. Her letter is very interesting. She writes, "Might I suggest for Miniature Hyacinths the word 'Cynthella'?" It is made from the last syllable of Hyacinth, with a diminutive ending and also after Cynthia, for which *vide* Pope (Epistle ii., 17-20), "Come, then, the colours and the ground prepare! Dip in the rainbow, trick her off on air, (Choose a firm cloud, before it fall, and in it Catch, ere she change, the Cynthia of the minute." The following titles are a selection of those sent in: Fairy, Maiden, Lesser, Fairy Bell, Lilliput, Immature (suggested more often than any other word), Baby, Bijou, Flapper, Derby (three-year-olds!), Peter Pan, Petite, and a large number of changes rung on Hyacinth, Cynthia, tres and parvus. The word Cynthella is very euphonious and appropriate, and its adoption should solve the confusion arising from the use of the present misleading term "miniature."

The Boycott of Edinburgh Bowling Greens.—The Parks Committee of Edinburgh Town Council has again had under consideration the continued boycott of the public bowling greens by the members of the Bowling Association. The special sub-committee recommended a reduction of the new charge from 3d. to 2½d. per player per rink, but a letter from the Bowlers' Association was read to the effect that the boycott would be continued unless there was a further reduction to 2d. per player for rinks, and 1d. for singles and pairs. The statement was made that there would be a loss of £800

even if the increased charges were agreed upon. Several members of the Committee took the position that the greens should be closed forthwith, but in view of the fact that some players had continued under the expectation that the compromise suggested by the sub-committee would be accepted, it was agreed that this should be laid before the Town Council.

Gardening and Food Production.—In his lecture in Ipswich lectures, Sir Daniel Hall discussed problems relating to home food production, with particular reference to intensive cultivation on allotments and gardens. He recalled the fact that from the beginning of the 19th century, when this country was self-supporting, there had been a fall in amount of food production, until in the years before the war only 42 per cent. of our food supplies were produced at home. Apart from reduction of total acreage devoted to food production, the decreased supplies were due to the "grassing down" of arable land, which proceeded rapidly between 1872 and 1914, so that whereas in the former year there were 14 million acres under the plough in England and Wales, in the later year there were little more than 10 million. The influence of this procedure upon the amount of home-food production may be judged from the fact which has been brought out so forcibly by Sir Thomas Middleton, that the average food producing power of arable land is more than five times that of pasture; 100 acres of pasture sufficing to provide food for 15-20 persons, whereas under the plough they will provide for some 84 persons. As a result of the war, the area under arable cultivation was increased by 2½ million acres, but, although the food shortage brought about by the war is not yet amended, the relapse of arable to pasture land has begun. Referring to allotments, Sir Daniel Hall traced their modern growth in the 19th century, and mentioned that one of the earliest "societies" was that founded by Sir John Lawes at Rothamsted in 1857. During the war the number of allotments increased remarkably, and at the present time it is estimated that one million allotments are in existence in England and Wales. As a good, practical gardener, the lecturer extolled the value—economic, social and moral—of the allotments, and expressed the wish of all in hoping that all future building schemes will make a liberal provision of allotment land.

Sale of Rare Horticultural and Botanical Books.—Lovers of horticultural and botanical books will not fail to be interested in the sale which Messrs. Sotheby, Wilkinson and Hodge will hold on June 17. No fewer than 217 works, the property of Mr. A. W. Paul, Broxbourne, Herts, will come under the hammer, and these include the *Botanical Register*, London's *Arboretum*, Maund's *Botanic Garden*, Paxton's *Magazine of Botany*, Sowerby's *English Botany*, Sweet's *Geraniaceae*, Watson's *Psudologia Britannica*, Caspar Cammelin's *Proculia Botanica*, a black letter copy of Langham's *Garden of Health* (1579), Pritzel's *Thesaurus Literaturae Botanicae*, Dr. Master's copy of Pritzel's *Iconum Botanicarum Index*, Hortus Veitchii, *Iconographie du Genre Camellia*, Elwes's *Monograph of the Genus Lilium*, Furber's *Floral Calendar*, Gerard's *Herball*, *Hortus Sanitatus* (1517), Rea's *Flora*, Parkinson's *Paraphesi in Sole Paradisus Terrestri* (2 copies), Parkinson's *Theatrum Botanicum*, Redouté's handsome *Les Roses*, Turner's *Herbal*, and Pierre Vallet's *Le Jardin du Roy Henry IV.*

Hybrid Campanulas.—The achievements in hybridising Campanulas form the subject of an interesting article by Mr. Murray Hornbrook in *Tribe Gardening* (May, 1920). Of crosses raised by the author, mention is made of a series from *Campanula rotundifolia*, of which one, *C. rotundifolia* × *carpatica*, is somewhat like *C. Profusion*, but forms a prostrate mass, looking best when overhanging a rock face and flowering all the summer. Another is from the cross *rotundifolia* × *Bellardii* with pale lilac, cup-like bells intermediate in shape. From *C. rhomboidalis* × *tubinata* Mr. Hornbrook has obtained a handsome hybrid with large, wide-

open, blue bells. After enumerating others of his raising and commenting on the origin of known hybrids, the author concludes with the observation that the hybridisation of Campanulas is as yet in its infancy, and suggests that wonderful possibilities await the hybridist who will work on this amenable genus.

The Inclosure Acts and Tithe Acts.—The Minister of Agriculture is empowered under the Inclosure Acts, 1845 to 1889, to effect exchanges of lands in England and Wales. Under these Acts landowners, whether limited or absolute owners, are enabled to avoid the necessity and expense of investigating the titles of the lands exchanged. The leading principles are that the lands exchanged shall be of equal value, and that the land received in exchange shall be held under the same title, and subject to the same uses, trusts, and liabilities, as was the land given in exchange. Upon the confirmation of an order of exchange, therefore, the land received becomes, with certain exceptions, clothed with the title and subject to all the liabilities of the land given up. The exchange is made between the two titles and not between the applicants claiming title, who are merely, for the purpose of the exchange, "the persons interested," *i.e.*, generally speaking, the persons in actual possession. These persons may have no title, but nevertheless, provided they are "the persons interested," the exchange is valid as between the persons really entitled, and accordingly it must be such as may properly be made on the assumption that the applicants are not really entitled. The Minister has no power to authorise a payment of money for equality of exchange. The only provision for compensating a deficiency is by the creation of a perpetual rent charge, to be charged on the land of greater value, or a sufficient part of it, in favour of that of less value, but such a rent charge can only be created where the deficiency which requires to be compensated does not exceed one-eighth of the value of the lands which are deficient. The Minister is also empowered to effect exchanges under the Tithe Acts, of glebe for other lands, and also of annual payments belonging to an incumbent in right of his benefice, and charged on lands or tithe rent-charge for lands or for tithe rent-charge. Application for such an exchange may be made by the spiritual person to whom such glebe lands or benefices belong in right of his benefice. The objects and the results of exchanges under the Tithe Acts are similar to those under the Inclosure Acts. There is, however, no provision in the Tithe Acts under which equality of exchange can be effected by the creation of a perpetual rent-charge. The procedure under the Inclosure Acts is somewhat more elaborate than that under the Tithe Acts and is more suitable for exchanges of large properties, even in cases where the exchanges provisions of the Tithe Acts would be applicable. Forms of application and instructions for exchanges, under either the Inclosure Acts or the Tithe Acts, may be obtained free of charge and post free on application to the General Secretary, Ministry of Agriculture and Fisheries, 3, St. James's Square, S.W.1.

"Gardeners' Chronicle" Seventy-Five Years Ago.—*Watering Orchidaceous Plants.*—I have no doubt many persons, like myself, are anxious to cultivate a few of these beautiful exotics, among a general collection of plants, but the great difficulty appears to be in getting an atmosphere sufficiently moist without making it too much so for other plants. I have long tried the plan of suspending a bottle against the plant which requires to be kept moist, and inserting a piece of common woollen list, one end of which remains in the bottle and the other hangs down over the plant. The force of capillary attraction will occasion the list to act like a syphon and discharge the water over the plant drop by drop; if the quantity is found too great reduce the list, and if too small, add one or two more pieces; but a little practice will soon regulate the supply. I have found the same plan answer well in the cultivation of *Droseras* and *Pinguiculas*. During periods of wet the list should be wholly withdrawn, but when in use, the bottles will require to be replenished almost daily. *George Wood, Rochford, Essex. Gard. Chron., June 14, 1845.*

THE PALMS OF THE RIVIERA.

I HAVE already stated (see *Gard. Chron.*, May 1, p. 216) that the Riviera is the point furthest from the Equator where any Palm species is (or rather was until recently) found wild, and the Palm in question, *Chamaecrops humilis*, is, as its name indicates, a small species. Indeed, it is usual that the representatives of a plant family, living at the extreme limit of the climatic zone, where the temperature is not yet so low as to exclude altogether such plants, are dwarf species. If such is the case in most parts of the northern hemisphere, where in the eastern part of United States Sabal Adansonii and Serenoa serrulata (Saw Palmetto), it may not be so everywhere. In Afghanistan occurs also a dwarf species, *Nannorhops ritchiana*; but unless a yet insufficiently-known Palm, *Trachycarpus Wagneriana* hort., from Japan, should be of dwarf growth, there is found in that country a rather tall-growing species, the well-known *Trachycarpus excelsus*, the Hemp Palm, which seems to reach furthest north, and to be the tallest of all known species.

In the southern hemisphere one of the tallest of Palms, *Jubaea chilensis*, growing, as its name indicates, in Chile, reaches the furthest point south of the Equator, and on the eastern side of the South American continent the Palm family is represented in Argentina by several species of *Bulfinch*, which, though not tall-growing, mostly have a trunk of several inches.

In New Zealand is found, as the representative at the "farthest south" limit of Palm growth, a rather tall-growing species, *Rhopalostyle sapida*; while in the Kermadec Islands a still taller species, *Rhopalostyle Cheesemanii*, is found. At the Cape is found *Phoenix reclinata*, a Palm having a trunk 6 or 7 metres high.

As the temperature falls not only with the distance from the Equator, but also with the altitude, species of Palms growing in temperate climates are found on the mountains at altitudes varying according to the latitude. These Palms are mostly less known than those named, which grow at the extreme limits of latitude, and several may yet be discovered in various parts of the tropical zone. Of such mountain Palms it may be stated that those which grow at the highest altitudes are not always dwarf species. Thus, though *Trachycarpus nana*, growing at 1,800 metres altitude in Yunnan, China, is a dwarf; another species of *Trachycarpus*, *T. Martiana*, growing at a similar altitude in the Himalaya, reaches a height of nearly 20 metres, and on the high mountains of Colombia, South America, is found one of the tallest Palms known, *Ceroxylon andicola*.

Though the Riviera is the point furthest north of the Equator where Palms are growing in the wild state, it is not the point furthest north where Palms will grow, and even in the warmest parts of England a few Palms thrive in the open.

But on the Riviera a large number of species can exist, and many are in a most prosperous state of development. It is perhaps less the winter temperature that prevents the successful culture of many Palms other than those as yet tried, than the dry atmosphere, so incongenial to plants from moist, mountain regions. However, the person who takes an interest in acclimatizing and who has had many disappointments has also had some agreeable surprises, and will be disposed to think that perhaps as many species of Palms as those already found on Riviera gardens may still be introduced with success. But the difficulty of obtaining seeds of many Palms, which always have to be tried in certain numbers and under different conditions, is great, and much patience and perseverance are needed. The number of plant lovers taking a special interest in this subject appears to be constantly diminishing, with the consequent result that the horticultural trade abandons more and more the culture of anything other than so-called "commercial" plants, and the acclimatizer has to depend on the good will of directors of botanical gardens and botanical travellers. J. Robertson Proschowsky, *Jardin d'Acclimatation, Nice*.

HARDY FLOWER BORDER.

ANTHEMIS CUPANIANA.

For the front of the border or for rockeries of fair size, *Anthemis cupaniana* may be recommended as a pretty and long-flowering subject. It is of low-growing, rather trailing habit, but not too aggressive in its ways. The foliage is of good size, prettily cut and of a delightful silvery tone. The flowers are about an inch-and-a-half across and are white with a yellow centre. The white is exceedingly pure and the harmony between the silvery leaves and the white flowers is exquisite. This *Anthemis* comes, I understand, from Italy, and is sometimes lost in very severe winters, but it withstands by far the greater number of the cold seasons we have to encounter in this climate. In general, young plants will survive the winter, and, fortunately for those who have not raised seedlings themselves or have not propagated their plants by cuttings, self-sown seedlings often appear and survive. Cuttings are easily struck, and the plant may also be propagated by layers. I have grown this species for close on twenty years, and, although I have lost a plant or two, have always had the succession maintained by self-sown seedlings. A light, dry soil and a sunny place are the best conditions for this attractive flower, which is in bloom from early May until autumn. S. Arnott.

CONCERNING IRIS COLOURATION.

In the *Gard. Chron.* for Feb. 14, 1920, Mr. A. J. Bliss, writing of Hybrid Bearded Irises, says, "Neglectas are squaleus in which there is no yellow, due either to an inhibiting factor or to the absence of a factor for yellow. It is, furthermore, remarkable that this change in the ground colour from yellow to white is always accompanied by a change in the overlying colour of the falls from red-brown to purple or blue violet."

If by "remarkable" the author means extraordinary or not to have been expected, I wish to take exception to the statement, for it is the only possible thing to occur when it is considered that Iris colours are of two distinct categories.

The yellow of the Iris, like the yellow of most flowers, is produced by the presence within the cells of yellow plastids. The larger the number of these microscopic yellow bodies within the cells, the more intense will be the yellow colour of the portion of the flower involved. On the other hand, the blues and purples, so far as they may be determined by the simpler reactions, appear to be anthocyanin, a sap colour. Consequently, whenever both are present the yellow plastids are simply immersed in the blue or purple sap, and must produce the red-brown in some degree.



FIG. 134 —CHELSEA SHOW: MR. HERBERT JONES'S ITALIAN GARDEN.

FOREIGN CORRESPONDENCE.

EDUCATION OF YOUNG GARDENERS.

I WAS very much interested in the short article by William McCombie, Osgodby Hall Gardens, Selby, in your issue of April 24, about head gardeners giving boys in their employ encouragement by explaining the why and the wherefore of things, when they make mistakes. I remember well the good advice given me when a boy in the gardens at Mentmore, by that fine gardener and grower, Mr. William Duncan, now of Bosworth Hall, Rugby, I believe. He never tired of explaining things and giving encouragement, and although 40 years have passed, I have very grateful remembrances of the pleasure he gave me. I well remember how he used to allow me to take charge of a range of greenhouses if the regular journeyman left for a vacation of a day or a week, and I used to work early and late to gain his approval. If more foremen and head gardeners would do this we should have many more and better gardeners to day. Helpful criticisms and explanations are never forgotten by a boy who is worth while and is interested in his work, as I can testify. Fredk. C. Green, Supt. of Parks, Providence, R.I., U.S.A.

proportioned to the density of the sap colour and the number of plastids present.

An interesting freak bearing upon this colour composition, occurred in a clump of *Honourables* grown by Mr. Homer Skeels at Takoma Park, Md., in 1915, and was duplicated in my own plantings of the same variety a couple of years later, in which the yellow plastids, for some reason were suppressed in a portion of the flower, presenting a flower about two-thirds of which consisted of yellow standards and red-brown falls, the remaining portion of standards being white and the falls purple as in *Amoena*. This bud was carefully marked and segregated, but the following year was true to colour as *Honourables*, thus proving it no bud sport but apparently the result of accidental suppression, the cause of which could not be known.

It may be interesting to add that while anthocyanin colour may be present throughout the flowers as in *Pallida* and *Neglecta* or only in the falls as in *Amoena*, or in definite patterns as in *Variiegata* and *Plicata*, on the other hand, so far as the writer knows, yellow plastid colour is invariably present throughout both standards and falls, varying only in degree. J. Marion Shull, *Cherry Chase, Maryland, U.S.A.*

The Week's Work.

PLANTS UNDER GLASS.

By JOHN COULTS, Foreman, Royal Botanic Gardens, Kew.

Winter-flowering Begonias.—Young plants of the Gloire de Lorraine type should be potted on as they require increased rooting space; continue to propagate where small specimens are required for table decoration. The other section of winter-flowering Begonias as represented by Elatior, Mrs. Heal, Exquisite, Fascination, Optima and Emita, should now be propagated, for the latter part of May and up to the end of June is the best time to obtain and insert cuttings of this beautiful section of winter-flowering Begonia. Large stocks are necessary, as many fail to come through the resting period; and most of the varieties produce cuttings very sparingly. The cuttings are best rooted in an intermediate temperature, and should be inserted singly in thumb pots. Place them in a close propagating case until they are rooted. Their subsequent cultivation is simple, as they grow freely in an intermediate temperature. They should not be over-potted and require careful watering at all times. These Begonias are not troubled with insect pests, with the exception of Begonia-mite, which may be kept in check by sulphur vaporising on two or three occasions.

Cestrum (syn. Habrothamnus).—*C. elegans*, *C. Newellii* and *C. aurantiacum* have long been favourite subjects for furnishing walls and pillars in the greenhouse and conservatory. They flower more or less all the year round and, to do them justice, they should be planted out in beds or borders. If this is not possible, grow them in large pots, and when well rooted feed them liberally with weak liquid manure and soft water. *C. Schottii*, with crimson, and *C. Smithii*, with flesh-coloured flowers, are dwarf, bushy-growing species which are worth cultivating for the decoration of the stages in the greenhouse. Cestrum are easily propagated at any season by means of cuttings. They are at all times subject to attacks of aphid, which should be prevented by spraying, or frequent fumigations.

Episcia (syn. Cyrtodeira) metallica.—This Gesneriad, with its beautiful foliage and brilliant scarlet flowers, is, when well grown in small pots or pans, very useful for table decoration, and also makes a fine subject for filling small hanging baskets.

Mitrisia coccinea.—This scarlet Mitre flower is also another beautiful plant belonging to the same order, at present in flower, and its curious-shaped, scarlet flowers always attract attention. It is best planted out in a bed in a cool greenhouse, as it is nearly hardy, withstanding the winter out of doors in the south west of England. It is propagated at this time of year by means of cuttings placed under a bell glass in a cool house.

THE HARDY FRUIT GARDEN.

By T. PATFMAN, Gardener to C. A. CUM, Esq., J.P., The Node, Codicote, Welwyn, Hertfordshire.

Early Strawberries.—Plants growing on warm borders have set a good crop of fruit and the berries will soon be approaching ripeness. Should the weather prove dry, see that the plants are well supplied with water, before finally placing clean straw on either side of the rows for the berries to rest on. Protect the fruit from birds with nets and see that the latter are free from rents through which birds might pass.

Mulching and Watering. Morello Cherries that are cropping freely on walls will be benefited by a mulching of short manure, and they should be watered freely. The trees are sub-

ject to attacks of Black Aphis, and this pest should be watched for and the tree syringed with quassia or nicotine wash immediately it is detected.

Apples.—Many bush Apples have set so many fruits that the crop will need to be thinned considerably. This should be carried out immediately it is seen that the fruits are swelling, retaining the centre fruit in each cluster where possible. By allowing all the fruits to remain the crop would be undersized and of poor quality generally, besides militating against next season's crop. Overcropping is a frequent cause of the biennial habit of fruiting of some Apples. By judicious thinning of the fruit the trees are more likely to develop strong fruit buds for the next season's crop and acquire the habit of fruiting annually.

Pear Sawfly.—This pest appears at the beginning of June. The sawfly itself is harmless, but the larvae, known as slug worms, eat away the upper epidermis of the leaves and give a decided check to the crop. The Pear slug-worm is a voracious insect and should therefore be checked directly it is detected. At this season of the year the trees may be sprayed with Paris green, four ounces to 50 gallons of water. If this arsenical wash is used, it should be kept constantly stirred. I have had equally as good results by the use of a strong nicotine wash. Whichever wash is used, the fruit should not be picked for use for four weeks after spraying, as both washes are very poisonous.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Melons.—The earliest Melons have now been cut, or are well netted, and will soon be ripe. The use of the syringe should be discontinued, but a brisk top and bottom heat, with a freer circulation of air, should be maintained. Second early plants, on which the fruits have been thinned to the requisite numbers, should be well fed with warm, diluted liquid manure, and freely syringed when the house is closed in the afternoon. Melons in pots require copious waterings and feeding from the time the fruits are the size of eggs until they cease swelling, when the amount of root moisture should be considerably reduced, otherwise the fruits will be liable to cracking and be deficient in flavour.

Vinery.—The buds on pot vines intended for forcing early are getting plump, and the canes will soon be changing colour, indicating ripening. This development should not be pressed too fast, and feeding and syringing should be continued for some time. As the vines approach the ripening stage, ventilate more freely and keep the atmosphere of the house rather drier at night. The vines having been stopped at a length of 8 or 9 feet, more or less, according to the amount of rod required, a few laterals may be allowed to develop near the top. Vines struck from eyes this season will not be so forward as the pot plants; they should be stopped if this has not been done and every possible care taken to preserve the main leaves, as on these will depend the plumping up of the buds for next season's crop. Assist the plants with weak stimulant and rich mulchings, but take care that the roots do not enter the plunging material, or control of them will be largely lost. Use the syringe vigorously to keep the foliage clean, and supply moisture otherwise by damping the paths and other available spaces.

Cherries.—Keep the house in which the Cherries are ripe fairly dry and cool. A long succession may be obtained from one house when the earliest varieties are grown in pots, as the trees may be placed out of doors as soon as the fruits are ripe. Trees of later varieties of Bigarreau and Elton may then have the borders to themselves, and be carefully watered and properly managed. Moderation in watering should be observed as the fruits approach ripeness, as cracking from an excess of moisture at the roots or in the house is quite as harmful as shrivelling from drought.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow.

Dendrobium.—*D. Phalenopsis* and *D. formosum giganteum* are two popular autumn-flowering Orchids, the latter often being grown to produce a supply of white flowers at that season. The present is a suitable time to afford fresh rooting material, consisting of two parts *Osmunda* or *AI* fibre, and one part *Sphagnum*-moss, with a sprinkling of crushed crocks and charcoal added. The plants may either be grown in ordinary flower-pots or pans; choose the former receptacles if it is intended to arrange them on staging, and pans with wire handles attached for suspending from the roof rafters. Large receptacles are not needed, but ample drainage material must be provided. Where the soil and drainage are in good condition and there is sufficient space for further development, disturbance at the roots is not necessary, but where the compost is decayed or has become sour through moisture, repot the plants afresh, as no Orchid will succeed unless the soil is sweet. Press the soil fairly firmly. Plants that are repotted or top-dressed should be watered sparingly until the roots take possession of the fresh soil. When this stage is reached an abundance of moisture is essential throughout the growing season. The plants should be grown within a foot or two of the roof glass, and placed either in the *Dendrobium* house or warmest division. They enjoy plenty of sunlight, and need only a very thin shading during the summer, and then only for a few hours, through the middle of the day. During the plants' period of active growth keep their surroundings moist, and use the syringe freely between the plants in hot weather.

Dendrobium infundibulum and its variety, *Jamesianum*, are stated to be alpine forms of *D. formosum*, and for this reason they should be grown in a lower temperature. They are often placed among the *Odontoglossums*, but the best results are obtained if they are grown in a light position in the intermediate division. Both these Orchids may now be repotted.

Dendrobium Dalhousieanum.—The tall-growing *D. Dalhousieanum* and *D. fimbriatum* make fine specimen plants, but they are only suitable for lofty structures, hence they are rarely seen in cultivation. They require fairly large receptacles which should be filled half their depth with drainage material. Use the *Osmunda* fibre in a lumpy condition, and mix freely with it pieces of charcoal, while a small quantity of *Sphagnum*-moss may be employed near the surface. The ordinary plant stove is a very good place in which to grow these large *Dendrobiums*.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURNHOLME, Warter Priory, Yorkshire.

Lilium.—A top dressing composed of equal parts of well-decayed cow manure and fibrous loam will greatly benefit stem-rooting Lilies. If dry the soil should be watered before applying the compost. Diluted quassia extract may be used to destroy aphides, which often attack the growing points of the plants. Attention to staking and tying is necessary, but the operation should be done in such a manner as will not detract from the natural gracefulness of the plants. In large borders dark foliaged *Cannas* and *Lobelia cardinalis* may be associated with *Lilium tigrinum splendens*; whilst *Viola Purity*, as a broad carpet to well-grown spikes of *Lilium auratum*, is both uncommon and pleasing. *Funkias* provide an excellent foreground to most Lilies.

Carnations.—Spiral wire stakes are useful for supporting Carnation flower stems; they are easily made on a rake handle and save considerable labour in tying. Carnations delight in good medium loam containing plenty of lime. Bentley's Carnation manure is a safe and reliable stimulant for these plants. It is not advisable to spray border Carnations with hard water, as this washes the "bloom" from

the foliage and lays bare the leaf tissue to attacks of fungous diseases and red spider. If persevered with, potassium sulphide will overcome both rust disease and red spider. Dissolve the potassium in a suitable quantity of soft water and finely spray the foliage on both sides towards the close of the day.

Mulching.—Many plants, including trees and shrubs, respond readily to mulching at this season. The mulch should not be applied so heavily as to exclude air from the roots. In some instances short lawn mowings may be used to conserve the soil moisture, but if Daisies grow on the lawn the mowings should not be used on beds or borders. A mixture of partly decayed leaves and well-rotted manure provides a good general mulch. Early-flowering shrubs such as Forsythia, Deutzia and Weigela require attention in this matter; whilst species flowering at the same time as *Olearia Haastii* will retain their flowers over a longer period if steps are taken to conserve the soil moisture at the roots. Broadly speaking, there are three ways of preventing direct evaporation; these are:—Mulching, hoing and planting the surface closely with small spreading plants. Given thoroughly prepared beds and soil of medium texture, mulching is not essential and preference should be given, where practicable, to clothing the surface with living plants, or by the frequent use of the hoe. Liquid manure may be supplied copiously to hard wooded subjects passing out of flower, and will greatly assist in the development of new, vigorous shoots.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, WENVOE Castle, near Cardiff.

Leeks.—On dry soils Leeks should be planted in trenches prepared as for Celery. On heavier soils they may be grown on ground that has been double dug and manure placed in the bottom spit. Make shallow drills fifteen inches apart, and in these, at one foot apart, make holes with a bar or dibber, in which to insert the plants deeply, adding sufficient soil to just cover the roots. When planting is finished, give the soil a thorough watering. The open holes will be filled later as hoeing is done, and a good length of the stem will become blanched.

Onions.—Plants intended to produce large bulbs should be growing freely. Onions are deep-rooting plants, and deep-rooting should be encouraged by the frequent use of the Dutch hoe. Do not use nitrate fertilisers after this date, otherwise the plants will continue growing until late in the season and prove difficult to ripen. Manures rich in phosphates are best from now onwards, varying these with an occasional dressing of soot. Apply the manure at a time when rain is expected, and take care not to let it come in contact with the foliage. Should it become necessary to water the manure in, let it be done in a thorough manner, so that the bed receives a good soaking. Where an attack of mildew occurred during the previous season, spray the plants with sulphide of potassium in solution at the rate of a quarter of an ounce to one gallon of water. Fill any gaps in the seed-bed by transplanting the best of the thinnings.

Cauliflower and Autumn Broccoli.—These crops should be planted two feet apart each way. The Cauliflowers should be liberally supplied with water during dry weather, to prevent buttoning.

Carrots.—A sowing of stump-rooted Carrots should be made to obtain roots for use in the autumn. All Carrots at this season should receive frequent dustings with soot, to make them distasteful to the Carrot fly; when the soot becomes washed off by the rains, it should be immediately renewed.

Swedes.—A good breadth of Swedes of a small variety sown now will prove a hardy and useful vegetable for winter consumption. They require the same culture as Turnips.

STREPTOCARPUS HYBRIDS.

The greenhouse *Streptocarpus* is a comparatively modern flower, and few subjects, of recent years, have made so great an advance or gained more popularity amongst growers. This beautiful race of plants originated at Kew, and several good crosses were made there. A few plants passed into the hands of Messrs. James Veitch and Sons, who intercrossed selections with the best Kew hybrids. The first flowers were comparatively small, on rather short stems, and possessed only a few shades of colour. The foliage was long and narrowly, but by continued selection and crossing we now possess plants of compact habit, with shorter foliage and varied shades of colour. The newer hybrids are remarkable for their floriferousness, for providing a long succession of flowers and for the length of time the blooms last. The flowers have a range of colours embracing almost every imaginable shade from pure white to rose, pink, salmon, red, violet and blue. Another section

sults: *S. Gratus*, magenta—Veitch's hybrid \times *S. Dumm*—the latter a species from the Transvaal, proved very distinct, the foliage being intermediate between the parents. The flowers are about 2 in. long and in several shades of magenta and magenta-rose. The stiff, erect peduncles are from 6 in. to 9 in. high, each peduncle terminating in a double cluster of flowers, numbering from 20 to 30, or more.

S. Mrs. Heal, magenta, Veitch's hybrid \times *S. Wendlandii*—a South African species. The flowers of this cross are 2½ in. in diameter, the stout flower stalks from 12 in. to 15 in. high and terminating in a sub-paniculate inflorescence of ten to fifteen flowers, which are bluish red, shaded purple, with a yellow throat. The habit of the plant is intermediate.

S. pulchellus came from Veitch's hybrid, white, yellow throat \times *Famini*, an Australian species. The foliage is distinct, narrow, and of a bright shining green.

The erect peduncles bear panicles of twenty to thirty flowers in various shades of blue to almost white, with a maroon blotch at the base.



FIG. 135.—CHELSEA SHOW: MESSRS. J. PIPER AND SONS' BLUE GARDEN, SEEN THROUGH THE "HOLE-IN-THE-WALL."

is named *Achimeniflorus*, from the resemblance of the flower to *Achimenes*. This type marks a distinct advance in the flower, and was obtained by fertilising *S. polyanthus*, a pretty species from Natal, with the pollen of the white Veitch's hybrid. The flowers are produced in much-branched panicles and have long stems; the colour is light-mauve tinted with blue, and the bloom has a light canary-yellow and white throat. The original of this cross, crossed again with three distinct shades of Veitch's hybrids, produced three distinct colours: albus; *giganteus*, with flowers of lavender-blue shades; and *rosens*, a soft, delicate, rose-coloured variety.

Another beautiful variety was obtained by crossing *Achimeniflorus albus* with *S. parviflorus*, a species from South Africa. It was named *New Giant White*, and is unsurpassed for size and vigorous habit. The individual blooms often measure 4½ in. in diameter, and are borne on long stems, 9 in. to 10 in. in length, rendering the flowers valuable for table decoration. The colours are now fixed and come true from seed.

Other experiments were successfully tried with different species with the following re-

The *Streptocarpus* is a greenhouse perennial easy of culture, requiring very little fire heat. By making two or three sowings at different intervals, the plants may be had in flower from April to November. Seedlings will flower in seven months from the time of seed-sowing, and will continue to bloom for several months. The same plants grown during the winter in a temperature ranging from 45° to 50°, kept moderately dry, potted, and started afresh in January to March, will form handsome specimens, giving a fine display when in flower.

Seeds of *Streptocarpus* may be sown at any time of the year; if sown in the summer the seed pan should be well-shaded from the sun. Use 4 inch or 5 inch pots or pans, and over the cracks place a thin layer of rough siftings, then a couple of inches of the coarser compost. Gently press the surface level, and within half-an-inch of the rim of the pot or pan. The seed should be pressed down in the soil and not covered. Water by means of a fine rose and cover the pan or pot with a piece of glass tilted about 2 in. at the back. In bright weather shade lightly. Germinate the seeds in a temperature 60° to 65°. *John Heal.*

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

THE MARKET FRUIT GARDEN.

FRUIT plantations generally look their worst in May. After the fall of the blooms, pests and diseases are active, and the fruit has not developed enough to show up well, so that one is apt to form an unduly pessimistic opinion of the season's prospects. On the whole, I think the trees have come through the ordeal somewhat better than usual this year, though it was rather a trying month. I speak for my own orchards only, as reports from other districts lead me to believe that I have been more fortunate than many.

Last month opened with showery weather; then came a few days of strong wind, after which conditions improved, and the last thirteen days were for the most part bright and warm and dry, with the exception of a steady, gentle rain on the night of the 28th. This period was ideal for spraying, though it is a pity that this work could not be started sooner. It also allowed good progress to be made with much needed hoeing and horse cultivation. The total rainfall at my place was 1.25 in., which fell on eleven days, and is rather under the average for the month. It has been a dry spring, and ponds are unusually low for the time of year.

APPLES AND PEARS LIGHT.

It can now be seen that the Apple crop will be light. Practically the only varieties that have set a full crop with me are Worcester Pearmain, Early Julyan and Lord Grosvenor; but Beauty of Bath, Blenheim Pippin, Cox's Orange Pippin and James Grieve are moderate. Late cooking varieties promise to be particularly scarce, Bramley's Seedling and Lane's Prince Albert being almost without fruit. Considering the strain put on the trees last year by the heavy crop and prolonged drought, a light yield this year was to be expected. I attribute it to this fact rather than to unfavourable weather at blooming time, though Apple blossom weevil helped to thin the crop.

Pears, grown only in the private garden, are very scarce.

BIENNIAL FRUITING IN APPLES.

In the light of recent investigations, it would probably be more correct to blame excessive blooming last year, rather than heavy cropping, for this season's scarcity of Apples. This view is the outcome of some most important investigations carried out at the Wisconsin Experiment Station, a report of which appears in No. 3 of the *Journal of Pomology*. It was found that the spurs that are to bloom the following year complete their development by the time the fruit has set in spring. Thus practically all their growth occurs during a period of about four weeks after the buds are well broken. During this period the leaves can be of but minimum value in producing carbohydrates, due to the relatively short time in which they are of much size. The principal supply of products utilised in the development of flowers, spurs and leaves therefore necessarily comes from the reserves in the tree. Thus the critical period for blossom bud formation comes at a time when the reserve in the plant has been largely utilised by the rapid early-season growth of the tree. If the

reserve is therefore decreased by excessive blossom production, this prevents the tree from being in condition to form blossom buds the same season in readiness for successive bearing.

The truth of this theory was borne out by practical tests. Thinning of the fruit failed to correct the alternate-year bearing habit, because it did not reduce the strain on the tree at a time early enough to influence spur formation. On the contrary, where the blossom was thinned (removed from a certain percentage of spurs on entire limbs), those limbs did produce bloom the following year, whereas the rest of the tree did not.

It seems to have been established, therefore, that biennial or alternate-year bearing, which is an annoying characteristic of many varieties of Apples, is due to excessive bloom production, and not necessarily to excessive cropping. Thinning the blooms would correct it, but unfortunately this is hardly practicable on a commercial scale, though I know of one private grower who has followed the plan for years on a small area.

A BAD SEASON FOR SCAB.

This promises to be a bad season for Apple and Pear scab in my plantations. The disease was noticed first on a Siberian Crab in my private garden, and it appeared on the leaves of several other varieties of Apples early in May, before the weather allowed any preventive spraying to be done. In the case of Pears it has already reached the fruit, small as it is. I am surprised, because mycologists tell us that the only source of infection is scab-infected one-year old wood, and scarcely any of this could be found during winter pruning. Last year there was scarcely a trace of scab on my Apples, and the dry season must have been dead against the disease. It is surprising, therefore, that there should be enough of it about to cause wholesale infection this spring, although the showery weather at blooming time and after was all in favour of its spreading.

The varieties most liable to scab here are Cox's Orange Pippin, Allington Pippin, Lord Grosvenor, Donato, James Grieve, Bannami's Red Wonder Renette, and Worcester Pearmain. As a rule Blenheim Pippin is healthy, but this year the leaves are affected. All these varieties have been sprayed with lime sulphur (full strength for Cox's) under perfect conditions, and it is to be hoped that in most cases it was done in time to prevent serious damage. A second spraying will be given in two or three weeks' time to give further protection to the fruit. Trees with little or no fruit on them have been sprayed with the rest, because it is important to protect the young shoots, so that they may not form a source of infection for another year.

PLUM APHIS.

In last month's notes I mentioned the leaf curling Plum aphid as one of the most serious pests of this season. Reports from many districts show that it is doing much damage practically throughout the country. Some of my trees, particularly those in exposed positions, are now almost denuded of leaves, and must drop all but a sprinkling of their fruit. Others, fortunately, are clean, and should still do well, a heavy crop of Monarch being the brightest feature.

BASIN SHAPE TREES.

A neighbour of mine is much attracted by the idea of trees with hollow centres, and he did some drastic pruning during the winter, removing all the middle branches. The idea is, of course, to expose all parts of the tree to the

influence of sun and air, in the hope of promoting health and getting all the fruit well-coloured. Personally, I favour trees of more natural shape, though I thoroughly believe in keeping the branches thinly disposed. To me there seem to be several objections to basin-shaped trees. For one thing, the loss of a branch through breakage or canker leaves a gap which is difficult to fill. Then, if all the bloom and fruit are open to the sun, they are also all exposed to frost or strong wind. But the chief objection is that, in a season of light crops, the yield is likely to be very small indeed, since the branch area is so much less than in the case of trees of more natural shape. After all, I doubt if there is much truth in the claim of better coloured fruit. When an ordinary tree carries a heavy crop, the outside branches are weighed down, leaving the centre ones well exposed to the colouring and ripening influence of the sun. I believe that fruit trees come soonest into profit, and bear most heavily, if allowed to grow as nearly natural in shape as possible, receiving little pruning beyond thinning out once they have been properly furnished with branches. With the basin-shape goes close pruning, making each branch practically a single cord, the only advantage of which, in my opinion, is that the pruning becomes fool-proof once the tree has been formed.

ARE ORCHARDS BARE FALLOW?

One of the grower's minor troubles at this busy season is the filling in of agricultural returns and the estimating of crops for the Ministry of Agriculture. When engaged on the former I was amused to find that orchards which have neither bush fruit nor grass under the trees must be entered, not only as orchards, but also as bare fallow! There may be a good official reason for this, but it is certainly no obvious to the ordinary individual. It is to be hoped that those who study agricultural statistics, and especially those who lecture to farmers on the increase in bare fallow, will note that the area returned under that heading includes some of the most profitable fruit plantations in the country, those in which the trees have grown to full bearing age and need sole possession of the ground, which is kept cultivated for their benefit.

The forward estimation of fruit crops is a more difficult matter, and fortunately is not yet compulsory. I am asked to estimate the probable yield of Plums by taking an average tree of each variety and guessing the weight of fruit on it in pounds. From this, and the number of trees per acre, the Ministry of Agriculture calculates the probable yield. I fancy that if ten men tried their hand at this the difference in their estimate would be astounding. Guessing the weight of a cake or a pig is child's-play in comparison, and yet few people get anywhere near a correct result in these popular amusements. *Market Grower.*

NOTES FROM THE EDINBURGH BOTANIC GARDENS.

THE famous rock garden in the Edinburgh Botanic Gardens has been so much enlarged lately that it is more realistic than ever in its wild beauty, and its miniature mountain peaks and the valley at the lower end are interesting at all times of the year. In the middle of May, there is a feast of colour and blossom to clothe the great blocks of stone or to creep down into the sheltered dells.

There was much to be seen in flower on the

day of my visit, but the plant that made the greatest impression upon me, by its sheer beauty, was *Schizocodon soldanelloides*, with its dainty, bright pink flowers so crimped and fringed that one stood lost in wonder before so tiny and perfect a thing. The blossoms are in clusters of four or five on bright red stems, and rise some three inches above the spreading tufts of leaves which are tinted bronze and crimson. The whole plant suggests a *Shortia*, and evidently likes the same conditions, as there were several healthy groups of *Schizocodon* growing in what appeared to be moist, peaty soil in a shaded bed at the base of a big rock. It is interesting to remember how it was originally found in Japan by Captain Torrens in 1891, who only succeeded in saving three or four plants after carrying them for hundreds of miles.

I found many species and varieties of *Cytisus* and *Genista* in bloom, for it is in May in the north that they begin to come into their own. There was *Cytisus scoparius* var. *prostrata* and *C. purpureus* *albus*, both crowning miniature mountain peaks, the former of drooping, low habit; the latter of upright growth, some 2 feet or 2½ feet high. That gay little

situation, where it seemed perfectly happy. Turning from shrubs to little Alpine plants, there was *Noceaea alpina*, with its dark green tufts hidden in a cloud of white flowers on tiny stems. This is an ideal and easily-grown rock plant, as I have proved in my own garden, and it blooms over a very long period. *Erysimum pominum*, from the High Alps and Pyrenees, and *E. nanum*, from Persia, were two brilliant, little, Wallflower-like plants, the former so short that its lemon-yellow flowers appeared to nestle among the carpet of grey-green leaves; the latter a taller, bushy species, some 12 inches high, set with deep yellow flowers, both giving a bright touch of colour to the scene. *Onosma alboroseum*, from Asia Minor, was a most interesting plant. One generally associates *Onosma* with yellow flowers, from its common name of Golden Drop. But here is a species in which the colour is white, the buds beautifully tipped with vivid pink, while the silvery foliage gives it a striking and most pleasing appearance. The plant was growing vigorously, spreading along the top of a high peak, over which the long, clustered bells drooped in a delightful fashion. It contrasted favourably with two little *Valerian*

pinnata, from Southern Europe; and *V. correaefolia*, not yet fully out and spreading itself far and wide in a sheet that must measure many feet in circumference.

Turning to the *Primula* family, I saw *P. involucrata* freely producing little bunches of white flowers on slender, 6-inch stems; while the almost stemless, little, purple *P. Juliae* had established itself in a moist, shady bed.

Among several *Rhododendrons* that were blooming perhaps the most interesting were *R. Kotschyi*, *R. Sargentianum* and *R. Souliei*, from China. The first is a small, dark-green leaved species, a foot or so high, with clusters of small, purplish-pink flowers. *R. Sargentianum* had formed little dense bushes, one foot high, with tiny leaves and flowers, the latter a pale-yellow colour and past their prime. *R. Souliei* is altogether on a larger scale, in height some three feet, with broad leaves and big, well opened clusters of pink flowers.

In another part of the rock garden, and set in a wide crevice, were several healthy specimens of *Daphne petraea*, from the Tyrol, freely opening little pink blossoms on the tiny 3-inch or 4-inch high bushes. *Penstemon Menziesii* had



FIG. 136.—CHELSEA SHOW: VIEW OF MESSRS. R. WALLACE AND CO.'S IRIS GARDEN.

species from the Maritime Alps, *C. Ardoinii*, had taken possession of another bluff, and clustering closely round it presented a dense sheet of soft green leaves set with countless bright yellow flowers, growing about 1 foot high. The little Austrian Broom, *Genista sericea*, was there, too, just opening lemon-coloured flowers on little upright bushes a foot or more high. *G. anglica* is of spreading prostrate habit with showy orange yellow flowers but poor foliage. *Cytisus decumbens* is a dainty European species, and its pale sulphur-coloured blossoms were set freely among the light green leaves; it creeps flat on the ground and is not so rampant as other kinds. *Genista pilosa* had formed a wide carpet of dark green foliage, but was not in bloom. Big, upright bushes of *Cytisus purgans*, with the yellow flowers wreathing every shoot, were growing on top of a cliff; and spreading bushes of *C. glabrescens* were lower down, just coming into bloom; while perhaps most showy of all was the fine hybrid, *C. Bearii*, a wealth of cream blossoms drooping over a peak in a shaded, somewhat draughty

slower down, whose colouring—a dirty pink—was not attractive. One, called *Valeriana tripertis*, is about 10 inches high; the other, *V. alpestris*, is of creeping habit and from the Caucasus. In a shaded damp nook the violet purple flowers of *Dodecatheon Hendersonii* were beginning to fade, while hanging from a high ledge was a young bush of *Berberis stenophylla* var. *corallina*, which is worthy of note for the really marvellous colouring of its flowers—a most vivid shade of flame imaginable—and is one of the many fine hybrids raised by the late Mr. F. Smith, of Newry. Among the *Saxifrages* in bloom I noticed the interesting *S. californica*, with tufts of small, spear-shaped leaves; and slender, 8 inch high stems terminating in dense clusters of minute white flowers.

The perennial *Candytufts* were largely represented, all with very similar, compact heads of white flowers and dense, evergreen foliage. There was *Theris sempervirens* and its handsome var. *superbum* (quite the most effective of all), also *F. Prunii*, from Sicily, beginning to go over; *F. Jordani*, from Asia Minor; the creeping *F.*

its large, dull violet bells fully out, and *Lathyrus* (syn. *Orobus*) *vernus* was pretty with its unique colouring of blue and purple. It is a useful little Vetch-like plant that is excellent for either rockery, border or wild garden, and I have seen it even thrive under Fir trees, while it blooms over a long period. *Anthyllis montana* var. *atro-rubens*, crimson, and like a Clover, with silvery leaves, was creeping over some big boulders; and the more curious than beautiful *Euphorbia Gerardiana* had numerous yellowy-green flowers out on upright, 18-inch stems.

There were several *Anemones* in bloom, such as *A. narcissiflora* and *A. rupicola*, both white, while a group of *A. sulphurea* was a lovely picture on a shaded ledge, each large, sulphur yellow blossom, with its big central boss, set singly on a stout 18-inch stem. It was a sight worth going a long way to see. Good stretches of colour were provided in various parts of the rock garden by bold plantings of commoner, but showy, things, such as *Alyssum saxatile* and its var. *sulphurea*; *Aubrietias*, especially var. *Dr. Mules*, and mossy *Saxifrages*. *M. E. Stebbing*.

THE GARDEN OF THE REV. WALTER STONEHOUSE AT DARFIELD RECTORY IN YORKSHIRE, 1640.

(Concluded from p. 269)

THE FRUIT GARDEN.

Most of Stonehouse's fruit was grown in the Saffron Garth (see Fig. 137), and the Orchard (see Fig. 156, p. 297), both of which were walled in. In the former he had 33 wall trees, planted 6 feet apart against the walls on the north and west sides, and a selection of 30 Apples and Pears in the open plot, as well as some more recent acquisitions from the garden of his neighbour, Sir John Reresby.

The best varieties of the original stock were probably obtained from Parkinson's "very good friend, Master John Trantsaunte," who had made a speciality of all fruit trees, "the choicest for goodness, and rarest for knowledge," and especially of Plums "fit for an orchard."

In the orchard there were fruit walls along the north and east, and a raised walk or "mount" along the wall on the west side. This "high walke" probably dated from before Stonehouse's time, for he refers to "olde plum trees" upon it. The "open plot" was stocked with Apples of various kinds, with a row of Pear trees along the north walk.

The high walke in the orchard, 66 times single gonn, or 33 times double (that is backward and forward) is a just mile 5260 fode.

The orchard 9 times round about is a mile and 4 yards.

In the open the fruit trees were planted about 18 to 20 feet apart. Their positions are clearly indicated upon his numbered plan, from which the illustration in Fig. 158 has been redrawn for purposes of reproduction.

The Sir John Reresby, from whom he obtained several varieties of Apples and Pears, was a neighbour living at Thrybergh, some six miles south of Darfield. His son, of the same name, was the well-known Governor of York, who wrote memoirs containing a secret history of the Courts of Charles II. and James II.

The manuscript concludes with an epitaph in Latin verse by Stonehouse, to his favourite cat, Delia, which died when kittening and was buried in the garden.

IN FELEM DILECTAM, INTER PARTIS DOLORES EXTINGTAM.

Delia (sic facta) coelum voracibus Taphos, Sub Feli, in terris, candidit ana latens, Putabns illa pau est; sed et illa (hca) saepe cocula,

Tardat, parturians dum mihi Felis olat, Ah, factum, Lucina, male! Ah, in gnatu Dira est, Prasilidii ut possit non inuare esse sui.

In the following list the numbers refer to positions shown on the garden plans. The letters T, G and P, have been added to indicate those varieties which had also been grown by Tradescant at Lambeth in 1654, by Gerard in 1599, or which had been distinguished by name by Parkinson in his Paradisus in 1629. It will be seen that the names of several varieties of Stonehouse's Apples and Pears do not occur in any of these lists. The "Melocotone Plum," which occurs once, may have been written in error for the Melocotone Peach.

CATALOGUE OF MY FRUITES - 1640

IN MY BEST GARDEN, AGAINST YE WALLS.

- 1. Morocco Plum, T.P.
2. Red Mirabalan Plum, T.P.
3. Orange Plum, T.P.
4, 5, 6, 7. Barbary Plums, P
8. Roman Yellow Peach, T.P.
9. Double-Mossion'd Peach, T.P.
10. Aprcock.
11. Pomegranate
12. Aprcock.
13. Chert wine Yme, P.
14. [Greate bearing Cherry], (erased), P.

IN THE NEW ORCHARD, IN THE MOUNT OR HIGH WALKE, AGAINST THE WALL.

- 1. Duke's Cherry, T.P.
2. Flanders Cherry, P.

- 3. Canon English Cherry, P.
4. Flanders Cherry, P.
5. Red Heart Cherry, (erased), T, P
6. Flanders Cherry, P.

AGAINST THE NORTH WALL.

- 1. White Pear-plum, P.
2. Black Damson, P.
3. Black Damson, P.
4. Barbary Plum, P.
5. [Black Damson, P.] The Numb Plum (1640)

AGAINST THE EAST WALL.

- 1. Red Muscadine Grape, P.
2. White Grape, P.
3. Dwarf Vine, or little early black grape, P.
4. White Heart or Archduke's Cherry grafted Feb. 25, 1644, P.
5. Aprcock.
6. Flanders Cherry, G.P.
7. White Cherry, T.
8. May Cherry, T.P.
9. Archduke's Cherry, T.P.
10. Black Pear-plum, P.

- gations also had a wide black cherry, (erased) vid. Chisum, Pannou, p. 91, P.

IN THE ORCHARD PLOT, PEARES

- 1. Windsor Pear, T.P.
2. Souer Jon, Chestonme, T.P.
3. [Katharine Pear, P.] Greate Lording.
4. Lording Pear, Sadler's maye.
5. [Larding Pear], Sadler's maye and Greate Lording.
6. Sliouer Pear, T.P.
7. Spanish Warden, T.P.
8. Popinon Pear, T.P.
9. Muske Pear, P.
10. Buzanot Pear, T.P.

APPLES.

- 1. (blank).
2. Kentish Strawberry Apple.
3, 4. (blank).
5. Kentish Coddling, P.
6. Golden Russeting, P.
7. Chester Pear-maine.
8, 11. (blank).
12. 2 Chester Pearmaines and one of the olde stock fro Smathley.

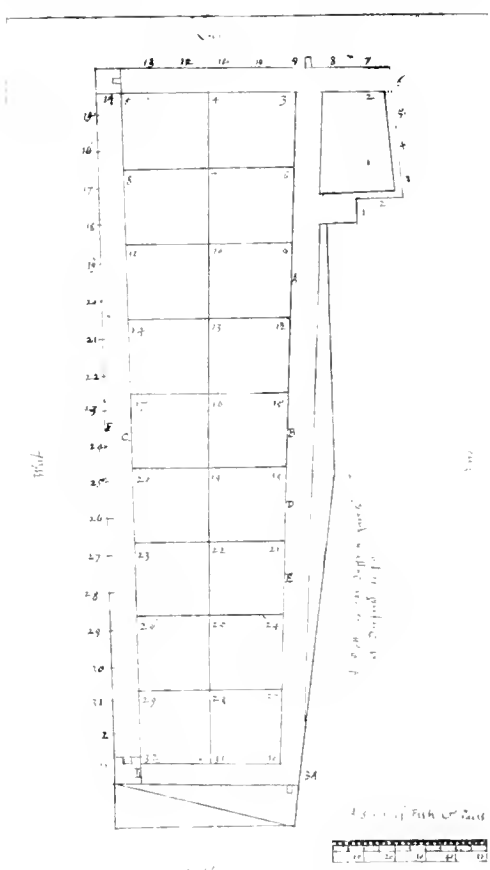


FIG. 137. A PLOTTE OF THE SAFFRON GARTH AT DARFIELD, 1640.

- 11. S. Lawrence Apple.
12. Amber Primordian Plum, P.
13. Melocotone, probably the Melocotone Peach of P.
14. Lesser Rose Cherry, P.
15. Red Mulberry, P.
16. Luke Ward's Cherry, T.P.
17. Melocotone.
18. Jottin Almond, P.

AGAINST THE EAST WALL.

- 1. White Damson, P.
2. Red Primordian Plum, P.
3. Black Muske Plum, P.
4. Nutmeg or Christian Plum, T.P.
5. Red P-scol Plum, T.P.
6. Verdach Plum, T.P.
7 to 11. (blank).
12. Round Peate of Yorke.
13. Melocotone.
14. In ye grass White heart, or Archduke's cherry, grafted Feb. 25, 1644.

AGAINST THE SOUTH WALL.

- 1. Duke's Cherry, T.P.
2. Flanders Cherry, P.
3. Red Wild Cherry, or Motly Tree, so called in Cheshire, as ye Hun-

- 14-11. (blank).
15. 2 Kentish Strawberry's.
16. (blank).
17. Kentish Coddling, P.
18-20. (blank).
21. 2 Chester Pearmaines.
22.
23. Chester Pearmaine.
24. Souer Pearmaine, P.
25. Golden Pippin, P.
26. Spotted Pippin, P.
27. Golden Pippin, P.
28. Spotted Pippin, P.
29. Russet Pippin, T.P.
30. Greate Pippin.
31. Souer Pearmaine T.P.
32. Black Nuret.
33. Souer Belle bon, T.
34. Peate Russet, T.
35. Greening, P.
36. Gray Costard, T.P.] Galle flower T.
37. Olde Wine, P.
38. Leather coat, P.
39. Gennetintz Apple, T.P.
40. Flower of Kent, P.
41. Violet Apple, T.
42. John Apple, T.P.
43. Winter Belle-bon, T.P.

- 44. Bette Russeting, (? Greate Russeting, T.P.)
45. Blaudrill, T.P.
46. White Queene Apple.
47. Greatest red Queene Apple, P.
48. Worcester Apple, P.
49. S. Lawrence Apple.
50. Gilflower Apple, T.P.
51. Dr. Chod.
52. - Pearmaine.
53. Gilflower Apple, T.P.
54. P. 51, 52, 54, 57, 58, 59 (blank).

IN THE SAFFRON-GARTH.

IN THE OPEN PLOTTE.

- 1. (bladder tree) Pear.
2. (Sorsive Tree), Sadler's maye for Muske pear.
3. Norwich Pear, P. Greate Lording Pear.
4. Bergamot Pear, T.P.
5. Paynted peate, T.
6. Avamst ye Privy.
6. Best Medlar.
7, 8. (blank).
9. Apple from Sr Jo: Reresby.
10. 11. From ye old tree in the Orchard cut down 1639.
A. Cowick Pear, Sr Jo: Reresby.
12. Bro. Burdets Apple.
13. 14. (blank).
15. Chester Pear-maine.
16. Bergamot Sr Jo: Reresby.
17. Pear Apple, P.
18. Bro. Burdets fine red Apple.
19. An Apple from Sr Jo: Reresby.
20. Twenty marke Pear, Sr Jo: Reresby.
21. An Apple from Sr Jo: Reresby.
22. An Aprcock set of a stone.
23. Bird's Cherry.
20-27. Bro. Burdets Pippin.
28. Apple from Sr. John Reresby GRAFTED FEB. 25, 1644.

- Personal peate, T.P.
Cowick pear.
20 Marke pear.
Greate Lording.
Muske pear.
Archduke's Cherry, T.
White Heart Cherry.
29. [Gillo flower], Apple from Sr Jo Reresby.
30. Chester Pearmaine.
31. Apple from Sr Jo: Reresby.
32. Ratvey Apple, P.

AGAINST THE WAITS.

- 1. Almond.
2. Olive Plum, P.
3. Black Damascene Plum, T.T.P.
4. Damask Plum, T.P.
5. Melocotone Plum.
6. Roman red Peach, T.P.
7. Newington Peach, T.P.
8. Yellow Nectarine, T.
9. Long Aprcock, T.P.
10. Red Nectarine, T.P.
11. Orange Aprcock.
12. [Nutmeg Peach], T.P.
13. [Melocotone, P.] Plum.
14. Blew Figue, P.
15. [Arch Duke's] May Cherry, T.P.
16. Greate Hungarian, or Zwart's Cherry, T.P.
17. Agriot Cherry, T.P.
18. Greate-bearing Cherry, T.P.
19. Black Heart, or Smallest Luc-cour cher, P.
20. Flanders Cluster Cherry, P.
21. Morello Cherry, P.
22. Red Heart Cherry, P.
23. Portugall pear-Quince, P.
24. Red Heart or Archduke's Cherry: grafted Feb. 25, 1644.
24. Portugall pear-Quince, P.
25. Portugall pear-Quince, P.
26. [Tradescant's] Luke Ward's Cherry, T.P.
27. Greate Flanders Cherry, P.
28. Queen Mother's Plum, P.
29. Aprcock Plum, T.P.
30, 31. (blank).
32. Turkie Plum, P.
33. Black Bullies, P.
34. Portugall Apple-Quince or Melocotone-Quince, P.
Su (Total) 222.

AMONG DARVYES PLUMS, SEE FEE. 1644

- 4. White Pear plums and 4 Damsons.
Cerasus avium fructu rubro, P.
Cerasus avium fructu nigro, P.
First nursery of Apples in new wth [A] and so turning by ye west wall, grafted the 6th of March, 1644:
1. Greate red Queene Apple, P.
2. Pear Apple, T.T.P.
3. Holland Pippin.
4. Pearmaine, T.P.
5. Holland Pippin and Pearmaine, F.
6. Holland Pippin.
7, 8. Harvey Apples, P.
9, 10, 11. Gillo flower Apple, T.P.
Second Nursery of Pears betwixt [A] and [12]:-
1. Paynted Pear (T.) grafted, March 6, 1644. And so successively 8 others grafted Feb. 25, 1644, with bippes from Sr Jo: Reresby of Bergamot Pear, Cowick peate, 29 marke Pear, greate Lording

MORAEA IRIDIODES JOHNSONII.

I HAD not seen the figure and description of this plant in the April 5 number of the *Gard. Chron.* until now. Is Mrs. Richmond certain that the plant is what she has called it, a variety of *M. iridioides*? It appears to me to be *M. bicolor*, formerly called *Pietes bicolor*, and figured in *Bot. Rep.* t. 1404, and in *Plant. Mag.* IX, 29, under the name of *Iris bicolor*. These figures, which were published about the year 1840, were prepared from cultivated plants of uncertain origin, and according to Baker (*Hand-book of Iridaceae*) the first description was made from a garden in Bayswater in 1851. This plant has the habit of *M. iridioides* and large flowers with broad outer segments, the colour, pale yellow, with a large black-purple blotch at the base of each. The species is now known to be a native of the South Eastern division of Cape Colony. It is a much showier plant than any variety of *M. iridioides* that I have ever seen. W. Watson, *Kew*.

WILD PEARS.

The Bulletin of Popular Information (No. 4, vol. VI.), issued by the Arnold Arboretum, contains the following interesting article on Wild Pears:—

The Arboretum collection of the wild type of Pear trees, especially those of eastern Asia, is probably now the largest to be found in any arboretum, and as many of the species now flower and produce large crops of fruit, this collection is of particular interest to pomologists who hope to find among these trees a stock resistant to blight on which to graft their orchard Pear trees with edible fruit.

The earliest of the Asiatic Pears this year, *Pyrus ussuriensis*, began to flower early in May. This tree, which is common in northern China, Korea and Manchuria, and the only species which has a foothold in Japan, where it has recently been discovered, inhabits more northern and colder regions than any other Pear tree. If any Pear tree proves hardy, therefore, in the northern interior part of this continent it should be this species; and if it proves resistant to blight it should yield the hardiest of all Pear stocks. No other species attains such a large size as is shown by the photograph made in 1919 by Wilson in Korea of a tree which was sixty feet high, with a tall trunk seven feet round and a head of spreading branches 75 feet across. The flowers are not as large as those of some of the other species, but as a flowering tree *P. ussuriensis* is one of the most beautiful of all Pear trees, for the flower-buds and the opening flowers are deeply tinged with rose-colour. The fruit is subglobose, green, hard, and one-half to three-quarters of an inch in diameter and, like that of most wild Pear trees, is of no comestible value. Among other Pear trees this northern species, as a young tree at least, can be easily recognised by its smooth, pale bark.

Pyrus ovoides, which was introduced into western gardens from northern China, and is an old inhabitant at the Arboretum, is now considered by botanists a variety of the Korean Pear tree (*var. ovoides*). It blooms two weeks later than the more northern tree; the flowers are larger and pure white; the fruit is larger, with succulent flesh, and, unlike that of most Pear trees, is broad at base and narrow at apex and pale yellow. The leaves of no other Pear tree in the collection assume such brilliant autumn colours. The large specimen of this tree near the Forest Hills gate has been covered with flowers this spring. For the beauty alone of its autumn foliage this tree should find a place in collections of ornamental trees. Inoculation of seedling plants of another Chinese Pear tree, *P. Calleryana*, shows, as much as such tests prove anything, that they are immune to attacks of the Pear blight; and pomologists now believe that in this tree they have found the stock which will make the production of Pears in this country a more certain and profitable industry

than it has been before. Many thousand seedlings have been raised by the Department of Agriculture of the United States and by different experimental stations from the seeds produced by the Arboretum trees; if these prove as valuable as American pomologists now believe them to be they will demonstrate the value of museums of science like the Arnold Arboretum and more than justify the labour and money it has expended in its explorations in eastern Asia. Unfortunately, the only specimens of this Pear tree outside of China which produce seeds are in this Arboretum, and although the trees produce good crops of fruit, the supply of seeds from the Arboretum will remain far short of the demand.

years ago in the United States, the Keiffer and Lecomte Pears. These, although rather hard, were large and well suited to ship long distances. Much was expected of them, especially in the southern states, where large orchards were planted. The trees, however, proved so susceptible to blight that their cultivation has now been practically abandoned. As an ornament of gardens, *Pyrus serotina* is worth growing for its large, white flowers, more or less deeply tinged with rose-colour, and the deep bronze colour of its unfolding leaves.

As a fruit tree for western countries, none of the Asiatic Pear trees, except the north China *Pyrus Bretschneideri*, gives any promise of value. In the Arboretum this tree, where

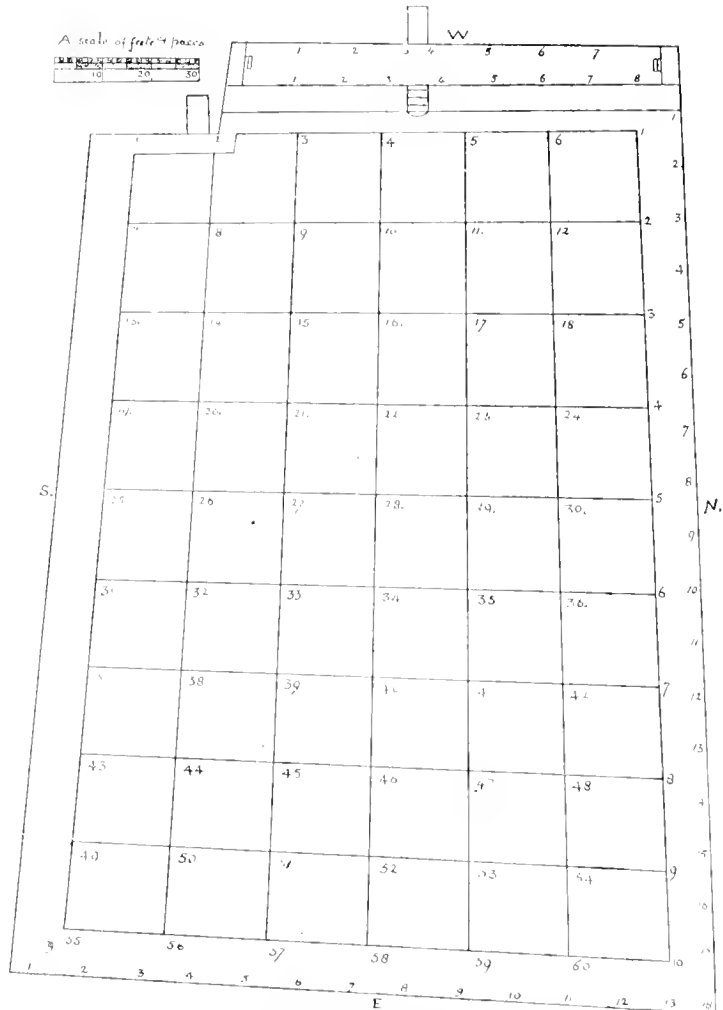


FIG. 158.—A MODEL OF MY NEW ORCHARD AT DARFIELD, 1630.

(See p. 296.)

Another Pear tree introduced from western China by Wilson, *Pyrus serotina*, is of interest to the students of cultivated fruits as the wild type from which have been derived the round, gritty Sand Pears, which in many varieties have been cultivated for centuries by the Japanese, who obtained them originally from China. Many forms of these Sand Pears, in the early days of Japanese intercourse with the outside world, were sent to the United States and to Europe. The trees are handsome, with beautiful flowers and brown or greenish yellow fruits, which in some forms are extremely ornamental, but western palates and digestions can not cope with the hard fruit full of grit, which is not worth even the trouble of cooking, although in Japan even little children appear to enjoy these Pears.

The cultivated Japanese Sand Pears crossed with cultivated garden Pears produced several

it was raised many years ago from seeds sent from Peking, produces yellow, globose, juicy fruits from one to two inches in diameter and of excellent flavour. Nothing is known of this Pear as a wild tree, but it is evidently the origin of the large, juicy Pears which are conspicuous in the Peking market in September and are said to keep well into the winter. This Pear tree has been in the Arboretum since 1882 and has never been attacked by blight, although trees of species like *P. betulaefolia*, growing with it, have suffered seriously from disease. It therefore seems possible that good results in hardness, freedom from disease and improvement of fruit might possibly be obtained in seedling forms of this Chinese tree, or by crossing it with some of our garden varieties. The European and western Asiatic Pear trees bloom rather later than the Chinese species.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Begonias From November to March (see p. 230).—I read with interest *Deansons*' excellent article on the cultivation of Begonias. I note in his selection he does not mention the variety *Optima*. In my estimation, this is one of the most beautiful Begonias in cultivation. It is useful as a decorative plant, and it also makes an excellent change for table decoration, having long stems suitable for displaying the flowers to good advantage. The colour may be described as cerise shaded with old gold. Another variety I have a liking for is *Idealia*. This is a semi-double variety, with bright rose-carmine flowers. Fascination is another good single variety, the colour being a rich Apricot, shaded with salmon. *Gloire de Sceaux* is still one of the best Begonias for late blooming and the flowering period extends over a long season. This hybrid was in flower with me in February, and at the time of writing (May 22nd) it still retains much of its loveliness. By careful attention given to feeding and watering these Begonias may be had in flower four months in the year. T. P.

Potato Spraying.—When the Potato crop is in a healthy condition and when good cultivation, suitable weather conditions, wide planting, or other causes help to ward off disease, it might happen that the sprayed patch would give a smaller yield than the unsprayed patch (see p. 258). I take it that this would be due to the clogging effect of the spraying mixture upon the foliage, acting, as dust would, in reducing the physiological processes of the plant. I have had direct evidence of this in connection with spraying demonstrations carried out in Belfast and in the south of Ireland. As, however, the normal season (especially in the west), is one which favours the disease, it is always a safe plan to spray. Spraying helps to keep the foliage green for a longer period and thus increases the yield. It is generally conceded that "muggy weather" is conducive to the development of the disease. Wm. H. Johns, Horticultural Superintendent, County Hall, Tralee.

Chelsea Show.—I venture to protest against the bad ventilation of the tents at the Chelsea Show, or, rather, against the utter lack of ventilation. In doing this, I would like to make it clear that I in no way blame the permanent officials, who, as always, manage things so well; but there is something very wrong when such an important item is overlooked. The unpleasant odour from certain cut flowers, and from perspiring humanity was so bad that ladies fainted, and even strong gardeners, used to hot houses, felt the strain. It is certainly curious that a Council composed of so many good business men should fail to obtain suitable tents for what should be the premier horticultural show in the world. A trip to some of our best provincial shows, in the midlands or the north, might enlighten them as to what can be done in the way of a properly-ventilated tent! Further, could not the walks have been sprinkled in the morning to keep down the dust which spoilt some of the exhibits? A *Sufferr*.

— I visited the Chelsea Show on the third day, and was disgusted, like a good many more, at the appearance of things in general. The new Victory Pelargonium, a fine new colour, looked as though it had been dragged through the deserts of Egypt. The fruit exhibits were in bad condition from dust, and I only hope that Messrs. Laxton's Strawberries were not sent to the hospitals on the conclusion of the exhibition. The R.H.S. Council should prevent a recurrence of this state of affairs, as those who can only afford to pay the lowest entrance fee should be considered as well as visitors on the first day. Water was to be had in plenty, as witness those poor fellows pumping away, behind the rock gardens; therefore the ground in the tents should have received a good soaking each day to lay the dust. Better conditions than those prevailing in 1920 must be provided in future. C. H. Rees, Clapham S.W.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 11.—*Present*: Mr. E. A. Bowles, M.A. (in the chair), Dr. Bateson, Dr. Voelcker, Messrs. Dykes, Page Hales, Worsdell, Chittenden (hon. sec.) and Marsden Jones (visitor).

Carnation foliage malformed.—Mr. W. C. WORSDELL showed *Carnation* leaves with curious, horn-like, lateral outgrowths, the origin of which was doubtful.

Tulip with bulb in leaf axil.—He also showed a Tulip with a bulb in the axil of the leaf.

Sports from root-cuttings.—Dr. BATESON showed a Pelargonium raised from a root-cutting of the variety *Ascot*, which has a rolled back petal with magenta spots on a white ground, whereas the plant raised from the root-cutting had a flat petal, larger than the parent, with a large, purplish spot. Of four root-cuttings raised at Melton, three had proved different from their parents.

Cheiranthus × Marshallii.—Mr. MARSDEN JONES showed a branch from his pale-budded hybrid with pale flowers similar in colour to those of *C. alpinus*, but of the size of those of the hybrid. He also showed some hybrid Tulips.

Iris Seedlings.—Mr. DYKES showed seedlings of *Iris Kharput*, having a long fall, and of *I. germanica*, with inflorescence branching from the base, with an herbaceous spathe. The habit, evergreen character of foliage, and partially herbaceous spathe of *I. germanica* have led Mr. Dykes to conclude that *I. germanica* is not a really wild plant, and the nature of the seedlings suggests that *I. aphylla* is one of the parents, but the other parent is unknown.

Rhododendrons.—Mr. MAGOR, of Lamellen, St. Tudy, sent the following rare *Rhododendrons*: *R. campylogynum*, collected by Forrest on the Tali Range, a dwarf undershrub, the seedlings raised by Mr. J. C. Williams; *R. apodectum*, also of Forrest's collecting, raised by Mr. Magor, from the Shweli-Salween Range, a shrub of 4 to 6 feet; *R. ledoides*, from Yunnan, a shrub of 2 feet; and *R. sp?*, related to *Azalea indica*, from the Chutong Hills. The last two were both raised by the exhibitor. Mr. M. YORKE sent a plant called *R. Edgari-annum*, which bore dark violet-purple flowers and was strongly aromatic.

CHELSEA SHOW.

(Continued from p. 287.)

Scientific Exhibits.

A special tent was set apart for scientific and educational exhibits, and many of the foremost horticultural research stations contributed in making a very interesting display. It was gratifying to see that the flower-loving public as well as professional horticulturists took advantage of seeing the part played by science in unravelling the mysteries of plant life.

From the Royal Horticultural Society's Laboratory at Wisley came a series of scientific exhibits. There were the results of experiments, set forth showing that the greater percentage of starch present in a seed potato tuber beneficially affected the yield. Specimens showing the disastrous effect of planting Apple trees in grassland as against planting in cultivated soil were on view, together with an interesting series of Plum trees in pots, showing that such varieties of Plums as *Descuisne*, *Jefferson* and *Comte Blanche d'Altham*, failed to set fruit when the flowers were pollinated with their own pollen, while the varieties *Monarch*, *The Czar* and *Denniston's Superb* were self-fertile. Solutions of typical plant pigments were also shown as well as contact washes, stomach poisons, and winter washes—and the chemicals with which they are made—used in controlling many insect pests affecting fruit trees. A very simple and instructive experiment was erected showing the effect of the presence of humus on the water-holding capacity of the soil.

Mr. J. K. RAMSBOTTOM exhibited a unique series of photomicrographs of the life history of the *Narcissus* eelworm and photographs of boxes

of bulbs showing the result of the treatment with hot water.

THE IMPERIAL COLLEGE OF SCIENCE, South Kensington, contributed an apparatus used for measuring the size of the leaf pores and another for measuring the loss of water from plants. A very interesting exhibit was shown by the FRUIT EXPERIMENTAL STATION of the South Eastern Agricultural College, East Malling. The different types of root action of various Crab and Paradise stocks of Apples and photographs of trees worked on various stocks were displayed: some of the photographs proved that the variety *Lane's Prince Albert*, for example, will give a tree of free-blooming and dwarf habit, when worked on some stocks, while worked on others the same variety is less precocious and more vigorous. This is a very valuable piece of research work which is being steadily investigated at East Malling and which will solve many of the difficulties with which the fruit grower has to contend.

THE INSTITUTE OF PLANT PATHOLOGY, Rothamsted Experimental Station, sent a large series of cultures of fungi found to be present in the soil, and work is now in progress to discover which species may be regarded as being beneficial and which harmful to the fertility of the soil and to the plant. It is known that many fungi affecting some of the most valuable food crops can remain active in the soil for a number of years; others there may be which are capable of adversely affecting the availability of manure, and we look forward to the results of this investigation which may shed more light on the complexities of the soil. From the same Institute came photographs of the process of steam sterilisation as practised in a Tomato house in order to free the soil from the root-knot eelworm, and there were also shown a number of chemicals employed to partially sterilise soil and render it free from many bacteria and low forms of animal life which are known to be detrimental to soil fertility.

A group of fruit trees with photographs was shown by the JOHN INNES HORTICULTURAL INSTITUTION, illustrating the effects of cross fertilisation in cases of self sterility. The same institution also displayed a series of *Calceolaria* hybrids obtained from original crosses made by the late superintendent, Mr. Allard.

Another very interesting exhibit came from the CHESHUNT EXPERIMENTAL AND RESEARCH STATION. Being situated in the centre of a large commercial Tomato growing district, this station is, amongst other things, paying particular attention to the many fungous and bacterial diseases affecting this crop. Cultures and photographs were shown of many destructive diseases which are now under investigation such as *Sleepy Disease*, *Stripe*, "Damping Off," *Collar Rot* and *Stalk Disease*.

Some excellent drawings of species of Tulips by Miss E. Kaye were shown by Mr. W. R. DYKES, M.A., while from Mr. R. A. MALBY, F.R.P.S., came a very interesting collection of micrographs of pests affecting horticultural and agricultural crops.

Horticultural Sundries.

Fertilisers, insecticides and fungicides, as well as the thousand and one things classed as horticultural sundries, are fast becoming necessities to successful gardening, and, judging from the numbers of visitors who thronged the Lime Avenue on all three days, are most attractive adjuncts to a flower show. It may be, though, that these mundane articles and preparations do not lend themselves to displays of compelling attraction; that there is nothing about a gigantic tubular boiler, such as the *Bisson*, or Knapsack sprayers, or tins of chemical fertiliser that require or warrant more than a passing glance. But there is a dignity in the massive lines of the boiler and a fascination in the make-up of the chemical manures that seems irresistible, and no doubt the insecticides stir up memories of the green fly at home which are greedily and ceaselessly appropriating the life blood of the plants. Be that as it may, the fact remains that the crowd in the Lime Avenue was almost as dense as in the flower tent, and decidedly more physically comfortable. And it was cosmopolitan in its tastes, too, for it displayed as much interest

in a new lawn mower as in the model green-houses, or the kill-all specific, or the beat-all fertiliser.

The greenhouses by Messrs. D. SWAIN AND Co., Holloway, and Messrs. J. WEEKS AND Co., 92, Victoria Street, Westminster, were of pleasing design and splendidly adapted for growing perfect plants. Besides span-rooted greenhouses, Messrs. SWAIN AND Co. had various garden frames and a most fascinating garden house; while Messrs. WEEKS AND Co. included their well-known sun-blinds and even more famous boilers in their exhibit. Messrs. SKINNER, BOARD AND Co., Bedminster, Bristol, exhibited their well-known greenhouse.

It was Messrs. C. P. KINNELL AND Co., of 65, Southwark Street, S.E.1, who exhibited the giant Bisson and Rochdale boilers, which seemed equal to heating unlimited lengths of piping, and they also had smaller boilers of the Mona and Robin Hood patterns.

Spraying appliances of various types were very prominent, and many of the manufacturers also showed spraying materials. The ACME CHEMICAL Co., Tonbridge, had a very attractive stand, where they displayed many of their well-known Acme preparations, weed killers and lawn sand. Fumerite, the Acme soil disinfectant, is a valuable preparation. Various insecticides, including the safe and popular Quassia chips, were also on view.

Mr. J. L. EDGINTON, Ecclesall, Sheffield, made a great display of his famed "Bux" specialties, Limbux, Pestibux and Bordobux. Limbux, a soil "energiser and fertiliser," is a specially treated lime preparation which, being non-burning, may be safely used at any season. The name Pestibux is sufficiently descriptive to indicate its nature. Bordobux is a dry-spray compound, non-caustic and very efficient.

Messrs. W. N. COOPER AND NEPHEWS, Berkhamstead, had on view various spraying machines, and their noted V1 and V2 spray fluids; Messrs. JEVES' SANITARY COMPOUNDS Co., 64, Cannon Street, London, also made a very attractive display with their well-known horticultural preparations and sprays.

Messrs. CORY AND Co., Bedford Chambers, Covent Garden, showed attractive samples of their proprietary Niquas; the old favourite Stander's manure, and the efficient Lethorion fumigating cone.

Spraying machines of many types and all of first-class make were set out by the FORR OAKS Co., Sutton Coldfield, near Birmingham, and by Messrs. HOLDER-HARRIDEN, LTD., 35, Noble Street, London; while Mr. J. HAWS, 227, Lower Clapton Road, E., showed his well-known watering cans.

Messrs. McDONNELL BROS., LTD., 66, Port Street, Manchester, had a most attractive stand where due prominence was given to the tried and proved Katakilla, an effective weed killer.

As it is on the eve of the Potato spraying season, the "Blighty" exhibit attracted a deal of attention. Many came, drawn by the novel character of the circular summer-house and garden, but remained interested in "Blighty" and its almost infinite possibilities as a safe and efficient spraying compound. Most similar preparations must be used soon after they are made, but Blighty remains in suspension for an unusually long time and, being of a very adhesive nature, is especially efficient. Besides its known great value as a preventive of Potato blight, Blighty is also an efficient cure for many other vegetable and fruit diseases.

PRINCE PATENT CANDLE Co., Belmont Works, Battersea, naturally gave special prominence to their Gishurst Compound, which was considered an indispensable insecticide by the older generation of gardeners, and has continued in the front rank as a reliable insecticide to this day. For those who prefer them there were soft soap and quassia; and soft soap and paraffin compounds, both readily soluble and safe to use.

Messrs. G. W. PURSER, 15, Charles Street, E.C.1, had spraying appliances and various insecticides. Messrs. ROBINSON BROS., Ryder's Green, West Bromwich, and the STONEHOUSE WORKS Co., Spin Lane Mills, West Bromwich, also displayed many excellent sprayers; the

latter firm included insecticides and such fertilisers as Abunda, Potoma and Vitilizer.

The famous Abol sprayers and preparations were prominent on the stand of Messrs. E. A. WHITE, LTD., Paddock Wood, Kent, who also showed their Stictite, which is extensively used for fruit tree banding.

Nicotyl, for use against red spider; Vossolite, the soil insecticide; Standard Lime Sulphur; Pterokyl, for aphides and capsid bugs are the names of only a few of the specialties attractively displayed by Messrs. WALTER VOSS AND Co., Millwall; while Messrs. WM. WOOD AND Co., Taplow, demonstrated the use and value of their sprayer, cultivator, and various other garden implements; Messrs. MURPHY AND SON, Mortlake, staged insecticides.

Messrs. PRENTICE BROS. made a great display of their famed Icthemio Guano, the newer Tomorite, and other fertilisers which they manufacture largely at Stowmarket, and also displayed excellent vegetables and saladings grown by the aid of these materials.

Splendid yellow loam in turves fully six inches thick and full of fibre was shown by Mr. A. B. JOHNSTON, New Park, Cranleigh; while further along the avenue Messrs. H. SCOTT AND SONS,

VASES AND STATUARY.

There was a sufficient variety of garden ornaments to suit all tastes, if not all purses. Many were exceedingly beautiful, and most of the leaden figures of great worth. No longer are garden ornaments restricted to figures and plant vases; the summer needs of birds are remembered in the artistic stone baths, where sweet songsters may disport themselves; and shallower drinking places where they may moisten their bills.

Messrs. T. CROWTHER AND SONS, Fulham, set out a wide range of garden ornaments and many iron gates of most elegant design. Mr. C. T. WEST, Seymour Street, London, included glass vases and stands. Messrs. SANDERS AND Co., Euston Road, London, had many desirable vases, figures and bird baths, mostly in stone and of pleasing design.

Garden furniture and tents were also shown in great variety. Such firms as CASTLES' SHIP-BREAKING Co., Millbank, London; Messrs. HUGHES, BOLCKOW AND Co., Blyth, Northumberland; Messrs. GAMAGES AND Co., Holborn; Messrs. MAGGS AND Co., Bristol; Messrs. PIGGOTT AND Co., Bishopsgate; and Messrs. DUNCAN, TUCKER AND Co., South Tottenham,



FIG. 139.—CHELSEA SHOW: MR. J. WOOD'S ROCK GARDEN.

Woodside, showed excellent turves of "mellow, fibrous soil."

Well-made labels of neat design, clear lettering and indestructible nature were shown in great variety by Mr. J. PINCHES, Crown Street, Camberwell, who also had bloom protectors and exhibition boxes.

In addition to their well-known horse lawn boots, Messrs. N. PATTISON AND Co., Streatham, exhibited a gradator/distributor for applying top-dressings. The ACME LADDER Co., Earlsfield, demonstrated the value of their extension ladders. The CLOHE CHIP Co., Guildford, displayed their speciality; and the CONCRETE BLOCK Co., Chelsea, showed the making of their blocks, which are recommended for building purposes.

GARDEN SUPPLIES, LTD. (late Boundary Chemical Co.), Liverpool, had many interested observers of the demonstrations with their new lawn mower and other of their sundries. The "Cascade" nozzle, by Mr. T. H. WENSNER, Hegatestone, Essex; and the "Newspray" nozzle, for attaching to watering cans, by Mr. J. SINGLETON, Fulwood, Preston, are both useful articles to the gardener.

who are also famed as builders of first-class glass-houses, were well represented. Garden gates of Oak were set up by Mr. GEORGE BLAY, of Malden; whilst DRYAD CANE AND METAL WORKS, Leicester, showed seats and hammocks.

HORTICULTURAL CLUB.

JUNE 1.—The annual dinner of the Horticultural Club was held during the evening of the first day of the R.H.S. Chelsea Show, in the lecture room at the Vincaat Square Hall, Westminster. Dr. F. W. Keeble presided, and there was a company of forty, including ladies. The Chairman read a letter from the President, Lord Lambourne, regretting his inability to be present and wishing the members an enjoyable evening. The toast list was a short one, and included "The Horticultural Club," proposed by the Chairman. Dr. Keeble referred to the difficulties the club has experienced in finding a suitable home since the Hotel Windsor was taken over by the authorities, and expressed the gratitude of the club to the Council of the R.H.S., which obligingly arranged for the Committee to rent

one of the rooms at the Society's hall. Such a measure could, however, be only a temporary one and they looked forward to the time when more suitable premises could be secured. He wished the club success in the future, for he was sure that the association of plant lovers resulted in friendships that were sincere and enduring. Mr. W. A. Bilney responded. "The health of the Chairman" was proposed by Mr. R. W. Wallace, who stated that Dr. Keeble's association with horticulture in the past few years had been fruitful of much good and he hoped that the time would come when he would again engage in the more practical side of gardening.

A capital programme was rendered by the following articles under the direction of Mr. Carl Hentschel:—Misses Pamela Baselow and Ethel Royston, Messrs. Charles Coborn, Walter Montagne, Arnold Stoker and Sinclair Mantell.

WAKEFIELD AND NORTHERN TULIP.

THE 88th Annual Exhibition of Tulips was held in the Bramswick Hotel, Wakefield, on Whit-Monday and Tuesday, the 24th and 25th ult. The season has been a bad one for Tulips; the fine open weather of March caused the blooms to develop rapidly, only to be damaged by the heavy rains and strong winds of April and early May.

The principal prize was a Silver Challenge Cup offered for the best pan of 9 blooms and the honour of being the first to have his name engraved on the Cup fell to an old Wakefield veteran, Mr. J. HARDWICK. His blooms were Mrs. Colver (premier), Mabel, fl., Sir Joseph Paxton, fl. (premier), Dr. Hardy, Lord Denman, fl., Mr. Jackson, fl., and Rosehill, Sir Joseph Paxton and Goldfinder, breeders. The first prize winner in the open class for 6 certified blooms was Mr. C. J. Fox (Birmingham), with Sarah Headley, Mabel, Sam Barlow Talisman and Adonis; 2nd, Mr. J. HARDWICK; 3rd, Mr. R. ROBINSON. In the open class for 6 breeders, the first prize again fell to Mr. C. J. Fox, for Annie Macgregor, Lady C. Grosvenor roses; Sulphur and Alfred Loyd, bizarres; and Talisman and Othello, Bybloomens; 2nd, Mr. F. FOX, and 3rd, J. HARDWICK.

In the open class for 3 breeders, Mr. R. ROBINSON won first prize with Rosehill, Paxton, and Bridesmaid, the last being a magnificent flower and easily securing the premier prize as the best breeder. In the class for the best pair of blooms, the first prize was won by Mr. R. ROBINSON; 2nd, Mr. J. HARDWICK; and 3rd, Mr. C. J. FOX.

The judging was in the capable hands of Mr. C. W. Needham, who also, at the conclusion of the dinner, presented the Cup to the winner.

KEW GUILD.

JUNE 2.—The annual general meeting and dinner of the Kew Guild, held at the Holborn Restaurant, were very largely attended. The gatherings were very representative, and those present included men from Malaya, India, West Indies, Uganda, West Coast of Africa and Luxembourg.

Mr. Charles H. Curtis presided over the annual meeting. The report presented by Mr. A. Osborn, the secretary, referred to the loss by death of Mr. G. Stanton, Mr. J. Rourke, and Mr. W. J. Tatcher; to the War Memorial; and to the need for increased subscriptions to maintain the *Kew Guild Journal* at its present standard of size and interest. In moving the adoption of the report, the Chairman emphasised the need for increased income and referred to the great value of the *Journal* to all Kewites. The report and accounts were adopted, and several recommendations to the Committee were accepted.

Mr. Osborn and Mr. Coultts were re-appointed Secretary and Treasurer respectively; Messrs. A. C. Bartlett and J. W. Taylor as Auditors; and vacancies on the Committees were filled by the election of Messrs. T. F. Chapp, A. Hosking, F. A. Sprague, J. Weathers and R. J. Platten. At the close of the formal business the Chairman made a strong and successful appeal for

the remainder of the amount needed for the Kew Memorial, and also urged members to support the Guild Benevolent Fund, by means of which timely and much-needed aid has been rendered on many occasions.

Capt. A. W. Hill, Assistant Director of Kew, and the President of the Guild, presided over the annual dinner. There was a record attendance, no fewer than 145 being present, including a number of women Kewites. This function was one of the happiest of a long series and will not soon be forgotten by those who took part in it. When proposing "The Kew Guild," Capt. Hill referred to the wide distribution of Kewites throughout the world, and the important positions they occupied. The influence of Kew was world-wide, and he was often surprised at the success of Kewites when he remembered how few opportunities there were at Kew for the study of the higher branches of the horticultural profession. He hoped greater facilities for study would be provided before long.—The Hon. J. W. Campbell, J.P. (Malacca), who responded, expressed the delight all Kewites in distant lands felt when the *Journal* reached them, and he hoped that whatever could, or could not, be done, the Committee would maintain the *Journal*.—The toast of "The President" was proposed by Mr. C. H. Curtis, who, on behalf of the members, congratulated Capt. Hill on presiding over a record attendance, on being able to announce the completion of the sum needed to provide the Guild War Memorial, on the hope he held out of increased educational facilities at Kew, and upon his work in connection with the War Graves' Commission.—The Misses Watson, Miss Harper and other Kewites contributed musical items, old acquaintances were renewed and new friendships made, and an all-too-short evening concluded with the singing of "Auld Lang Syne."

R.H.S. GARDENS' GUILD.

ALONG the river side and across the flower-decked fields, from Byfleet, a few who in years gone by worked at the old R.H.S. Gardens, at Chiswick, together with some of the earlier Wisleyites, wended their way on the beautiful morning of June 5, to the little eight-hundred-years-old church at Wisley, Surrey. There they were met by the Wisley staff and other members of the R.H.S. Gardens' Guild, and all joined in a short, impressive, memorial service to those men—about a score—who, counting not their lives dear unto them, passed on during the great war to where flowers fade not, and where trees are always green, and moth does not corrupt.

After the service the party went to the R.H.S. Gardens for lunch. The annual meeting which followed, held in the lecture room at the laboratory, was the first gathering since 1914. Mr. F. J. Chittenden, presided. An informal report was presented, and Mr. S. T. Wright stated that the finances showed a balance in hand, but increasing expenditure on printing called for increased income if the *Journal* was to be continued. Mr. J. Fraser was reappointed Editor of the *Guild Journal*, and thanked for his services. To meet the heavier costs of production the meeting decided to raise the annual subscription to 2s., and establish life membership at a charge of two guineas. Mr. Lionel Rothschild was invited to succeed his father as President of the Guild; Messrs. Chittenden and Wright were appointed Vice-Presidents; Mr. A. D. Cartwright was chosen as Secretary; and Messrs. Spooner and Tinley, as Auditors. The Committee, elected by ballot, consists of Messrs. C. H. Curtis, C. Titchmarsh, Frank Reader, and Wallis, with Messrs. Sims and Hamilton representing the Wisley students.

At the conclusion of this meeting the members inspected the gardens, under the guidance of Mr. Chittenden, Mr. Wright and Mr. Blakey, and were greatly interested in the new Chinese shrubs, the rock and water gardens, the culinary Pea trials, the colonies of *Filium giganteum* and *Primula*, and the fine promise of a large Apple crop in the orchard on the high ground where the splendid appearance of the trees when in bloom was the subject of comment by visitors.

Obituary.

Augustin De Candolle.—We learn with regret of the death of Augustin Pyramus De Candolle, which took place on May 9, at Vaillon, near Geneva. Augustin De Candolle, the last of a long line of distinguished botanists, died in his fifty-second year, having survived his father, Casimir, by some eighteen months. Born in England in 1869, Augustin De Candolle was a frequent visitor here. His published work includes memoirs on new plants from Madagascar and Touquim. He was the great grandson of A. P. De Candolle (1778-1841), grandson of Alphonse De Candolle (1806-1895), who was awarded the Linnean gold medal in 1889, and the son of Casimir, 1836-1918; surely an unique line composed of four generations of botanists!

ANSWERS TO CORRESPONDENTS.

EXCAVATION OF SOIL: *H. S.* We know of no special work dealing with the subject mentioned in your letter, but you will find the information you desire in the *Horticultural Notebook*, published by Messrs. Crosby Lockwood and Sons, 7, Stationers' Hall Court, Ludgate Hill, London.

MORALEA IRIDIROIDES JOHNSONII: *R. F. S.* Write to Mrs. I. L. Richmond, Woodlands, Lustleigh, Devon, who will probably be able to oblige you.

MUSHROOMS FALLING IN MEADOW LAND: *H. S. N.* Unless well fed cattle have been grazed upon the meadow-land, it is hardly likely that Mushrooms will appear again after an absence of three years. We can find no trace of any previous communication from you on this subject.

NAMES OF PLANTS: *J. O.* *Limnanthes Douglasii*.—*H. and S.* Probably a species of *Salvia*; send when in flower.—*H. C. N.* *Streptosolen Jamesonii*.

NECTARINE LEAVES BLISTERED: *J. T. T.* The blistering is caused by a fungus, *Exoascus deformans*, which attacks the young leaves of Peaches and Nectarines during a period of cold weather. Spraying with Bordeaux mixture will prevent infection by means of spores, but a better plan is to cut away infected shoots and leaves and burn them.

TOMATO LEAVES DISEASED: *J. C. McA.* The disease is caused by the fungus *Cladosporium fulvum*, and is known as Tomato leaf rust. Spray the plants with a dilute solution of potassium sulphide or with Bordeaux mixture at half the usual strength. If the plants are badly affected remove and burn them.

TULIPS "BREAKING": *C.* Certain varieties of self-coloured Tulips have the habit of "breaking," i.e., they may produce flowers of a different colour from the true form. The variety Mr. Farncombe Sanders sometimes "breaks" in this way, and having once broken, the bulbs do not again produce flowers of the original colour; the reason for this peculiarity is not known.

VINE LEAVES INJURED: *W. H. M.* The injury is due to some external agency and not to specific disease. Scorching by bright sunshine may have caused the trouble.

VINE LEAVES SCALDED: *E.* The scalding is due to the action of sunlight upon foliage wet with condensed moisture. Theinery should be ventilated early in the morning so that the moisture is dispersed before brilliant sunshine can act through it, as through a lens, on the tender tissues. The chief point to observe in the prevention of scalding is to open the ventilators very slightly, early in the morning, and steadily increase the ventilation through the day in bright and warm weather.

Communications Received.—W. F. R.—W. J. E.—F. T.—W. K.—A. W. M.—C. A.—B. S.—J. E.—W. J. E.—F. G.—A. S.—C. E. P.

THE
Gardeners' Chronicle
No. 1747.—SATURDAY, JUNE 19, 1920.

CONTENTS.

Alpine garden, the— Erythronium flavifolium .. 307	Leicestershire, fruit crops in .. 308
Liliospermum pur- purvo-raculeum .. 307	Nursery notes— Messrs. Allwood Bro- thers .. 309
Anemone St. Bridgid .. 308	Orchid notes and glean- ings— Odontioda Vera .. 305
Apiary, the .. 305	Belle .. 305
Books, notices of— Manual of American Grape Growing .. 303	Orchid tent at the Chelsea Show .. 305
Botanical Magazine .. 302	Peas, late .. 308
Colonies, notes from the— Fern flora of a single tree .. 309	Plants, new and note- worthy— Catalpa Buelowii .. 303
Cowper's summer house at Olney .. 302	Chomata Armandii, C. montana, C. Sponeri .. 303
Dendrobium primu- laridi .. 308	Davidia involucrata .. 303
Edinburgh, the Harri- son Park at .. 301	Mucana sempervirens .. 303
Ewell, garden of re- membrance at .. 301	Potato spraying .. 308
Flowers, useful indoor summer .. 308	Rochea .. 303
"Gardeners' Chronicle" seventy-five years ago .. 302	Rothamsted Experi- mental Station .. 301
Gesneria cardioides .. 308	Silver Leaf disease .. 308
Glasgow, proposed new park for .. 301	Societies— Gardeners' Royal Benevolent Insti- tution .. 301
Horticulture, new Con- troller of .. 301	Royal Horticultural York Gala .. 319
Horticulture in Parlia- ment .. 302	Timber exhibition at Holland Park .. 301
Inaw Binn, plant col- lecting on the .. 306	Trees and shrubs— Elacagnus argentea .. 307
Isatis tinctoria .. 305	Veronica Hulkeana .. 307
Week's work, the .. 304, 305	

ILLUSTRATIONS.

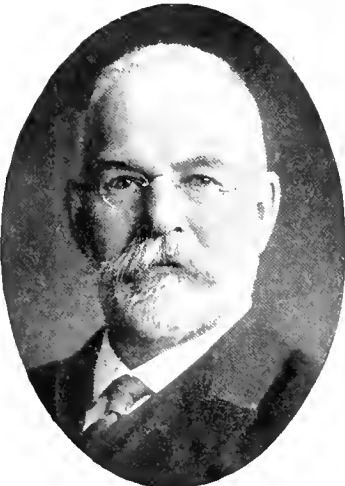
Cowper's summer house at Olney .. 302
Dianthus Allwoodii Susan .. 309
Elacagnus argentea .. 307
Isatis tinctoria .. 305
Lobjoit, Mr. W. J., portrait of .. 301
Mucana sempervirens flowering at Verrieres .. 303

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, June 16, 10 a.m. Bar. 29.92; temp. 70°. Weather—Sunny.

The excellence of the work done by the Rothamsted Experimental Station on behalf of agriculture and horticulture is universally recognised, and the need for continuing and extending that work is incontestable. It is therefore to be hoped that the activities of the Station will not be restricted for lack of funds. Research is an increasingly costly operation, and the discoveries made by investigators, though they add to the wealth of the community, bring no financial return to the institution to which the investigators are attached. Moreover, although the Ministry of Agriculture and the Development Commissioners have dealt not ungenerously with Rothamsted, recourse has to be had to private generosity to supplement the funds forthcoming from public sources. This task is undertaken by the Society for extending the Rothamsted Experiments in Agricultural Science and it is due to the untiring efforts of this Society that the income received by Rothamsted has up till now proved sufficient to permit the Institute to carry out its work and pursue its course of development. How remarkable that development is may be judged from the fact that whereas in 1909—the year in which the Society for extending the Rothamsted Experiments was founded—the staff at the Experimental Station consisted of thirteen persons, it now comprises forty-three, and whereas in the same year the land available for experiment was limited to fifty acres, it is now two hundred and eighty acres. In spite, however, of generous benefactions which have provided an endowment fund bringing in annually some £2,600,

there is urgent need for further generosity on the part of the public. Present annual expenditure amounts to £11,600, towards which the Ministry of Agriculture makes a grant from the Development Fund of £7,950, so that the Council of the Rothamsted Experimental Station have to look to the Society for assistance in raising the balance of a little over £1,000. Among recent benefactors, horticulturists will notice with interest the names of Mr. W. B. Randall, one of the prominent growers of the Lea Valley, who has provided the funds necessary for maintaining a W.B. Randall Research Biologist, and Lord Elvedon, who has shown great and active interest in the work of Rothamsted, in maintaining a special research chemist at the Station. Mr. J. F. Mason, another generous benefactor, provided for the building and equipment of the James Mason Bacteriological Laboratory, and the Goldsmiths' Company, contributed £10,000 to provide an endowment for soil investigation, in which branch of research, Rothamsted is foremost throughout the world. But as already indicated, a larger endowment is needed. In the pursuit of discovery, new lines of investigation are always presenting themselves, and in the research of the future well trained



MR. W. J. LOBJOIT, THE NEW CONTROLLER OF HORTICULTURE.

bands of experts will have to be engaged. Furthermore, it is proposed to establish at Rothamsted an Institute for Plant Pathology, and for that purpose also additional funds are required. No one who will read the record of achievement published in the Book of Rothamsted Experiments can doubt that support given to the institution is well bestowed, and we are sure therefore that the efforts made by the Society for extending the Rothamsted Experiments will meet with success. Like his predecessor, Sir Daniel Hall, the present Director, Dr. E. J. Russell, is keenly interested in gardening problems and has seen to it that horticultural soil problems are not overlooked in the schemes of research planned and practised at Rothamsted. It is to be hoped, therefore, that those horticulturists who have not already made contributions to the Research Fund will do so now, and as liberally as their means will permit.

The New Controller of Horticulture.—The Minister of Agriculture, Lord Lee of Fareham, has appointed Mr. W. J. Lobjoit, O.B.E., to be Controller of Horticulture (unpaid) at the Headquarters of the Ministry. Mr. Lobjoit is

President-Elect of the Chamber of Horticulture; Chairman of the Agricultural Committee, the Small Holdings Committee, and the Agricultural Education Committee of the Middlesex County Council, of which he is also an Alderman; Chairman of the Market Gardening, Fruit-Growing and Hop Committee of the Central Chamber of Agriculture; Examiner to the Royal Horticultural Society; and Member of the Horticultural Advisory Committee of the Ministry of Agriculture. Mr. Lobjoit is also a well-known writer on horticultural subjects and has a life-long practical experience of market gardening on a large scale.

Best New Rose at Bagatelle.—We are informed that Messrs. Alex Dickson and Sons, Newtownards, have been awarded the Gold Medal for the best new Rose in the trials held at the Bagatelle Gardens, Paris. The variety which won the award is named Frances Gaunt.

Mr. Peter Leslie's Visit to American Forestry Schools.—Mr. P. Leslie, lecturer in Forestry at Aberdeen University, has been granted leave of absence for three months during the coming autumn to enable him to visit a number of the Forestry Schools, Experimental Stations, Forest Produce Laboratories, and the more important forest districts in the United States and Canada. The authorities consider that the experience which Mr. Leslie will gain during his travels will be beneficial to the Forestry Department, and the Committee of the Department unanimously recommended the leave, especially as Mr. Leslie has not had a vacation since the commencement of the war.

Proposed New Park for Glasgow, at Garscube.—The Glasgow Parks Committee has had under consideration the offer of a park at Garscube by Sir Archibald Campbell, of Succoth, and has agreed to recommend the Town Council to accept the same. The ground is about 40 acres in extent, and has been favourably reported upon by the Director of Parks and the City Engineer, who have stated that a part of the land could be made suitable for purposes of recreation at a moderate cost and within a short time. The ground is well suited for the purpose of a public park, and will supply a felt want in that district of the city.

The Harrison Park, Edinburgh.—The recommendation of the Parks Committee of Edinburgh Town Council to purchase the Harrison Park for the sum of £13,500 came before the Council at a meeting the other day. The proposal was adopted—a decision which will give much satisfaction in the district served by the park.

Garden of Remembrance at Ewell.—The people of the village of Ewell, Surrey, have decided to lay out, as a War Memorial, a Garden of Remembrance, situated in the churchyard. There is to be a Yew hedge enclosing a plot of ground bordered with Rosemary. Within, there will be a memorial stone set in a rock garden in which brightly-coloured flowers will be kept.

Gardeners' Royal Benevolent Institution.—Sir Harry J. Veitch, Treasurer of the Gardeners' Royal Benevolent Institution, reminds us that the 77th Anniversary Festival Dinner in aid of the fund will take place on June 29 at the Grocers' Hall, London, E.C., when Field-Marshal H.R.H. The Duke of Connaught will preside. Subscriptions and donations are earnestly solicited and will be gratefully acknowledged if sent to the treasurer or the secretary, Mr. George J. Ingram, at 92, Victoria Street, Westminster, S.W.1.

Empire Timber Exhibition at Holland Park Skating Rink.—From July 5th to July 17th of the present year an exhibition of timber drawn from various parts of the Empire, together with a comprehensive exhibit of home-grown woods and articles manufactured from them, will be held in the Holland Park Skating Rink, London, W. At the present time, when so much attention is being directed to the necessity for planting trees over extended areas in the British Isles, so that we may be self-supporting

in the event of any future catastrophe arising such as a world war, it is very necessary that people should realise that timber suitable for all kinds of purposes can be grown in Britain, although we have been content in the past to import the greater part of our timber. In order that the home-grown section shall be as complete as possible in the space at the disposal of the committee, estate owners, scientific bodies, timber merchants and manufacturers have united to provide not only the exhibits but also a great deal of the money to pay for the floor space, generous contributions having been made by many of the societies interested in the cultivation of trees and the marketing of the timber. The exhibition has been organised by the Overseas Branch of the Board of Trade, and running concurrently with it there is a Forestry Conference organised by the Forestry Commission.

Cowper's Summer House, at Olney.—For twenty years the house at Olney, Bucks, in which the poet, William Cowper, lived from 1767 to 1786, has been known as the Cowper and Newton Museum, and the interesting and well-arranged collection within its walls is visited each year by numbers of those who cherish the memory of the poet. A few months ago the opportunity occurred of purchasing the garden in which still stands the summer-house so fre-



FIG. 140.—COWPER'S SUMMER HOUSE AT OLNEY.

quently mentioned in Cowper's inimitable letters, and, thanks to the generosity of a number of friends, the trustees have bought and paid for the freehold. They now have to meet the cost of restoring the summer-house, a work which has been faithfully carried out, and also have to provide a fund for the general upkeep of the Museum. Mr. Thomas Wright, author of the well-known *Life of William Cowper*, of which a second edition is in the press, is the secretary of the Museum, and to him, at Olney, contributions may be addressed.

Horticulture in Parliament.—A strong and influential Parliamentary Committee, under the chairmanship of Mr. Rupert Gwynne, M.P., has recently been formed to guard and watch over all the interests of horticulturists in general. This important step has been successfully organised by the Chamber of Horticulture, of 18, Bedford Square, W.C.1, which has already obtained many concessions in favour of horticulturists, and has been the means of keeping before the authorities the just claims of those engaged in this essential industry. Amongst those Members of Parliament who are already serving on this new Parliamentary Committee may be mentioned the names of: Mr. Rupert S. Gwynne, Eastbourne; Major S. Steel, Ashford; Mr. Ronald McNeill, Canterbury; Major G. H. Wheeler, Faversham; Commander C. Bellairs, Maidstone; Col. B. Spender-Clay, Tonbridge; Earl Winterton, Wor-

thing; Sir Philip Pilditch, Spelthorne; Lt.-Col. G. L. Courthope, Rye; Lt.-Col. G. Dalrymple White, Southport; Rt. Hon. E. G. Pretyman, Chelmsford; Mr. H. B. Betterton, Rushcliffe; Mr. H. S. Cautley, East Grinstead; Commander B. M. Eyres Monsell, Evesham; Major R. Glyn, Clackmannan; Col. C. R. Burn, Torquay; Mr. M. G. Fownley, Bedford; Major Clive Morrison Bell, Honiton; Sir Charles Hanson, Bodmin; Lt.-Commander Charles Williams, Tavistock; Mr. G. F. Hobler, K.C., Gillingham; and Sir Clifford J. Cory, St. Ives. It is anticipated that this Committee will be greatly strengthened after the next meeting, but in the meantime horticulturists of every class may at least feel satisfied that, owing to the action of the Chamber, their interests are being watched over in the House of Commons.

Fighting the Wart Disease of Potatoes.—In order to give farmers greater opportunities of raising clean crops of Potatoes and of fighting the devastating Wart Disease, the Ministry of Agriculture has instituted a system of free inspection of immune varieties and the granting of certificates. In districts of England and Wales regarded by the Ministry as suitable for production of "seed," growers may have their crops inspected on application. This arrangement applies only to growers whose area under Potatoes is not less than half an acre. In those

cases where, after inspection, the Ministry is satisfied that the stock is pure and the crop generally healthy, a certificate to that effect will be issued free of charge. The object of this inspection is to secure, as far as possible, that pure "seed," true to type, shall be available for planting in 1921, in areas certified as "infected areas" under the Wart Disease of Potatoes Order of 1919. Growers are, or should be, aware that under this Order "seed" of immune varieties can only enter such areas after it has been certificated. Certificates will not be issued unless the authorities are fully satisfied as to the purity of the stock and the general healthiness of the crop. A certificate will assist the grower to sell his seed to a dealer, and will facilitate the entry of such seed into infected areas. Applications for the inspection of growing crops must be made on forms provided for the purpose, which can be obtained from the Ministry of Agriculture and Fisheries, 72, Victoria Street, London, S.W.1. These forms, duly completed, must be returned not later than July 1, 1920.

Botanical Magazine.—This historical work is still being issued in tri-monthly parts by the publishers, Messrs. L. Reeve and Co., Ltd. The first section of vol. XVI, representing the issues Nos. 181, 182, and 185, contains illustrations and descriptions of the following plants:—*Stenopea costaricensis*, tab. 8839; *Rhododen-*

dron ledoides, tab. 8831; *Ilex verticillata*, tab. 8832; *Cornus Kousa*, tab. 8833; *Rhododendron vernicosum*, tab. 8834; *Erica Haroldiana*, tab. 8835; *Primula pulvinata*, tab. 8836; *Symphyanthra asiatica*, tab. 8837; *Pavetta abyssinica*, tab. 8838; *Pleurothallis punctulata*, tab. 8839; and *Ribes Jessoniae*, tab. 8840. Both the *Rhododendrons* are newly introduced Chinese species. *R. ledoides* belongs to the *Cephalanthum* series of *Rhododendrons*; it forms a shrub some two feet tall and has the habit of a *Ledum*, hence the specific name. The flowers develop in a globular umbel and are rose-coloured. *R. vernicosum* is a much bigger species and produces imposing looking trusses of bell-shaped pale rose coloured flowers. *Ilex verticillata* is a well-known plant in gardens and was figured by Loudon in *Arb. et. Frut.*, vol. 11, fig. 191. *Cornus Kousa* flowers in May and is said to be less sensitive to late spring frosts than *C. florida*. It is described as one of the more beautiful as well as remarkable of hardy shrubs. *Erica Haroldiana* is a new Heath from South Africa and seeds were received at Kew from the National Botanic Gardens, Kirstenbosch, South Africa, in 1915. The plant, which attained a height of 18 inches, flowered in the greenhouse in January. The flowers are in terminal clusters of 4-5, and coloured red at the mouth part, the basal part being whitish. *Primula pulvinata* is a dwarf, Chinese species with golden yellow flowers which are embedded among the lanceolate leaves. *Symphyanthra asiatica* has Campanula-like flowers of very pale mauve colour produced on stems some 2½ feet high. Mr. E. H. Wilson collected seeds in Korea and from these was raised the plant which furnished the material for the *Bot. Mag.* plate. The Currant, *Ribes Jessoniae*, has an inflorescence some 6 inches long with dull red flowers. The fruits are about the size of Black Currants and covered sparsely with glandular bristles; when ripe they are of a pale, rusty yellow colour, and sometimes red.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*Production of Male or Female Flowers on Cucumbers.*—One of our correspondents has been perplexed at finding in his Cucumber plants a great abundance of barren (or male) flowers, and very few fertile (or female) flowers. If he had been a Morphologist he would have been at no loss to account for the phenomenon. The late Mr. Andrew Knight, who was one of the most faithful of all observers, and who was never guilty of forming an opinion upon any other than what he considered conclusive evidence, used to maintain that when plants have the stamens in one flower, and the pistil in another, it was possible to compel such plants to yield one or the other of such flowers at the pleasure of the operator. He found, in fact, by experiment, that the effect upon such plants of a preternaturally high temperature, was to cause them to produce male flowers only; while a preternaturally low temperature was favourable to the production of female flowers only. A Water-Melon plant was grown in a house, the heat of which was sometimes raised to 110 during the middle of warm and bright days, and which generally varied in such days from 90 to 105, declining during the evening to about 80, and to 70 in the night; the air was kept damp by copious sprinkling with water, of nearly the temperature of the external air, and little ventilation was allowed. The plant, under these circumstances, grew with great health and luxuriance, and afforded a most abundant blossom; but all its flowers were male. This result, he says, did not in any degree surprise him; for he had many years previously succeeded, by long continued very low temperature, in making Cucumber plants produce female plants only; and he entertained little doubt that the same fruit stalks might be made in this and other and the preceding species, to support either male or female flowers "in obedience to external causes." This, be it remembered, was the experience of a quiet skilful observer, who had no theory to support, and probably never heard of the word Morphology; but who carefully noted facts which came under his observation, without proceeding further. *Gard. Chron.*, June 21, 1845.

NOTICES OF BOOKS.

Manual of American Grape Growing*.

ALTHOUGH this book is written for American growers, there is much in it which the British cultivator will find interesting and profitable.

The European species, *Vitis vinifera*, does not, as a rule, flourish on its own roots in the United States of America; and when varieties of that species are grown it is found necessary to graft them on one of the American stocks, of which there are several species and about two thousand varieties, some of which are resistant to the Phylloxera, which insect is the one most commonly met with in that country.

Grafting is extensively practised, cleft grafting being very usual. This form may be necessary when the scion has to be fitted on to a large dormant stock, but we cannot understand why it should be practised on young stocks of a similar size to the scion, and the author admits that from 5 to 50 per cent. will fail, or grow so poorly that re-grafting is necessary.

Another method is described, which we should call inarching, and this takes two seasons to perform, the variety desired being rooted one season and planted close to the stock in the year following, the inarching being performed with young growths in June. Were the British method followed—i.e., grafting after the stock has made some leaves, while the scion is almost dormant—a whole season might be saved, and failures with this plan are almost unknown in the hands of an expert.

A plan of "bench" grafting is described, in which the stock and the scion are rootless cuttings of the same diameter. This appears to be a very expeditious method, and is well worth adopting when it is desired to increase the vigour of some of our weakly-growing varieties. Cleft and also whip grafting are practised, but we should imagine that our ordinary splice grafting would do quite as well and be neater.

The plan of wire grafting of cuttings appears to be a neat one. The stock and scion of the same diameter are cut at an angle of 45°, and are held together by a piece of galvanised wire, 2 inches in length, inserted in the pith.

These grafted cuttings are not planted in the nursery at once, but are tied in bundles and placed in a "callusing" bed of damp but not wet sand, with a temperature of 60° until the middle of March, after which time it should be about 75°. In four weeks after warming the bed the stock and scion will be found to be so far united that it will take a pull of several pounds to separate them. Roots will also have started from the stock, as well as from the scion, and they are then ready for planting. After planting, the grafts are covered with an inch or two of soil. Roots start on the scion sooner than on the stock, the soil being warmer at the surface, and these help to assist the scions until the stocks are well rooted, at which time all roots on the scion are removed.

Many of the American varieties are self-sterile, and produce no fruit if cross-pollination is not provided for. The remedy is inter-planting with varieties which flower at the same time.

There are some interesting remarks on "ringing" vines. The author says three objects may be attained by ringing. Unproductive plants may be brought into bearing, the size of the fruits may be increased, and maturity hastened, but it is doubtful whether the gains attained by ringing offset the losses.

Bagging is essential in some localities to protect the fruit from birds. It is also found to be a protection from insects, fungi and early frosts. The "bagged" fruits are also free from weather marks and ripen earlier.

In northern regions it is necessary to protect the vines, especially the European varieties, from the severe frosts experienced there. After pruning, the canes are brought down flat and covered with soil.

There is a chapter on "Grapes under Glass" which is very well written, but as it contains little that is new to the British gardener, it is needless to quote from it.

* *Manual of American Grape Growing*. By W. P. Hendrick. Macmillan and Co. Price 15s. net.

NEW AND NOTEWORTHY PLANTS.

CATALPA DUCLOUXII, DODE.

THERE is now flowering in the garden of Mr. W. P. Brigstocke, Ryde House, Isle of Wight, a tree of this new species of *Catalpa*, probably the first tree of its kind to blossom in this country. The species is a native of Western China, and was first discovered by Delavay, in Yunnan, in 1885; nine years later it was found again by Père Ducloux, after whom it was named. For most of the plants in cultivation we are indebted to Mr. E. H. Wilson, who found the species in Szechuen in 1904, when collecting for Messrs. Veitch, and in 1907 for the Arnold Arboretum. It is a tree up to 50 feet in height, and Mr. Wilson records one with a trunk girthing 4 feet 4 inches. The leaves are described as being entire, but on Mr. Brigstocke's tree they have occasionally a triangular, pointed lobe at each side; they are ovate, acuminate at the apex.



FIG. 141.—FLOWERS OF A NEW SPECIES OF *MUCUNA* (*M. SEMPERVIRENS?*) FLOWERING AT VERRIÈRES.

cuneate or truncate at the base, the larger ones 5 inches long and 4 inches wide, the stalks purplish and from 2 to 4 inches long. The inflorescence is a terminal corymb carrying six or more flowers, each flower of the usual *Catalpa* shape, the corolla 1½ inch wide and 1½ inch long, with five rounded, frilled lobes. In colour they are distinct from the older *Catalpas*, having a pinkish white ground freely dotted both inside and outside with purplish pink. Lines of still darker dots traverse the throat of the corolla, where are also two broad stripes of rich yellow.

In Dode's original description of the species the leaves and inflorescence are described as glabrous, and the specimens in the Kew Herbarium have that character. But in Mr. Brigstocke's specimen the leaves have stellate hairs on the midrib and chief nerves of the leaves, and the flower stalks are more or less pubescent, especially near the base of the calyx. This pubescent character, in conjunction with the lobed leaves, supports the view of Mr. Rebole, who in the *Plantae Wilsonianae* is inclined to regard *C. Duclouxii* as only a variety of

C. Fargesii, which, normally, has leaves very pubescent beneath and very distinctly lobed. I consider the tree at Ryde House intermediate between these two species, although much nearer to *C. Duclouxii*.

This is an early season, but the tree is evidently a much earlier-flowering one than the American species, and was in bloom at Ryde House in the last days of May. It thus lengthens the *Catalpa* season, although one would prefer the lengthening to have been at the end rather than the beginning. W. J. Z.

RARE SHRUBS FLOWERING AT VERRIÈRES.

AMONG many rare and new shrubs which have flowered this season in M. de Vilmorin's collections at Verrières le Buisson, France, may be mentioned both forms of *Davidia involucreata*: var. *laeta*, with red bark and petioles, introduced by Messrs. J. Veitch and Sons; and var. *Vilmoriniana*, first introduced and flowered by M. Maurice L. de Vilmorin. The latter has produced, this year for the first time, although it is now 17 years old, a few dozen flowers with very large, hanging, white bracts. Two forms of *Rhododendron calophyllum* with white and pink flowers respectively, flowered in March for the first time. *Clematis Spooneri* and a fine pink hybrid, raised at Verrières, both with flowers almost twice as large as those of *C. montana*, flowered in May, and a beautiful form of *C. Armandii*, with flowers much larger and more abundant than those of the type, blossomed in March and April.

The most curious plant is a species of *Mucuna*, which seems to be the one illustrated and described in the *Bot. Mag.*, t. 7, 978, as *M. sempervirens*, introduced into England by Dr. A. Henry, from Ichang, in 1885, and flowered at Kew in the temperate house in August, 1905. The Verrières plant flowers much earlier in the season, notwithstanding that it is planted out of doors against a wall facing south, where it has grown for sixteen years during very severe winters without protection. The seeds were collected in China (without any precise indication of locality) by Abbé Farges, in 1897, and introduced into cultivation by the late M. Maurice L. de Vilmorin to Verrières. The plant is a large, twining shrub, with persistent trifoliate leaves. In 1905 three flowers were produced for the first time. This year it has given, for the second time, eight fine, drooping racemes, each one foot long (see Fig. 141), borne on the old wood and carrying 15 to 20 large flowers. The individual blooms are over 3 inches long, very dark claret-purple, with a long-beaked and split keel, as shown in the much reduced illustration, and look very curious indeed. One inflorescence is borne close to the ground.

The seeds of another *Mucuna* were received by Mons. de Vilmorin in 1910, from Father R. P. Thermes, of which the only plant at Verrières has not yet flowered, but, judging from the foliage it must be very near *M. sempervirens*. S. Mottet

ROCHEA.

ROCHEA coccinea, *R. jasminae* and their hybrids, generally known in gardens as *Crasulacae* or *Kalosanthes*, have long been favourite greenhouse plants. *Rochea coccinea* may attain a height of some three feet and as much through, and at one time such specimens were common in gardens. *R. jasminae* is a dwarf and more slender growing species than *R. coccinea* and bears white, Jasmine-like flowers. The plants usually flower during June, and are easily propagated at this season. Flowering specimens for next year are best obtained by inserting five or six cuttings in a 48-sized pot which should be stood on a shelf, or in a cold frame, without shading. The plants grow well in ordinary loam lightened with plenty of old mortar rubble; when rooted they are best stood in cold frames from which the lights should be removed during the summer. During the winter they should be grown in a light, airy position, close to the roof glass in a cool house. J. C.

The Week's Work.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNIE, Weyhoe Castle, near Cardiff.

Green Vegetables.—Brussels Sprouts, Kales, Savoys, and other Brassicas should be transplanted before they become crowded in the seed bed. Good ground is essential, as they occupy the position for a considerable period. To facilitate watering, make shallow drills and set the plants in them firmly; avoid deep planting, and, as each row is planted, give the roots a thorough watering. This work is best done in dull weather. Brussels Sprouts should be allowed a space of three feet between the rows, and two feet six inches between the plants in the rows. Kales require a distance of two feet six inches between the rows, and two feet between the plants in the rows. Allow the larger varieties of Savoys a space of two feet apart each way, reducing the distance for the smaller varieties, according to the size they will ultimately attain. A sowing of Coleworts made now will provide useful plants for filling ground cleared of early crops.

Runner Beans.—In prepared positions make a sowing of Runner Beans to succeed those transplanted from pots. Sow in double lines, inserting two seeds in positions two feet apart in the rows. Water them if the weather is dry, and later remove the weaker of the two plants.

Potatos.—The hoe should be run alongside the rows to destroy weeds and loosen the surface a few days before the tubers are finally earthed up. The chief object of ridging is to prevent the tubers becoming exposed to the light and turning green, but it is a disadvantage to draw an excess of soil about the plants, for air and light are necessary to produce good crops. When doing the work, endeavour to leave the centre of the ridges open so that the sunlight may reach the haulms. Where manure was not used at planting time, a dressing of Potato fertiliser should be scattered on the surface before the hoeing is done; it will become thoroughly mixed with the soil during subsequent operations.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENCER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Figs in Succession Houses.—Trees started after the turn of the year have had the benefit of longer days and better weather than the earlier ones; plenty of heat, with proportionate air and moisture, may be used to hasten development, especially in the daytime. It is not wise to force the trees hard when they are in flower, but once this stage is passed a maximum temperature of 70° will do no harm. If trained on the extension system, each shoot to be cut away when it reaches the extremity, let the growths have plenty of room. Syringe the trees regularly, twice on fine days and once only in dull weather, for much as Figs like moisture, it is always wise to allow the leaves to become dry before nightfall. Later trees in cool houses may be grown in a maximum temperature of 60° to 85°, closing the house early, with the atmosphere warmed by sunlight and containing plenty of moisture.

Melons in Pits.—The weather has not been very favourable to the plants, and any specimens that are not doing well should be removed and their places filled with strong seedlings; time and patience will be saved by making a fresh start. Plants that are growing freely should not receive a check of any kind. Let the shoots be trained thinly and maintain plenty of warmth. As the flowering stage approaches, all laterals showing fruits should be drawn up to the sun and light, and duly pinched when the young fruits begin to swell.

Cucumbers.—Plants in frames have not made such rapid progress as one could have wished, without the aid of a little fire-heat. After this date their management is extremely simple, and, provided the plants are liberally fed with warm liquid manure, well syringed and moderately cropped, they should continue fruitful throughout the remainder of the season. Pinch out the points of the shoots at the first or second joint as soon as the fruits are visible, according to the amount of space available in the frame.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Clacton, Chelmsford.

Stanhopea.—The members of this curious family of Orchids should be suspended from the roof rafters of the warm house, and on account of the way in which they produce their flower scapes, should be grown in teak wood baskets, with, instead of potsherds, a layer of peat rhizomes for drainage material. The flower scapes will push through the sides or bottom of the basket without injury. When the new growth is a few inches long, fresh soil, consisting of Osunna fibre or peat and Sphagnum-moss in equal parts, may be afforded. Spray the plants freely during the summer, and especially the undersides of the leaves, to prevent attacks of red spider. Should this pest appear, sponge the foliage with a weak solution of an insecticide. When the plants have completed their season's growth, keep the roots slightly on the dry side.

Seedlings.—Many of the larger plants having received attention in regard to repotting, a suitable opportunity presents itself for providing seedling Cattleyas and others of this type with fresh rooting material and larger receptacles. If seeds were sown a few months ago the seedlings will be large enough to prick off into store pots. These are two or three inches in diameter, and should be filled one half of their depth with drainage material. The soil should consist of Osunna fibre and Sphagnum-moss in equal parts, and both should be free of all foreign growth and cut up moderately fine. Press the compost firmly in the pots and neatly trim it with a pair of shears or scissors to create a level surface on which to place the seedlings. The soil should be moistened with water a few hours before the seedlings are transplanted. Exercise great care when removing the seedlings from the seed bed to the store pots, to prevent injuring them; a pointed stick is best to use for the purpose. Keep the soil moist by damping with a fine sprayer. If it is noted that the plants are being gradually smothered with Liebmans growth so often associated with Sphagnum-moss they should be removed to another store pot. As the seedlings increase in size, fresh soil will be needed, and more space between the plants, until three or four seedlings occupy a single pot. At the next shift they should be potted singly, and, where space is available, this should be done as early as possible.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P., The Nole, Godicote, Welwyn, Hertfordshire.

Apple Aphids (Rosy Aphis). This pest is a source of much trouble to Apples and should be combated by every possible means. If allowed to protect itself by the curling of the leaf it is a difficult pest to eradicate. Spray the trees with Quassia or nicotine wash, and remove by hand picking any leaves that are curled and burn them.

Peaches and Nectarines.—Peach and Nectarine trees trained on walls should never, whilst in active growth, be allowed to suffer from drought at the roots, and this must especially be guarded against where the trees are carrying heavy crops of fruit. A medium mulching of short manure will greatly retard evaporation, allow water to thoroughly moisten the border, and will also benefit the tree by its manurial properties. The manure should be slightly raised by the use of a fork after a heavy watering. Where

good crops of fruit are swelling an occasional application of weak liquid-manure or a light dusting of concentrated fertilizer will greatly assist the trees. The final thinning of the crop may now be done. In the case of Peaches, leave one fruit to every square foot of wall space, whilst Nectarines may be allowed only nine inches. Sometimes, when the trees are allowed to carry an excessive crop, the fruits are lacking in flavour.

Pears on Walls.—Pear trees on walls that have set a good crop of fruit should be kept moist at the roots. Examine the borders occasionally, and if the soil is found to be dry, soak it with weak liquid manure. In the case of trees that have failed to set a crop of fruit, clear water only will be sufficient. In some cases the trees have set their fruits freely and the latter may require to be thinned. Pears are very liable to drop in the young state. Therefore the final thinning should not take place until a crop is certain.

PLANTS UNDER GLASS.

By JOHN COUTTS, Foreman, Royal Botanic Gardens, Kew.

Crassula falcata and C. lactea.—These are old garden plants, the latter flowering during spring or early summer. *C. falcata* is a very showy species, flowering in August, when it is very useful, as the range of choice subjects for the furnishing of the greenhouse and conservatory is very limited at that time. Both species are easily propagated by means of cuttings inserted during June.

Violets.—During periods of dry weather, Violets should not be allowed to suffer from lack of water; in dry weather they are benefited by syringing or spraying during the evening; neglect in this respect generally results in them suffering from attacks of red spider. All suckers should be regularly removed and the roots mulched with manure from a spent Mushroom bed, or well decayed stable manure.

Souvenir de la Malmaison Carnations.—Commence layering the shoots to obtain an early batch of plants. This is best done in cold frames; those that have been used for growing crops of early vegetables are suitable for the purpose, as, beyond the possible addition of leaf soil and coarse sand, they require no further preparation for the Violets. The stock for layering should be young and healthy. Thin out all weak shoots and strip off the bottom leaves. Before turning the plants out of their pots see that the roots are thoroughly moist. Plant deeply enough to ensure easy layering, placing the plants on their sides, if necessary, for this purpose. Layer carefully in the usual way, water well, and shade during bright sunshine. After the first week the plants will receive benefit if the lights are removed at night during fine weather replacing them and shading the plants during the day if necessary.

THE FLOWER GARDEN.

By SIDNEY LEGG, Gardener to the Dowager Lady NUNBURGHOLME, Warton Priory, Yorkshire.

Pruning. Many flowering shrubs having passed out of bloom the soil vessels should be removed and growth that is weak or crowded cut out. *Philadelphus*, *Weigela*, *Dentzia*, *Syringa*, *Forsythia*, *Kerria* and *Ribes*, all of which flower chiefly on the wood of the previous year, may be cut back to strong, young shoots. In doing this have regard to the position and ultimate shape of the bush. Specimens that have been neglected and left unpruned during the war may have the oldest wood cut out almost down to the base. The removal of all suckers from *Lilacs*, *Rhododendrons*, and *Viburnums*, which have been grafted, is imperative. The *Viburnum* stock is especially troublesome in this respect. Cytisus soon spread unduly if the young wood is not judiciously curtailed each season; however, in some instances, such as obtain in the wild garden, a colony of unpruned Brooms provides a pleasing

feature. Guard against cutting back to the old wood in plants of the Broom family. Where *Ceanothus* are growing in bush form, the knife may be used to preserve symmetry, after the inflorescences have faded. Varieties of *Ceanothus* and climbing *Roses*, planted in conjunction on the outskirts of the flower garden, and sheltered from strong winds, are very effective. Light and air are essentials in the production of strong flowering wood; therefore, the knife should not be spared.

THE APIARY.

BY CHLORIS.

Swarms.—The most common period of the year for swarming in the south is the end of May or beginning of June, on a warm, fine day. In the north of this country, and even in the Midlands, the time varies from mid-June to July. The usual signs of the swarming period are the crowded condition of the hives, the building of queen cells, and the appearance of drones. The queen cells can only be discovered by an examination of the frames. They much resemble an acorn in size and shape, hang downwards, and may be found generally on the edges or bottom of the combs, but sometimes they are made in a passage cut out by the bees in any part of a comb. When the queen cells are capped, then a swarm may be expected any fine day between the hours of 11 and 5 (summer time). When bees are prevented from swarming by reason of cold or wet for several days, they often rip open the queen cells and kill the occupants. In such a case swarming is often abandoned for the season. When bees swarm no mistake can be made, for they simply bustle out of the hive by the entrance as if every member of the community was afraid of being left behind, such is their haste. The air seems full of flying bees, and every leaf on neighbouring shrubs and hedges seems to have a bee resting on it. Those on the wing wheel round and round, and if it be a first swarm they will soon settle, usually on a bush near by, for they are accompanied by the old queen, which is often disinclined for a long flight, or even may be incapable of undertaking it. To cause the swarm to settle quickly throw water from a syringe as high as possible over them, making it to resemble rain. This will cause them to change their intention of decamping, if such were the case, or it may prevent them from clustering on a high tree, as in such circumstances it is difficult to hive them, especially if they settle on outer, thin branches.

Hiving. When the bees have settled in a cluster resembling a bunch of grapes, hold a skep or other suitable receptacle below them, having first spread a sack or old sheet on the ground underneath, and then taking a firm hold of the branch give it a sharp shake, to dislodge the majority of the cluster, which will fall into the skep. The turned skep should be gradually made to resume its right position on the sheet near those bees shaken on it, and a stone or brick placed under the edge will make a good opening for all running bees to join those already in the skep. It will be advisable to leave the bees alone until 7 p.m. The new hive should be ready all foundation fixed in the frames, a sheet of queen excluder above them, and some fully-drawn shallow frames of comb, or sections, placed above so that plenty of storage may be provided for the honey when the bees start work next day. By providing drawn-out comb in the supers the bees will have to begin storing there, as there is no room in the brood chamber, which will be provided with foundation only.

The hive from which the bees came should be removed to another portion of the garden, and the new hive placed on its stand, so that the swarm may be made as strong as possible by flying bees from the old hive, for the parent hive will not be strong enough to produce surplus brood this year. By adopting this method of depleting the parent stock of as many bees as possible, casts or after-swarms will be prevented, which will be headed by the hatching

young queens unless all surplus queen cells are removed, leaving the best only to provide the new queen. Cover up the swarm very warmly.

Prevention of Swarming—This is a very difficult task, but is sometimes successfully performed when the bees have not the real swarming fever. (1) Give the queen plenty of space in which to deposit eggs by removing a full comb occasionally and replacing it by an undrawn-out frame of foundation. The comb of hatching brood—free of all bees—may be placed in a hive requiring a little help. (2) Keep the hives well ventilated. (3) Give plenty of super space in advance of the needs of the bees—placing the new super under those filled or filling. (4) Some bee-keepers place a second brood chamber under the first, and separated from that above by the queen excluder zinc, removing the queen to the lower chamber. As the bees hatch above the cells will be filled with honey. This is an excellent method and very rarely fails.

ODONTODA VERA BELLE.

A flower of the new cross between *Odontoda Bella* (*Cochlidia Noctiflora* x *Odm. bellatulum*) and *Odm. Thais*, a showy hybrid not definitely recorded, gives an instance of the merging of *Odontoda* and *Odontoglossum*, whereby some forms can scarcely be distinguished from *Odontoglossum*, as in the present case a position not difficult to understand when it is considered that but for the *Cochlidia* in the original parent the ancestry is *Odontoglossum*. Nevertheless, in the lip of *Odontoda Vera Belle* there is a strong indication of *Odontoda* influence. The flower, which equals in size a good, blotched *Odontoglossum*, has a white ground, heavily blotched over the greater part of the surface with bright mauve. The rather narrow lip has a dark yellow crest, with large, chestnut red blotch extending to the finchiate-white margin. The flower of *Oda. Vera Belle* was sent by Mr. S. O. Stephenson, East Lodge, Worthing.

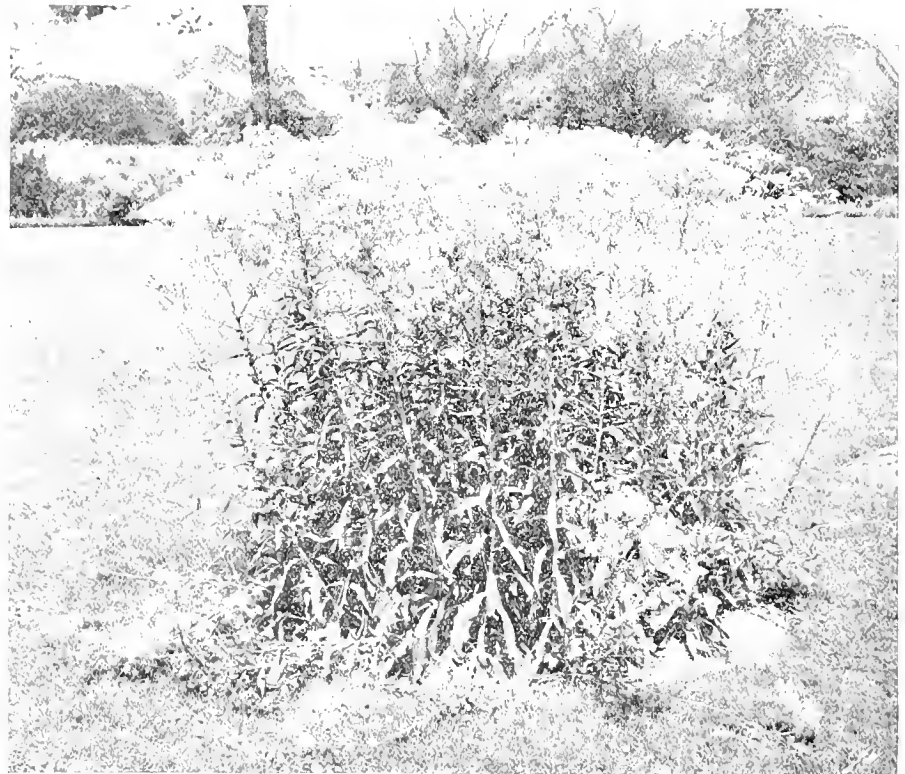


FIG. 142. ISATIS TINCTORIA.

ORCHID NOTES AND CLEANINGS.

ISATIS TINCTORIA.

THE ORCHID TENT AT CHELSEA

Most of the exhibitors of groups of Orchids at the Chelsea Show complained of the lack of space in which to display their plants effectively, and stated that a commodious tent, of a larger size, should on future occasions be devoted entirely to Orchids. If the groups are displayed against the sides of the tent, greater depth should be allowed, giving a wider space from front to back. The whole of the space need not be allotted to groups, as now arranged, but space given in the centre (if the situation of the groups is not changed so as to occupy the centre), for artistically arranged designs made up of Orchids and elegant foliage plants. Examples of the florist's art, in which Orchids are used, might also occupy available spaces, and altogether a novel result attained. Skill would be required in working out the plan, but the suggestion is well worth the consideration of the Council of the Royal Horticultural Society before the Chelsea Show of 1921.

The "Dyer's Wood" is a hard-woody plant, interesting as the source of the dye with which the ancient Britons used to paint their bodies. It is easily grown, and when planted in masses is very effective, either as a woodland plant, or when grown in beds as shown in the accompanying illustration (Fig. 142). When treated well it reaches a height of from 5 ft. to 4 ft., with numerous stems, bearing large, loose panicles of rich yellow flowers.

Isatis tinctoria is a biennial, the plants usually dying after flowering, but seedlings are produced so freely from self-sown seeds that there is little trouble in maintaining large groups.

Of larger and more handsome growth is another species, namely, *I. glauca*, which, in rich soil, will reach a height of 6 ft. or more. It has larger and more glaucous leaves, with cloud-like masses of bright yellow flowers. It is the best species for planting in the open woodland, bold masses producing a very striking effect from a distance. *I. glauca* is a native of Asia Minor, and is easily raised from seeds. Seedlings usually make good plants the first year, and flower well the second season. W. J.

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

PLANT COLLECTING ON
IMAW BUM.—III.*

OF all the alpinists on Imaw Bum, none took my fancy so much as a dwarf Rose.

It grew on the sheltered north flank, in steep gullies and on screes, amongst shattered and fallen rocks. At the end of July it was in flower, and the flowers were a rich lemon yellow. In September the flask-shaped fruits were rosy red, and by October the colour had deepened till it was almost purple. The plant grows a foot high, forming a compact dwarf bush; the stems are covered with prickles, like fur. It is altogether a charming little plant, and if the seed germinates over here should prove a great acquisition to the rock garden, both in flower and fruit.

Another good alpine was a bog Iris, growing in peaty soil which had collected in ledges and hollows amongst the granite slabs on the protected side of the mountain. There was a little meadow, ringed about with precipices, absolutely filled with this plant. It grows twelve to fifteen inches high. The colour of the flower is a limpid violet-blue, as though it had drunk in the sunlight; on the falls is a golden mosaic. I secured a good lot of seed, but so far it does not seem to have germinated.

Imaw Bum, lacking limestone and unlimited altitude, is rich neither in *Primula* nor in *Meconopsis*. The number and variety of *Rhododendrons* met with suggest that this genus flourishes to perfection anywhere within a thousand or fifteen hundred feet of the snow line, wherever that may be. (On the N.E. frontier, the snow line is probably under 15,000 feet; the highest peaks are about 15,500 feet.) The absence of *Meconopsis*, however (which genus is represented only by *M. Wallichii*, at 9,000-11,000 feet), suggests that it only flourishes above 14,000 or 15,000 feet. In other words, it would appear that *Rhododendron* is affected only by the relative altitude, *Meconopsis* only by the absolute altitude.

Primula, however, though not found in such numbers and variety as in Yunnan, is much better represented than *Meconopsis*. Five sections, namely, *Obconico-Listeri*, *Nivalis*, *Bella*, *Sikkimensis*, and *Sonchifolia*, are represented; they include about ten species, distributed as follows: *Obconico-Listeri*, 2; *Nivalis*, 2; *Bella*, 3; *Sikkimensis*, 1; and *Sonchifolia*, 2. If we cross the Imaw Bum range and go over to Hpinaw, half-a-dozen more *Primulas*, distributed over three or four more sections, must be added. But with these I shall not deal here.

Of the ten species found on Imaw Bum, however, only the two *Nivalis*, three *Bella* and *Sikkimensis* are truly alpine. The others all belong to the forest belt between 8,000 and 10,000 feet.

Of the *Nivalis* species, the better has pale, pinkish-mauve flowers with yellow eye. The leaves are strap shaped, dark glossy green above with typical silver farina below; this silvery meal also shows through from the inside of the deeply-cleft calyx, in characteristic fashion. The plant varies greatly in size, and there may well be two or three distinct varieties, considering

*The previous articles appeared in *Gard. Chron.*, April 3, p. 168, and May 8, 1920, p. 228.

that it grows in deep shade on wet cliffs in the upper Conifer forest (11,000 feet) and on open screes at the summit of Imaw Bum (15,000 feet). However, the smallest specimens I found were growing on limestone instead of on granite.

The other *Nivalis* *Primula* is smaller, and is found in the peaty pools amongst the granite slabs of Imaw. The flowers are like those of the first species in miniature, except that the petals are more deeply cleft; they are borne in pairs. This plant lacks the silver meal of typical *Nivalis*.

Of the *Bella* set, the best is *Primula coryphaea*, growing on patches of granite sand on the summit. The flowers are rich bluish-violet, the occluding pompon of hairs, white. The tiny leaves are delicately cut, and without farina. This species is much commoner than *P. sciophila*, of which I found one patch in 1914 and failed to rediscover it in 1919, or than true *P. bella*, which may also occur on Imaw Bum, though I cannot swear to its presence there.

P. sciophila has larger flowers than *P. coryphaea*—is a larger plant altogether, in fact; but it lacks the fine colour of the latter, being rather more lilac.

Finally we come to the *Sikkimensis* *Primula*, easily the most beautiful of the lot. I found one patch of this plant at the head of a steep couloir, just below the summit of the peak. The flowers have a lemon-yellow streak down the centre of each petal, the centre of the corolla and edges being cream. Thus, in its striped flowers, the plant recalls *P. serratifolia*. The latter, however, belongs to another section altogether. Moreover, this Imaw Bum species is delightfully scented. Unfortunately, it set very little seed, partly because a herd of takin were in the habit of tramping backwards and forwards across this couloir, and probably cropping the herbage. However, I did secure a little seed.

There are two species of *Cassiope* found on Imaw, *Cassiope myosuroides*, which is common, and *C. palpebrata* (or a very similar species), which is rarer. *C. palpebrata* is really a Yunnan plant, first found by me on the Mekong-Salween divide in 1915. The creeping stems, covered with minute leaves, resemble moss. On Imaw the species grows in sheltered places, under rocks or amongst dwarf *Rhododendron*, frequently hanging down. The flowering stems stand more or less erect, but the white bells are always nodding. *C. myosuroides* hangs its tails, which are more or less square in section, over the rocks everywhere. The pendent white bells are borne in profusion on erect stalks. It is a pretty species, but both this and the last set very little good seed, at least on Imaw.

Cushions of *Diapensia himalaica* are common amongst the rocks, but *Androsace chamaejasme*, which one would naturally have expected to find, is one of the curious absentees. I say "curious," because the plant is common on the Himalayan ranges to the north-west and on the Chinese ranges to the north-east and east; hence one would expect to find it at the foot of the Y also. Its place is taken by a pretty little golden-flowered species.

Another plant we miss is *Isopyrum grandiflorum*. I can see no reason why it should not be found here—it grows on granite rocks under very similar climatic conditions in Yunnan, at rather higher elevations.

I have already pointed out the paucity of *Meconopsis*, and the comparative poverty of *Primula*. The following genera—*Clematis*, *Lonicera*, *Berberis*, *Cotoneaster*, so richly represented in the Himalaya and in Yunnan, are

miserably represented in the Htawgaw Hills. So also *Pinguicula alpina*, *Oxygraphis glacialis* and species of *Oxytropis*, *Caragana*, *Aquilegia*, *Salvia*, *Adenophora* and *Epimedium* are entirely lacking. On the other hand, for the area explored, the following genera—*Pedicularis*, *Rubus*, *Polygonum*, *Saxifraga*, *Rhododendron* and other *Ericaceae*, *Thalictrum*, etc., are as well represented in the Htawgaw Hills as in Yunnan or the Himalaya.

When writing of the alpine *Primulas*, I made no mention of two belonging to the curious *Omphalogramma* section, characterised by their large, flattened seeds and conical capsules. The latter open by spiral valves. These, though so unlike the ordinary idea of a *Primula*, are now generally regarded as belonging to that genus. *Primula Delavayi*, with magnificent violet flowers standing horizontally on the stem, is common on Imaw. It grows on the north slope, in the couloirs where water is trickling, often under Bamboos, and in thickets. It flowers in early June, and the seeds are ripe in September or October. It is a far cry from the Tai-li range in Yunnan, where this plant belongs, to the Htawgaw Hills, and one wonders how it reached these parts; it will be interesting to see if it really is the same species.

Growing in the peaty mud, on granite ledges, is a second *Omphalogramma*, considerably smaller than *Delavayi*. This I did not see in flower, though I secured seed.

The western face of the Imaw ridge—which runs approximately north and south—is very precipitous, the ridge itself being deeply gashed in places; so that it was no mere matter of strolling idly along the crest of the ridge, even when the summit had been reached. The east flank, however, is rather different, sweeping down in a series of smooth granite slabs, separated by ledges in which water collects. The slope ends abruptly in sheer cliffs which surround an amphitheatre below. The whole structure is evidently the result of protection afforded by the snow. On these ledges, which hold up and retain the ever-trickling water, grow many flowers; more flowers grow on the grassy slopes. Here, in autumn, a small yellow-flowered *Cremanthodium* was much in evidence; also two or three blue *Gentians* and a violet *Swertia*. At this time, too, the rocks are covered with bunches of golden-yellow *Saxifraga*, of which I noticed three or four species. But the yellow *Saxifrages* of all these mountains, from the Himalaya to China, are very much alike, and only one, with mossy foliage, struck me. Another had the golden petals spotted with orange, giving a pretty effect.

A *Sedum*, with pale sulphur-yellow flowers, and a fine rose-pink *Polygonum* also adorned the rocks.

Autumn is the season of *Saxifrages* and *Gentians*, and at this time there is little else. They have to get through their business quickly, for in November the snow comes down on them and closes the season. However, after the middle of September, the worst rains are over, and some fine weather may be expected before the first heavy snowfalls of mid-November.

From the cliffs hang tufts of grass, amidst which a white-flowered *Lloydia* was often prominent. An *Allium*, with vinous purple flowers and very similar habit to the last, also grows here. It flowers late—in September I found it.

One of the prettiest of the alpinists—though too small to be of any use as a garden plant—was a little *Geranium* with deep rose-red flowers. It grew on the open, grassy summits, and was in flower at the very end of July.

Spring and autumn are the seasons when the

alpine flowers are at their best in the Itawgaw Hills. Owing to the incessant rain, there is little in flower in the summer months. In July or August, however, there is sometimes a ten days' break, when the sun shines out and even the mountain-tops are clear of cloud, at least in the early morning and evening. Then many plants may be found in flower.

There is one striking difference between the alpine flora of a mountain such as Imaw and the Yunnan ranges, and that is the absence in the former case of flowers growing up amongst the dwarf Rhododendron. In Yunnan there are *Codonopsis*, *Pedicularis*, *Meconopsis* and many more scattered through the Rhododendrons; on Imaw Bum there is nothing of the kind.

The contrast between the dense Bamboo brake with Rhododendron scrub (chiefly *R. eichromii*) on north and east faces, and the dwarf Rhododendron and *Salix* on south and west slopes is striking. Snow lies a month or six weeks longer on the former.

On the whole, though Imaw Bum has produced several first-class alpine, it does not compare in this respect with, say, the Tali range in Yunnan, which is very little higher. But we must never forget, when dealing with alpine floras, that a mountain 13,000 feet high is a very different thing to 13,000 feet on a mountain even 15,000 feet high. Moreover, Yunnan has been a collecting ground for the last twenty-five years; the N.E. frontier is virgin soil. We may be quite sure that even the small area covered by the Itawgaw Hills will yield new treasures yet, and they will have a better chance in our climate than many of the Yunnan introductions. *F. Kingdon Ward.*

THE ALPINE GARDEN.

ERYSIMUM LINIFOLIUM.

This appears to be the correct name of the delightful little plant known as *Cheiranthus linifolius*, which aroused considerable attention when first shown in London (by Mr. Clarence Elliot, I believe). At that time it was understood to be an annual or biennial, but it is really more lasting and has survived with me for three or more years without renewal. The plant received many encomiums and has deserved them because of its beauty and distinctness. It is said to reach a height of two feet in its native habitats on the cliffs of the Serra de Estrella, in Portugal, and on the west coast of Spain, but with me it makes a low, spreading bush. Especially useful for the rock garden is the variety *filifolium*, which is only some six inches or so in height. It is exceedingly pretty with its neat, narrow leaves and good-sized flowers of a bright lilac colour. Its value is much increased by its long duration of bloom. Here it opens in the early part of May and will bloom until frost comes. *E. linifolium* makes an excellent rock plant, either for crevices or terraces of the rock garden. But it does very well on the moraine, the freely-drained conditions of which suit it well. It should have full sun. Propagation is effected by cuttings or by seeds.

LITHOSPERMUM PURPUREO-CAERULEUM.

This is a cumbrous name for the Creeping Grousewell, a British plant, yet even more beautiful than some of the exotics which are more popular, although this is said without depreciation of its ally, *L. prostratum*. It has proved disappointing to some on account of shyness of flower, but where it is happy it gives wonderfully beautiful purple-blue flowers in fair numbers. To induce it to flower in some places the long, trailing, barren branches should be cut off, but in some parts of the garden, especially where the soil is poor, this appears to be unnecessary. Many years ago in my old garden this had to be practised, but here it seems uncalled for and the plant is allowed to ramble among rough growing subjects and never fails to bloom. It must, however, be watched if it is placed near choice small-growing plants, as its trailing, barren branches will root among these and may choke them. On a dry bank, in sun or shade, it will look after itself, even among more robust plants. *S. Arnott, Maxwelltown, Dumfries.*

TREES AND SHRUBS.

THE SILVER BERRY (ELAEAGNUS ARGENTEA).

Born in its foliage and its flowers, *Elaeagnus argentea* (see Fig. 143) is one of the best members of the genus. The evergreen species flower mostly during October and November, but *E. argentea* is deciduous, and flowers in early summer. It is interesting as being the only *Elaeagnus* found wild in North America, over which, however, it occupies a large area, extending from the Central United States northwards to the Hudson Bay territory and westwards to British Columbia. It is a shrub up to 12 or 14 feet high, the young shoots covered at first with silvery scales, afterwards turning brown. The leaves are alternate, narrowly oval, and 1 inch to 2½ inches long, and both surfaces are clothed with silvery scales; the metallic sheen is more pronounced beneath. The flowers are borne in great numbers in the leaf axils of the young shoots, and are shaped like tiny Fuchsias, each rather less than half an inch long; the outer surface is covered even more densely than the leaves with glistening silvery scales, but inside they are clear yellow. To this unusual association of colours is added a charming fragrance. The fruits are roundish, egg shaped, one-third of an inch long, silvery, with metallic scales, dry, and mealy inside, but described as edible.

This *Elaeagnus* is perfectly hardy, and is not

VERONICA HULKEANA.

This is, to me, the finest of all Veronics, and although it was introduced more than sixty years ago, it does not appear to have become a general favourite. Here, in the gardens of W. R. Lysaght, Esq., at Castleford, Chepstow, the plant is employed for greenhouse decoration, and is also planted in the flower-garden. We have a splendid specimen growing at the base of a wall with a south aspect. This *Veronica* is a somewhat straggling shrub, producing panicles of small, delicate, lavender flowers. Some of the flowering shoots on the plant under notice were eighteen inches to two feet in length, while the small side-shoots were from one to four inches long. Unfortunately it is a tender plant, but perhaps in counties where

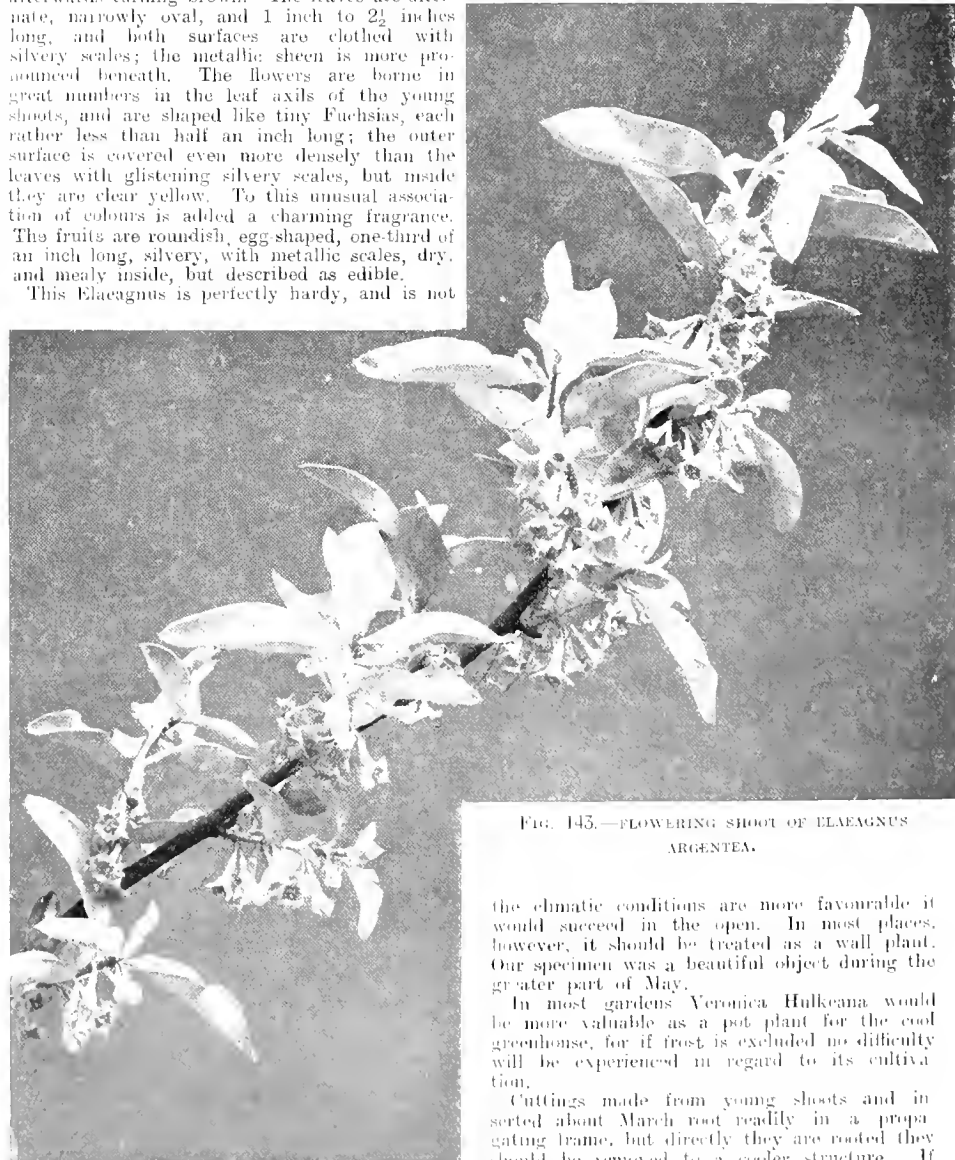


FIG. 143.—FLOWERING SHOOT OF ELAEAGNUS ARGENTEA.

the climatic conditions are more favourable it would succeed in the open. In most places, however, it should be treated as a wall plant. Our specimen was a beautiful object during the greater part of May.

In most gardens *Veronica Hulkeana* would be more valuable as a pot plant for the cool greenhouse, for if frost is excluded no difficulty will be experienced in regard to its cultivation.

Cuttings made from young shoots and inserted about March root readily in a propagating frame, but directly they are rooted they should be removed to a cooler structure. If the plants are potted on as needed, the points of the shoots pinched, nice little specimens suitable for growing in five-inch pots will be obtained.

The best specimens are, however, produced in the second year. After flowering the shoots should be cut back slightly, and when new growth is evident pot the plants in a mixture of good turfy loam and leaf mould. Throughout the summer they should be grown in the open, and may remain outside until there is danger from frosts.

Green and white fly are often troublesome, but an occasional spraying with an insecticide will keep these pests in check. *P. W. Briscoe, Castleford Gardens, Chepstow.*

rare in gardens, yet it seldom flowers very freely. I think it requires to attain a good size and age to bring about that condition. An old specimen near the Temperate House at Kew flowers nearly every year, and usually profusely. The species suckers freely, and there is, perhaps, a tendency to cut out the older wood and leave the fresher, more silvery young growths. This *Elaeagnus* is frequently called *Shepherdia argentea* in gardens and nurseries; this name is incorrect, as *Shepherdia* belongs to a different genus, distinguished by having opposite leaves, and is by no means so ornamental as this *Elaeagnus*. *W. J. Bean, Royal Gardens, Kew.*

LATE PEAS.

In order to be able to gather Peas as far into autumn as weather permits, it is necessary to exercise more than usual care in the sowing. For late crops it is not always possible to reserve ground that has been lately trenched for them, and in many cases they have to occupy the position previously occupied by Broccoli or some similar crop. Such ground is usually very dry and in an exhausted condition at this season, and to make suitable provision for Peas it is advisable to dig trenches about 2½ feet deep and 15 inches wide. The bottom should be well broken up, with a liberal dressing of well rotted manure added. When filling in the soil, more manure should be freely mixed in it, together with a sprinkling of sulphate of ammonia, and the soil should reach to within a few inches of the ordinary ground level.

The latest date for sowing Peas varies with the district. In South Yorkshire it is little use to put in tall varieties after the middle of June, but, given a fine autumn, a row or two of first-early dwarf sorts, sown before the month is ended, seldom fail to pay for themselves. If the soil is very dry, it is advisable to water the drills the day before sowing in order to hasten germination. Late Peas should be carefully staked, for in a wet autumn, if the haulm is near the ground, many pods will be lost through damping. Late September dews also cause damping, unless there is a free circulation of air about the plants. When trenches are made, the spaces between the rows should be dug over and mulched with yard manure after staking is completed. This helps to keep the roots cool and moist, in addition to acting as a mild stimulant. In a dry period an abundance of water should be supplied. Once the plants suffer from a lack of moisture, mildew will quickly put in an appearance. Diluted liquid manure applied to the roots when the plants are in full growth is most beneficial. In this district, if Peas may be gathered well into October, neither the variety nor the season is complained of. Varieties which possess a strong constitution, enabling them to withstand drought and resist mildew to a fair extent, are the best for late sowing. Of the faller growers, good strains of Gladstone and Autocrat are noteworthy for these good qualities, and are being sown this year in preference to sorts of more recent introduction tried last season. *Yorkshire Gardener.*

USEFUL INDOOR SUMMER FLOWERS

TUBEROUS-ROOTED Begonias that were started in boxes of leaf soil and sand and subsequently potted in a rich compost should be fed with liquid manure. Those in small pots should be placed in larger receptacles. Syringe between the pots occasionally and keep the plants shaded from strong sunshine. Admit air on all favourable occasions, as sturdy growths are necessary to produce good flowers. Let the plants have ample room to prevent the stems becoming drawn, and fumigate the house about once a fortnight to check thrips. Should the Begonia mite prove troublesome, dip the plants in a preparation of nicotine. As the flowers develop, grow the plants in cooler conditions and use a little less moisture.

Gloxinias may be treated in a similar manner to that advised for Begonias; the chief points to observe in their culture are maintaining a close, moist atmosphere during the growing period and keeping them free from thrips in the manner advised for Begonias. The plants should be grown in suitable-sized pots filled with a compost consisting of loam 1 part, leaf-mould, peat, and decayed manure 1 part, with sharp sand and broken charcoal added.

The *Streptocarpus* is another useful indoor flowering plant. Provided the plants are kept free from mealy bug, which is their chief enemy, they form very beautiful subjects in pots, and are useful for supplying cut blooms. They may be grown in slightly cooler conditions to

either of the other plants named above. Pot the plants in receptacles large enough to accommodate the ball of roots comfortably, and place them in a warm pit until growth becomes active, when they may be removed to a house having an intermediate temperature. The roots should be fed liberally when they have filled the pots.

Impatiens are very free-flowering plants, and continue in beauty for a long period. These may be raised either from seeds or cuttings, and both seedlings and cuttings give satisfactory results if grown in a house having an intermediate temperature. They should be grown in a mixture of loam 2 parts, peat and sand 1 part, with a little dried cow dung and charcoal. Keep the plants well syringed during their season of active growth, as the foliage is easily damaged by red spider. Impatiens Holstii and I. Sultanii are two good Balsams, the latter being the more difficult to grow to perfection.

Gesneras are beautiful foliage and flowering plants that provide a good succession to Gloxinias and Begonias. They may be brought forward in batches through the late summer, autumn and winter by starting them in April, May and July. A compost, and growing conditions similar to those advised for Gloxinias are suitable. Keep the plants free from insects by frequent fumigations, and well damp the spaces between the pots, but avoid wetting the plants overhead on account of damaging their beautiful, velvety foliage. An occasional damping between the pots with soft water will provide suitable growing conditions and help to keep thrips in check. Beautiful colours are afforded by *G. cinnabarina*, *G. exoniensis* and *G. zebrina*. *H. E. Kemp.*

GESNERA CARDINALIS.

THIS is a very slow and at the same time accommodating member of the Gesneria family, for according to the treatment given it the plant may be had in bloom at different periods of the year. Its usual habit is to pass the winter in a dormant state, commence growing in the spring, flower in May or June, and go to rest in the autumn; by giving it a shorter or longer period of rest the time of flowering may be varied. *G. cardinalis* forms a firm, solid tuft, whence is pushed up a stout stem that reaches a height of a foot, or nearly so. These stems are furnished with large, oppositely arranged leaves, of a bright green colour, and so plentifully furnished with hairs as to give them a velvety appearance. This covering of hairs is by no means restricted to the leaves, but extends also to the stems, and even to the blossoms. These last are borne in a terminal head, from which a succession is maintained for some considerable time. The flowers are tubular in shape, from two to three inches long, and of a bright vermilion colour. The hairs with which the blossoms are clothed are of a reddish tint. This Gesneria has been long grown in gardens, but is not met with to the extent that its merits entitle it. According to *The Kew Hand List of Tender Dicotyledons*, its native country is unknown. *Gesneria cardinalis* is of easy culture in a house having an intermediate temperature. Like most Gesneraceous plants, it is benefited by a liberal amount of leaf-mould in the potting compost. When potted early in the year previous to starting it should be shaken quite clear of the old soil. The plant may be readily increased from seeds, which are plentifully produced if the flowers are pollinated. *W. T.*

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.

St. Brigid Anemones.—Your correspondent J. P. (page 270), writing of St. Brigid Anemone, does well to recommend its usefulness for cut flowers. Having grown several thousands in different parts of the country, I have found tubers give the best results, provided they are

thoroughly ripened. To secure proper ripening, lift the tubers when half the foliage has turned yellow, place them in boxes, and stand the boxes in a cold frame where no water can reach the roots. The object is to imitate nature as nearly as possible until the tubers are planted in a well-prepared border, from September to the end of November. I have found similar treatment suitable for *Anemone hortensis plena*, one of the most striking spring flowers I know, and would be glad to know where a few tubers of this variety may be obtained. *J. E.*

Silver Leaf Disease.—I think if your correspondent, *C. A. Jardine*, turns up back pages of the *Gard. Chron.*, he will find ample evidence of the fact that investigators have tried the soil solution method of treating Silver Leaf Disease; it may be that the right solution has not yet been used or, if used, not used efficiently. Practical growers know that suckers from diseased trees are often badly affected, which would indicate that a cure, if any, must be able to reach the root system. *Wm. H. Johns, County Hall, Truro.*

Dendrobium primulardii.—I notice that in your issue of the 15th ult., reference was made to a *Dendrobium* which I recently staged at Manchester. This plant, a natural hybrid between *D. primulinum* and *D. Pierardii* (not a garden hybrid as stated in your note) was staged without a name, but was described as *D. venustum* by the Secretary, Mr. Arthur, in his report of the meeting of the Manchester and North of England Orchid Society. I am in full agreement with your remarks as to the desirability of care in the naming of Orchid hybrids and have written to the Secretary with a request that he will correct the name to *D. primulardii*. The plant was fully described in the *Orchid Review*, Vol. 24, p. 96, and a dried specimen is in the Kew Herbarium. *W. Horridge, Bolholt House, Bury.*

Fruit Crops in Leicestershire.—It may interest your readers to know the condition of the fruit crops in this county. There was a grand display of blossoms, but the setting has in most cases been very poor. Plums gave great promise, but the majority of fruits have fallen; the crop will be poor. Apples and Pears suffered during the prolonged wet spell, and as a result the crops will be below the average. Raspberries and Strawberries are promising. Red Currants are good, and Black Currants fair; Gooseberries, in some localities, are good, but in others only moderate. *T. G. Bullock (Hort. Instructor).*

Potato Spraying.—I have read with interest the question raised by Mr. Irwin Lynch, and also the remarks of Mr. C. A. Jardine. The subject is one of much importance and especially now there is a world shortage of food. After many years' practical experience and a wide opportunity for observing the effects of spraying, I must state that I have not yet met with a case where a properly compounded spraying mixture, judiciously applied, has had an injurious effect upon the Potato crop. But several cases have come under my notice, where the spraying mixture has been improperly compounded or injudiciously applied, and has caused injury. I cannot agree with Mr. Jardine's suggestion—that is if I understand him aright—that the spray fluid has an injurious effect if not washed off the Potato leaves within 48 hours of its application. Copper sulphate is the effective agent of the spray fluid; the soda or lime is used to prevent scorching, which will take place if these substances are not combined in proper proportions. If the disease spores fall upon the sprayed foliage the copper sulphate will kill them, and thus prevent their entrance to the leaf. The importance of using the spray before the disease appears is obvious, for if the spores have germinated and the disease has already entered the leaves, spraying is not effective. The spray fluid simply acts as a protection, and it is a mistake to suppose the plant absorbs the fluid. If it did, the sulphate of copper, being a poison, would cause the death of the plant. From many carefully conducted experiments it has been proved that sprayed Potatoes

continue longer in growth than unsprayed, even in seasons when Blight is not at all prevalent—and this being so, naturally the crop will be heavier—which also has been proved. If, as suggested, the spray fluid clogged the stomata on the underside of the foliage, how is one to account for the longer period of growth and the heavier crop of tubers? My object in writing is not to enter into controversy, but to endeavour to impress upon every cultivator of Potatos the value and importance of spraying, and, what is equally important, the proper compounding and application of the spray fluid. I strongly recommend growers to apply for leaflets on this subject, which can be had on application, without expense, to The Secretary, Board of Agriculture, 3, St. James' Square, London, or The Secretary, Department of Agriculture, Merrion Street, Dublin. T. S.

NURSERY NOTES.

MESSRS. ALLWOOD BROTHERS.

GREAT skill in all the arts of cultivation is essential in the conduct of a business which depends upon the production of healthy plants and fine flowers. That Messrs. Allwood Brothers possess this skill is evidenced by the comparatively short period in which they have built up their business, and by the steady extension of their nurseries. But skill in cultivation is not the whole secret of success in this commercial enterprise. The brothers possess unbounded energy and an enthusiasm which is highly infectious, while each has a distinct and striking personality.

About ten years ago they commenced business as Carnation specialists by renting four glass houses at Wivelsfield, Haywards Heath, Sussex. Now they have a large nursery on the opposite side of the road, where there are twenty-three houses, the larger ones being 250 feet by 55 feet, each filled with 20,000 plants producing an aggregate of 200,000 blooms in a season. The latest addition of new glass consists of nine smaller houses connected by a corridor. These are for the propagation and cultivation of young stock. The corridor is fitted with a wide bench, and is sufficiently roomy to allow potting, propagation, and the selection and labelling of young plants for filling orders, to be carried on rapidly and under the best conditions for plants and workers. Beside this addition to an already large establishment, the brothers have taken over a nursery at Plumpton, and this they are devoting to the cultivation of their new race of perpetual Pinks—*Dianthus Allwoodii*. Two of the three brothers, with modest assistance, managed the business at the outset; now the employees are about 120 in number.

The enthusiasm which the brothers show in their business is not exhausted when they have persuaded people that Carnation growing is the finest possible floricultural hobby, and that the Wivelsfield plants are the best for such a hobby. By no means. It finds an outlet in the creation of new varieties and of distinct races. Mr. Montague Allwood, whose gifts of oratory and sense of humour have made him the best-known of the brothers, has also a fine imagination which enables him to foresee the probable effects of certain combinations among Carnations and *Dianthus* species. He has made large numbers of crosses between *Dianthus*, between Carnations and Pinks, and between Pinks or Carnations and species of *Dianthus*.

Like all other raisers of new plants, Mr. M. Allwood has experienced many disappointments, but his many successes have encouraged him to continue. Wivelsfield White, Wivelsfield Beauty, Wivelsfield Claret, Apricot, Destiny (corise), and Mary Allwood were all raised by him, and they are all excellent and popular varieties of the perpetual flowering race. It is ample evidence of the value of these varieties that the Allwood Brothers grow them extensively for cut flowers, together with Beacon, Enchantress Supreme, White Enchantress, Salmon Enchantress very fine, and a scarlet seedling of their own raising. This latter grows rapidly, is a great producer of brilliant flowers,

is of comparatively dwarf habit, and yields two blooms to every one of any other scarlet variety. The firm does not confine its attention to home-raised varieties, but cultivates all varieties that are worth growing.

Jessie Allwood is a perpetual Malmaison variety, with large handsome flowers of light yellow colour. It was raised at Wivelsfield, as the name suggests. To the credit of the firm must also be placed several perpetual-flowering border Carnations, of which the light yellow Roslyn is a good example. The Messrs. Allwood believe that this particular section has a great future, and work is being continued therein with the view to obtaining plants which will continue to produce useful flowers out of doors all through the summer and early autumn.

Probably nothing the Allwood Brothers have raised has taken the popular fancy so quickly as the new race of perpetual Pinks dignified by the name of *Dianthus Allwoodii*, and for which the firm received a certificate of appreciation from the Royal Horticultural Society. The

beauty, has, as it should, with such a name, a trim habit (see Fig. 144) and is a capital pot plant for a cold greenhouse, as, indeed, are most of the members of this race. All are good garden plants for beds or borders, unquestionably hardy and easily grown.

Messrs. Allwood Brothers make a special feature of growing large, bushy plants of the free-flowering perpetual Carnations in 32-size pots for planting out of doors in early summer to flower throughout the season. For these they have now a good demand from owners of large gardens and those who have the management of public parks. Special care is taken in packing and the prompt fulfilment of all orders, and plants for export to other countries are subjected to special treatment, which toughens them and thus reduces to a minimum the possibility of losses during their journey. In short, the Allwood Brothers are specialists, and apply their experience, skill, and enthusiasm to every branch of their increasing business.



FIG. 144. DIANTHUS ALLWOODII SUSAN: A POT-GROWN SPECIMEN

race is of hybrid origin, and obtained by fertilising flowers of the old-fashioned garden Pinks with pollen of perpetual-flowering Carnations. Many varieties have been raised, and all have the hardiness and free habit of Pinks, with a taller growth, branching inflorescence, larger blooms, and a perpetual habit derived from the Carnation parent.

There are certain old-fashioned florists who regard the blooms of this race of garden plants as beneath contempt, but garden lovers who are not such sticklers for form have nothing but admiration for these free-flowering and effective plants, which will grow in any kind of soil, but do best in deeply worked medium soil containing a fair supply of lime. Of the several varieties, the sturdy white-flowered Harold must be given pride of place. Rufus is a double deep old rose coloured variety of very cheerful hue; while Robert, less double, is soft pink, with claret-coloured zone. Jean, of neat outline, white, with violet-purple centre, is very dainty, and was greatly admired when shown in the splendid group of Carnations and Pinks exhibited by the firm at the recent Chelsea Show. To each of these four varieties the R.H.S. Award of Merit has been granted. Another charming sort, Susan, so named because it is a black-eyed

NOTES FROM THE COLONIES.

FERN FLORA OF A SINGLE TREE.

Some time ago (see *Gard. Chron.*, Oct. 4, 1919, p. 161), I sent you a description of New Zealand Orchids found on a single tree. I now send lists of Ferns noted on two trees (*Griselinia littoralis*) in the bush or forest, some 3,000 ft. up Mt. Egmont. All the trees have such masses of Ferns, from the base, right to the topmost branches, that it is difficult to choose a particular specimen. However, I selected two as having perhaps rather more variety than the rest. The Fern Flora was as follows: Tree No. 1. *Hymenophyllum scabrum*, *H. rarum*, *H. polyanthos*, and *H. pulcherrimum*; *Trichomanes reniforme* (Kidney Fern), *Polypodium australe*, *P. Billardieri* and *P. graminifidus*; *Asplenium bulbiferum*, *A. falcatum* and *A. falcatum*, and *Aspidium aculeatum*. Tree No. 2. *Hymenophyllum pulcherrimum*, *H. scabrum*, *H. dilatatum*, and *H. rarum*; *Asplenium falcatum*, *A. bulbiferum* and *A. bulbiferum*; *Aspidium capense*; *Polypodium australe*, *P. graminifidus*, and *P. Billardieri*; *Leomania* (or *Blechnum*) *fluyia*, *tilis*, and *Pteris incisa*. *M. F. Manuia, New Zealand.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 15.—There was a bright display at the Royal Horticultural Hall on this date and hardy flowers provided the chief attraction. Delphiniums, Sweet Peas, Roses, Carnations and Paeonies were the principal flowers shown; of Orchids there was only one group. The Floral Committee granted eight Awards of Merit, and the Orchid Committee one first-class certificate.

The attendance was much smaller than usual, probably as a consequence of the counter attraction of Ascot race meeting.

Floral Committee.

PRESENT.—Messrs. H. B. May (in the chair), W. A. Binney, Sydney Morris, Jas. Hudson, John Green, W. J. Bean, John Heal, John Jennings, Andrew Ireland, J. F. McLeod, Thos. Stevenson, W. Howe, W. B. Cranfield, C. R. Fielder, Chas. Dixon, Arthur Turner, H. J. Jones, Wm. Cuthbertson, Chas. E. Pearson, G. W. Leak, W. P. Thomson, J. W. Barr, R. C. Notcutt, W. R. Dykes, George Paul, E. H. Jenkins, H. Cowley and H. R. Darlington.

AWARDS.

AWARDS OF MERIT.

Delphinium Blue Bird.—A tall growing variety with a yard long spike of rounded, deep, velvety blue flowers. The spike is not so dense as in the case of many modern varieties, and is consequently the more elegant. Shown by Messrs. R. Tucker and Sons.

Delphinium Pannonia.—A very distinct variety bearing a comparatively short, sturdy spike of clear, deep blue flowers. The blooms are set closely together, but not sufficiently so to make the appearance of the spike heavy. Shown by Messrs. R. H. Bath, Ltd.

Sweet Pea Le Mahdi.—A bold and handsome variety of deep purplish blue colour. The Sweet Pea of Delphinium blue colouring is still to seek. Shown by Messrs. Ireland and Hitchcock.

Sweet Pea Mildred Howard.—This Sweet Pea is a lovely pink variety, the wings having a tint of rose in the pink. The standards are of large size, and the flowers are set rather widely apart on the stout spikes. Shown by Mr. Robert Wright, Formby.

Gaillardia Downer's Double.—A large and handsome variety with flowers fully four inches in diameter and of a golden yellow colour; the effectiveness of the flower is accentuated by the crimson zone composed of the outer rows of disk florets. The ray flowers are large, in two rows, and each has four or five divisions. Shown by Mr. C. R. Downer.

Carnation New White Clover.—Mr. Douglas has at last succeeded in producing a large, broad petalled, smooth edged, white border Carnation with the fragrance of the Old Clove. The blooms are of fine size and form and the petals are stout in texture. Shown by Mr. James Douglas.

Rose Mrs. Curdock Sawday.—A strong-growing Hybrid Tea Rose of fine form and shell pink colour. The blooms are broad petalled and stout, making up a full, handsome bloom of great promise, and one that is sweetly scented. The stems are purplish red and the foliage dark green. Shown by the raiser, Mr. E. J. Hicks.

Pyraeantha yunnanensis var. *Warley*.—An elegant shrub producing long, slender branches along which every spur and bud appears to produce a cluster of small, white, Hawthorn-like flowers. In some of these branched clusters there are as many as 35-40 flowers, consequently a branch becomes a graceful wreath of blossom. This *Pyraeantha* has a distinct value as a flowering shrub, and we understand it berries freely. Shown by Miss E. Willmott, V.M.H., Great Warley, Essex.

GROUPS.

Delphiniums and Paeonies were the chief floral feature of the show and were generally excellent.

Messrs. BLACKMORE AND LANGDON arranged many magnificent spikes on a floor space. The popular white-eyed variety Rev. E. Lascelles immediately attracted attention, but it was the lighter blues that received most admiration, and of these Willy O'Brien, Lizzie van Veen and Lord Lansdowne were superb. Mrs. Shirley is of pure mauve colour and first size. Queen Wilhelmina, of similar colouring, is also desirable (Silver Grenfell Medal).

Messrs. KELWAY AND SONS had a large collection of the best sorts at the end of the hall, and of these Dusky Monarch and Bayardo were particularly attractive to lovers of novel colouring. Paeonies, both double and single, were also freely shown by the Messrs. Kelway, and of the former Dorothy Kelway, Spion Kop (rose) and Joy of Life (blush) found many admirers (Silver Flora Medal).

A large collection of border flowers was also contributed by Messrs. R. H. BATH, LTD. Their Paeonies were excellent, and although the double sorts were unusually large and of good form and colouring it was the many single-flowered varieties that received most attention. Several seedlings of great merit were shown, and these were characterised by increased size and delightful colouring. The named sorts included Mikado, deep crimson with golden filaments; Philomele, satiny pink petals and deep Primrose petaloid stamens; King Lear, in which the Rose-coloured filaments are edged with gold; and Academic, shaded soft pink, and brightened by a cluster of golden filaments. The Delphiniums were equally meritorious. Lovely is a delightful variety, Hugo Poortman, Turquoise and Willy O'Brien are the names of the very best (Silver Grenfell Medal).

Messrs. R. TUCKER AND SONS showed Delphiniums and border Pinks with various Alpines, which included many Sempervivums and the graceful *Allium pedemontanum* (Bronze Banksian Medal). Messrs. J. PIPER AND SON were also exhibitors of Alpines and border flowers, and in their collection *Linum alpinum roseum*, *Campanula pulloides*, *Sempervivums*, and the beautiful blue *Pentstemon heterophyllus* were especially noteworthy (Bronze Banksian Medal).

Mr. W. WELLS, JUNR., showed a generous collection of Delphiniums, including such valuable sorts as Lamartine, Mrs. W. Wells, Joan Carter and Merstham Glory (Bronze Flora Medal). Mr. C. R. DOWNER showed Delphiniums, Gaillardias and Scabiosa caucasica. Mr. G. W. MILLER arranged a good collection of seasonal border flowers and the Misses HOPKINS and Messrs. MAXWELL AND BEALE showed various Alpines.

Mr. M. PRICHARD had the glowing scarlet *Verbena chamaedryoides* with various hardier rock plants, and also included in his exhibit many spikes of Kniphofia, Irises, Delphiniums, *Campanula latifolia bicolor* and *Verbasum Lady Alison* (Silver Flora Medal). Messrs. BAKERS, LTD., arranged a great variety of Delphiniums, Irises, *Lilium Szovitzianum*, and a quantity of Sunbeam Poppies (Silver Banksian Medal).

Mr. G. REUTHE had his customary collection of anemomon shrubs and plants, and also included hardy terrestrial Orchids, various Ericas, Irises, Rhododendrons and Magnolias (Silver Banksian Medal). Messrs. J. GODFREY AND SON contributed a splendid selection of Scabious Pride of Exmouth, a glorious caucasica variety; *Campanula glomerata superba*, in spikes of deep blue flowers; *Erigerons*; and a goodly collection of Oriental Poppies, amongst which the clear cerise variety, Delightful, was prominent (Bronze Banksian Medal).

Messrs. SUTTON AND SONS sent a large collection of splendid spurred Aquilegias. The crimson and gold, and the pink shades, as well as *Aquilegia coerulea*, were particularly noteworthy. Messrs. W. H. STIMPSON AND SONS exhibited a splendid collection of named Antirrhinums, apparently grown under glass. The spikes were large and fresh and the colours distinct and good (Bronze Banksian Medal).

Mr. ROBERT BOLTON was the only exhibitor of a group of Sweet Peas, and he arranged a most praiseworthy collection. Although cut from the open the spikes were immense; yet free from coarseness, and the flowers perfectly arranged on the stalks. The new variety Picture was even more beautiful than at Chelsea. Lavender Seedling is another charming variety. Annie Ireland, Verdun, Tangerine and Victory were also shown in great beauty and perfection (Silver Flora Medal).

Messrs. RICH AND CO. showed several desirable varieties of *Chrysanthemum maximum*. Rentpaver is a large flower, but more graceful than the type, while Moneymaker is rounder and of clear milk white colour (Bronze Banksian Medal).

Messrs. J. CHEAL AND SONS brought a collection of interesting hardy shrubs, which included flowering sprays of *Zenobia speciosa*, *Robinia Kelseyi*, *Abutilon vitifolium*, *Senecio Grayii* and several late Rhododendrons. A noteworthy collection of herbaceous flowers, and the Star Dahlias which Messrs. Cheal and Sons have improved so greatly, were next to the shrubs. *Lilium umbellatum* varieties, *Campanulas*, *Erigerons* and *Armerias* were especially good (Silver Flora Medal).

Messrs. W. CUTBUSH AND SONS brought a large number of splendid Hydrangeas, both the normal rose coloured and the blue, and also showed fine double blue flowered *Petunias* and the scented-foliaged *Pelargonium crispum variegatum* (Silver Banksian Medal). Messrs. H. B. MAY AND SONS interspersed *Heliotropes*, *Verbenas*, *Hydrangeas* and *Antirrhinums* with their greenhouse Ferns (Bronze Flora Medal). Mr. L. R. RUSSELL contributed a collection of stove plants, which showed high culture. *Caladiums*, *Marantas*, *Codineums* (Crotons), *Draconas* and *Aralias* were all first rate (Silver Flora Medal).

Roses were fresher and better than might have been expected in view of the late unfavourable weather. Messrs. B. R. CANT AND SONS brought beautiful blooms of Juliet, Madame Edouard Herriot, Padré and Constance Casson (Silver Grenfell Medal). Mr. ELISHA HICKS arranged vases of *Comtesse du Cayla*, Mrs. Curdock Sawday, Mrs. E. Hicks and other Hybrid Tea Roses, and also a stand of the brilliant *Rosa Moyesii* (Silver Grenfell Medal).

Rev. J. H. PEMBERTON included such fine sorts as Mme. Edouard Herriot, Miriam, Lemon Pillar, Gen. McArthur and Lady Pirrie with his seedlings. Ruth, a 1921 variety, is of fascinating orange-apricot colour flushed with carmine (Bronze Banksian Medal).

Carnations were a noteworthy feature of the meeting, and the various types were well represented. Messrs. ALLWOOD BROS. brought a selection of the Allwoodii Pinks, which they showed in such quantity at Chelsea. As before, Joan, Harold, Rufus and Robert were particularly charming. Many perpetual-flowering Carnations were also shown by this firm, as well as such valuable border varieties as Bookham Clove, Bookham White and King Arthur (Silver Flora Medal). Mr. J. DOUGLAS had a collection of splendid border Carnations and a selection of "Rockwork Pinks," a race which has great possibilities. Vivid, Bookham Rose, Grenadier, Gordon Douglas, Orangeman, Virginia and Cleopatra are the names of only a few of the excellent border Carnations (Silver Flora Medal).

Mr. F. GIFFORD showed a quantity of the Pink Glory, while Messrs. B. LADRAMS, LTD., had a wide range of border Pinks, with Mimususes, Giant Thrift and other herbaceous flowers (Bronze Banksian Medal). Mr. C. ENGELMANN again arranged excellent perpetual-flowering Carnations in such sorts as Delice, Variegated Carola, Destiny, Champions and Circe (Silver Banksian Medal).

A group of well-flowered Astilbes in relatively small pots was arranged by Mr. H. J. JONES (Bronze Flora Medal).

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair; Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, Arthur Dye, R. A. Rolfe, Chas. H. Curtis, Fred K. Sander, J. E. Shill, Richard G. Thwaites, E. R. Ashton, Pantia Balli and Frederick J. Hanbury.

As usual after a large special show, the meeting following was not well attended, and only one group and three hybrids were placed before the Committee.

Only one Award was made, a First-Class Certificate, to *Laelio-Cattleya Mrs. Willoughby Pemberton* (*L.-C.*, *Baroness Emma* × *L.-C.*, *zamia*), from Baron BRUNO SCHROEDER, The Dell, Englefield Green (gr. Mr. J. E. Shill). A very fine example of progressive hybridisation, the new hybrid featuring *L.-C.* *eximia*, which is one of the parents of *L.-C.* *Baroness Emma*, and now crossed with it again. The resemblance is remarkable, but all the best features are improved. The broad-petalled flower measured eight and a half inches across, the sepals and petals being silver white, tinged with rosy-lilac. The lip, which is strongly reminiscent of *L.-C.* *eximia* is broad, ruby-purple, shading to mauve towards the front and with bright yellow disc.

GROUP.

MESSRS. CHARLESWORTH AND CO., Hayward Heath, were awarded a Silver Flora Medal for a group in which white *Cattleyas*, including several good examples of *C. Suzanne Hye de Crom*, were prominent. Fine hybrid *Odontoglossums* and *Odontiodas* also enhanced the beauty of the display, and the singular bigeneric hybrid *Schombolaelia tibibrosa* presented a remarkable combination. Among the species were the still rare and beautiful *Laelia tenebrosa* Walton Grange variety; a very interesting selection of curious *Masdevallias*; the scarlet *Habenaria rhodochila*; and the feather-lipped *Bulbophyllum larbigerum*.

OTHER EXHIBITS.

W. R. FASEY, Esq., The Oaks, Holly Bush Hill, Suaresbrook (gr. Mr. Seymour), sent the beautiful *Odontoglossum Fabia Majestica* (*eximium* × *Aglaon*), a model flower, broad in all its parts, the sepals and petals claret-red with white margin, the broadly-ovate lip white, with ruby-red blotch in front of the yellow crest.

MESSRS. SANDERS, St. Albans, showed *Odontoglossum crispum* var. *Belgica*, a very large, handsome and distinct form, with white flowers of fine substance, heavily blotched with claret-red. There is, as in most blotched *crispums*, a suggestion of hybridity, but being an imported plant, there were no data to guide the observer. It was certainly a very handsome form.

Fruit and Vegetable Committee.

Present: Messrs. W. Poupert (in the chair), W. H. DIVERS, Owen Thomas, W. E. HUMPHREYS, E. BECKETT, F. JORDAN, P. D. TUCKETT, S. B. DICKS, H. MARKHAM, J. C. ALLGROVE, E. A. BMYARD, A. H. METCALF and the Rev. W. WILKS.

The trials at Wisley this year include 120 varieties of early culinary Peas and of these the Committee last week made awards to 21, of which dishes were on view at the meeting. These, we understand, were the best of the earliest varieties, and the remainder of the trials will be inspected later, as they mature. Awards of Merit were recommended to Reading Wonder (MESSRS. SUTTON AND SONS), Primo (MESSRS. WATKINS AND SIMPSON), and Prosperity (MESSRS. TONGOOD AND SONS). These are three excellent sorts; the pods are of good length, rich greenness and well filled. The remainder of the 21 varieties received cards of commendation.

A small collection of late Apples was shown by Mrs. LEVISON-GOWER, Bill Hill, Wokingham (gr. Mr. W. Chislet). The varieties Winter Peach, Winter Greening, Alfriston and Anne Elisabeth had kept wonderfully well.

YORKSHIRE FLORAL FETE AND GALA.

JUNE 16, 17 and 18.—The fifty-eighth annual Floral Fete, opened on June 16, in delightful weather, at Bootham Park, York, was one of the finest of a long series. The present exhibition differs greatly from those held a score or more years ago. In those days huge Palms, wonderful specimen stove and greenhouse plants, and giant *Pelargoniums* were exhibited in large numbers; now, these are conspicuous by their absence, and Sweet Peas, Carnations, H.T. Roses, bardy border flowers and "garden groups" are the chief features. In bygone years the exhibits were housed in stuffy tents; this year, as in recent years, the exhibition was held in a roomy, well ventilated, canvas-covered erection of wood and wire; indeed, it is no secret that the Yorkshire society obtained the greater part of the wooden framework used at the International Show, at Chelsea, in 1912.

Capital arrangements are made at York for the convenience of the exhibitors, as well as the general public, and various amusements are provided for the latter when they tire of the flowers. Exhibitors are made to feel they are welcome and visitors know there will be ample space between the exhibits and pleasant atmospheric conditions, no matter how high the temperature rises.

On this occasion a deputation from the Royal Horticultural Society visited the gala and made special awards, as set out below: the members of Council present, headed by the Rev. W. Wilks, were Mr. Henry B. May, Mr. W. A. Bilney, Mr. W. M. Cuthbertson, and Mr. Jas. Hudson.

Orchids.

In the class for a group of Orchids arranged on a space 12 ft. by 5 ft. Messrs. JAS. CYRER AND SONS, Cheltenham, were the only exhibitors, and they put up a handsome exhibit wherein *Thunias*, *Vandateres*, *Miltonia*, *Bleuana*, *Odontoglossums*, *Oncidiums*, *Masdevallias* and *Laelio-Cattleyas* were the chief features.

The same firm gained first prize for a dozen Orchids, and here their best specimens were *Laelia cinnabrosa*, *Miltonia vexillaria* with about seventy blooms, *Thunia Magoriana*, *Laelio-Cattleya Aphrodite*, and *Brasso-Cattleya Mossiae-Dighyana*. First prizes for six Orchids, for three Orchids, and for one Orchid—a fine example of the white *Cattleya Queen Mary*—were also won by the Cheltenham firm.

In the amateurs' classes for Orchids, Mr. A. J. FRANCOIS (gr. Mr. D. Pitts), Axholme House, Doncaster, was a most successful competitor, winning first prizes for six and for three specimens, and second prizes for six and for three Orchids in another class, and for a single specimen, *Oncidium hastiferum*, *Laelio-Cattleya Violetta*, *Odontioda chelseensis*, and *Coelogyne pandurata* were the principal kinds of Orchids shown by Mr. FRANCOIS. Mr. JAS. SENLEY, South Melford, was also a prize-winner in several classes for Orchids.

Roses.

The competition in the Rose classes was fairly good, but the blooms were below the best exhibition standard, and many showed evidences of unpleasant weather. Mr. ELISHA J. HUCKS, Twyford, was particularly successful, winning the first prize for seventy-two blooms in not fewer than three dozen varieties; for forty-eight blooms in not fewer than two dozen varieties; for thirty-six blooms; for eighteen blooms; for a collection of Roses in pots, associated with cut blooms; and for a decorative table of Roses. Mr. Hicks's leading varieties were Red Letter Day, Nita Wellbon, Bar le Duc, Richmond, C. V. Howarth, Augustus Hartmann, Frau Karl Druschki, and Ethel Malcolm. Messrs. D. Prior and Sons, Colchester; and Mr. George Pince, Oxford, were the other prize-winners in this section.

Water and Rock Gardens.

The premier prize for a water garden arranged in irregular form on a space not exceeding 250 square feet was awarded to H. E. LEETHAM, Esq. (gr. Mr. J. Winn), Alderside, Dringhouses. The design was pleasing, the irregular pool being set amid low rockwork, with an

overflow here and there to provide the boggy spots for *Astilbes*, *Iris sibirica*, *Osmunda regalis*, and *Hemerocallis*. Among the rocks were colonies of *Primulas*, *Saxifrages*, *Violas*, *Campanulas*, *Ranuncias*, *Onosmas*, *Alpine Phloxes*, and dwarf *Hypericums*, with dwarf *Comfers* on the higher portions. In the pool were a few *Water-lilies*, *Typhas*, and, at the margin, variegated *Funkias*.

The best rock garden exhibit was the one arranged by Messrs. J. BACKHOUSE AND SONS, York, who had a very bold and effective design with a low rockwork foreground, a tiny pool, and then rising rockwork with a row of Pines as background. The planting was good and pleasingly subdued. *Astilbes*, Foxgloves and *Campanula persicifolia* showed up well against the Pines. Ferns, *Primulus*, dwarf *Campanulas*, *Coms*, *Achilleas*, *Mimulus*, *Saxifrages* and *Sempervivums* filled nooks, crannies and little bays, while *Water-lilies* studded the tiny lakelet.

The three exhibits in the class for a collection of hardy perennials arranged in a natural manner on a ground space not exceeding 350 sq. ft., produced a splendid effect. Messrs. HARKNESS AND SON, who arranged a lozenge shaped group of splendid blooming Oriental and Iceland Poppies, *Delphiniums* in variety, *Verbascum Calcedonia*, *Kniphofias*, *Irises*, *Erigerons*, *Lupins*, *Pyrethrums* and other showy subjects. The pointing was as follows:—Quality of bloom, 58 (60); harmonious blending of colour 18 (20); artistic arrangement and general effect 20 (20); total, 86. The figures in parentheses show the highest possible points. Messrs. W. ARTINDALE AND SON, Sheffield, came second with 56, 15 and 15 points, respectively; Messrs. G. GIBSON AND CO., Leeming, were third with 50, 14 and 14 points, respectively.

Hardy Flowers.

MESSRS. G. LANGSTER AND SONS, Malton, were placed first for two dozen bunches of hardy flowers, arranged on the ground. They exhibited a fine collection and had good examples of *Erigeron* B. Ladhams, *Pyrethrum Mdme. Munier*, *Achillea serrata*, *Spiraea Rubens*, *Lupins* and *Delphiniums*. Messrs. HARKNESS AND SONS, Bedale, second, and Mr. W. HUTCHINSON third; the three groups made a very fine mass of colour.

Beautifully effective were the collections of hardy flowers arranged in usual fashion, rising from a low foreground. Messrs. HARKNESS AND SONS won first prize with similar subjects to those already mentioned; Messrs. W. ARTINDALE AND SON and Messrs. G. GIBSON AND CO. were second and third prizewinners respectively.

Mr. G. W. READER, Neburn Ferry, York, was the most successful exhibitor in the class for a collection of hardy flowers arranged on the ground on a space 18 ft. by 7 ft.; he made a fine display of popular subjects. Mr. W. HUTCHINSON, Kirbymoorside, exhibited the best two dozen bunches of hardy flowers; his vases of *Papaver Lady Roscoe* and *Pyrethrum Queen Mary* were especially good; Mr. J. H. JUBB, Goole, second.

Two exhibitors came forward in the class for a collection of Sweet Peas. Messrs. E. W. KING AND CO., Coggeshall, won with 92 points out of a possible 100. Messrs. S. BIDE AND SONS, Farham, came second with 84 points. Both exhibitors had delightful exhibits, and made a feature of varieties of their own raising.

Groups of Plants.

A handsome group of plants artistically arranged on a area of 300 sq. ft. obtained for Mr. W. A. HOLMES, Chesterfield, the first prize award of £20. The design was by no means new. The central arch, with a noble *Kentia* in the middle, was furnished with *Crotons*, *Clarkias*, and drooping *Fuchsias*. Large *Crotons* occupied corner positions, and a fine pair of *Cocos plumosa* filled prominent positions. In the groundwork of the group *Crotons* were largely employed in association with *Lilium longiflorum*, *Begonias*, *Ixoras*, *Lantanas*, *Laelias* and *Dracenas*.

In the class for a collection of plants arranged in group 16 ft. by 6 ft. there were two entries. First prize was won by Messrs. JAS. CYRER AND SONS, with a pleasing and elegant display,

in which graceful spikes of yellow *Oncidium* and *Francoa ramosa*, with spikes of *Lilium longiflorum*, rose above well-grown *Crotons*, *Arabas*, *Thunias*, *Rocheas*, *Miltonias* and *foliage Begonias*, all bedded in green moss, and the whole margined with *Nertera depressa* and the tricolor form of *Saxitraga sarmentosa*. Mr. W. A. HOLMES won second prize, and the chief subjects in his lightly arranged group were *Crotons*, *Bamboos*, *Liliums*, *Petunias*, *Marantas* and *Nandina domestica*.

In other group classes, J. ROWNTREE, Esq. (gr. Mr. F. Dean), Clifton, York, led for tuberous *Begonias*; Dr. MACDONALD (gr. Mr. G. Bennett), Ouse Lea, York, for *Calceolarias*; Mrs. AKENHEAD (gr. Mr. W. Fletcher), Rischolme, York, won first prize for eight specimen herbaceous *Calceolarias*.

Florists' Designs.

Eight classes were provided for the display of the florist's art, and in seven of these MESSRS. R. FELTON AND SON, Hanover Square, received the highest award. In certain classes they had no competitors, but they would have been difficult to beat even in a strong competition. The firm was successful with a hand-basket of cut flowers—mauve and mauve-lipped *Cattleyas* and mauve-marked *Odontoglossums*; with a hand-basket of flowers, *Orchids* excluded—a lovely basket of blush *Carnations*; with a hand-basket of *Roses*—a lovely arrangement of the variety *Ophelia*; with two bridal bouquets—one of white *Cattleyas* and one of white *Odontoglossums*; with two ball bouquets—one of *Croc* and the other of saffron *Carnations*; with two hand bouquets—one of *Odontocarnations* and one of purple and mauve *Cattleyas*.

MESSRS. SIMPSON AND SONS, Mr. T. M. PETCH Miss G. PEARSON, York; and MESSRS. LANGSTER AND SON, all won prizes in the foregoing classes. Mr. ELISHA J. HICKS won first prize for a vase of epergne of flowers, with single *Roses*; MESSRS. C. E. SIMPSON AND SON, second with *Sweet Peas* and *Cattleyas*—a by no means pleasing combination; MESSRS. PADGETT AND MASON third with a rather massive design in orange-coloured *Sweet Peas*.

Fruits.

The interest which used to centre in this class for a decorated table of ripe fruits has not yet returned to York; although on this occasion there were two exhibits. MESSRS. C. E. SIMPSON, LTD., Spurrigate, York, won the first prize with *Pineapples*, rather small *Peaches*, *Nectarines*, *Figs*, *Strawberries*, *Cherries*, *Melons*, fairly good *black Grapes*, but poor white *Grapes*. The decorations, consisting of *Francoa ramosa*, blush *Carnations*, pink *Clarkias* and *Gypsophila*, were charming. MESSRS. PADGETT AND WATSON, Low Ousegate, York, won second place with fair samples of fruit and a decoration of *heliotrope* and pink *Sweet Peas*.

As far as we could discover there were no entries in the other classes for fruits.

Non-Competitive Groups.

MESSRS. MANSELL AND HATCHER, Rawdon, contributed a delightful group of *Orchids* wherein every plant, small or great, was allowed to express its individuality. The staging and the pots were covered with sheets of deep green moss, and a few ferns were used below the plants in the background. *Laelio-Cattleya Canhamiana*, *L. C. Cowanii*, *Cattleya Mossiae Wagneri*, *C. Hesta magnifica*, *Odontioda Alcantara*, *O. Mena*, *Anguloa Rolfei*, and *Odontoglossum Doreen magnificum* were a few of the special subjects in a fine group.

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, had a thinly disposed group of *Orchids*, wherein *Laelio-Cattleya Aphrodite*, *L. C. Martinetti*, *Cattleya Mendelli Duke of York*, and *Odontoglossum eximillus* were conspicuously good.

Sir JEREMIAH COLMAN, Gatton Park, Reigate (gr. Mr. J. Collier), deserved all the congratulations he received, as he showed splendid spirit in sending a fine group of *Orchids*. The group was admirably set up, with moss and small ferns between the plants. Where all the specimens represented good varieties it is difficult to particularise, but the rare and beautiful *Odonto-*

glossum Memoria Gurney Fowler, *Cypripedium Curtisii Sanderie*, *Laelio-Cattleya Phoebe*, *Odontoglossum Gatton Emperor*, and the quaint *Epidendrum Medusae*, and the sensitive *Bulbophyllum barbigerum*, were a few that attracted special attention.

MESSRS. ALEX. DICKSON AND SONS, Belfast, occupied a large space and filled it in splendid style with *Sweet Peas* and *Roses*. There were over sixty bowls, vases and stands of *Sweet Peas*, and among the many varieties shown *Hawmark Lavender*, *Barbara*, *Daisybud*, *Hawmark Pink*, *John Porter*, *Orchid* and *Hawmark Scarlet* were unusually fine. This firm's brilliant group of *Roses* contained lovely blooms of *K. of K.*, *Golden Emblem*, the glorious *Sunstar*, and Mrs. C. V. Haworth among many other beautiful sorts. Mr. J. STEVENSON, Wimborne, was responsible for an attractive exhibit of *Sweet Peas*, the flowers finely developed and well arranged. *La France*, *Fair Lady*, *Brilliant*, *Faith*, *Charity* and *Lavender Belle* were the varieties occupying positions of honour.

MESSRS. SUTTON AND SONS, Reading, exhibited extensively and confined their energies to a display of *Sweet Peas*. The display was arranged in the artistic manner which invariably characterises the Reading groups. Some fifty-six varieties of the popular annual were disposed in stands and bowls of varying height, and in every instance the blooms were of fine size and colour. Leading varieties included Mrs. A. Hitchcock, Sutton's Blue, Valentine, Elegance, Doris, Fiery Cross, May Unwin, Hebe, Charity and Southcote Blue. A feature worthy of mention is that the labels of the varieties were neat and not aggressively conspicuous.

MESSRS. DOBBIE AND Co.'s exhibit of *Sweet Peas* was especially pleasing, because the colours were so happily associated. Over fifty stands and vases of fine flowers were shown, and the leading bright-hued were *Thos. Stevenson*, *The President*, *Dobbie's Orange*, *Alex. Malcolm*, *Illuminator* and *Royal Scot*. Mr. W. J. UNWIN, Histon, made a great feature of *Unwin's Pink* in his group of *Sweet Peas*; it is a bright pink variety, very effective and of good form. *Twilight* and *Unwin's Cream* were other good sorts.

MESSRS. STUART LOW AND Co., Enfield, exhibited *Orchids* and *Carnations*, a group of each, side by side. The principal *Orchids* on view were *Renanthera Imshoottiana*, *Odontioda Lutetia*, *Laelio-Cattleya Aphrodite* and *Miltonia Charlesworthii*; whilst among the *Carnations* the special attractions were *Mephisto*, *Princess Mary*, *Volcano* and Mrs. E. Douglas.

An exceptionally fine lot of border *Carnations* was shown by Mr. H. LAKEMAN, Thornton Heath; the varieties, *Grey Douglas*, *My Clove*, *Border Yellow*, *Elaine*, *Lt. Shackleton*, *General French*, *Salmonea* and *Elizabeth Shifner* were represented by superb blooms.

MESSRS. ALLWOOD BROTHERS, Haywards Heath, disposed their varieties of *Dianthus Allwoodii* in pleasing fashion, with flanking semi-circular groups of *Carnations*, the latter including *Edward Allwood*, a fine new scarlet seedling; *Wivelsfield White*, *Destiny*, *May Allwood*, *May Day*, *Triumph* and *Mikado*. Mr. C. ENGELMANN, Saffron Walden, was also an exhibitor of fine *Carnations*.

MESSRS. BLACKMORE AND LANGDON, Bath, exhibited *Delphiniums* in fine style; the varieties were similar to those referred to in our R.H.S. report. MESSRS. R. H. BAYB, Wisbech, had a large square group of *Delphiniums*, *Paonies*, *Irises*—their vase of *Delphinium Lavenda* was unusually good. The contribution from MESSRS. J. PEED AND SONS, West Norwood, was composed of large flowered *Streptocarpuses*, *Tritonia Prince of Orange* and small plants of many sorts of *Caladiums*.

Mr. J. W. MILLER, Wisbech, exhibited hardy flowers in great variety, and Mr. W. WELLS, junr., Mersham, contributed a splendid exhibit of fine varieties of *Delphiniums*.

MESSRS. P. GARDNER AND Co. exhibited an extensive rock garden, well furnished with suitable subjects, but the rocks appeared to be somewhat too obtrusive at the back of the exhibit. Mr. G. PRINCE and Mr. G. BURCH, Peterborough, had small exhibits of *Roses*.

MESSRS. WATERER, SONS AND CRISP contributed a group of handsome *Rhododendrons*, associated with Japanese *Maples*, *Kalmias*, and standards of *Ilex crenata* and *Retinospora filifera aurea*. MESSRS. S. BROADHEAD AND SON, Haddenfield, arranged an attractive rock garden, well furnished with dwarf *Campanulas*, *Saxifrages*, *Sempervivums*, *Primulas* and other seasonable flowers.

Mr. GEORGE YELD, Burton Lane, York, contributed a number of beautiful *Irises* and *Hemerocallis* of his own raising. Among the former *Lord of June*, *Lady of June*, *Camma* and *Asia* were noble, large-flowered sorts. Mr. H. N. ELLISON, West Bromwich, showed ferns in great variety, with *Araucaria Silver Star*.

MEDAL AWARDS.

Large Gold Medal.—To Sir Jeremiah Colman; Messrs. Sutton and Sons; Messrs. Allwood Brothers; Messrs. Waterer, Sons and Crisp; Messrs. W. Artindale and Son; Messrs. D. Gardner and Co.; Messrs. Alex. Dickson and Sons; and Messrs. Mansell and Hatcher.

Gold Medal.—To Mr. Broadhead; Messrs. Dobbie and Co.; Messrs. Stuart Low and Co.; Messrs. Blackmore and Langdon; Mr. H. Lakeman; Messrs. J. Backhouse and Son; and Mr. George Yeld.

To the other non-competitive exhibitors special awards were made according to the merit and extent of their displays.

Royal Horticultural Society's Awards.

The following awards were made by the members of the R.H.S. deputation:—

Gold Medal.—To Messrs. Mansell and Hatcher; Messrs. Armstrong and Brown; Sir Jeremiah Colman; Messrs. Alex. Dickson and Sons; Messrs. Dobbie and Co.; Messrs. Sutton and Sons; Messrs. Allwood Brothers; Messrs. Waterer, Sons and Crisp; Messrs. P. Gardner and Co. (rock garden).

Silver Gilt Flora Medal.—To Messrs. Jas. Cypher and Sons; Messrs. Blackmore and Langdon; Mr. H. Lakeman; Mr. W. A. Holmes; and Mr. H. E. Leatham (water garden).

Silver Gilt Banksian Medal.—To Mr. J. Stevenson; Messrs. Jas. Cypher and Sons (plants); Messrs. J. Backhouse and Son; Mr. W. Wells, jun.

Silver Flora Medal.—To Mr. S. Broadhead (rock garden) and Messrs. Harkness and Son.

Silver Greenfell Medal.—To Messrs. E. W. King and Co.; Messrs. W. Artindale and Son; and Messrs. Harkness and Son (perennials).

Silver Banksian Medal.—To Mr. C. Engelmann; Messrs. S. Bide and Sons; Messrs. Gibson and Co.; and Messrs. G. Langster and Sons.

First Class Certificate.—To *Odontoglossum Doreen magnificum*, shown by Messrs. Mansell and Hatcher.

Award of Merit.—To *Cattleya Hesta magnifica*, shown by Messrs. Mansell and Hatcher; to *Odontoglossum Emperor Constantine*, shown by Sir Jeremiah Colman; and to *Iris Camma*, shown by Mr. George Yeld.

ANSWERS TO CORRESPONDENTS.

BLACK CURRANT FRUITS FALLING: A. W. M. In the absence of big bird mite it is difficult to assign a reason for the failure of the crop. A severe check imposed by very cold nights may be the cause of the trouble, or, it may be that the soil was unusually dry. *Black Currant* bushes thrive best in a rich and moderately moist rooting medium.

MOSS ON LAWNS: C. A. The appearance of moss in a lawn suggests that the drainage is at fault and the soil lacks lime. Do what is necessary to provide better drainage, rake out as much of the moss as possible by means of an iron rake and top dress the lawn with finely-sifted, rich soil to encourage the growth of the grass; with the soil mix lime in the proportion of one of lime to four of soil. Apply the mixture at the rate of two and a half cart loads per rood of lawn surface. At a little later date apply a light dressing of some good proprietary lawn manure and water it in.

THE
Gardeners' Chronicle

No. 1748.—SATURDAY, JUNE 26, 1920.

CONTENTS.

Aberdeen, new park for .. 313	Orchid notes and gleanings—
Arum Lilies in Cwm-donkin Park, Swansea .. 320	Miltonias at Chelsea .. 315
Books .. horticultural, sale of .. 314	Orchids at the Dell, Egham .. 315
Books, notices of—	Orchis Munbyana .. 315
Identification of Timbers .. 314	Potatos, sales of, in Ayrshire .. 313
Chamber of Horticulture .. 322	Paris, horticultural congresses in .. 314
Cusia grandiflora .. 313	Pyrethrum powder .. 314
Conifers, odours of .. 318	Saxifragas, the Lingulate .. 319
Douglas Fir, Chermes attacking .. 318	Societies—
Fish poisons as insecticides .. 313	Economic Biologists .. 321
"Gardeners' Chronicle," seventy-five years ago .. 314	Royal Horticultural Nationale d'Horticulture de France .. 313,321
Galega Hartlandii .. 319	United Hort. Ben. Prov. .. 321
Impatiens Herzogii .. 318	Trees and shrubs—
Land settlement, the progress of .. 313	Helichrysum rosmarinifolium .. 317
Law note:	Amelanchiers .. 317
Bulb trade dispute .. 322	Veronica dimensis .. 317
Market fruit garden, the .. 317	Wandsworth, flower show at .. 313
Moraea iridoloides Johnsonii .. 320	Week's work, the—
Nova Scotia, fruit-growing in .. 313	Flower garden, the .. 316
Obituary:	Houses under glass .. 316
Cypher, Mrs. J. .. 322	Hardy fruit garden, the .. 316
Ravn, F. K. .. 322	Kitchen garden, the .. 316
Onion smut .. 313	Orchid houses, the .. 316
	Plants under glass .. 316

ILLUSTRATIONS.

Arum Lilies (Richardias) in park at Swansea .. 320
Chermes Cooley on the Douglas Fir .. 318
Cusia grandiflora .. 313
Helichrysum rosmarinifolium .. 317
Saxifraga lingulate var Bellardii .. 319

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61.6°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Wednesday, June 23, 10 a.m.: Bar. 30.3; temp. 68°. Weather—Dull.

Fish Poisons as Insecticides. So long ago as 1877, in the Report on the Progress and Conditions of the Royal Gardens, Kew, Sir J. D. Hooker, commenting on a specimen of *Derris elliptica* from Singapore, made reference to the use of decoctions of the root of this plant as an effective insecticide for garden purposes. Chinese gardeners in Malaya are said to use the plant also for this purpose, and its value is also commented upon by Sir George Watt in his *Dictionary of the Economic Products of India*. The most recent, and, indeed, the first systematic investigation of preparations of *Derris* as insecticides made by Messrs. McIndoo, Sievers and Abbott* appears to demonstrate that this material is rich in promise as an insecticide for horticultural purposes. The genus *Derris* (syn *Deguelia*) belongs to the Papilionaceae and consists of a number of tropical, arborescent, climbing plants, numerous in the old world and frequently used for the purpose of killing fish. The authors above referred to have made comprehensive tests of the insecticidal value of six species and have found that in two of them, *Derris elliptica* and *D. uliginosa*, it is remarkably great. The toxic property of *Derris* roots is due to a resin-like substance which is readily extracted from them. Of the solvents used for extraction, alcohol appears to be the best and most economical. Such an extract used at the rate of 1 lb. to 200 gallons of water has remarkable insecticidal powers. Moreover,

derrin, as the resinous, toxic extract is called, is efficacious also in powdered form, and that not only as a means of destroying horticultural insect pests, but also against such pests as chicken lice and mites and house flies. With respect to house flies, the authors state that in one of their tests of several hundreds of flies set free in a room "dusted" with *derrin* seven days before, only three or four were alive two days afterward. Used as dust *derrin* was effective with green Apple aphid (*Aphis pomi*) but failed against mealy bug and red spider. Used as a spray it was no less effective in destroying green Apple aphid and in so weak a concentration as 1 lb. to 200 gallons of water, it destroyed completely young Tent caterpillars (*Melanosoma americana*). It also proved successful as a destroyer of the larva of Cabbage loopers (*Autographa brassicae*). The efficacy of dusting or spraying with *derrin* against *Aphis* was well shown by an experiment in which the mode of action of this material was observed on aphides affecting pot plants. It was found that the aphides began to fall from the plants within an hour of the application of the powder, and that though they were still alive when they fell, all were dead by the third day. The authors conclude that the extract of *Derris* serves both as a contact and as a stomach poison and that it acts in the former case by particles of it adhering to the bodies of the insects and giving off exhalations which, passing into the spiracles, exert their toxic effect in the tissues of the body. In view of the striking results obtained by this insecticide, it is desirable that further comparative tests should be made, for in view of the high cost of nicotine it would be a boon to gardeners were it to be shown that *derrin* is an efficient substitute. It remains, however, to be seen whether it could be put on the market at a sufficiently low price. This aspect of the matter might well be investigated by the Agricultural Departments of our tropical Colonies and Dependencies.

Fruit-Growing in Nova Scotia.—The fruit crop in Nova Scotia for the year 1919 shows an increase of from 50 per cent. to 250 per cent. The total yield was 1,500,000 barrels.

National Rose Society's Exhibition.—The National Rose Society's Metropolitan Exhibition, which is to be held in the Royal Botanic Society's Gardens, Regent's Park, on Thursday, July 1, promises to be a great success. Entries in many of the classes are numerous, and the recent rains should enable growers to exhibit fine blooms.

The Progress of Land Settlement.—According to the returns of May 31, made by the Ministry of Agriculture, the progress made in settling ex-Servicemen on the land may be summarised thus:—Applications (England and Wales), 36,851, for 639,025 acres; approved applicants, 15,501; applicants to be interviewed, 7,818; holdings provided since December 18, 1918, 7,133; acreage 105,505; total area acquired, 198,751 acres.

Sale of Growing Potatoes in Ayrshire.—The first auction sale of growing Potatoes in Ayrshire for this season took place on June 17, on several farms near Girvan. The variety on each of the farms was *Epicure*, and, as the land is in a high state of cultivation, high prices were obtained. The sales took place in the barns of the respective growers, with closed doors. The average price per acre obtained was £142 at Wallen, £111 at Jamieston, and £97 at Robstone.

Flower Show at Wandsworth.—A flower show and industrial exhibition will be held on Saturday, July 24, in the Memorial Hall, High Street, Wandsworth. The exhibition will be under the auspices of the South-West London Adult School Federation, and has for its object the encour-

agement of a greater interest in the cultivation of flowers and vegetables and the care of gardens in the south-western district of the metropolis. The secretary is Mr. P. W. Bennett, 24, Jedburgh Street, Battersea, S.W.11.

Hazlehead Estate Acquired by Aberdeen.—A very important decision was arrived at by the Aberdeen Town Council on Friday, 11th inst., when it was unanimously resolved to acquire the fine estate of Hazlehead. Adjoining the western suburbs of the city, its acquisition should have a great bearing on the development of Aberdeen, a development which has suffered greatly owing to the failure of past Town Councils to acquire land in the vicinity of the city when opportunities arose. None knows better than the present-day citizens of Aberdeen the evil effects of the short-sighted policy followed by the city fathers some forty or fifty years ago. Large sums have had to be paid when public improvements necessitated the acquisition even of strips and patches of land which could have been acquired years ago for very modest sums. Hazlehead comprises a mansion house with over 14 acres of land, four farms, market gardens, nurseries, crofts, and Sunnyside House and grounds of 10 acres—in all 832 acres. The total rental is £1,278 16s. 5d., and the purchase price is £40,000. There are magnificent old woods on the estate and although the mansion house of Hazlehead might be in better condition, the surrounding policies are exceedingly fine. Not only will the estate form a fine lung to Aberdeen, but from a commercial point of view its acquisition should prove a sound investment for the city.

Onion Smut.—This American pest has appeared in the north-east of England and in Northamptonshire. It attacks plants in the seedling stage, appearing as black streaks on either the leaves or bulb. If the soil once becomes infected, healthy seed sown in following seasons will give rise to plants infected at an early stage of their growth. Fortunately, Onion plants raised from healthy seed in clean soil are not attacked when planted out in infected ground. Growers who have sown foreign seed, especially of the white varieties, or are growing Onions on land where they have been cultivated during the past two or three years, should make a careful examination of the young plants for signs of this disease. The Ministry of Agriculture has issued an Order requiring that the presence of Onion Smut be immediately notified to the Ministry on its discovery. In order to prevent its spread, the Order provides that no Onion seed shall be planted on land on which the disease has previously occurred, and only those seedlings which have been grown on non-infected land may be used for planting in infected soil. No Onions shall be removed from an infected place until they have been certified by an Inspector to be free from the disease and have been washed free from soil.

National Horticultural Society of France.—We are glad to welcome the re-appearance of another old publication, which was suspended during the war. The annual *Liste Générale des Membres* of the above Society has just reached us for the first time since 1914. On turning over its pages we notice many changes, although perhaps fewer than might have been expected. The leading officials from M. Viger, the President, to M. Tesmer, the Assistant Librarian, are all the same, excepting the Vice-Presidents and minor secretaries. The 1920 issue contains a report of the general meeting held on December 18 last, which gives the results of the elections for the various offices. There is, also, a report of the work of the society during the period covered by the war, with a list and brief notes of those members who have passed away in the interval. The rules and regulations of the society occupy 16 pages, then follow the composition of the various "Sections," or, as we should call them, the Committees. The remainder of this volume, which runs into 253 pages, only fifteen less than the 1914 issue, is devoted to the names and addresses of the various grades of members, beginning with the lady patronesses, members of honour, corresponding members, etc. On looking these over we find that all the former

* *Derris* as an Insecticide. *Journal of Agricultural Research*, Vol. XVII, No. 5, 1919.

members of enemy origin have had their names eliminated from the lists. An interesting addition, quite an innovation, is made in appending to the members' names not only their civil decorations as heretofore, but their war honours. The Council of the Society, instead of being purely metropolitan, is a representative one of the whole of French horticulture, provincial and otherwise.

Pyrethrum Powder.—This useful and safe insecticide is now mainly produced in Japan, although before the war large supplies were forthcoming from Dalmatia, Persia and certain parts of Eastern Europe. The powder is made from the dried heads of *Chrysanthemum parthenium* and the centre of production in Japan is in the Okayama and Wakayama Kens in the Kobe district, the port of Kobe exporting practically the whole output. The area under cultivation in Japan rose from 2,760 acres in 1914 to 10,712 acres and 10,474 acres respectively in 1917 and 1918, the greatest yield being in 1918, when the crop was estimated at 7,720,000 lbs. According to the *Journal of the Royal Society of Arts*, in the year 1913, the largest foreign purchaser of the Japanese flowers was Great Britain, which took 184,930 lb., while China purchased the largest amount of insect powder, 77,034 lb. During that year the exportation to the United States amounted to only 30,376 lb. of flowers and 16,027 lb. of powder. In 1918, however, the United States was by far the largest purchaser of flowers, exports to that country amounting to 2,721,993 lb., or 84 per cent. of the total exportation. China, however, is still the leading purchaser of insect powders, exports to that country amounting to 206,682 lb. in 1918, while the export of powder to the United Kingdom amounted to but 120,949 lb., or about 14 per cent. of the total exportation. Mainly owing to a shortage of food stuffs, many farmers in Japan have abandoned the cultivation of Pyrethrum, and are growing cereals.

President's Prize at York Gala.—We understand that the prize offered by Mr. James Melrose, President of the York Gala Society, for the best exhibit at the recent show, was divided between Messrs. Sutton and Sons, Messrs. Mansell and Hatcher and Messrs. Armstrong and Brown.

"The Gardeners' Chronicle" Seventy-five Years Ago.—*The Pink.*—This is a flower that is cultivated and admired by everybody, and now that a better system of saving seed is adopted than formerly, we may expect a rapid advance; in fact, a visible improvement has taken place within the last few years. There appears to be some difference of opinion in various parts of the country as to what really ought to be the properties of a good Pink. Lancashire and Yorkshire exhibit them much thinner than the southern growers, and especially at Sheffield, where it is by no means requisite that a flower should possess more than 8 or 10 petals, whilst they deride the fuller flowers of the Metropolis and its vicinity as "mops." I am aware that the Pink has been decanted by many florists, and that different views have been taken as to the essential and requisite properties. In my opinion the Pink ought, in the first place, to be rose-leaved, whether it is plain or laced. This I take to be a *sine qua non*, for however long we have been without them, scarcely any florist would advocate a ragged-edged flower against such sorts as Creed's President, Jones's Huntsman, and Beauty of Blackburn. It will also be conceded that a perfectly-laced flower, each petal truly and neatly margined with red or purple, or any other perfectly distinct colour, contrasting well with the pure white of the ground colour, will be preferable to one in which some of the petals are margined, others only partly so, whilst some may be without it altogether, forming an imperfect and irregular flower. Neither do I imagine that amongst florists there would be two opinions as to dull or impure flowers, contrasting with those of brighter colours. Now these are points known and acknowledged by professed florists during the past half century, however they may be laid down as this or the other person's. *W. Gard. Chron., June 28, 1845.*

SALE OF HORTICULTURAL AND BOTANICAL BOOKS.

ON Thursday, the 17th inst., a large number of valuable works from the library of Mr. A. W. Paul, of Broxbourne, Herts, was offered for sale by public auction by Messrs. Sotheby, Wilkinson and Hodge at their sale room in New Bond Street. There were about 200 lots (as notified on p. 290) and the total realised at the sale must have been not much less than £2,000. The bidding was almost wholly confined to the trade; at times great keenness was shown for the acquisition of some of the bibliographical rarities, and the offers were swift and eager.

The prices and purchasers of some of the lots may interest those readers who devote attention to gardening literature. Unfortunately, many of the rarest and most valuable old horticultural books are going across the Atlantic, and this is one reason for the continual rise in prices:—

The Botanical Register, vol. i.-xiii. and vol. xiv.-xxviii., fetched £29 (Gibbs); *Flore des Serres*, vol. i.-xxiii., £17 10s. (Humphreys); Loddiges' *Botanical Cabinet*, £10 (Wheldon); *Nouvelle Iconographie des Camellias*, £15 (Edwards); Sowerby's *English Botany*, £12; Sweet's *Geraniaceae*, £21 10s. (Gregory); Sweet's *British Flower Garden*, 7 vols., £25 10s. (Gregory); Andrew's *Botanist's Repository*, £13 5s. (Gregory); Jacquin's *Oraxis Monographia*, £15 10s. (Quaritch); Repton's *Landscape Gardening*, £18 10s. (Maggs); Berlése's *Inconographie du genre Camellia*, £27 (Bumpus); Bonpland's *Description des plantes rare cultivées à Malmaison*, £56 (Quaritch); Decandolle's *Histoire des Plantes Grasses*, £22 (Quaritch); Ehret's *Plantae et Papilionae Rariores Depictae*, £20 (Quaritch); Elwes's *Monograph of the Genus Lilium*, £14 15s. (Bumpus); Fuchs's *De Historia Stirpium*, £15 (Quaritch); Furber's *Floral Calendar* (12 large coloured plates of flowers), £45 (Quaritch); *Hortus Sanitatis*, £28 10s. (Quaritch); *L'Illustration Horticole*, vol. 1-43, £18 10s. (Quaritch); Mary Lawrence's, *A Collection of Roses*, £82 (Bumpus); Merian's *Florilegium*, £12 15s. (Quaritch); a copy of Miller's *Gardeners' Dictionary*—extended to 12 vols. by extra illustrations, about 2,000 in all—£38 (Spencer); *Hortus Floridus*, £29 (Wesley); Redouté's *Les Liliacées*, 8 vols., £160 (Bumpus); Redouté's *Les Roses*, £165 (Bumpus); *Theatrum Florae*, £5 5s. (Quaritch); Thornton's *Temple of Flora*, £29 (Spencer); Trev's *Plantae Selectae*, £10 15s. (Quaritch); Turner's *Herbal*, £16 10s. (Thorpe); Vallet's *Le Jardin du Roy Henri IV.*, £20 (Edwards); and Ventenat's *Jardin de la Malmaison*, £61 (Quaritch).

There were many other lots which realised lower prices than those mentioned, but which were of equal interest to collector or literary workers. Such authors as Sweetius, Rea, Siebold, Parkinson, Michaux, Hooker, Gerarde, Dodoens, Dalechamps, Brumfels, Crescentio, and Paxton were well represented.

NOTICES OF BOOKS.

The Identification of Timbers.*

THIS work, devised for the use of students of forestry, will prove of real assistance to those who desire to be able to identify timbers. The characteristic features of each kind of wood as shown in transverse and longitudinal sections are described for all the common timber trees grown in this country, and under each tree is given the means of distinguishing it from others with which the tree in question is likely to be confused. The work is illustrated by three plates showing under a magnification of fifty diameters the structure of the following:—Weymouth Pine, Birch, Lime, Larch, Scots Pine, Douglas Fir, Elm, Wych Elm and False Acacia. The book concludes with useful artificial keys for the identification of the broad-leaved and of the coniferous trees described in the text.

* *A Guide to the Identification of our More Useful Timbers.* By Herbert Stone. (Cambridge University Press. 7s. 6d. net.)

HORTICULTURAL CONGRESSES IN PARIS.

DURING the week of the Spring Exhibition in Paris, there were numerous horticultural meetings. The most important was the Conference of French Rose growers, which had not been held for five years previously. Dr. Viger presided over the meeting.

M. Jacques de Vilmorin showed about eighty botanical types of the genus *Rosa*, from the Fruticetum at Les Barres. He called special attention to the following species as material for hybridisation:—*Rosa Hugonis*, yellow flowered; *R. Moyesii*, red; *R. Willmottiae*, pink; *R. sericea* var. *pteraacantha*, remarkable for its ornamental red spines; *R. ferruginea*, with purple foliage; *R. longiscuspis*, with long leaves.

M. Pernet-Ducher next passed in review, in a very detailed account, all the new *Roses* placed in commerce from 1913 to 1918, giving his own personal observations on the merits and demerits of each variety. His paper will be published in full in the *Bulletin de la Société Française des Roséristes*. On the subject of synonyms, the Conference decided to retain the name originally given to a variety by the raisers, without translation or other change.

At the Horticultural Congress held the preceding day (also under the Presidency of Dr. Viger), a monograph of the genus *Grevillea*, by the late M. van den Heede, was read. An important discussion followed the reading of a paper by M. Poher, Commercial Inspector of the Orleans Railway Company, on "The Part played by Means of Transport in the Development of Horticulture and the Export of Horticultural Products." MM. Duval, Rivoire, Cayeux, and others took part in the discussion. The efforts made in the interests of the Trade by the French Railway Companies, particularly by the Orleans Railway, were unanimously acknowledged. The questions of the packing of produce and refrigeration were touched upon, and a resolution was passed regarding the use of ferries-boats to facilitate export to England. M. Magnien read a paper on the organisation of horticultural instruction in the elementary schools.

After this the burning question of the creation and protection of novelties—also discussed at the Rose-growers' Congress—was canvassed. M. Lemoine (Nancy) advocated, in order that the raiser might receive a legitimate profit on his production, the imposition on each sale for a certain number of years of a percentage, to be deposited to the credit of the raiser with an international organisation such as the International Horticultural Federation. He cited in support of his proposal the method of collection of the luxury tax as practiced in France, which yielded satisfactory results. M. Nonin proposed that there should be a fee for the registration of novelties, sufficiently high to eliminate those of no value. He also suggested that the appropriate association in each country should collect all the necessary particulars of each novelty registered, and advertise the fact of registration widely in the horticultural Press. By way of penalty, all firms refusing to pay the fee should be placed on a "black list." M. Nomblot summarised the various aspects of the question:—(1) creation of the novelty; (2) its protection; (3) placing it on the market. He urged that protection in the country of origin be considered first, and then protection in other countries.

In order to attempt the solution of this important question, a general conference of delegates from the various Societies and Federations of Horticulturists in France took place on Friday, June 4. At the Congress of the Fédération Horticole Professionnelle Internationale, held recently at Ghent, it had been decided that the names and descriptions of various novelties should be sent, on the responsibility of the raisers, to the International Union, and immediately sent for verification to the National Societies interested.

MM. Nomblot, Cayeux, Lemoine, Nonin, and others advocated a reverse procedure, namely, the deposit of the name, with an example of the plant, with the interested Society; then with the National Bureau; and finally, with the International Bureau.

MM. Pernet, Rivoiré, and Turbat, preferred the first method, as being more rapid. This opinion finally prevailed, but the matter was left to the option of those interested to inscribe their novelties at the National or the International bureau, whichever they preferred. The discussion was then closed, and a further conference of the delegates, with the addition of representatives of the Museum of Natural History, was fixed for July 8.

The International Competition of Roses at Bagatelle took place on the 8th of June, presided over by M. Deville, Municipal Councillor. A Gold Medal was awarded to the Rose Souvenir de Claudius Pernet, from M. Pernet-Ducher; and to Frances Gaunt, from Messrs. Alex. Dickson and Sons, Newtownards, Ireland. A First-Class Certificate was awarded to Rose Bénédicte Séguin, sent by M. Pernet-Ducher; and Certificates of Merit were awarded to Rose Président Parmentier (M. Sauvagoët), Rose La France Victorieux (Roseraie de l'Hay), Rose Mermaid (W. Paul and Sons, Waltham Cross, Ltd.) and Rose Comtesse de Cassagnac (M. Guillot).

Among other meetings which took place in Paris the same week, we may mention those of the Fédération des Syndicats Horticoles, Fédération des Sociétés d'Horticulture, Chambre Syndicale des Marchands Gramiers, Union Commerciale des Horticulteurs; and the General Meeting of the Old Students' Association of the National School of Horticulture at Versailles.

ORCHID NOTES AND GLEANINGS.

MILTONIAS AT CHELSEA.

ONLY a few years ago the forms of *Miltonia vexillaria*, with their great variety and beauty, were the sole representatives of the large-flowered section in gardens, but the hybridist has evolved a marvellously beautiful class, which put the forms of *M. vexillaria* in the shade, fine as are the Lyoth class, raised by Messrs. Charlesworth and Co., and which they have excelled in *M. Charlesworthii* and others, many of which were well displayed in their group. In Messrs. McBean's group, at Chelsea, the white and bluish-white forms of *M. Hyeana*, with their large, triangular blotch of ruby-red or black at the base of the lip, were much admired, contrasting well with the deep vinous-purple *Odontoglossum illustrissimum*, Shrubby variety, and *O. eximium Leonora* behind them. The *M. memoria Crown Princess Margaret*, for which Messrs. Sanders obtained an Award of Merit, was of the same class, the clear white flowers, slightly tinged with pearly-pink, being finely displayed by the nearly-black colouring of the base of the lip. Messrs. Armstrong and Brown had many fine forms. One of the most remarkable forms was *M. Bleuana Reine Elisabeth* in Messrs. Charlesworth's group.

ORCHIDS AT THE DELL, EGBAM.

It is satisfactory to note that Baron Bruno Schröder's famous collection, in the care of Mr. J. E. Shill, has passed through the troublesome time satisfactorily, although signs of damage due to shortage of fuel and the effects of the absence on war service of most of the staff are still visible. The compact block of houses, in which the rain-water supply in each division is from an outside tank holding 35,000 gallons, is of unusual interest. Mr. Shill has a very successful arrangement of seed-raising cases, in which the closely-arranged seed-pots, their surfaces plentifully sprinkled with young plants in their first stage, are seen. The surface on which the seeds are sown is covered with soft netting, with small open squares, and similar to that sometimes used for blinds. This netting is found to be much more satisfactory than the finer material commonly used, and when sowing the seeds on its surface a slight sprinkling of very fine, live *Sphagnum* moss is added, only partly covering the canvas and the seeds on it. This is said to have a salutary effect by naturally regulating the moisture around the seeds and freshly raised seedlings. Certainly, the evidence of the condition of seedlings at The Dell supports the theory.

Brasso-Cattleyas, Cattleyas, and Laelio-Cattleyas are first favourites, and many fine examples raised at The Dell are now in bloom, while, during the past two months, over 2,000 Laelio-Cattleya and Cattleyas have flowered. Among the novelties noted were Laelio-Cattleya Mrs. Willoughby Pemberton, raised between L.-C. Baroness Enun and L.-C. eximia, a noble rose flower with ruby-crimson lip; Brasso-Laelio-Cattleya Schroglossa (E.-L.-C. Ardermicæ x C. Schröderæ), a large and beautiful light rose flower; and of others previously recorded, Mrs. Jas. Watson, The Dell Variety, Laelio-Cattleya San Juan, L.-C. Ivanhoe, and some good white Cattleyas were noted, with a large batch of *C. Hardyana alba* in bloom.

The new *Odontoglossum* range constructed by Messrs. Armstrong and Brown has been a great success, and the plants it contains are in grand condition. Among them it was interesting to see *O. crispum apiatium*, O.c. Ballantinei, O.c. Schröderianum, O.c. Veitchianum, O.c. Sandersianum and other fine forms, for which the late Baron Schröder obtained First-Class Certificates in the early 'eighties, still in vigour. Of the hybrids in bloom, *O. eximium*, The Dell variety, is a grandly coloured form. Good xanthodes varieties of several classes are in excellent condition with sufficient richly coloured

O. latifolia group, about 2½ ft. high or more. The flower spikes are 3 ins. to 9 ins. long, and the blooms are of a rich, dark purple and not spotted. The leaves are similar to those of *O. latifolia*, but of a uniform green without markings. Plants of various sizes in a group seem to be quite at home in a moist, peaty soil in the rocky at Kew. The species is a native of Algeria. In a cool, moist soil, or that of a peaty nature, the above and several other species of *Orchis* would make an interesting and showy adjunct to any garden, and they are especially suitable for planting in boggy ground or for association with water in rock gardens, such as the dripping pools and streams which most rockeries include. *J. P.*

CLUSIA GRANDIFLORA.

ONE of the most interesting, as well as one of the most beautiful, of plants at the Cambridge Botanic Gardens is *Clusia grandiflora*, a specimen which has been growing there for thirty-two years in the stove, and is now 11 ft. high. For



FIG. 145.—CLUSIA GRANDIFLORA, NOW FLOWERING IN THE BOTANIC GARDENS, CAMBRIDGE.

Odontodas to add to the effect. At one end is a healthy batch of rare Miltonias, the superb *M. Hyeana*, The Dell variety, with its broad, clear white flowers with large, triangular, almost black mask on the lip, being the finest of its class, although *M. The Baroness*, a near ally, is comparable.

Time and circumstances have wrought many changes in The Dell Collection. The old specimens of *Coelogyne*, *Cypripedium* and other early favourites have passed away, some of them, like the *Phalaenopsis*, which never did much at The Dell, having failed to survive the cold of last winter, to the regret of the owner. But in these days of hybrid-raising vacancies are soon filled, and with successful raisers the trouble is to find room for all they desire to accommodate. The Dell houses are full now, and what is to happen when the thousands of small seedlings come to maturity is a problem. In any case we may look forward to some notable acquisitions amongst these unflowered plants, for the parents are of the highest quality and pedigree.

ORCHIS MUNBYANA.

THERE seems to be no record that this species of *Orchis* has been previously introduced. It is a handsome and stately plant belonging to the

some time past it has been producing its handsome large, white, rose-tinted flowers (see Fig. 145), each bloom from seven to eight inches in diameter. The flowers are fleshy, with a delicate white fringe around the centre of a deep yellow, discoid, gummy mass, which is composed of a very large number of agglutinated staminodes overlaid with soft resin. Three flowers are usually borne at the end of a shoot, the central one opening first and hiding the two side buds, which open later.

Clusia grandiflora is a native of Guiana, and, like other members of the same genus, it is dioecious and of an epiphytic nature, embracing other trees, and is said to often ultimately strangle them by means of its roots. The large, handsome, coriaceous leaves, some of which are 18 inches long and 7½ inches wide, are distinctly petioled, obovate, or elliptic obovate, and borne in clusters towards the end of the twigs.

The cultivation of *C. grandiflora* is not difficult, provided the roots and the atmosphere are kept moist; it succeeds in a rooting medium of ordinary loam and peat. It may be propagated from cuttings, but these are rather slow rooting, often taking six months to establish. A point in favour of the plant is that it is not in any way susceptible to insect pests. *F. G. Preston, Cambridge.*

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow.

Bulbophyllum.—The members of this family of Orchids are usually held in higher esteem by botanists than by the average amateur cultivator, but signs are apparent that the plants are again in demand. The singularity of form and the peculiar structure of the flowers, render them most interesting, while the colour and scent of some species are very pleasing. Perhaps the most attractive garden species is *B. Ericssonii*, a strong-growing plant with large, umbel-like clusters of flowers. The small *B. barbigerum*, *B. Lobbii*, *B. Gentilii*, *B. grandiflorum* and *B. fuscum* should be grown in the warm house, but *B. careyanum*, *B. cupreum*, *B. comosum*, *B. Dayanum* and *B. rigidum* will succeed in the *Cattleya* or intermediate division. With a few exceptions, *Bulbophyllums* may be grown suspended from the roof-rafters; a wire stretched the whole length of the house, made fast at either end and to a few of the rafters, provides an ideal position for a large number of small-growing Orchids. Plants suspended need to be watched very closely for watering, especially throughout the summer, when, if neglected, they are liable to suffer from drought. Species that have long, creeping rhizomes and are more or less rambling in habit need to be grown in pans or teak-wood baskets of various sizes, but much may be done to obtain compact specimens by pegging the growths on to the compost. Certain species, of which the quaint *B. barbigerum* may be cited as an example, thrive best in small baskets or pans, with very little compost about the roots.

Scuticaria.—Two species, viz., *S. Hadwenii* and *S. Steelii*, are in cultivation; the former should be grown in the intermediate house and the latter in the warm division. Teak wood rafts or baskets are usually chosen for the reception of their roots and very little soil is needed. Fresh compost should be provided when new growth begins. Suspend the baskets from the roof rafters, and when the plants are in active growth supply them with water liberally, but after the active growing season is over the compost may be kept on the dry side.

THE HARDY FRUIT GARDEN.

By T. PATEMAN, Gardener to C. A. CAIN, Esq., J.P.,
The Node, Codicote, Welwyn, Hertfordshire.

Mulching Bush Apple Trees.—Trees that have set a heavy crop of fruit may now be given a top-dressing of short manure, but the mulch should not be sufficiently heavy to exclude air from the roots. Weak liquid manure may be supplied copiously. This will greatly assist in the development of the fruit; failing this afford a dressing of some reliable fertiliser. The best time to apply manures to fruit trees is after heavy rains, when the soil is in a thoroughly moist condition. Should the weather continue dry it may be found necessary to water the trees several hours before applying the liquid manure or fertiliser. Trees that have failed to crop should not be mulched or given a nitrogenous fertiliser; manure rich in phosphates will be best for them.

Raspberries.—Raspberries suffer considerably from the effects of drought, for the fruit becomes hard and all pips. No crop responds to watering better than the Raspberry, and the best results are obtained when the water is applied close up to and around the canes. A slight dusting of an approved fertiliser before watering is of considerable benefit where the crop promises to be a heavy one. Presuming the beds were surface dressed with manure or leaf-mould as previously advised, the latter should be slightly moved by the use of a fork several hours after the watering is done.

THE KITCHEN GARDEN.

By H. WHEELER, Gardener to Mrs. JENNER, Wenvoe
Castle, near Cardiff.

Asparagus.—The cutting of Asparagus should cease at about this time, to enable the plants to build up strong crowns for production next season. As the shoots gain in height and strength they should be supported either by placing Pea sticks amongst them or by tying each stem separately to a single stake. Occasional light dressings of suitable concentrated fertiliser should be applied, and in the absence of rain, washed well into the soil by watering. Keep the beds free from weeds by hand weeding; do not use the hoe, as this might cause damage to the young growths.

Celery.—The plants intended to form the maincrop should be ready for transplanting in trenches prepared for them. Before commencing to do this give the plants a thorough watering, as they should not be moved with the roots in a dry state. Lift the plants with as much soil adhering to the roots as it is possible to retain, and immediately planting is done water them freely. Attention is more easily given the plants when they are grown in single rows; but it economises space if two or three rows are planted in each trench. In either case a distance of one foot apart each way should be allowed. To prevent attacks of Celery fly, dust the rows frequently with soot in the early mornings, whilst the foliage is still damp with dew.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY,
M.P., Ford Manor, Lingfield, Surrey.

Pineapples.—The development of Queen Pines in the early house will be greatly facilitated by the increased amount of sun-heat, and the long days justify a higher temperature when the houses are closed in the afternoon. Use the syringe freely for damping the surfaces of the beds, and also for charging the lower axils of the leaves with weak liquid manure and guano water. Careful attention should be given to watering, which is necessary at least twice a week; much depends upon the conditions, structure of the house, compost and plunging material, which may be kept moist with warm water if it becomes too dry. Successional plants in various stages of development require the same careful attention. The fruits being required at a later date these plants need not be grown in such a high temperature as the earlier ones. Suckers should be reduced to two on each plant.

Later Pineapples.—The length of days now justifies high culture and, as no after management can restore drawn plants, admit a little night air and exercise great care in the day ventilation. As the pots become full of roots more water will be required, and diluted stimulants may be given regularly at a temperature equal to that of the bed. Economise fire-heat and retain moisture by light shading. The treatment of suckers should be similar to that for growing stock, but a little more shade and bottom heat should be given to induce the plants to root quickly.

Strawberries for Forcing.—Preparations for layering stock for next season's supply should receive attention as soon as runners are available for layering. Success depends upon having the plants in their fruiting pots early in summer to secure large, plump crowns for forcing. Many layer the earliest batch direct into 5-inch pots, and in these times this method has much to recommend it, as a considerable amount of labour is saved thereby, but unless every care is taken in watering, the soil is in some danger of becoming soured. For layering large quantities 60-sized pots have many advantages over larger receptacles, especially in dry weather; the pots may be placed closely together in two or three lines between every other row of plants, a good strong runner being secured on each. In a fortnight or three weeks' time the plants will be ready for transferring to their fruiting pots.

PLANTS UNDER GLASS.

By JOHN COURTS, Foreman, Royal Botanic Gardens,
Kew.

Climbers.—Climbing plants in the stove and greenhouse will require constant attention as regards tying, thinning and training. Climbers that are subject to the attacks of Mealy Bug or other insect pests may be kept clean by a vigorous use of the syringe, which may be used twice a day when the weather is bright.

Fittonia Verschaffeltii and **F. argyryneura.**—These plants have for many years been grown in plant stoves, being commonly used for covering the surface of large pots and tubs, as well as for carpeting beds and making an edging to borders under stages, for which purpose they are admirably adapted as they naturally do well in partial shade. They also prove useful for house decoration. *F. argyryneura* is especially pretty for the decoration of the breakfast or lunch table, its silver veined leaves giving a cool effect during hot weather. For use in this way they should be grown in small shallow pans, which may be put into suitable receptacles for the table. *Fittonias* root readily in a warm propagating case.

Brunfelsia (syn. **Francisea**).—Several species of *Brunfelsia* are very old inhabitants of our plant houses, and always very popular, as they flower with wonderful freedom, their flowers varying in colour from purple to bluish-violet, while in one species, *B. americana*, the flowers open yellow and fade off to ivory white. *B. calycina*, the large-flowered *B. macrantha* and *B. americana* are the species most commonly grown; these are easily propagated now by means of cuttings made from young, firm, shoots. Insert the cuttings in a sandy compost and plunge the pots in a propagating case with a bottom heat of 65° to 70°. *Brunfelsias* grow well in medium loam with a little fibrous peat added. They require an ordinary stove temperature during their growing period, and when in flower may with advantage be removed to a cooler and drier house.

THE FLOWER GARDEN.

By SIDNEY LEOG, Gardener to the Dowager Lady
NUNBURNHOLME, Warton Priory, Yorkshire.

Alpines.—The seed of many Alpines is ripe and, where it is desired to perpetuate varieties, no delay should occur in sowing the seed after harvesting it. Care should be taken to have the compost composed of materials suitable to the requirements of the different species. It is convenient to sow the seed in well-drained pots, which have been previously watered; place them in a cool frame and afford shade until after germination of the seed. Where it is possible to do so with success, I advocate sowing the seed of many Alpines in their permanent stations.

Convallaria.—Afford plantations of *Lily-of-the-Valley* copious waterings with diluted liquid cow manure, to insure good flowering crowns for next season. In hot sandy soils the best inflorescences are usually produced behind a north wall.

Amaryllis Belladonna.—The successful flowering of the *Belladonna Lily* depends to a large extent on the freedom with which this bulbous plant produces foliage. During dry weather attention to watering and occasionally feeding of the plants with liquid manure will repay the cultivator. In due course, remove the foliage as it ripens and clean the border before the flower spikes push through the soil.

Trollius.—All the forms of *Trollius* have been exceptionally fine this season, the wet spring having suited them admirably. *Newry Giant* is a vigorous yellow variety, whilst *Orange Globe* is true to its name. A moist position suits their requirements; however, when planted in the ordinary border, the roots penetrate a considerable depth for moisture. September is the best time to increase them by division. Seeds which are now ripening take several months to vegetate naturally. *Trollius* are adaptable both to collective and individual planting by the side of streams.

THE MARKET FRUIT GARDEN.

IMPROVED LIME-SULPHUR WASH.

WHEN spraying with a fungicide, such as lime-sulphur, the object is to coat the leaves and fruit with a protective film of chemicals which prevents the germination of spores of fungi which fall on those parts. Unfortunately, fungicides have not good wetting or spreading qualities, and the result of their application, no matter how fine the spray, is a collection of little spots of chemical on the surface of the leaves, instead of an unbroken film. The spaces between these spots remain unprotected. The difficulty cannot be overcome by adding soap to the wash, as is done in the case of some insecticides, because the lime in the lime-sulphur would coagulate the soap. Considerable importance must therefore be attached to the discovery that saponin, a vegetable product, may be added to lime-sulphur to improve its spreading powers. Even so small a proportion as .05 per cent. of saponin in the mixed wash causes it to dry on the leaves as a thin, continuous layer. Attention was drawn to this discovery by Prof. E. S. Salmon at the recent conference on fruit culture held at Wye College; but he mentioned that it should be tried by growers only on a small scale, until further experiments had proved whether or not the addition of saponin makes the lime-sulphur more likely to be washed off by rain.

Saponin is now on the market in the form of a proprietary article known as Saponex, which contains 5 per cent. of saponin. The makers recommend that this should be used at the rate of $\frac{1}{2}$ to 1 gallon to 50 gallons of diluted lime-sulphur wash. I have made an experiment with Saponex, and find that it certainly does what is claimed for it in the way of making the wash dry on as an unbroken film. The improvement is not very obvious to the naked eye, but it is revealed at once under a strong magnifying glass.

Should saponin survive further tests, it would seem to open up the possibility of getting a satisfactory combined fungicide and aphid wash. It is, of course, allowable to add nicotine to lime-sulphur as it is; but without a spreading agent the result is not so satisfactory. The addition of saponin ought to give the nicotine a better chance of doing good. *Market Grower.*

TREES AND SHRUBS.

VERONICA EDINENSIS.

FOR a few years past a shrubby Veronica has been in commerce under the above name. It has been regarded as a hybrid of *V. Hectori*, but no one, so far as I know, has suggested the other parent. So far as the foliage goes, and the bifarious pubescence extending down the stem from the edges of the leaves, *V. anomala* would suggest the other parent. In size and shape the leaves of *V. edinensis* are intermediate between those of *V. anomala* and the reverted leaves of *V. Hectori*. Here the similarity ends, because *V. edinensis* does not bloom on the branches that bear spreading leaves. After a plant attains some years of age it begins to bloom on whipcord-like branches with smaller, shorter, adpressed leaves more closely resembling those of *V. Hectori*, as it is best known. The flowers are white and produced in short, spicate heads, as in the last-named, close to the ends of the twigs I would suggest that *V. edinensis* is merely a juvenile form of *V. Hectori*. The latter readily reverts to the juvenile state when grown in slight shade, and though the leaves are narrower, both have one to three teeth on each side of a leaf. Cheeseman had not seen the leaves of young plants of *V. Hectori*, when he described it, though he rightly placed it in a group having dimorphic leaves. Hector's *Speedwell* is figured in the *Bot. Mag.*, t. 7415, and *Veronica anomala* in the same publication, t. 7360. *V. Hectori* comes from the South Island of New Zealand and forms a shrub up to 2 ft. high. *V. anomala* comes from the same dis-

trict, and good specimens may attain to a height of 5 ft. *J. F.*

HELICHRYSUM ROSMARINIFOLIUM.

THIS shrub is fairly well known in southern gardens as *Ozothamnus rosmarinifolius*, and it is popularly known as Snow-in-Summer, owing to its free flowering habit and white flowers. A native of Tasmania, it requires protection in all but the most favoured situations, though here it passes through the winter entirely unprotected and unharmed. The specimen illustrated (Fig. 146) is growing in a border, in cultivated ground, where the species thrives better than it does when planted out as a lawn specimen on grass. It is a rapid-growing shrub, easily propagated from cuttings, and, as it is

richness of the forests of Eastern North America in flowering shrubs and small trees; the Hawthorns in bewildering numbers of species, the Plums of the Missouri-Texas region, the fragrant Sunnah (*Rhus canadensis*) and the flowering Dog wood (*Cornus florida*), the Azaleas of the S. Atlantic and Gulf States and the "Laurel," *Kalmia latifolia*, which makes so brave a show in the Arboretum and grows wild from New Brunswick to Louisiana. Of species of *Amelanchier*, North America may boast almost a monopoly—Europe possessing naturally only one poor shrubby species and China and Japan also only one. This genus ranges wide over North America with many species—from the Atlantic to the Pacific, from Newfoundland to the Gulf States. Some are trees and some shrubs, large or small. Many species



FIG. 146.—HELICHRYSUM ROSMARINIFOLIUM IN THE GARDENS AT FOTA, CORK.

not long-lived, a few young plants should always be held in reserve.

Helichrysum rosmarinifolium flowers with wonderful profusion even in quite a young state, and the flowers remain fresh for a considerable length of time. Sprays of flowers may be cut and dried and are useful in this condition for decorative purposes, including wreath-making. The foliage, and the young, sappy growths especially, bear a striking resemblance to Rosemary; hence the specific name. *E. B., Fota*

AMELANCHIERES.

TO those who have had the pleasure of visiting the Arnold Arboretum, the popular *Bulletin's* descriptions of the special and striking features of that fine garden are of great interest. A recent number describes the typically North American *Amelanchiers* prized in gardens here no less than in the United States. The *Bulletin* recounts the wonderful

habit of flowering in spring before the leaves appear. To their characteristic, edible dark blue or nearly black small fruits they owe probably their common name of Service tree. One of the earliest *Amelanchiers* to bloom in the Arboretum is *A. canadensis*, which in its native habitat reaches a height of 60 feet. As the flowers open, its leaves unfold, covered with pale grey silky hairs which make the whole plant look white. *A. canadensis* is often confused in gardens with a species now known as *A. laevis* which, however, may be distinguished from the true *A. canadensis* by the red colour of the young leaves and their almost complete lack of downy covering. The shrubby *A. obovata* has been planted in large numbers in the Arnold Arboretum, and some five or six other species are also established there. The common *Amelanchier canadensis* is a useful flowering shrub in this country, and its autumn tints are strikingly handsome, especially in gardens where the soil is of a light texture.

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CHERMES ATTACKING DOUGLAS FIR.

IN afforestation schemes the tendency of late years has been largely to extend the use of Pacific Coast Conifers, notably Douglas Fir and Sitka Spruce. All foresters agree as to the outstanding merits of those two species, the Douglas Fir being restricted to dry soils and sheltered conditions while the Sitka Spruce thrives with great vigour in wet soils and in exposed situations. Both trees produce a large volume of timber per acre, which is ready for marketing at about sixty years old. Up to the present, these two species have been remarkably free from disease both in the nursery and when planted out.

It is regrettable, therefore, to record a new and possibly serious insect attack on the Douglas Fir in this country. Some warning is needful, as means ought to be taken speedily to prevent the spread of such pests. The insect, which has been identified with the North American *Chermes Cooleyi*, was, so far as I know, first observed on the Oregon Douglas Fir in Europe, in June, 1913, in the New Forest, by Mr. A. C. Forbes and myself. It resembles in outward appearance and mode of attack the *Chermes* or so-called "Woolly Aphis" (see Fig. 147), which occurs on the common Larch. Since 1913 it has spread over the south of England, and has been seen by the writer on trees 30 to 70 feet high near Petersfield and East Liss, Hampshire; at Felbridge, near East Grinstead, Sussex; at Buckhold, Berkshire; and in Bagley Wood, Oxfordshire. It is abundant on the foliage and branchlets of the lower part of the trees. At Felbridge some trees seen last April are much worse affected than when they were first looked at two years ago. The renewed attacks of the insect have stunted the foliage and the growth of the shoots. An attack has also been watched in one case on younger trees, about seven years old, when the larvae hatched out of the eggs on the old shoots were observed creeping out on the young shoots, which speedily become curved and feeble.

In the United States, *Chermes Cooleyi* occurs on both the Colorado and Oregon Douglas Firs, being much more common on the Rocky Mountain species. The insect passes a second stage of its life on certain Spruces, on which it forms a cone-like gall. It attacks *Picea Engelmannii* and *P. pungens* in the Rocky Mountains, and the Sitka Spruce in the Pacific Coast region. In England, this species escaping even when it the Sitka Spruce, are apparently due to the

same insect, but this is not certain. It is rather strange that *Chermes Cooleyi* has not yet been noticed on the Colorado Douglas Fir in England, this species escaping even when it grows alongside affected Oregon Douglas Fir.

In the United States, *Chermes Cooleyi* is reported by Mr. J. R. Weir, forest pathologist, to be destructive to 2 to 4-year-old stock of Douglas Fir in the seed-beds of the Forest Service Nursery, in the St. Helena National Forest, Montana. Seedlings are apparently killed outright or so greatly weakened that they become a prey to certain fungi. Mr. Weir states that spraying with kerosene emulsion has been found successful against *Chermes Cooleyi* in nurseries. Should, as seems probable, the pest spread to nurseries of Douglas Fir in this country, this remedy ought to be tried.

Prevention is, however, better than cure, and steps ought to be taken to secure the proper collection and inspection of the seed of these important Conifers. This seed is now collected



FIG. 147.—EFFECT OF *CHERMES COOLEYI* ON THE DOUGLAS FIR.

in native forests in a haphazard manner, often from undesirable, badly-formed, and diseased trees. Imported seed is often mixed with bits of foliage, branchlets, etc., which may carry insects and their eggs as well as the spores of fungi. Two measures are advisable, one being a regulation that no forest tree seed should be offered for sale unless it has been first inspected and disinfected by a competent mycologist. The other measure would be the appointment of a skilled forester in Vancouver, who would arrange for the collection in British Columbia, Washington and Oregon, of seed of the important Conifers from good trees, in vigorous health, perfect in shape, and growing in the most suitable conditions. Sitka Spruce grows wild near the sea coast through a wide range of climate from Alaska to California. It has not yet been determined in what localities the seed should be collected that would produce the best trees for wet mountain land and exposed moorland. This is a matter of considerable importance. *A. Henry.*

ODOURS OF CONIFERS.

In a recent paper on the Douglas Firs* Professor Henry calls attention to the difference in odour found in the Oregon Douglas Fir (*Pseudotsuga Douglasii*, Carr) and the Colorado Douglas Fir (*P. glauca*, Mayr). This he finds is due to the different oils contained in the leaves of the two species. In the Colorado tree the strong turpentine odour is due to the large percentage of pinene and bornyl acetate present. In the Oregon tree pinene is absent and the fragrant odour is due to the presence of a highly odiferous substance, geraniol, slightly modified by a small amount of bornyl acetate present.

In the same paper Professor Henry refers to the Douglas Fir aphid (*Chermes Cooleyi*, Gillette), probably the worst insect enemy of the Douglas Fir in Britain, and points out that while it attacks the Oregon species it has not yet been observed on the Colorado species, even where, as at Bagley Wood and East Liss, the two trees occur side by side. I have observed the same phenomenon myself in Surrey. More information on this subject is required, but it seems probable that the strong odour of the Colorado Fir, due to pinene, is disliked by the aphid, although, as Professor Henry states, *Chermes Cooleyi* does occur on *P. glauca* in America.

Other instances in which the odour of Conifers seem to play a part in relation to insect attack can be cited. The notorious Pine weevil (*Hyllobius*), for example, shows a distaste for the Sitka Spruce and an equally strong preference for the Oregon Douglas Fir. In its selection of breeding ground it also shows preference for certain species. Scots Pine is undoubtedly its chief breeding ground. Spruce comes next. Larch is rarely chosen, and Silver Fir and Douglas Fir are rarely, if ever, selected. Again, the felled Scots Pine attracts hosts of bark-beetles to its resin-exuding butt, yet Spruce attracts only a few, Larch fewer still, and Silver Fir none at all. I suggest that in all these instances the odour of the species plays an important part, if it is not, indeed, the determining factor in the choice of the host shown by these insects.

A fuller knowledge of the odours and the essential oils of Conifers cannot fail to effect an improvement in our methods of controlling forest insect pests, and Professor Henry's researches on this subject may yet prove of great value, not only to the dendrologist, but also to his fellow workers in entomology and mycology. *J. W. Munro, Entomologist to the Forestry Commission.*

IMPATIENS HERZOGII.

This striking member of the Balsam family, which is of comparatively recent introduction from New Guinea, is an exceedingly useful plant where a display of flowers has to be maintained at all seasons. It is of a sturdy, freely-branched habit, suggestive of the deep magenta-purple flowered *Impatiens Hawkerii*.

The flowers of *Impatiens Herzogii* are large and flat, and the colour, which is exceedingly difficult to define, is admired by many. It may perhaps be best described as a bright orange-salmon with the least purplish suffusion in the centre. Like most of the Balsams, *I. Herzogii* is a plant of easy culture and thrives in a house having an intermediate temperature. Cuttings formed of young shoots strike root in a very short time. In common with many of its allies, the flowering season extends over a lengthened period, in fact if two or three batches are grown flowers may be had practically all the year round. Their peculiar tone of colour causes them to stand out very conspicuously during dull weather. This species has already been employed by the hybridist, the variety *kwensis* having been raised between *I. Herzogii* and the lilac-coloured *I. platyptala*. *W. T.*

* *Proc. Roy. Irish Acad.*, vol. xxxv, section B, No. 5.

THE LINGULATE SAXIFRAGAS.

THE lingulate Saxifragas are the jewels of their race for purity of flower, beauty of rosette and leaf, while in grace and lightness they exceed all others. Much has been written about them, but somehow they have not become popular in our gardens. This is the more remarkable, considering that they are the easiest of all plants to manage. They develop quickly into big masses, of which every offset grows, whilst seeds germinate freely. Besides all this, they are willing to mate with others, and already some beautiful hybrids have appeared.

The type—*Saxifraga lingulata*—comes mainly from the Maritime Alps, while other forms are found in the hills near Naples and in North Africa. A minute form carrying five or six large, full flowers on a stem only three inches high, hails from Kurdistan, in the mountains round Kermanshab; only old seed heads remained when I found it, but it had been free flowering, even for a *lingulata*, and members of this group are generous indeed, both wild and in a cultivated state.

For gardening purposes, however, we need only look to the Maritime Alps, between the Col di Tenda and the valley of the Vesubie. The forms here found are *S. lingulata*, *S. Bellardii* and *S. lantoscana* respectively. *S. Lehmannii* (see Fig. 148) gets more sun in nature than does *S. lantoscana*, and has developed a marked type, chiefly in its longer, more punctuated, and more outtidy habit. Its rosettes are not so clearly separated and the plume is usually rather longer. In their separate stations the two forms are distinct, but in the hills between they vary one towards the other indefinitely.

Beautiful as they all are, care should be taken to obtain a good form, no matter under which name, for some have gorgeous, great, pendulous plumes of full petalled flowers, while others are poor in comparison, with starry flowers huddled on the spike. Some again are red spotted, not always to their detriment, for good sprays are sometimes so marked, but nothing can improve the purity of the white form. Luckily, when buying the plant, it is generally possible to tell the good forms by the leaf; the fuller the leaf, the finer the flower. It is the spidery-leaved plants which usually produce poor blooms. This also applies to the spotted forms, though not universally.

Among my collected stock from the hills behind Mentone, every kind of variation occurs from pure *S. lantoscana* to pure *S. Bellardii*, and occasionally they hybridise naturally with *S. Aizoon*, but the result is a poor thing, worse than either of its parents. I have tried, so far without success, to get the red of *S. Aizoon* rosea into the flowers of *S. lingulata* but I doubt whether anything could be more beautiful than the white of the type, certainly not at the expense of the lovely spray. I have one plant with very large thick leaves, after *S. lantoscana*, but irregular in growth, like *S. Bellardii*, with a six-petalled terminal flower topping a huge, pure white spray; this I fertilised with pollen from *S. longifolia*, and the result is the wonderful new *S. Tumbling Waters*, which received an Award of Merit at the Chelsea Show, and was illustrated in *The Gardeners' Chronicle* of June 5 (Fig. 130).

S. Dr. Ramsay is probably a hybrid form, although I am not sure of its parentage. The spike is upright and graceful, each flower beautifully round and densely, but evenly marked with red. The flowering rosette, too, is a good red, which adds to the charm of the plant, and makes it especially valuable for growing in a pan where detail can be noted. *S. Burnatii* is another hybrid, probably with an *Aizoon*, but, to my mind, lacking the charm of its other parent, especially in its rosette. It is, nevertheless, a beautiful thing.

Closely kin to the *lingulata* or tongue-shaped Saxifragas come the *Cochlearis* or spoon-shaped forms, which grow near by at Tenda. Now *S. cochlearis* is a sun lover, while *S. lingulata* generally prefers the shady side of a rock; but when *S. cochlearis* grows in the shade, then it develops into a major form and

gradually assumes the growth of *S. lingulata*, until they are hard to distinguish. So, again, in a sunny spot it gets more compact and in its minor form, in gardens, it becomes so minute as to be able, fairly successfully, to imitate the rare *S. valdensis*—quite an unnecessary proceeding, for *S. cochlearis* on its own merits is one of the most valuable of all rock garden plants. Perfectly easy to manage, and a rapid grower, it is beautiful, in flower and out, for a pocket in the rock garden or for massing in great drifts on a chip strewn ledge. Its rosette is neater and more regular than that of *S. lingulata*, and the leaf, as its name implies, swells at the top into the shape of a spoon. The flower spike emerges like a slender red crozier, opening into a more delicate spray with flowers of the same lovely white. It is even

haunts the high places, but only locally, and then its stations are only two hundred or three hundred feet wide and in places difficult to reach. It is an unsociable plant, and difficult to increase, though it grows well enough in sun in either lime or anything else. The plant obviously has *S. cochlearis* blood in it, and is probably a natural hybrid with *S. caesia*. With its resemblance to *S. cochlearis* in leaf, it has done with the likeness, for it has creamy flowers, not the pure white of the race. This is important, and should settle the vexed question of parentage once and for all. The spike is about three inches high, very glandular, and bears its six to ten rather large flowers in a flat head. It is a gardener's curiosity rather than a garden ornament. *B. H. B. Symons-Jeune.*



FIG. 148.—SAXIFRAGA LINGULATA VAR. BELLARDII GROWING NEAR THE COL DI TENDA.

more generous of bloom than *S. lingulata*, and almost every rosette produces a flower spike. Not so, however, is the minor form, which is not so generous but equally beautiful. Almost intermediate between *S. lingulata* and *S. cochlearis* in rosette is *S. lingulata Alhertii*, rather larger, but no more beautiful than either of these two forms.

A new hybrid—*cochlearis* × *longifolia* (?)—has the lovely rosette of the mother plant, but the flower spike is not quite so good as the promise of it; on an erect green and glandular stem, the flowers are just a trifle small and stiff. Indeed, the task of equalling their parents seems too hard for most of the hybrids. One expects too much, and anything short of breath-taking loveliness becomes bathos. This is hard on the hybrids, for they are all good.

One more, a much disputed, much misnamed plant, akin, but no rival in charm, is the very rare *S. valdensis* from the Cottian Alps. This plant, in all lists, is never what it pretends to be. *S. cochlearis* minor has been and will go on being supplied instead, and (*sotto voce*) so much the better for the purchaser. *S. valdensis* is exceedingly like the smallest forms of *S. Cochlearis* in rosette, but even closer growing. It hugs the high up, sun-baked cliffs like a lichen, for alone of these Saxifragas *S. valdensis*

GALEGA HARTLANDII.

WHEN this ornamental Goat's Rue was first introduced many years ago by the late Mr. Baylor Hartland, of Cork, and exhibited in London, it attracted a good deal of notice and was figured in the horticultural journals. Mr. Hartland sent me a plant for trial, and I have had it in my garden ever since. Its most striking feature is the beautiful green-and-white variegation which it shows in early spring. As the season advances this becomes less and less apparent, but the flowers, which are of a pretty, pink and white, or lilac and white, compensate—and more than compensate—for the loss of the variegation. It may be said that this plant has two seasons of beauty—spring and summer. It is claimed to be a variety of *Galega flexuosa*. Its height is about three feet and it grows in any ordinary border in common soil. It is increased by division, but also reproduces itself partially from seeds.

The two species commonly cultivated in this country are *G. Officinalis* and *G. orientalis*. Both have blue flowers, and there is a white and also a bicolor form of *G. Officinalis*. Galegas are showy plants, and the flowers are developed in loose racemes on tall stems. *S. Arnott*

HOME CORRESPONDENCE.

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Moraea iridioides Johnsonii.—In reply to Mr. W. Watson, of Kew, it does not appear likely to me that *Moraea iridioides Johnsonii* is similar to *Moraea bicolor*, as the two plants are quite distinct in colouring. The ground tint of *M. iridioides Johnsonii* is white with a faint tint of cream; the upright petaloid segments are of a delicate shade of violet, and the blotches on the basal petals are bright yellow, feathered at the base with crimson-brown. *M. bicolor* has yellow petals, blotched with purple-black (distinctly bicolor), whilst *M. iridioides Johnsonii* shows three tints, and is remarkably chaste and beautiful by reason of the contrasts. It appears probable that *M. bicolor* was figured from a plant raised in Bayswater in 1831; whilst *M. iridioides Johnsonii* was brought from Ceylon by Mrs.

even three blossoms at once on the points of each branch of the flower-scape, and all of fine size. I shall be happy to present a plant of the new *Moraea iridioides Johnsonii* to Kew if it is not known there, so that it may be possible to compare the two plants. *I. L. Richmond.*

—It seems that Mr. Weston has not seen or had not remembered when he wrote the note on this plant, on p. 297, that *Moraea iridioides* is of a totally different colour from the *M. bicolor*, figured in *Bot. Reg.*, t. 1904. I have two excellent drawings made here from a plant which I obtained from Messrs. Barr and Sons, and which agree with the Fig. 71 in the *Gard. Chron.* of April 3, 1920, and with Mrs. Richmond's description. The flowers are creamy-white with yellow blotch on the three outer segments, and the standards violet-purple, whereas *M. bicolor*, as figured, has pale-yellow much smaller flowers with a dark chocolate blotch. I do not find the plant so hardy as

puts *M. catenulata*, Ker, in *Bot. Reg.*, t. 1074—“falls with a yellow spot in the centre and a double row of yellow papillae down the nearly glabrous claw; styles and crest lilac,” under *M. iridioides*, as a variety. *W. W.*

Arum Lilies in Cwmdonkin Park, Swansea.—Eight years ago a few small plants of *Richardia atricana*, the common Arum Lily, were planted about twelve inches deep in one of the ornamental pools in Cwmdonkin Park Swansea. The plants have grown well and spread considerably, and they were flowering freely at the end of May when the photograph (see Fig. 149) was taken. The illustration, however, does not show the whole of the plants. I am sure there are warm pools in many public parks and gardens where the Arum Lily would flourish and provide an attractive feature. *Daniel Bliss, Supt. Swansea Parks.*

TRADE NOTES.

MAJOR C. M. MATTHEWS, the new Secretary of the Chamber of Horticulture, possesses the advantage of a long experience in connection with practical growing as well as with methods of organisation and Parliamentary procedure. He is 42 years of age, and when 17 years old, he entered the office of Lord Winchelsea's National Agricultural Union, where for about six years he was engaged in the organisation of branches of the Union and in arranging conferences in all parts of the country. When this body was absorbed into the Agricultural Organisation Society, he left London and started farming on his own account. In 1908, he accepted an offer of the secretaryship to the East Kent Conservative Association and became political agent to the Right Hon. A. Akers-Douglas, M.P., and thus gained considerable experience in speaking at public meetings, as well as an insight into Parliamentary affairs. The Chamber of Horticulture has no politics, and its membership embraces men of all political opinions, but the knowledge of how to get things done in the House of Commons should prove of considerable use in obtaining adequate representation in Parliament of the special interests of horticulture. At the commencement of the war, Mr. Matthews received a commission, and owing to his knowledge of agricultural matters, he was allocated in the first instance to the Forage Dept. of the War Office. In 1915 he was promoted to the post of District Purchasing Officer for Supplies in Lincolnshire.

THE Chamber of Horticulture, in conference with representatives of the Horticultural Trades' Association and the British Florists' Federation, recently considered a communication from the Dutch Bulb Exporters' Association. As the terms of this communication failed to meet the resolutions passed at a previous conference of the above associations, the representatives agreed to advise all British traders to adhere to the previous resolutions and make no purchases unless the terms are f.o.b., and the cost of packages is placed on the invoice and not to be collected on delivery. We understand that since this decision was arrived at the Dutch Exporters have withdrawn from their impossible position.

ON Wednesday, June 16, a conference on the subject of the conveyance of pot-plants by passenger train took place at the Ministry of Agriculture between representatives of the trade (Horticultural Trades' Association, British Florists' Federation and Chamber of Horticulture), the Royal Horticultural Society and a representative of the Railway Clearing House. The conference was presided over by an official of the Ministry. After much debate, it was agreed that the Ministry of Agriculture, on behalf of the trade and R.H.S., should write to the Ministry of Transport suggesting that the railway regulation which prohibits the carriage of pot-plants on and after July 1, be further postponed pending a settlement of the rate question, whereby two classes of rates should be granted to the nursery and allied trades for—(1) pot-plants in trays or shallow boxes as carried hitherto; and (2) pot-plants packed in accordance with the railway requirements.



FIG. 149.—ARUM LILIES (RICHARDIAS) FLOWERING IN CWMDONKIN PARK, SWANSEA.

Johnson about sixteen years ago. The original *M. iridioides* is figured in the *Bot. Mag.*, 693, and is identical with the plant of this name now growing in S. Africa; it was also represented in *Miller's Dictionary* more than a century ago. It is a worthless plant because of the flimsy petals and ephemeral nature of the flowers, which last only for a morning, whereas blooms of the new variety have thick petals which remain open for three or four days, and are of twice the size of those of the original plant, the flowers being about four inches across, whilst the other is barely two inches in diameter. The Scientific Committee of the R.H.S., as well as Sir Michael Foster, Mr. Barr and others, have all concurred in pronouncing *M. i. Johnsonii* to be a remarkable instance of self-improvement in the rich soil and moist climate of Ceylon, to which island it was probably taken many years ago; and Sir Michael Foster's prediction that it would still further improve has already been fulfilled. Some seedlings now produce two and

Mrs. Richmond seems to do. It flowered in a warm house on July 7 and in a cool one on September 15, and likes to be kept pretty dry in a pot in the winter. I have a much smaller flowered variety similar in colour, but with a much longer flowering stem which I have grown for many years as the *M. iridioides*. *H. J. Elwes, Coleborne.*

—Mr. Elwes is quite correct. I was misled by the photo-figure of Mrs. Richmond's plant published in *Gard. Chron.*, showing a large, dark blotch on the three falls of the flower. There are plants at Kew, in flower a few days ago, which agree with the description given above by Mr. Elwes of a plant obtained by him from Messrs. Barr and Sons. The Kew plants came from the Botanic Gardens, Natal, in 1910. Baker gives Cape Colony, extending northward to Natal and the mountains of Zambesiland, as the habitat of *M. iridioides*. He also states that *M. prolongata* and *Diets Macleanii* are garden forms of this species, and

SOCIETIES.

ROYAL HORTICULTURAL

Scientific Committee.

JUNE 1, 1920.—*Present*: Mr. E. A. Bowles (in the chair); Messrs. J. Arkwright, W. G. Baker, W. Haies, H. J. Elwes, and F. J. Chittenden (hon. sec.)

Wheat-ear Carnation.—MRS. F. E. LONGHURST sent a shoot of Carnation of the variety Congress showing the well-known "wheat-ear" formation in a marked manner.

Various Plants.—MR. H. J. ELWES showed from his garden specimens of *Blandfordia superba*; a seedling *Eremurus* with sessile flowers; *Dianella tenuissima*, which bears deep indigo-blue berries; *Littonia modesta*; *Paeonia decora* (= *P. lobata*, but the nomenclature of these species appears to be involved); *P. Broteri*, from Portugal; *Eria ornata*, the leaves of which appear to be normally orange, a native of Borneo; *Tricyrtis latifolia*, which Mr. Haies stated had grown outdoors at Chelsea uninjured for seven years; *Habranthus* sp., which failed to flower until mulched with leaf-mould, after which it grew and flowered well.

Aquilegia Hybrid.—MR. MARSDEN JONES showed a hybrid between *Aquilegia vulgaris* and *A. canadensis*, showing the characters of both; this he had named *A. × vulcan* var. *Phyllis*.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.

THE spring exhibition of the Société Nationale d'Horticulture de France took place at Paris this year from June 2 to June 8, in the Great Conservatory of the Zoological Garden, in the Bois de Boulogne instead of at Cours la Reine. The exhibition was successful from every point of view, and almost attained to the importance of a pre-war show.

The big Paris firms utilised to the best advantage the space allotted to them for the creation of charming garden scenes, in which the colours of annuals, biennials, and hardy plants formed harmonious contrasts. The large specimen *Rhododendrons* which usually form one of the chief attractions of the exhibition were almost entirely absent, and so were hardy *Azaleas*; this was in consequence of the abnormal forwardness of the season, and also due to the somewhat late date of the exhibition. Orchids, which occupied one greenhouse, were particularly fine. There were some very beautiful plants, notably *Laelio-Cattleya Princess Alice*, *Cattleya Pompadour* (an immense flower, purplish-mauve), *Brasso-Cattleya Iréné Boués* (of a curious yellowish tint, suffused with purple); fine specimens of *Vanda teres*, *Miltonia Bleuana*, *Dendrobium thyrsiflorum*, and *Saccolabium Blumei*.

Certificates of Merit were awarded to *Cattleya Rachel*, a large white flower, with the labellum marked with reddish-violet (M. MARON); and *Laelio-Cattleya Mossiae × Dominiana* (MM. VACHEROT ET LACOUËLE).

An important collection of Brazilian *Caladiums* was staged, and one of very fine *Rex Begonias*, e.g., *Lord Kitchener*, with immense leaves, and *La Perle de Mortefontaine*, with lovely red foliage. Among the certificated varieties were *Sang Gaulois*, with small red leaves (M. VALLERAND), *Mons. Bach*, and *Général de Villaret* (M. CHANTIER).

Hydrangeas were represented by a number of important groups. M. HENRI CAYEUX, director of the gardens and plantations at the town of Havre, showed some beautiful seedlings, of which the following gained certificates:—*Yvonne Cayeux*, with large red flowers; *Caprice*, shaded white; *Monsseline*, with immense, lightly-tinted flowers; and *Succés*, large pink flowers. *Beauté Havraise* must also be mentioned, a beautiful variety shown the previous year, with large, bright-red flowers and fringed petals. In the collection shown by M. MOUTILLIERE, the lovely variety *La Marne* was noticed.

M. HENRI CAYEUX also showed, under the name of *Hydrangea hortentolaris*, a hybrid plant, the result of a cross between *Hydrangea hortensis rosea* and *H. petiolaris*. The plant has not yet assumed a definite character, and it is not possible to judge of its climbing nature. Doubtless, however, this will prove to be the forerunner of an interesting race of hybrids.

There were several groups of tuberous *Begonias*, among which the variety *Miss Edith Cavell* was noticed, a beautiful pale-pink variety, shown the previous year (M. BILLARD). Certificates of Merit were awarded to the following varieties:—*Maréchal Foch*, a multiflora variety of a reddish-orange colour; *La Neige*, a double white; *Maréchal Joffre*, a double red; *Général de Castelnau*, double golden-yellow; and *Le Grand Couronné*, double salmon-pink, all raised by M. BILLARD.

The exhibits of *Roses* were numerous and interesting; multiflora and *Wichuraiana* hybrids predominated, most in the form of pergolas, arches and parasols. The varieties most commonly represented were *Dorothy Perkins*, *White Dorothy Perkins* and *Lady Gay*. Among dwarf *Roses* the *Pernetiana* type was chiefly shown, such as *Juliet* and *Madame Edouard Herriot*. A novelty from M. PERNET-DUCHER—*Souvenir de Claudius Pernet*—a magnificent yellowish-pink variety, received a Certificate of Merit. We may mention also the beautiful wine-red *Château de Clos Vougeot* and the already well-known white *Louise Crette*, nearly resembling *Frau Karl Druschki*, but of better growth and distinctly superior.

The collections of annuals and herbaceous plants were numerous and very varied. There was a very fine group of *Sweet Peas*; and, among the important exhibits of the firm of MESSRS. VILMORIN-ANDRIEUX AND CO., we noticed the beautiful *Iris germanica hybrida* *Ambassadeur*, with very large flowers, the lower petals purplish-brown and velvety in texture. There were several groups of herbaceous *Paeonies*, and among the Japanese varieties were several new ones with flowers of an altogether original form. M. DESSERT, the clever cultivator of *Chenonceaux*, Indre et Loire, obtained Certificates of Merit for the following varieties:—*Mme. Jules Dessert*, white tinted with pink; *Auguste Dessert*, pink edged with white; and *Laura Dessert*. M. G. WEISS showed some lovely little Alpine scenes in miniature, with tiny rocks, something like the miniature gardens cultivated by the Japanese. The plants used were *Sedums*, *Sempervivums*, dwarf *Saxifragas*, young *Firs*, and tiny plants of *Bellis coerulescens* and *Bellium minutum*.

Several exhibits of excellent vegetables were shown in artistic fashion, and forced *Peaches*, *Plums* and *Nectarines* were exhibited under glass. A large number of fruit trees in pots was also shown, the *Cherry trees* covered with fruits. An interesting section was that devoted to garden plans and designs, many being in course of execution by French landscape gardeners.

The Premier Grand Prix d'Honneur was awarded to the firm of NOMBLOT-BRUNEAU for fruit trees, trained and in pots. The Second Grand Prix d'Honneur was won by MM. MARON ET FILS for their exhibit of Orchids. As usual, those who had won these awards the previous year did not enter for competition.

Among other plants which received awards the following should be mentioned:—*Delphinium* hybrids, e.g., *Jeanne Cayeux*, with large sky-blue flowers; *Boréal*, with yellowish-white blooms (MM. CAYEUX and LE CLERC); *Solange Beauvergent*, azure blue, suffused with mauve (MM. FORTIN and LAUMONNIER); *Pelargonium grandiflorum* *André Tardieu* and *Maréchal Foch* (M. CHAUBERT).

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE June meeting of this Society was held in the Royal Horticultural Hall, Vincent Square, Westminster, on the 14th inst.

Mr. Chas. H. Curtis presided. One new member was elected. Four members

were allowed to withdraw double the amount of their accruing interest, amounting to £17 1s. 4d. The death certificates of three deceased members were received, and the sum of £133 0s. 11d. was passed for payment to their respective nominees. The sick pay for the month on the private side was £44 0s. 11d., and on the State side £26 13s. 4d.; maternity benefits totalled £13 10s.

ASSOCIATION OF ECONOMIC BIOLOGISTS.

ON Friday, June 4, the Association of Economic Biologists and the Imperial Entomological Conference held a joint meeting at the Rothamsted Experimental Station, Harpenden. The Park Grass Plots were demonstrated by Dr. Winifred E. Brenchley. This land has been under grass for some centuries, it is not known that seed has ever been sown and at the beginning of the experiments (1856) the herbage on all the plots was apparently uniform. The twenty-three plots are each manured differently, the same treatment being maintained year after year, and the southern half of each plot is limed. The plant associations in the several plots are now remarkably different, the herbage presenting totally unlike faces. Perhaps one of the most striking features is the sharp line which often separates one plot from another, indicating the total absence of lateral diffusion of the manure in the soil water.

The Broadbalk Wheat field which was demonstrated by Dr. E. J. Russell is perhaps the most famous single field in the world. Here Wheat has been grown continuously since 1843, the eighteen plots receiving different manurial treatment which is maintained year after year. The knowledge already yielded by Broadbalk has served almost to revolutionise earlier ideas concerning the growth and needs of the Wheat plant and the nature of the soil, and the attention now being concentrated upon it by physicist, chemist, statistician, botanist, protozoologist, entomologist, mycologist and algologist should continue the good work begun by Lawes and Gilbert and so ably sustained by Sir Daniel Hall and the present director. Park Grass and Broadbalk are a mine of information from which have been gathered results of the most immediate and practical value for farmers and growers the world over. But they possess value beyond this. The plant is not an individual standing alone; it is one of a community with the most intimate life-relations to its fellows and to its habitat. The study of these relations is called "Ecology," and their experimental investigation is one branch of that newer, more vital botanical science which during the last decade has forced its way to recognition in academic institutions. Park Grass and Broadbalk are ecological demonstrations of the very first order, for they are perhaps the only exact large-scale quantitative experiments on the value of plant associations existent. Perhaps in nothing else does the remarkable presence of the honoured founder of the Rothamsted Experiment Station show so greatly as in the way in which these experiments initiated nearly a century ago are now becoming a Mecca for students of a branch of science unknown in his day.

After returning from the fields the party was conducted round the laboratories where the investigations in progress were demonstrated. This was followed by a discussion on "Tropisms," opened by Dr. A. D. Imms, who gave a brief account of his own studies on the attraction or repulsion of insects by certain chemical substances. The possibilities of this work in the control of insect pests was alluded to, and the nature of the underlying principles discussed.

A paper entitled "The Theory of Tropisms," by Dr. Jacques Loeb, especially contributed to the meeting, was read, and in the discussion the following participated:—Dr. R. J. Tillard, of New Zealand, Mr. F. E. Green, Dr. C. B. Williams, of Africa, Sir Jagadis C. Bose, Mr. W. B. Brierley and Professor Neilson Jones. In the unavoidable absence of the President of the Association, Sir David Prain, the discussion was presided over by Dr. E. J. Russell.

LAW NOTE.

THE CUSTOM OF THE BULB TRADE.

At the Greenwich County Court recently, Walter W. Wood, Horn Park Farm, Lee, S.E., nurseryman, appeared as defendant in an action brought by Messrs. Christian Kieft and Sons, Lemmin, Haarlem, Holland, bulb exporters, in respect of a claim of £49 10s. 6d. for goods supplied to him during May, 1919. It was stated by plaintiff's counsel that the representative who was acting as traveller for the firm in England, called at Horn Park Farm and obtained an order for the bulbs, which were to be delivered early in September. The order was signed by Mr. Vaughan, defendant's foreman, and in accordance with the conditions of the contract entered into, a request was made for payment some four months later. Defendant, who had dealt with the plaintiffs for some years, held that the amount was not due until the autumn of 1920. Plaintiffs replied pointing out the conditions of contract as set out on the back of the order form, which were in accordance with the conditions of the Dutch Bulb Growers' Association, and in the course of correspondence drew attention to the serious loss they had sustained owing to the drop in the exchange, and pointed out that the same credit could not be given as before the war. The action was originally commenced in the High Court, but was transferred to the Greenwich County Court.

Mr. Sidney B. Wood, who managed this particular branch of the nursery business for his father, said they had always bought bulbs on the condition that they were allowed sufficient time for them to come up. It was essential that they should see that they were true to variety and stock before a settlement was effected.

His Honour: Then I am not surprised the Dutch Association have changed their methods.

Dr. Dodd, representing the defendants, maintained that it was a perfectly reasonable arrangement.

His Honour replied that he wished he could obtain goods on those terms.

Witness added that Mr. Vaughan had no authority to sign a document in respect to alterations of conditions of sale.

A further witness pointed out that it was customary to give twelve months' credit for bulbs.

His Honour gave judgment for the plaintiffs with costs.

Obituary.

Frederick K. Ravn.—We learn that Mr. F. K. Ravn, professor of plant pathology in the Royal Agricultural College, Copenhagen, died recently from blood poisoning in East Orange, New Jersey, U.S.A. Professor Ravn, who was born in 1873, was the author of several standard works on plant pathology. The King of Denmark recently conferred the Cross of the Order of Danneberg upon him in recognition of his scientific achievements.

Mrs. John Cypher.—Many horticulturists will be grieved to hear of the death of Mrs. Elizabeth Jane Cypher, wife of Mr. John Cypher, of Messrs. J. Cypher and Sons, Cheltenham, which took place at her home on June 16, after a long illness, patiently borne. Mrs. Cypher was the daughter of the late Mr. James Cypher, and during her whole life had been intimately associated with horticulture and horticulturists, many of whom had enjoyed her hospitality. In her younger days Mrs. Cypher was an expert florist and decorative floral artist, and had won many prizes for bouquets and other designs.

ANSWERS TO CORRESPONDENTS.

APPLE TREES INJURED: *B. and S.* The injury is probably due to an application of grease direct on the bark of the trees. It is a very dangerous practice to put some kinds of grease on the bare bark of fruit trees in autumn instead of using grease bands.

GOOSEBERRY BUSH DISEASED: *J. E.*—The Gooseberry bush is suffering from an attack of Botrytis which is the cause of "collar-rot" and "die-back." The fungus attacks the bark just above or just below the ground level, and the bark then becomes soft, turns brown, decays, and so causes the death of the bush. The Botrytis form of the fungus is usually noticeable as a greyish mould on the diseased bark in the summer. Damp conditions favour the development of the disease, as also does the presence of decaying manure close to the stem.

GRAPES SHANKED: *A. N.*—You are right in both the diagnosis and cause of the berries turning sour and shrivelling. The shanking is most probably due to the roots having entered the cold subsoil as you suggest, and may also be the result of over-cropping and general neglect of the vines. Endeavour to bring the roots nearer to the surface, where they will be more under the control of the cultivator, and see that the cultural conditions generally are suitable for the vines.

MELON PLANTS WILTING: *G. C. K.*—The wilting of the plants is probably due to some injury at the lower part of the stem thus hindering the flow of the sap. The injury may be caused by careless handling, by slugs, or by decay set up by an excess of moisture at the "collar." In their present condition it would be quite impossible to save the plants.

METHOD OF CLEANSING THE WOODWORK OF A FRUIT ROOM: *J. D. C.*—A solution of commercial formalin at the rate of 1 pint of formalin to 5 gallons of water, applied by means of a scrubbing brush, will probably cleanse the mildew from the woodwork in your fruit room.

MOSS-LIKE GROWTH ON A POND: *H. C. B.* The growth is probably algal and may be eradicated by the use of copper sulphate. First ascertain the amount of water in the pond by multiplying together the average length, breadth and depth, and multiplying the number of feet thus obtained by 64, the approximate number of gallons in one cubic foot. Then, for every 100,000 gallons of water take one pound of copper sulphate, break it up and enclose in a bag of loose texture. Draw the bag backwards and forwards through the pond in parallel lines 10 or 20 feet apart. The sulphate will dissolve and become diffused throughout the water, killing the weeds. If used in the proportions given above the copper sulphate will not be likely to injure the fish and may even benefit them by ridding them of parasites.

NAMES OF FRUITS: *G. W. B. B.* Wellington svn. Dumelow's Seedling.—*S. S.*: Broad-Eyed Pippin.

NAMES OF PLANTS: *M. F.* Magnolia obovata.—*L. M. W.* 1, missing; 2, *Cytisus biflorus*; 3, *Pentstemon Menziesii*; 4, *Cotoneaster microphylla*; 5, *Viburnum Lantana*; 6, *Veronica speciosa*; 7, *Elaeagnus pungens*; 8, *Cotoneaster Henryana*; 9, *Cornus* sp. (send in flower); 10, *Olearia macrodonta*; 11, too withered to identify; 12, *Cupressus obtusa* var. *nana aurea*; 13, *Rosa sericea* var.; 14, send when in flower.—*A. C. R.* 1, *Lencothoe Catesbaei*; 2, *Pernettya mucronata*; 3, *Kerria japonica* var. *flore pleno*; 4, *Lycocystia formosa*; 5, *Myrica Gale*.—*A. H.* 1, *Robinia Pseudacacia*; 2, *Cephalaria alpina*; 3, *Dier-villa rosea*; 4, *Lilium Martagon*; 5, *Buddleia* sp.; 6 and 7, insufficient material for identification.—*D. H. D.* *Cephalanthera ensifolia*.—*E. G. S.* 1, *Jasminum humile*; 2, *Escallonia macrantha*; 3, *Acer Pseudoplatanus variegata*; 4, *Geranium eriostemon*; 5, *Geranium san-*

guineum; 6, *Helianthemum vulgare* var.; 7, *Polygonum cuspidatum*.—*L. S. A.* 1, *Enanthe crocata*; 2, *Veronica officinalis*; 3, *Potentilla Tormentilla*; 4, *Galium saxatile*.

NEW POTATOS INSIDE OLD ONES: *H. G.*—It is no uncommon experience to find new Potatos formed within old tubers. Indeed, in some gardens, old tubers are kept in the dark in the equable temperature of a cave or similar place, and placed on a thin layer of dry soil. Here, in due course, instead of making leaf and stem growth, they produce new Potatos. In this way it is quite possible to have new Potatos in small quantities throughout the winter.

NUISANCE FROM A GREENHOUSE CHIMNEY: *C. E. P.*—Your best plan would be to add another length of piping to the chimney to obtain a better draught, and obviate the smoke nuisance. If your neighbour's new fence obstructs the light to your premises and your crops suffer injury thereby, you might be able to obtain an injunction against him. Endeavour to settle the matter amicably without resorting to the law.

POTATO LEAVES BLACKENED: *W. A. D.*—The blackening of the Potato leaves and young stems is due to the action of frost. As only the uppermost leaves are affected it is probable new side growths will be produced from the stems, and consequently the crop may not be seriously injured.

STAFF TO MANAGE A GARDEN: *B.* To manage a garden such as described, not fewer than six men would be required. The kitchen garden of 1½ acre would need two men in the busy season if it is to be cropped to its fullest extent; less labour would be needed when work is not so pressing. The pleasure grounds would require two men to keep everything in good order, and one of these could be responsible for the conservatory, if it were near at hand. In the remainder of the glass department there would be ample work for two men. The old form of ventilation described would result in a waste of time and energy. Considering that such a garden has been allowed to fall below the average standard, another man could with advantage be found employment for one year. Considering, too, that the hours of working are now less than in the past, seven men would only do the same amount of work in a day that six did formerly. The vineries are of large size, and by working these in unison with the other houses, two men would be required. These estimates have been arrived at after assuming that all means of saving labour are used, e.g., hose and mowing machines (horse or pony if the lawns are extensive). It might be possible to employ a youth in place of one of the men if the number of pot plants for conservatory decoration, etc., is kept at a minimum. In the winter there would be ample work for all the staff.

STONE FRUITS FALLING: *G. F. C.* The Green Gage is very uncertain in fruiting. It is advisable to plant a free-fruited variety of Plum near to it so that the pollen may be carried by insects and wind to the Green Gage. The young fruits which appear to be fertilised may not really be so; they will sometimes swell to a considerable size before falling. See that the soil does not lack lime, phosphates and potash.

TENNIS COURT: *U. G.*—A plan and measurements of a tennis court are given in the new edition of the *Calendar of Garden Operations*.

WATERCRESS CULTIVATION: *W. J.* So far as we are aware there is no book dealing solely with the commercial cultivation of Watercress, but full particulars of the management and making of Watercress beds were published in the *Journal* of the Board of Agriculture for March, 1915, a copy of which you may obtain from the Publications Department of the Ministry of Agriculture, 3, St. James' Square, S.W., for 6d. post free.

Communications Received.—*C. L.*—Du C.—*S. L.*—*W. K.*—*S. A.*—*H. W. W.*—*C. L.*—*A. C.*—*R. B.*—*E. M.*—*U. G.*—*L. B. C.*—*J. K. R.*



