CHELTENHAM COLLEGE

Natural History Society.

NATURAL HISTORY

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1895

Sumptibus Editorum Cheltoniensium.

CHELTENHAM :
DARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

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PREFACE.

T is seldom probably that a school society experiences such a series of changes as the Natural History Society has experienced during the past year. Not only has the office of President, vacated by the late Principal, been filled by his successor, but the office of Secretary has had to be filled owing to the departure of both Mr. Hichens and Mr. Rouse. To these former members of the council, and to all who have left us last year, we offer our most hearty thanks for all they have done for the Society.

Unfortunately for the value this year's Report few minutes of its meetings seem to have been taken and no records of the Archæological and Geological Sections are to be found, so that this Report mainly consists of the records of the other Sections.

As full a list of Members as it has been possible to collect is printed and it is hoped that every member's name occurs in it No list of flowers and moths of the district can be given this year, but it is hoped that in next year's Report this will be done.

The Presidency of the Archæological Section has been filled by Mr. A. S. Owen, that of the Entomological Section by Mr. Salter and that of the Geological Section by Mr. Gardiner, and all Members of the Society wishing to join any one of those Sections should give in their names to its President, and any one too who has specimens he wishes to be named, or who wants assistance in any of these departments, should consult the President on the matter.

THE COUNCIL.

President	THE PRINCIPAL.
Vice-President	REV. J. MUGLISTON.
Treasurer	W. M. BAKER, ESQ.
Secretaries	J. H. HICHENS, ESQ. W. H. D. ROUSE, ESQ. C. I. GARDINER, ESQ.
President of Archaeological Section ...	A. S. OWEN, ESQ.
President of Art Section ...	S. P. NESBIT, ESQ.
President of Botanical Section ...	J. R. WYNNE-EDWARDS, ESQ.
Secretary	E. W. SPARROW.
President of Entomological Section ...	J. C. SALTER, ESQ.
President of Geological Section ...	C. I. GARDINER, ESQ.
President of Ornithological Section ...	M. TANNER, ESQ.
Secretary	S. DENNIS.
President of Photographic Section ...	A. H. MACDONALD, ESQ.
President of Junior School ...	F. J. CADE, ESQ.

RULES.

1.—That this Society be called the Cheltenham College Natural History Society, and have for its object the promotion of the study of Natural History.

2. – That Ordinary Meetings of this Society be held on Fridays once in three weeks at 5.30 p.m., or at such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal Subscriptions, be exempt from any further payment.

6.—That any Member whose subscription shall be a whole term in arrears shall cease to be a Member of the Society.

7.—That Members be encouraged to join sections for the more accurate study of the different branches of Natural History : that the formation of these be arranged, and the work settled at the first Meeting of each term : that each section be under a President, who is responsible for its Meetings and organisation, and that a Secretary be appointed by each section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary and Treasurer, who, with the Presidents

and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President, or, in his absence, a Member of the Council, shall preside.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of the two Auditors, to be appointed at the last Meeting of each year, be laid on the table at the first Meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a Special or Ordinary Meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-Member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.

Cheltenham College Natural History Society.

LENT TERM, 1895.

President: THE REV. H. A. JAMES.

Secretaries: J. H. HICHENS, ESQ., W. H. D. ROUSE, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Adair
Adami
Alexander
Atkinson
Baines, F. A.
Baines, L. O. T.
Bradford
Bethel
Bickham
Biggs
Blomfield
Bourne
Bourne, E. E.
Bowly
Chamier
Cohen
Cohen
Cole
Collins
Coulson
Croker
Dansey
Denne
Dennis
Dickinson
Dilke
Dyas
Eldridge
Enriquez, Alb.
Enriquez, Alf.
Evans
Fawkes
Finké
Fisher, E.
Fleming
Footner
Fowler
Fraser
Gambles, A.
Gambles, C.
Gooch
Goodlake
Hance
Handley
Hawkins
Henderson
Hill
Hooper
Houston
Jeffery
Joseph
Kemble
Kennedy
King, E.
King, L.
Lambert
Lanyon
Laurie
Lewin
Little
Lock, R.
Lockley
Lucas
Marcan
Martin
Middleton
Middleton
Morgan
Morris
Mortimore
Moseley
Murray
Ommanney
Osborne
Parish
Poe
Powell
Ramsay, H.
Rawlins
Redfern
Reece
Roberts
Russell
Sandell
Shelley
Sington
Stuart
Talbot
Talbot
Thomson, D.
Thomson, H. G. A.
Thompson, L.
Thornley
Turnbull
Turner
Urquhart
Watson
Weld
Wheatcroft
Whitaker
Williams, W. H.
Williams
Wilson
Wilson
Wilson
Wiltshire
Winter
Wood
Woodward

ORDINARY MEMBERS.

Atkins	Healing	Lyster	Rollo
Baines, C. T.	Hill	Macleod	Russell
Barrett	Hill-Thomson	May	Selby
Berrington	Hollins	Moore	Sherwood
Black	Hollway	Mortimer, A.	Sparrow
Carter	Hood	Mullins	Spencer
Chamier, A. G.	Jackson	Neame	Theobald, H.
Cleaver	James	Nelson	Thomson, A.
Crawford	Kirshaw	Newton	Titley
Cunrick	Kirkhouse	Noad	Torrie
Dennis	Knox-Brown	Noel, C.	Torrie
Francis	Lechmere	Noel, W.	Turnbull
Fowler	Lee	Pariente	Wenham
Grant	Levy, H.	Pery Knox-Gore, A.	Wernicke
Green	Levy, R.	Pery Knox-Gore, W.	Willcox
Halford	Lock, H.	Prichard	Woods
Hare	Long	Rider	

SUMMER TERM, 1895.

President : (vacant).

Secretaries : J. H. HICHENS, ESQ., W. H. D. ROUSE, ESQ.

Treasurer : W. M. BAKER, ESQ.

LIFE MEMBERS.

Adair	Bourne, E. E.	Dilke	Gooch
Adami	Chamier, P. G.	Dyas	Goodlake
Alexander	Cleaver	Eldridge	Hance
Atkins	Cohen	Enriquez, Alb.	Handley
Atkinson	Cohen	Enriquez, Alf.	Hawkins
Baines, F. A.	Cole	Evans	Henderson
Baines, L. O. T.	Collins	Fawkes	Hill, L. S.
Barnett	Cox	Finké	Home
Bedford	Coulson	Fisher	Houston
Berrington	Croker	Fleming	Jeffery
Bethel	Danish	Fowler	Joseph
Bickham	Dansey	Fowler	Kemble
Biggs	Denne	Fraser, A. C.	Kennedy
Blomfield	Dennis	Furniss	Kirshaw
Bourne	Dickinson	Gantillon	Lambert

Lanyon
Laurie
Lechmere
Lewin
Little
Lock
Lockley
Long
Lucas
Lyster
Macleod
Marcan
Middleton
Morgan
Morris
Mortimore
Murray, E.
Noad
Ommanney
Osborne
Parish
Prichard
Poë
Powell
Rawlins
Reece
Russell
Sandell
Shelley
Sherwood
Sington
Stuart
Talbot, B. W.
Thomson, H. G.
Thompson, L.
Thornley
Torrie
Turnbull
Turner
Urquhart
Watson
Weld
Wheatcroft
Whitaker
Williams, W. H.
Williams
Wilson
Wilson
Wilson
Wiltshire
Winter
Wood
Woodward

ORDINARY MEMBERS.

Arbuthnot
Baines, C. T.
Baxter
Bird
Black
Carter
Chamier
Clarke
Congreve
Crawford
Curnick
Dennis
Francis
Fraser, G.
Green
Halford
Hedger
Hill-Thomson
Hollway
Hood
Jackson
James
Knox-Brown
Lee
Levy, H.
Levy, R.
Lock
Maclean
May
Morgan
Moore, C.
Mottram
Mullins
Murray, H.
Murray, M.
Murray
Neame
Nelson
Newton
Noel, C.
Noel, W.
PeryKnox-Gore, A.
PeryKnox-Gore, W.
Phillips
Richardson
Rider
Rollo
Russell
Roberts, F
Roberts, G.
Savill
Selby
Skinner, J.
Sparrow
Spencer, A.
Spencer
Theobald
Thomson A.
Titley
Turnbull
Wallace
Wernicke
White
Willcox
Wilmer, W.
Woods

MICHAELMAS TERM, 1895.

President: THE REV. R. DE C. LAFFAN.

Secretaries: W. H. D. ROUSE, ESQ., C. I. GARDINER, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Adair
Alexander
Atkins
Baines, F.
Baines, L. O. T.
Bickham
Bourne
Bowle-Evans

Buckrett
Cleaver
Collins
Croker
Eldridge
Fawkes
Fitzherbert, A.
Finké
Fowler
Furniss
Gooch
Handley
Hill, B.
Hill, L. S.
Houston
Jackson
James
Joseph
Kemble
Kershaw
Lambert
Lanyon
Laurie
Lee
Levy, H.
Levy, R.
Lewin
Little
Long
Lock, R.
Lockley
Lyster
Middleton
Morris
Noad
Noel
Osborne
Parish
Phillips
Poe
Poyser
Prichard
Ramsey, H.
Ramsey
Rawlins
Roberts, J.
Russell
Sandell
Shelley
Sherwood
Sparrow
Stewart, G.
Talbot, B.
Thomson, A.
Thompson, H.
Turnbull
Wernicke
Wheatcroft
Whitaker
Wild
Williams, W. H.
Williams
Wilson
Worthen
Woods, E. G.

ORDINARY MEMBERS.

Baines, C. T.
Balfour, J.
Beasley
Bird
Biscoe
Black
Boothby
Bramwell
Brierly
Carter
Chamier
Clarke
Congreve
Cottrell
Crawford
Creswell
Curnick
Davies
Dennis
Edge
Fisher
Francis
Fraser, G.
Garrett
Gray
Greer
Grose
Griffith
Halford, E.
Hedger
Hill-Thomson
Hood
Houghton
Knox-Brown
Langley
Lee, M.
Lock, H.
Lockhart
Loyd
Lynch-Staunton
Maclean
May
Morris
Mortimer
Mottram
Mullins
Murray, H.
Murray, M.
Murray
Neame
Nelson
Newton
Pery Knox-Gore,
Pery Knox-Gore, W.
Reece, E.
Richardson
Rider
Roberts, F.
Rollo
Russell
Savill
Selby
Skinner
Spencer
Thomson
Torrie, T. G.
Wallace
Wheeler
White
Willcox
Wilson, W.

LECTURES, EXCURSIONS, &c.

Feb. 1 ...Lecture on Wild Flowers, by J. R. Wynne-Edwards, Esq.

Feb. 20...Lecture on "Some Greek Fairy Tales," by W. H. D. Rouse, Esq.

Mar. 1 ...Lecture on "The Geological Action of Ice," by C. Roberts, Esq.

Mar. 30...Lecture on "Larvæ," by T. G. Goodlake, Esq.

May 23...Expedition to Winchcombe and Hales Abbey

June 8 ...Expedition to Birdlip.

June 29...Expedition to Withington.

July 16...Expedition to Pinetum and Gloucester Cathedral.

Oct. 25...Lecture on "Some Greek Stories," by W. H. D. Rouse, Esq.

Nov. 23...Lecture on "The Structure of Birds," by F. J. Cade, Esq.

Nov. 29...Lecture on "Weather Charts and Storm Warnings," by C. I. Gardiner, Esq.

Dec. 7 ...Exhibition of Slides taken by the Photographic Section.

BOTANICAL SECTION.

President - - - J. R. WYNNE-EDWARDS, ESQ.

Secretary - - - G. W. SPARROW.

Working Members:

J. E. HOME.	C. H. C. NOAD.
C. G. WELD.	J. H. ROBERTS.
F. E. WILLIAMS.	C. F. NOEL.
C. P. JAMES.	B. WALTER.
C. H. G. MOTTRAM.	F. P. WERNICKE.

THE competition for the Botany Prize this year was carried out on somewhat simpler lines than formerly. Instead of working out the natural orders with the help of the 'School Flora,' the competitors merely brought their specimens to the Museum and had them identified and marked. This enabled them to spend more of their spare time in actually hunting for flowers, though probably at some sacrifice of accuracy of knowledge.

Another year we hope to have a complete record of the dates of first flowerings, but this year we have been unable to do this and have appended the initials of the two who get the greatest number to the flowers they found.

The Section shared two expeditions with the Ornithological Section. The first was on June 7th. We drove to Whitcombe, and after inspecting the Roman Villa, walked through the woods up to Birdlip. 116 different species were found in all. The second was to Hillcot and Colesbourne, and the woods by the Colne proved an excellent hunting ground. We were sorry to miss the Mimulus, which has been found in former years in the stream-bed. We got 128 species in all.

We make a special appeal to all those who feel an interest in Wild Flowers to join this Section next year. Boating boys have special opportunities for collecting, and the President of the Section

is always ready to receive specimens at the Museum on whole-school days between 2 o'clock and afternoon school.

Sparrow and Howe were excluded from the competition as winners of the prize in former years. The most successful were Noad, who won the prize with 227, and Weld who got 186.

JUNIOR SCHOOL.

President - - - F. J. CADE, ESQ.

Working Members.

HODSON, T. A.
CURRIE, M. M. L.
MACKIE, G. L.
WHITTUCK, H. C.
COLLETT, L. G.
GRIFFIN, T. W. R.
GRIFFITH, R. C.
LIDDLELAW, G. S.
LITTLEDALE, H. F.
MATTHEWS, F. A. W.
KING, S.
WORSEY, T. A.
PRUEN, A. S. F.
PORTER, L. B. M.
RING, C. S.
BURGE, R. L.
NESTOR-SCHMURMANN, H.

EXCELLENT work was done in this Section during the Summer term. Seventeen competed for the prizes which were given for the greatest number of specimens obtained, and were gained by Hodson with 237 specimens and Currie with 234, Mackie being third with 190.

An expedition was made on June 18th, in company with the members of the Ornithological Section to the Roman Villa at Chedworth and to Foss Bridge, returning by Puesdown. Among the flowers found not common in the immediate neighbourhood of Cheltenham were the henbane, skullcap, wood vetch, geranium columbinum, and galium uliginiosum.

In the following list of specimens it should be explained that the initials of Juniors appear only after those species which have *not* been given up by Seniors.

Next year it is hoped to give all the records of first flowerings.

H..T. A. Hodson. C..M. M. L Currie. B..Burge.
G..Griffin. Mc..Mackie. Co..Collett.

SENIORS.

W...C G. Weld. Wr..B. Walter. R..J. H. Roberts.
N...C. H. C. Noad. Wm..F. E. Williams.

Ranunculus Aquatilis, (Water Crowfoot) .. ..W., N.
,, Ficaria, (Lesser Celandine) .. ..W., N.
,, Arvensis, (Corn Buttercup) .. ..W., N.
,, Repens
,, Bulbosus } (Common Buttercup) .. ..W., N.
,, Acris
,, Auricomus, (Goldilocks) .. ..W., N.
,, Sceleratus, (Celery-leaved Crowfoot) .. N.
Caltha Palustris, (Marsh Marigold) .. .. ..W., N.
Chelidonium Majus, (Great Celandine).. .. ..W., N.
Papaver Rhoeas, (Common Poppy) .. .. .. W.
,, Dubium, (Long-headed Poppy) .. .. H.
Anemone Nemorosa, (Wood Anemone) .. .. H.
Fumaria Officinalis, (Fumitory) .. .. ..W., N.
,, Capreolata, (Rampant Fumitory) .. .. N.
Corydalis Lutea, (Yellow Fumitory) .. .. .. N.
Clematis Vitalba, (Traveller's Joy) .. .. .. N.
Thlaspi Arvense, (Penny Cress) .. .. .. W.
Capsella Bursa-Pastoris, (Shepherd's Purse) .. .. W.
Cochlearia Armoricaria, (Horse Radish) .. ..W., N.
Cardamine Pratensis, (Cuckoo Flower) .. .. W.
,, Hirsuta, (Hairy Bitter Cress) .. ..H., C.
Hesperis Matronalis, (Common Hesperis) .. ..H., C.
Arabis Hirsuta, (Hairy Rock Cress) .. .. ..W., N.
Barbarea Vulgaris, (Yellow Rocket) .. .. ..W., N.
Lepidium Campestre, (Field Cress) .. .. ..H., C.
,, Draba, (Hoary Cress) .. .. ..H., C.
Camelina Sativa, (Cameline) .. .. H.
Nasturtium Officinale, (Watercress) .. .. ..W., N.
,, Amphibium, (Great Watercress) .. .. W.
Erysimum Cheiranthoides, (Common Erysimum) ..H., C.
Sisymbrium Officinale, (Hedge Mustard) .. ..W., N.
,, Alliaria, (Garlic Mustard) .. .. ..W., N.
Brassica Alba, (Mustard) .. ..M., C.
,, Nigra, (Black Mustard) .. .. ..W., N.
,, Campestris, (Field) .. ..H., C.
,, Sinapistrum, (Charlock) .. .. .. W.
,, Muralis, (Wall) .. ..H. C.
,, Oleracea .. ..H. C.

Senebiera Coronopus	H. C.
,, Didgrna	N.
Draba Verna, (Whitlow Grass)	L.
Reseda Luteola, (Wild Mignonette)	W., N.
,, Lutea, (,,)	N.
Helianthemum Vulgare, (Rock Rose)	N.
Viola Hirta, (Hairy Violet)	
,, Odorata, (Sweet Violet)	
,, Canina, (Dog Violet)	W., N.
,, Tricolor, (Pansy)	W.
Polygala Vulgaris, (Milkwort)	W., N.
Silene Inflata, (Bladder Campion)	W., N.
,, Gallica, (Small-flowered Silene)	B.
Lychnis Diurna, (Red Campion)	W., N.
,, Vespertina, (White Campion)	W., N.
,, Floscuculi, (Ragged Robin)	W., N.
Sagina Procumbens, (Knotted Pearlwort)	N.
Arenaria Trinervis, (Sandwort)	W., N.
,, Serpyllifolia, (Thyme-leaved Sandwort)	
Stellaria Media, (Chickweed)	N.
Stellaria Holostea, (Stitchwort)	W., N.
,, Graminea, (Lesser Stitchwort)	N.
,, Uliguiosa, (Bog Stitchwort)	N.
Cerastium Triviale, (Mouse-ear Chickweed)	W., N.
Linum Catharticum, (Purging Flax)	N.
Malva Sylvestris, (Mallow)	W., N.
,, Moschata, (Musk Mallow)	W., N.
,, Rotundifolia	W., N.
Tilia Europaea, (Lime)	N.
Hypericum Perforatum, (St. John's Wort)	W., N.
,, Dubium Imperforati, (St. John's Wort)	H.
,, Quadrangulum, (St. John's Wort)	H., C.
,, Pulchrum, (Little St. John's Wort)	
,, Hirsutum, (Hairy St. John's Wort)	N.
Acer Pseudo-Platanus, (Sycamore)	N.
,, Campestre, (Maple)	H., C.
Euonymus Europaeus, (Spindle Tree)	H.
Castanea Vulgaris, (Horse Chestnut)	W., N.
Ilex Aquifolium, (Holly)	H.
Geranium Molle, (Dove's-foot Cranesbill)	W., N.
,, Lucidum, (Shining Cranesbill)	
,, Robertianum, (Herb Robert)	W., N.
,, Pratense, (Meadow Cranesbill)	W., N.
,, Columbinum, (Long-stalled Cranesbill)	G.
,, Dissectum, (Ragged Cranesbill)	N.
Oxalis Acetosella, (Wood Sorrel)	C.
Cytisus Scoparius, (Broom)	N.
Ulex Europaeus, (Gorse)	W.
Genista Tinctoria, (Dyer's Green Weed)	W.

Ononis Arvensis, (Rest Harrow) .. .. .. W.
Anthyllis Vulneria, (Kidney Vetch) .. .. .. H.
Medicago Sativa, (Lucerne) .. .. N.
Melilotus Officinalis, (Melilot) .. .. ..W., N.
Trifolium Minus, (Lesser Trefoil) .. .. ..W., N.
,, Pratense, (Red Clover) .. .. ..W., N.
,, Repens, (Dutch Clover) .. .. ..W., N.
,, Procumbens, (Hop Trefoil) .. .. ..W., N.
Lotus Corniculatus, (Bird's Foot Clover) .. ..W., N.
,, Major, (Great Bird's Foot Clover) .. ..W., N.
Hippocrepis Comosa, (Horse Shoe Vetch) .. .. H.
Onobrychis Sativa, (Common Sainfoin) .. ..H., C.
Vicia Sativa, (Common Vetch) .. .. .. N.
,, Tetrasperma, (Slender Vetch) .. .. ..H., C.
,, Sepium, (Bush Vetch) .. ..W., N.
,, Sylvatica, (Wood Vetch) .. .. .. C.
,, Cracca, (Tufted Vetch) .. ..W., N.
Lathyrus Pratensis, (Yellow Pea) .. .. ..W., N.
,, Macrorhizus, (Common Pea) .. .. ..
Prumus Padus, (Bird Cherry) .. .. .. N.
,, Communis, (Wild Plum) .. .. . N.
Rubus Idaeus, (Raspberry) .. ..W., N.
,, Fructicosus, (Blackberry) .. .. .. W.
,, Corylifolius, (Blackberry) .. . ..W., N.
Agrimonia Eupatoria, (Agrimony) .. .. .. W.
Rosa Canina, (Dog Rose) .. .. N.
,, Arvensis, (Field Rose) .. ..H., C.
Rosa Villosa, (Trailing Rose) .. .. ..W., N.
Spiraea Ulmaria, (Meadow Sweet) .. .. ..W., N.
,, Filipendula, (Dropwort) .. .. ..H., C.
Geum Urbanum, (Wood Avens) .. .. ..W., N.
Fragaria Vesea, (Wild Strawberry) .. .. ..W., N.
Potentilla Anserina, (Silverweed) .. .. ..W., N.
,, Tormentilla, (Tormentil) .. .. .. N.
,, Fragariastrum, (Barren Strawberry) .. .. N.
,, Reptans, (Creeping Cinquefoil) .. .. N.
Poterium Sanguisorba, (Salad Burnet) .. .. ..W., N.
Sanguisorba Officinalis, (Great Burnet) .. ..
Alchemilla Vulgaris, (Lady's Mantle) .. .. .. N.
Crataegus Oxyacantha, (Hawthorn) .. .. ..W., N.
Pyrus Malus (Crab Apple) .. ..W., N.
,, Aucuparia, (Mountain Ash) .. .. ..W., N.
,, Communis, (Pear) .. ..
Epilobium Montanum, (Willow Herb) .. .. ..W., N.
,, Angustifolium, (Rose Bay Willow Herb) ..W., N.
,, Palustre, (Marsh Willow Herb) .. ..H., C.
,, Hirsutum, (Hairy Willow Herb) .. .. N.
,, Parviflorum, (Hoary Willow Herb) .. ..H., C.
Circaea Lutetiana, (Enchanter's Nightshade) .. ..W., N.

Lythrum Salicaria, (Purple Loosetrife)	W.
Bryonia Dioica, (Bryony)	N.
Sedum Acre, (Biting Stonecrop)	W., N.
Chrysosplenium Oppositifolium, (Golden Saxifrage)	N.
Ribes Rubrum, (Red Currant)	N.
Sanicula Europaea, (Wood Sanicle)	W., N.
Cegopodium Podagraria, (Goutweed)	H., C.
Oenanthe Phyllandrium, (Dropwort)	W.
Carum Carvi, (Caraway)	H., C.
Aethusa Cynapium, (Fool's Parsley)	W., N,
Silaus Pratensis, (Meadow Silaus)	H., C.
Heracleum Spondylium, (Cow Parsnip)	W., N.
Pastinaca Sativa, (Parsnip)	H., C.
Conopodium Denudatum, (Earth-nut)	W.
Scandix Pecten-Veneris, (Venus' Comb)	C.
Angelica Sylvestris, (Angelica)	W., N.
Daucas Carota, (Wild Carrot)	H., C.
Anthriscus Sylvestris, (Chervil)	W., N.
Conium Maculatum, (Hemlock)	C.
Eupatorium Cannabinum, (Hemp Agrimony)	W., N.
Helosciadium Nodiflorum	N.
Apium Graveolens, (Parsley)	N.
Viscum Album, (Mistletoe)	H.
Cornus Sanguinea, (Dogwort)	W.
Sambucus Nigra, (Elder)	W., N.
Adoxa Moschatellina, (Moschatel)	
Viburnum Opulus, (Guelder Rose)	W., N.
,, Lantana, (Wayfaring Tree)	N.
Lonicera Periclymenum, (Honeysuckle)	W., N.
Galium Cruciatum, (Crosswort)	W., N.
,, Verum, (True Bedstraw)	W., N.
,, Mollugo, (Hedge Bedstraw)	W., N.
,, Parisiense, (Wall Bedstraw)	Mc.
,, Saxatile, (Rock Bedstraw)	H., C.
,, Uliginosum, (Marsh Bedstraw)	C.
,, Aparine, (Cleavers)	W,, N.
Sherardia Arvensis, (Field Madder)	N.
Asperula Odorata, (Woodruft)	W., N.
,, Cynanchica, (Squinancy wort)	W., N.
Valeriana Officinalis, (Valerian)	W., N.
Dipsacus Sylvestris, (Teazle)	
Scabiosa Succisa, (Scabious)	
,, Columbaria, (Small Scabious)	H., C.
Knautia Arvensis, (Field Scabious)	W., N.
Eupatorium Cannabinum, (Common Eupatory)	H , C.
Tragopedon Pratensis, (Goat's Beard)	W., N.
Leontodon Hispidus, (Hawkbeard)	N.
Hypochaeris Radicata, (Cat's Ear)	W., N.
Lactuca Muralis, (Wall Lettuce)	W., N.

Sonchus Arvensis, (Corn Sowthistle) .. .. .. H.
Sonchus Olereacus, (Sow Thistle) .. .. ..W., N.
Crepis Virens, (Hawkbit) .. ..W., N.
,, Biennis, (Biennial Hawkbit) .. .. ..N., C.
,, Hieracioides, (Hawkweed Crepis) .. ..W., N.
Tussilago Farfara, (Coltsfoot).. .. .. .. N.
Hieracium Pilosella, (Mouse-ear Hawkweed) .. ..W., N.
,, Murorum, (Wall Hawkweed) .. ..N., H.
Taraxacum Densleonis, (Dandelion) .. .. ..W., N.
Lapsana Communis, (Common Lapsana) .. ..W., N.
Arctium Lappa, (Common Burdock) .. .. .
Carduus Palustris, (Marsh Thistle) .. .. ..W., N.
,, Arvensis, (Field Thistle) .. .. ..W., N.
,, Nutans, (Musk Thistle) .. .. .. W.
,, Marianus, (Milk Thistle) .. .. ..H., C.
,, Lanceolatus, (Spear Thistle) .. .. ..W., N.
,, Acaulis, (Dwarf Thistle) .. .. ..W., N.
,, Crispus, (Welted Thistle) .. .. ..W., N.
Centaurea Nigra, (Knapweed) .. .. ..W., N.
,, Scabiosa, (Scabious Knapweed) .. ..W., N.
Tanacetum Vulgare, (Tansy) .. .. W.
Senecio Vulgaris, (Groundsel).. .. .. ..W., N.
,, Jacobaea, (Ragwort) .. ..W., N.
,, Erucifolius, (Narrow-leaved Senecio) .. ..H., C.
Inula Dysenterica, (Fleabane) .. .. ..H., C.
Bellis Perennis, (Daisy) .. ..W., N.
Chrysanthemum Leucanthemum, (Dog Daisy) .. ..W., N.
,, Segetum, (Corn Marigold) .. .. Wr.
Matricaria Camomilla, (Camomile) .. .. ..W., N.
Anthemis Cotula, (Field Camomile) .. .. .. H.
Achillea Millefolium, (Yarrow) .. .. ..W., N.
,, Ptarmica, (Sneezewort) .. .. ..H., C.
Artemisia Vulgaris, (Mugwort) .. .. .. H.
Campanula Rotundifolia, (Harebell) .. .. ..W., N.
,, Latifolia, (Giant Bell Flower) .. ..
,, Rapunculoides, (Creeping Bell Flower) .. H.
,, Trachelium, (Nettle-leaved Bell Flower) ..C, Mc.
Glomerata, (Clustered Bell Flower) .. .. ..W., N.
Monotropa Hypopitys, (Bird's Nest) .. .. ..W., N.
Ilex Aquifolium, (Holly) .. ..W., N.
Fraxinus Excelsior, (Ash) .. ..
Ligustrum Vulgare, (Privet) .. ..W., N.
Vinca Major, (Periwinkle) .. .. H.
Gentiana Campestris, (Gentian) .. ..
Erythraea Centaurium, (Centaury) .. .. .. N.
Chlora Perfoliata, (Yellow Wort) .. .. .. N.
Convolvolus Arvensis, (Convolvulus) .. .. ..W., N.
,, Sepium, (Great Convolvulus) .. ..W., N.
Hyoscyamus Niger, (Henbane) .. .. .. Co.

Solanum Dulcamara, (Woody Nightshade) .. .. W., N.
Atropa Belladonna, (Deadly Nightshade) .. .. Wm.
Veronica Arvensis, (Field Speedwell) .. .. .. N.
,, Hederæfolia, (Ivy-leaved Speedwell) .. .. N.
,, Serpyllifolia, (Thyme-leaved Speedwell) .. N.
,, Agrestis, (Field Speedwell) .. .. .. W.
,, Chamaedrys, (Germander Speedwell) .. .. N.
,, Anagallis, (Water Speedwell) .. .. .. W., N.
,, Montana, (Mountain Speedwell) .. .. N.
,, Buxbaumii, (American Speedwell) .. .. N.
,, Beccabauga, (Brooklime) .. .. .. W., N.
Verbascum Thapsus, (Mullein) .. .. .. N.
,, Nigrum (Black Mullein) .. .. .. W., N.
Pedicularis Sylvatica, (Field Lousewort) .. .. N.
,, Palustris, (Marsh Lousewort) .. ..
Rhinanthus Cristi-galli, (Yellow Rattle) .. .. N.
Bartsia Odontites, (Bartsia) .. .. W.
Melampyrum Pratense, (Cow-wheat) .. .. ..
Euphrasia Officinalis, (Eyebright) .. .. .. W.
Linaria Cymballaria, (Ivy-leaved Toad-flax) .. ..
,, Vulgaris, (Yellow Toad-flax) .. .. .. W.
,, Minus, (Lesser Toad-flax) .. .. .. N.
Scrophularia Nodosa, (Knotted Figwort) .. .. W., N.
,, Aquatica, (Water Figwort) .. .. N.
Digitalis Purpurea, (Foxglove) .. .. .. W.
Verbena Officinalis, (Vervain) .. .. ..
Mentha Arvensis, (Corn Mint) .. .. .. H., C.
,, Aquatica, (Water Mint) .. .. .. H.
Thymus Serpyllum, (Wild Thyme) .. .. .. W., N.
Origanum Vulgare, (Marjoram) .. .. ..
Caamintha Acinos, (Basil Thyme) .. .. .. W., N.
,, Officinalis, (Wild Basil) .. .. .. W., N.
,, Clinopodium, (Hedge Calamint) .. .. H., C.
Teucrium Scorodonia, (Wood Germander) .. .. N.
Ajuga Reptans, (Bugle) .. .. W., N.
Ballota Nigra, (Black Horehound) .. .. .. W., N.
Lamium Purpureum, (Red Dead-nettle) .. .. W., N.
,, Album, (White Dead-nettle) .. .. .. W., N.
,, Galeobdolon, (Yellow Dead-nettle) .. .. W., N.
Stachys Betonica, (Betony) .. .. W., N.
,, Sylvatica, (Hedge Woundwort) .. .. H., C.
,, Palustris, (Marsh Woundwort) .. .. .. W.
Galeopsis Ladanum, (Red Galeopsis) .. .. .. H., C.
Nepeta Gleehoma, (Ground Ivy) .. .. .. N., W.
Prunella Vulgaris, (Self.heal) .. .. .. N., W.
Scutellaria Galericulata, (Common Skullcap) .. .. C.
Lithospermum Arvense, (Corn Gromwell) .. .. N.
Myosotis Arvensis, (Field Forget-me-not) .. .. W., N.
,, Sylvatica, (Wood ,,) .. .. N.

Myosotis Caespitosa, (Tufted Forget-me-not) .. .. N.
,, Palustris, (True ,,) .. .. W.
,, Repens, (Creeping ,,) .. .. W.
Anchusa Officinalis, (Common Alkanet) .. .. H., C.
Cynoglossum Officinale, (Hounds Tongue) .. .. N.
Symphytum Officinalis, (Comfrey) .. .. W.N.
Borago Officinalis, (Common Borage) .. .. .. H., C.
Echium Vulgare, (Viper's Bugloss) .. .. ..W., N.
Primula Vulgaris, (Primrose) .. .. .. N.
Primula Veris, (Cowslip) .. ..W., N.
Lysimachia Nemorum, (Money Wort) .. .. .. W.
,, Nummularia. (Creeping Jenny) .. .. W.
Anagallis Arvensis, (Scarlet Pimperne) .. .. ..W., N.
Plantago Major, (Great Plaintain) .. .. ..W., N.
,, Media, (Hoary ,,) .. .. .. N.
,, Lanceolata, (Ribwort ,,) .. .. ..W., N.
Chenopodium Bonus Henricus, (Good King Henry) .. N.
,, Arbicum, (Upright Goosefoot) .. .. H., C.
,, Album, (Goosefoot) .. .. .. N.
,, Vulvaria, (Stinking Goosefoot) .. .. C.
Polygonum Aviculare, (Knotweed) .. .. ..W., N.
,, Amphibium, (Amphibious Bistort) .. ..W., N.
,, Persicaria, (Persicary) .. .. .. H., C.
,, Convolvulus, (Convolvulus Bindweed) .. N.
,, Bistorta, (Snakeweed) .. .. .. C.
Rumex Obtusifolius, (Dock) .. ..W., N.
,, Crispus, (Curled ,,) .. ..W., N.
,, Acetosa, (Sorrel) .. ..W., N.
,, Acetosella, (Sheep Sorrel) .. .. .. N.
Euphorbia Amygdaloides, (Great Spurge) .. .. N.
,, Helioscopia, (Sun ,,) .. ..W., N.
,, Peplus, (Common ,,) .. ..W., N.
,, Exigua, (Lesser ,,) .. .. W.
Mercurialis Perennis, (Dogs' Mercury) .. .. ..W., N.
Urtica Dioica, (Nettle) .. ..W., N.
,, Urens, (Small Nettle) .. .. H., C.
Ulmus Montana, (Elm) .. .. H., C.
Quercus Robur, (Oak) .. .. H., C.
Alnus Glutinosus, (Alder) .. .. H., C.
Salix Caprea, (Willow) .. .. W.
,, Purpurea, (,,) .. ..W., N.
,, Alba, (Common Willow) .. .. ..W.. N.
Pinus Syvestris, (Scotch Pine .. ..H., C.
Lemna Minor, (Duckweed) .. .. W.
Orchis Pyramidalis, (Pyramidal Orchid) .. .. ..W., N.
,, Mascula, (Early Purple ,,) .. .. ..W., N.
,, Masculata, (Spotted ,,) .. .. ..W., N.
,, Palustris, (Marsh ,,) .. .. .. H.. C.
Habenaria Bifolia, (Butterfly ,,) .. .. .. W.

Habenaria Viridis, (Frog Orchid) .. .. .. Wm.
Epipactis Latifolia, (Helleborine) .. .. ..
,, Palustris, (Marsh ,,) .. .. .. Mc.
Herminium Monorchis, (Musk Orchis) .. .. .. H., C.
Orphrys Apifera, (Bee Orchid) .. .. .. Wm.
Listera Ovata, (Twayblade) .. .. W., N.
Iris Pseudacorus, (Yellow Flag) .. .. .. Wm.
Polygonatum Officinale, (Solomon's Seal) .. .. N.
Allium Ursinum, (Garlic) .. .. N.
Arum Maculatum, (Lords and Ladies) .. .. .. W., N.
Hyacinthus Nonscriptus, (Hyaciuth) .. .. .. W., N.
Paris Quadrifolia, (Herb Paris) .. .. .. W., N.
Tamus Communis, (Black Bryony) .. . .. N.
Luzula Campestris, (Wood Rush) .. .. .. N.
Carex Praecox, (Early Sedge) .. .. W., N.
Juncus Glancus, (Common Rush) .. .. .. W.
,, Communis, (Common Rush) .. .. .. W.
Alisma Plantago, (Water Plantain) .. .. .. W.
Typha Latifolia, (Bulrush) .. .. N.
Melica Uniflora, (Melic Grass) .. .. .. N.
Phleum Prateuse, (Timothy Grass) .. : .. W., N.
Anthoxanthum Odorotum, (Vernal Grass) .. .. N.
Alopecurus Pratensis, (Foxtail Grass) .. .. .. N.
,, Geniculatus, (Bent Foxtail Grass) .. .. N.
Dactylis Glomerata, (Cock's Foot Grass) .. .. W., N.
Aira Caespitosa, ... N.
Calamagrostis Epigeros .. .. N.
Lolium Perenne, (Darnel) .. .. W., N.
Lathraea Filix Mas, (Male Fern) .. .. .. W., N.
Equisetum Palustre, (Horsetail) .. .. .. R.

ENTOMOLOGICAL SECTION.

President - - - W. GRIFFIN, ESQ.

Two boys only competed for the prize for a collection of butterflies and moths, namely Brettell and Collett. Both sent in very fair collections and their specimens were very well set. No rare specimens seemed to have been captured, and one specimen only of Colias Edusa represented the large numbers of this moth caught during the last two years. The prize was awarded to Brettell.

A complete list of the moths and butterflies captured during the year cannot unfortunately be given, but it is hoped that a list of captures will be published in next year's Report.

GEOLOGICAL SECTION.

President - - - C. I. GARDINER, ESQ.

HIS section has to mourn the loss of its President, Mr Hichens, but in a place like Cheltenham the loss of the President will not we hope mean the extinction of the section. A few members who are keen on the subject went to some of the neighbouring quarries during the winter term and succeeded in getting some very good fossils, and some of these have been presented to the School Museum.

The chief formations which were visited were the Oolite of Leckhampton, Cleeve and Crickley Hills, and the Lias of Leckhampton and Battledown.

The Lias, which is the oldest rock exposed in the immediate vicinity of Cheltenham, is a stiff blue clay, and yields many fossils. It is split up into three divisions called the Upper, Middle and Lower Lias, and the pits near Cheltenham seem to be in the Lower Lias.

All the pits near Battledown and the pit close to Leckhampton Station have yielded *Ammonites Striatus*, while the pit at the base of Hewletts Hill has yielded *Belemnites*, *Rhynconella*, and several bivalves which have not yet been named. The brick pit just at the base of Leckhampton Hill is in slightly higher beds and has yielded a large number of casts of various fossils, *Avicula Inæquivalis* being common. W. H. Williams found a very fine *Pholodomya* here. Enough has been seen at these pits to show that a very large collection of Lias fossils can be made from them and the College museum ought to have such a collection.

The Oolite which is exposed at Leckhampton Hill is all termed Inferior Oolite, and one can get almost a complete section of that

division of the Oolite at Leckhampton Hill. There are a number of different beds which may be seen and they have been given the following names :—

1. Ragstone.
2. Upper Freestone.
3. Oolite Marl.
4. Lower Freestone.
5. Pea Grit.
6. Cephalopod Bed.

The lowest bed of all is poorly shown and the most obvious bed when one has climbed up the first incline from the road and arrived at the lowest windlass, is the Pea Grit. This is an orange brown bed composed of large circular flattened concretions sometimes half an inch across. The lower part of the bed is cemented together into a firm limestone, the upper part weathers readily and crumbles away so that fossils are most easily extracted from this part of the bed. Above this comes a thick bed of freestone, with very few fossils reaching up to the top of the second tramway incline. Its base just above the Pea Grit is often made up of smashed up shells and fragments of fossils. A few feet below the second windlass platform, and easily reached, is a well marked band of rock, weathering white, soft and very fossiliferous, this is the Oolite Marl and it is about 6 feet thick. The characteristic fossil of this bed is *Terebratula Fimbria*, so called because its lower edge is all puckered and frilled, and many specimens may be collected in a very short time, they are interesting also because no two are exactly alike, an extraordinary amount of slight variation being visible in the shell marking. Another very common shell is *Astarte*, and a very good specimen of it was found by W. H. Williams and presented to the College Museum. This band is the easiest to find and well rewards the fossil hunter as it is one of the most fossiliferous bands of the Hill.

Above this Oolite Marl comes the Upper Freestone, a compact Oolite with few fossils and right at the top of the cliff comes a loosely packed bed with many oyster shells which is the lowest bed of the Ragstone.

This Ragstone has been much worked in past times at the top of the hill, where the old heaps of refuse are now grown over with grass, but the low cliff some 300 yards away from the edge of the present face of the hill is well worth looking at, as there are a large number of fossils to be got out of it, notably several kinds of *Trigoniæ*, also *Terebratula Globata and Rhynconella Subtetratedra.* In the clay bands in the Ragstone, in the highest quarries the workmen are finding some large Ammonites now (1896). Some of these should be obtained for the College Museum.

At Crickley Hill, the old quarries on the right of the road which descends the hill from the public house called the Air Balloon, give very good sections of Pea Grit, which is here much more fossiliferous than at Leckhampton, several Echinoderms, *Ammonites Murehisoniæ*, *Nautilus*, and various *Terebratulæ* and *Rhynconellæ* have been obtained from this locality by the President and Mr. Macdonald and the place is one which should be visited several times.

On Cleeve Hill not very much was found, but some good fossils have been obtained there in days gone by, and the locality is one which should be well searched.

From these and the other exposures of the Inferior Oolite a good local collection of fossils should without much difficulty be obtained, and it is hoped that those who belong to the section and others will not only collect for themselves but will assist in gradually getting in the Museum a good local geological collection. This will no doubt take years to do, but everyone can do a little and increase the collection while he is at the school. Presentations have been made during Xmas term by W. H. Williams and I. Francis.

No list of members of this section is given this year, as no record of the section during the first two terms of the year are to be found and therefore a complete list of members cannot be made out.

ORNITHOLOGICAL SECTION.

President - - - M. TANNER, ESQ.

Secretary - - - S. DENNIS.

The Prize—"Headley's Life and Structure of Birds"—was gained by J. S. Dyas.

Notices should be given in of the arrival or departure of migratory birds, as well as for eggs.

Working Members.

J. S. DYAS. S. DENNIS.
H. THOMSON. E. URQUHART

MEETING of the section was held at Thirlestaine Villa on November 23rd, when a paper was read by Mr. Cade on the structure of birds. The reader acknowledged his great obligations to the recently published book by Mr .Headley "Structure and Life of Birds" and we would take the opportunity of advising all who are interested in birds to obtain a copy of this most useful book. While the subject is treated with great thoroughness technicalities are avoided as much as possible, and anyone who has read the book will have gained a very fair idea of the anatomy and physiology of birds.

The best thanks of the section and of the College generally are due to Mr. W. L. Mellersh (O.C.), who has during the year given a vast amount of time and trouble to re-arranging the collection of eggs in the Museum. The collection has been badly cared for in the past and there are many gaps to be filled up even among the commoner species.

We print below a communication from Mr. Mellersh giving a list of deficiences and feel sure that we shall find many present

and past members of the school who will help to supply our wants as as we are able to tabulate them, and we may mention that Mr. Tanner has given us his collection.

As the Spring will soon be here attention is called to the British birds' eggs forming the College collection, which have been lately arranged in the new cabinet. There are very many prominent gaps as given below, and it is much hoped that members of the N.H.S. will do their best to fill them up if at the expense even of their own collections. In nine cases out of ten a boy's collection is placed out of sight in a lumber room on his leaving school. The result is that its contents are lost to him or to a permanent and public collection (such as the one here) which might become distinctly good if some general interest were shown in it.

There is a catalogue in connection with the cabinet in which will be inserted the names of those presenting eggs of any rarity or to any extent.

The following eggs are particularly wanted :—

Ring Ouzel.	Redstart.	Linnet.
Redwing.	Grasshopper Warbler.	Brambling.
Fieldfare.	Dipper.	Mealy Redpole.
Whinchat.	Giskin.	Marsh Titmouse.
Stonechat.	Hawfinch.	Wood-lark
Pied Wagtail.	Hooded Crow.	Snow Bunting.
Grey ,,	Crowbill	Lapland ,,
Yellow ,,	Corn Bunting	Cirl ,,

The Hawk tribe and marsh and river birds are scarcely represented at all. The commoner birds of sport are good, but the eggs of only the following sea-birds are to be seen, viz., Artic and Sooty Terns, Oyster-Catcher, Curlew, Guillemot, Razor-bill, Black-headed and Herring Gulls, and Richardson's Skua.

JUNIOR SCHOOL.

President - - - F. J. CADE, ESQ.

Working Members:

FORT, L. HODGSON, T. A.
PEMBERTON, E. H. COLLETT, L. G.

The prize was gained by L. Fort with 24 specimens. In the following lists the initials of Juniors have been appended only to those

which were not found by Seniors. We are unfortunatly unable this year to give the dates of finding.

SENIORS.	JUNIORS.
Dy..J. S. Dyas.	F...L. Fort.
D...S. Dennis.	H...T. A. Hodgson.
Th...H. Thomson.	C...L. G. Collett.
U...E. Urquhart.	P...E. H. Pemberton.

DATE.	NAME OF EGG.	LOCALITY.	TAKEN BY.
March 31st ..	Thrush ..	Charlton Kings ..	Dy.
,, 31st ..	Chiffchaff (arrival) ..	,, ,, ..	Dy.
April 2nd ..	Robin ..	,, ,, ..	Dy.
,, 3rd ..	Rook ..	,, ,, ..	Dy.
,, 5th ..	Blackbird ..	Crippets ..	Dy.
May 2nd ..	Jackdaw ..	Charlton Kings ..	Dy.
,, 2nd ..	Spoted Flycatcher (arrival) ..	,, ,, ..	Dy.
,, 5th ..	Chaffinch ..	Crippets ..	Dy.
,, 5th ..	Willow Wren ..	,, ..	Dy.
,, 5th ..	Chiffchaff ..	Charlton Kings ..	Dy.
,, 5th ..	Hedge Sparrow ..	,, ,, ..	Dy.
,, 9th ..	Tree-Creeper ..	,, ,, ..	Th.
,, 9th ..	Starling ..	,, ,, ..	Th.
,, 12th ..	Marsh Titmouse ..	Leckhampton ..	Dy.
,, 12th ..	Yellow Hammer ..	Crippets ..	Dy.
,, 13th ..	Blackcap ..	Charlton Kings ..	Th.
,, 13th ..	Redstart ..	,, ,, ..	Th.
,, 15th ..	Greenfinch ..	Pittville ..	Th.
,, 15th ..	House Sparrow ..	,, ..	Th.
,, 16th ..	Reed Bunting ..	Charlton Kings ..	D.
,, 18th ..	Tom-Tit ..	Leckhampton ..	Dy.
,, 19th ..	Great Tit ..	Crippets ..	Dy.
,, 19th ..	Turtle Dove ..	Charlton Kings ..	D.
,, 19th ..	Common Whitethroat ..	Crippets ..	Dy.
,, 19th ..	Lesser ,, ..	Charlton Kings ..	Dy.
,, 19th ..	Bullfinch .	Crippets ..	Dy.
,, 19th ..	House Martin ..	,, ..	Dy.
,, 19th ..	Sand ,, ..	Leckhampton ..	Th.
,, 22nd ..	Swallow ..	,, ..	Dy.
,, 23rd ..	Stock-Dove ..	Hales Abbey ..	Dy.
,, 23rd ..	Wood Pigeon ..	Hales Abbey ..	Th.
,, 24th ..	Tree Sparrow ..	Crippets ..	U.
,, 25th ..	Skylark ..	Tewkesbury . ..	Th.
,. 27th ..	Red-Backed-Shrike ..	Leckhampton ..	Th.
,, 30th ..	Sedge Warbler ..	Tewkesbury ..	D.

DATE.	NAME OF EGG.	LOCALITY.	TAKEN BY
June 1st ..	Swift ..	Sandy Lane	.. D.
	Wren ..		F., C., H.
	Missel Thrush ..		.. H.
	Partridge ..		.. F., P.
	Sand Martin ..		.. C., P.
	Moorhen ..		.. P.
	Tree Pipit ..		.. P.
	Cole Tit ..		.. F.
	Wild Duck ..		.. F.
	Pheasant ..		.. F.
	Linnet ..		.. F.
	Pied Wagtail ..		.. F.
	Garden Warbler ..		.. F.

PHOTOGRAPHIC SECTION.

President - - - - A. H. Macdonald, Esq.

Members.

Balfour, J. M.
Bird, E. B.
Boothby, E. B.
Cabrera, W. J.
Clarke, J. R.
Cohen, G. H.
Cottrell, V. S.
Creed, C. O.
Cresswell, F. W.
Fawkes, R. E. F.
Fowler, E. G.
Furniss, F.
Houghton, A. T.
Joseph, E. M.
Kershaw, F.
Little, C. H.
Lockhart, H. W.
May, H. S.
Neame, F. J.
Nelson, H. S. C.
Nothmann, V.
Pery-Knox-Gore, W. H. C.
Pery-Knox-Gore, A. F. G.
Rawlins, H. St. G.
Roberts, J. H.
Roberts, F. R.
Russell, R. E. M.
Samuelson, C. L.
Thomson, D. A.
Thomson, H. G. A.
Thomson, A. F.
Wallace, C. J. S.
Winter, E. C.

The annual exhibition of lantern slides was held on December 7th. Dr. Ferguson kindly consented to judge the slides sent in for competition, but the entries were unfortunately very few this year. The first prize was awarded to E. M. Joseph, whilst H. St. G. Rawlins and A. F. Thomson were bracketted second. The other competitors were A. T. Houghton and F. R. Roberts. A considerable number of additional slides were shown by the above, and also by W. Bowle-Evans, H. S. May, A. F. G. Pery-Knox-Gore and Mr. Rouse.

ADDITIONS TO THE MUSEUM

DURING 1895.

Ferns and Shells from New Zealand, and the Magazine of the Linnean Society ... ... Presented by C. G. Lyall, Esq., O.C.

Shells and specimen of Coral from the Fiji Islands, Presented by H. Thomson, Esq., O.C.

Bow and Quiver of Poisoned Arrows from the West Coast of Africa, Bow and five Arrows from North America, and Bow from Ceylon, Presented by A. B. Webster, Esq.

Small Crocodile from India ... Presented by Mortimer (C).

Fossils from Leckhampton ... Presented by W. H. Williams (C), and J. Francis (C).

BALANCE SHEET FOR 1895.

Receipts.

		£	s.	d.
Jan. ...	Balance in hand from 1894 ...	25	7	0
April...	Dark Room Subscriptions and First Term Subscriptions	8	1	6
July ...	Dark Room Subscriptions and Second Term Subscriptions ...	12	17	6
Dec. ...	Dark Room Subscriptions and Third Term Subscriptions ...	8	4	0

£54 10 0

Audited and found correct, Feb. 21st, 1896,
A. A. Bourne.

Expenditure.

	£	s.	d.
Hire of Slides and carriage...	0	3	8
Expenses of Mr. Rouse's Lecture	0	9	6
Slides Bought, (per W.H.D.R.)	1	11	0
King, Dark Room Supervision, First Term	3	9	0
King, Managing Lantern at Lectures ...	0	7	6
Expenses of Birdlip Excursion (per M.T.)...	0	14	4
„ Hales Abbey „ (per W.H.D.R.)	2	12	3
„ Colesborne „ (per J.R.W.E.)	0	13	0
King, Dark Room Supervision, Second Term	4	2	3
Balcomb (per F.J.C.)	0	3	0
Lantern Slide Exhibition (per W.H.D.R.)...	0	9	6
King, Dark Room Supervision, Third Term	4	2	0
King, Managing Lantern at Lectures ...	0	10	0
New Lantern, etc. (Thomas Bros.) ...	20	17	6
Balance in hand	14	5	6

£54 10 0

W. M. Baker,
Hon. Treasurer.

CHELTENHAM COLLEGE

Natural History Society

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1896.

CHELTENHAM COLLEGE

Natural History Society.

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1896

Sumptibus Editorum Cheltoniensium.

CHELTENHAM :
DARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

CHELTENHAM :
THOMAS HAILING, OXFORD PRINTING WORKS.
1897.

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THE COUNCIL.

President	THE PRINCIPAL.
Vice-President	REV. J. MUGLISTON.
Treasurer	W. M. BAKER, ESQ.
Secretary	C. I. GARDINER, ESQ.
President of Archaeological Section ...	A. S. OWEN, ESQ.
President of Botanical Section ...	J. R. WYNNE-EDWARDS, ESQ.
Secretary	C. NOAD.
President of Entomological Section ...	J. C. SALTER, ESQ.
President of Geological Section ...	C. I. GARDINER, ESQ.
President of Ornithological Section ...	M. TANNER, ESQ.
Secretary	A. F. THOMSON.
President of Photographic Section ...	A. H. MACDONALD, ESQ.
President of Junior School ...	F. J. CADE, ESQ.

PREFACE.

HE past year has been one of quiet but steady progress. The Excursions and Lectures of the Society have been very well attended, the latter having indeed at times drawn so large an audience that the Lecture Theatre has been most inconveniently crowded.

Lists of flowers and moths found in the Cheltenham district are published this year, they are by no means complete, and it is hoped that all members of the Society who take an interest in Botany or Entomology, whether they are members of the Sections which study those subjects or not, will do what they can to make the lists more complete. That our lists are improving is shown by the fact that seventy more flowers were noticed this year than last.

Owing to the Old Chapel being now about to be used as a Library and Museum, there is at last a chance that we may get a little more space in our present Museum. Some of the things will be moved out into the Old Chapel, though much of the space there available for the museum will be filled with a collection of birds not yet exhibited.

It will probably be possible to keep the old Museum for a Natural History Museum alone.

The crying need in our Museum is for better arrangement of the specimens, and at present it is so terribly crowded that this appears impossible, with more space however it is hoped that the collections will be of more value.

The thanks of the Society are due to various O.C's. who have made presentations to the Museum during the past year, a list of which is published in this report. We must also thank W. F. Hicks-Beach, Esq., for allowing us to see the Roman Villa at Whitcomb, when we had our excursion there last May.

RULES.

1.—That this Society be called the Cheltenham College Natural History Society, and have for its object the promotion of the study of Natural History.

2.—That Ordinary Meetings of this Society be held on Fridays once in three weeks at 5.30 p.m., or at such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal Subscriptions, be exempt from any further payment.

6.—That any Member whose subscription shall be a whole term in arrears shall cease to be a Member of the Society.

7.—That Members be encouraged to join sections for the more accurate study of the different branches of Natural History : that the formation of these be arranged, and the work settled at the first Meeting of each term : that each section be under a President, who is responsible for its Meetings and organisation, and that a Secretary be appointed by each section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the Presidents

and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President, or, in his absence, a Member of the Council shall preside.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of the two Auditors, to be appointed at the last Meeting of each year, be laid on the table at the first Meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules

15.—That the Secretary have power by a vote of the majority of Members present, at a Special or Ordinary meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-Member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two thirds of those present.

Cheltenham College Natural History Society,

LENT TERM, 1896.

President : THE REV. R. DE C. LAFFAN.

Secretary : C. I. GARDINER, ESQ.

Treasurer : W. M. BAKER, ESQ.

LIFE MEMBERS :

Adair
Alexander
Atkinson
Baines, F. A.
Baines, L. O. T.
Barratt
Bickham
Bourne, E.
Bowle-Evans
Cleaver
Cohen, G.
Cohen, S.
Collins
Croker
Dansey
Davenport
Eldridge
Fawkes
Finke, R. H.
Fitzherbert
Fowler, E. G.
Fraser, A. C.
Gooch
Handley
Hill, B. H.
Hooper, J.
Houston
Jackson
James, W. P.
Joseph
Kemble
Kershaw
King, L.
Lambert, J. P.
Langford-James
Lanyon
Little, C. H.
Lock, R.
Marcan, L.
Middleton, G. V.
Morris
Noad
Noel, C.
Noel, E.
Northall-Laurie
Osborne
Parish, S.
Poë,
Phillips
Poyser
Pritchard, E. C.
Ramsay, H.
Rawlins
Roberts, J. H.
Russell
Shelly
Sington
Sparrow, W.
Spencer, A.
Stuart
Talbot, B.
Thomson, D. A.
Thomson
Torrie, C. J.
Turnbull
Watson
Wheatcroft, H. A.
Whittaker
Wild
Williams, A. S.
Williams, F. E.
Williams, W. H.
Williams
Wilson, S. B.
Woods, S. I.

ORDINARY MEMBERS :

Bathurst
Baines, C. T.
Beach
Beazley, R. L.
Bedell
Birtwhistle, G.
Biscoe
Black
Booth
Bramwell, G.
Brierley, W.
Capel-Davies
Carter
Chamier
Clarke

Cottrell, J.
Cottrell, V.
Congreve
Conran, W.
Crawford, A.
Cresswell
Crookes
Curnick
Currie
Dennis, R. H.
Dixon
Edge
Francis, J.
Fraser, G.
Fisher
Fitzherbert, E.
Fort, L.
Garrett
Graesser
Grey, A. J. H.
Griffith, R. C.
Grose
Halford, E.
Hedger
Hill-Thomson
Hodgson, T. A.
Hood, F.
Houghton, A. T.
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Knox-Brown
Langley
Lee, A.
Lee, M.
Levy, H.
Levy, R.
Lloyd, A. M.
Lock, H.
Lockhart
Long
Lynch-Staunton
Maclean
Macrae, F.
May
McLeod
Medlicott
Middleton.
Morris
Mortimer
Mottram
Mullings
Murray, H. K
Murray, M.
Murray
Neame
Nelson
Newton
Oliver
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Ponting
Popham
Porteous, N.
Reece, E.
Reynolds, D.
Richardson
Rider
Roberts, F. R.
Rollo
Russell
Savill
Selby
Skinner
Sington
Sparrow, G.
Taylor
Torrie, T.
Upton, H.
Wallace
Walter
Walter
Wells
Wheatcroft, K.
Wheeler
White
Wilcox.
Wilson
Wolff

SUMMER TERM, 1896.

President: THE REV. R. DE C. LAFFAN.

Secretary: C. I. GARDINER, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Adair
Atkinson
Baines, L. O. T.
Barrett
Black
Bourne, E.
Bowle-Evans
Carter
Chamier
Cleaver, A.
Cohen
Collins
Crawford
Curnick
Dansey
Davenport
Dennis
Eldridge
Fawkes
Fraser, A. C.
Fitzherbert, A.
Francis, J.
Halford, E.
Handley

Hill Thomson
Hood
Hooper
Jackson
James
Joseph
Kemble
Kershaw
King, L. R.
Knox-Brown
Lambert, J.
Langford-James
Lanyon
Lee, M.
Levy, H.
Levy, R.
Lock, H.
Lock, R.
Maclean
Marcan
May
Neame
Noad
Noel, C.
Noel, E.
Northall-Laurie
Osborne
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Phillips
Poë
Poyser
Ramsay
Rawlins
Rider
Rollo
Russell
Russell
Selby
Shelley
Sington
Talbot
Thomson
Turnbull
Watson
Wheatcroft, H.
Whittaker
Wild
Williams, A. S.
Williams, F. E.
Williams, W. H.
Williams

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Bathurst
Baines, C. T.
Beach, G.
Beazley, R. L.
Birkett
Birtwhistle, J. C.
Biscoe
Bramwell
Brettell, V.
Brierley, W.
Capel-Davies
Clarendon
Clarke
Coddington, H. H.
Collett, L. G.
Conran
Congreve
Cottrell
Cresswell, C. S.
Crookes
Currie, M.
Dixon
Edge
Fisher
Fitzherbert, C.
Fitzherbert, E.
Fort, L.
Fraser, G. F.
Garratt
Gray, A. J.
Gray, A. M. H.
Greer
Griffith, R. C.
Grose
Hodson, H.
Hodson, T A.
Houghton
Houston
Johnson
Lee, A.
Lewer
Lloyd, A. M.
Lockhart
Long
Lynch-Staunton
Macrae, F.
McLeod
Medlicott
Morris
Mullings
Murray, H. K.
Murray, M.
Newton
Oliver
Porteous, N.
Reynolds, A. O. P.
Roberts, F. B.
Savill
Sington
Skinner, J.
Sparrow
Stuart
Suarez
Thwaite
Torrie, T.
Turner
Upton
Vere
Wallace
Walter
Wells
Wheatcroft
White
Wilson
Wolff

MICHAELMAS TERM, 1896.

President: THE REV. R. DE C. LAFFAN.

Secretary: C. I. GARDINER, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Adair
Baines, C. T.
Black
Bourne, E.
Bowle-Evans
Carter
Chamier
Clarke
Cleaver
Cohen, G.
Collins
Crawford, A.
Curnick
Dennis, R. H.
Eldridge
Fawkes
Fowler, E. G.
Fraser, A. C.
Gooch
Greer
Halford
Handley
Hill, B. H.
Hill-Thomson
Hood
Hooper
Houghton
Jackson
James
Kershaw
King, L. R.
Knox-Brown
Lanyon
Lee, M.
Levy, H,
Levy, R.
Little
Lock
Maclean
Marcan
May
Middleton
Morris
Mullings
Neame
Newton
Noad
Noel, C.
Noel, E.
Northall-Laurie
Osborne
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Phillips
Rawlins
Rider
Rollo
Russell
Selby
Shelley
Spencer
Thomson, D. A.
Thomson
Torrie, C.
Torrie, T.
Turnbull
Watson
Williams, A.
Williams, F. E.
Williams, W. H.
Wilson
Woods

ORDINARY MEMBERS.

Adair
Balfour
Beach
Beazley, R. L.
Birkett
Birtwhistle
Biscoe
Brettell, V.
Brierley
Clarendon
Collett
Congreve
Conran
Copland
Cottrell
Crookes
Currie
Denne
Dixon
Edge
Fisher
Fitzherbert, C.
Fitzherbert, E.
Fort
Francis
Fraser
Garratt
Gray, A.
Green
Grey, A. J. H.
Grieve
Griffith, R. C.
Grose, F.
Grose, W.
Haldinstone
Hare

Harrison, A.
Hart, A.
Hawkins, A.
Heath
Hodson, A.
Houston
Johnson
Johnstone
Jordan
Lathbury
Lee, A.
Lewer
Lloyd, A. M.
Lockhart
Lynch-Staunton
Mackie, T.
Macrae
Mansfield
Martin, N.
Medlicott
Middleton
Moore, H. F.
Moore
Morris
Morris, M.
Murray, H.
Murray, M.
Nothmann
Oliver
Peal
Penny
Porteous
Porter
Reynolds
Rickford
Roberts, F.
Samuelson
Sanders, H.
Sanders, J.
Schnurmann, N.
Simeon
Sington
Smith
Soutry
Stamp
Stephens
Stuart
Suarez
Tillard
Thwaite
Turner
Upton
Vere
Wallace
Walter
Wells
Wheatcroft
White
Wolff, A.

LECTURES AND EXCURSIONS.

Feb. 7...Lecture on Coal Mines, by A. H. MACDONALD, ESQ.

„ 20...Lecture on Soap Bubbles, by T. HYETT, ESQ.

Mar. 6...Lecture on Some Animals, Past and Present, by C. I. GARDINER, Esq.

„ 27...Lecture on Green Leaves, by H. MATTHEWS, ESQ.

May 30...Excursion to Whitcombe.

June 13...Excursion to Wainlode Cliff.

„ 27...Excursion to Pegglesworth.

July 11...Excursion to Crickley Hill and Birdlip.

Oct. 29 ..Lecture on Glaciers, by J. R. WYNNE-EDWARDS, ESQ.

Nov. 13...Lecture on Rock Builders, by E. WETHERED, ESQ. F.G.S.

„ 23 ..Lecture on Argon and Helium, G. W. HEDLEY, ESQ.

Dec. 10...Lecture on Cheltenham in the Olden Days, by A. S. OWEN, ESQ.

„ 16...Exhibition of Slides taken by the Photographic Section.

ADDITIONS TO THE MUSEUM, 1896.

Collection of Fossils, presented by the Rev. E. T. Griffiths, O.C.

Two Cabinets containing Botanical Studies, presented by R. L. Shubrich, Esq., O.C.

Two Eider Ducks shot at Whitcomb (in case), presented by F. J. Cade, Esq., O.C.

Musical Instruments from West African Coast and a Mohammedan Prayer Book, presented by Captain Troughton, O.C.

Coat and Uniform of Cheltenham College Cadet Rifle Corps, presented by Captain A. Crawford, O.C.

ARCHAEOLOGICAL SECTION.

President - - - A. S. OWEN, ESQ.

Members:

T. H. K. Adkin. A. M. H. Gray. A. T. Houghton.
J. M. Balfour. St. G. J. Heath. G. R. Murray.
G. Beach.

N Thursday, June 4th 1896, a small party walked to Southam de la Bere, which is at present tenantless, and went round that historic mansion, some parts of which date from the time of the Plantagenets. There is much to see, not only in the picturesque architecture of the building, but in the fine paintings and treasures gathered from every land, with which the building is stored. When full justice had been done to the interest of the house, our geological friends went off to investigate a neighbouring quarry, while the archæologists proceeded to the adjoining village, and inspected the two ancient farmhouses—one of which contains a phenomenally large stone cider press—and the old Norman chapel, restored as a parish church by the late Lord Ellenborough. After tea the party returned to Cheltenham.

In several of the general expeditions there were objects of interest for those who cared for archæology. At Birdlip the old Roman bath with its hypocaust was viewed. In the expedition to the Severn the day was too hot to induce many to cover the extra three miles necessary to visit Deerhurst with its two old Saxon churches dating from before the Conquest; on a subsequent expedition the scanty remains of the old camp on Crickley Hill were examined.

A prize will be given to members of the Archæological Section for the best set of photographs or sketches illustrating the Church Architecture within seven miles of Cheltenham. They must be arranged chronologically according to the different styles of architecture, and must reach the President of the Section by the last day of the Summer Term.

BOTANICAL SECTION.

SENIOR.

President - - - - J. R. WYNNE-EDWARDS, ESQ.
Secretary - - - - C. H. C. NOAD.

JUNIOR.

President - - - - F. J. CADE, ESQ.

Working Members.

C. I. Gardiner, Esq. A. H. Macdonald, Esq. G. W. Hedley, Esq.

Senior.

H. A. G. Chamier,	Ch.	M. M. L. Currie,	C.	M. W. B. Oliver,	O.
L. G. Collett,	Co. 1	R. C. Griffith,	G.	C. T. S. Wallace.	
F. L. Congreve,	Cn.	T. A. Hodson,	H.	C. G. Weld.	
T. H. J. Crookes,	Cr.	C. P. James,	J.		

Junior.

R. L. Burge.		J. C. Marklove.		A. S. F. Pruen,	Pr.
H. T. Butt,	B.	H. C. Mitchell-Dawson,	M.-D.	W. R. F. Ryan,	R.
S. Gollett,	Co. 2			H. Nestor Schnurmann.	
A. S. Dugdale,	D.	G. Marsden,	M. 1	T. M. Salter,	S.
H. de C. Falle,	F.	A. Marsden,	M. 2	C. E. Stranack,	St.
T. W. R. Griffin,	Gr.	C. A. G. Moore,	Mo.	H. C. Whittuck,	W.
C. T. H. Handley.		T. L. Pearce,	P.	G. A. W. Young,	Y.
W. H. King.	K.	C. T. C. Plowden,	Pl.		

[The initials after the names refer to the list of records.]

SENIOR DEPARTMENT.

THE season's work in this section has been most successful. The prize for the greatest number of plants in flower was shared by Hodson and Currie, who accomplished the remarkable feat of beating the previous record by over 100. The following are the general results of the competition:—

Hodson	..	360 (exclusive of sedges, grasses and ferns).
Currie	..	355 " " " "
James	..	172
Oliver	..	134
Collett	..	109
Griffith	..	52

Weld .. }	51
Crookes .. }	
Congreve ..	50
Wallace ..	42
Chamier ..	37

A record of first flowerings has also been kept, the results of which we publish ; it is perhaps the best test of keenness of work, and here we were closely rivalled, if not actually beaten, by the junior section. The usual three sectional excursions were increased to four this year, and they all proved very successful, in every case being favoured by good weather.

On Saturday, May 30th, we drove to Whitcombe Magna and walked through the woods to Birdlip. Among the finds were Ophrys muscifera (Fly Orchid), Pyrus aria (Beam Tree), Cephalanthera grandiflora (White Helleborine), Neottia nidus-avis (Bird's-nest Orchid), Atropa Bella-donna (Deadly Nightshade), Cynoglossum vulgare (Hound's-tongue.)

On Saturday, June 13th, we drove to Wainlode Cliff, and thence walked along the old canal to the Severn at Wainlode Hill. This was a new excursion, and it proved most interesting; the canal is one of the best places for marsh plants in the whole district, and in previous years fellows who did not belong to the boat club have had no opportunity of getting to the river. The following were found :—Thalictrum flavum (Meadow Rue), Scutellaria galericulata (Scull-cap), Oenanthe fistulosa (Water Dropwort), Nasturtium amphibium (Great Watercress), Geranium pratense (Meadow Cranesbill), Sagittaria sagittifolia (Arrow head.)

On Saturday, June 27th, we drove to Pegglesworth, and walked through the woods to the Hilcot fish-breeding ponds, returning by Colesbourne. The following were found : Epilobium angustifolium (Rose-bag Willow Herb), Verbascum nigrum (Black Mullein), Mimulus luteus (Monkey Flower).

On Thursday, July 16th, there was an excursion to Crickley Hill and Birdlip, which was mainly intended for geologists. Among the flowers found were Inula conyza and dysenterica (Fleabane), Carlina vulgaris (Carline Thistle), and Ranunculus flammula (Lesser Spearwort.)

List of first flowerings:

Latin Name.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba ..	Traveller's Joy ..	June 30..	Gr.
Anemone Nemorosa ..	Wood Anemone ..	Mar. 25..	J, H, C.
Ranunculus Aquatilis ..	Water Crowfoot ..	April 23..	H, C.
,, Flammula ..	Spearwort ..	June 29..	Gr.
,, Ficaria ..	Celandine ..	Mar. 8..	Ch.
,, Sceleratus ..	Scelery-leaved Crowfoot ..	May 24..	C.
,, Auricomus ..	Goldilocks ..	April 12..	C.
,, Acris	..	May 4..	Pr.
,, Repens }	Common Buttercup ..	Mar. 12..	S.
,, Bulbosus	..	Mar. 12..	S.
,, Arvensis ..	Corn Buttercup ..	May 17..	C.
,, Hederaceus ..	Water Crowfoot ..	April 23..	H, C.
Thalictrum Flavum ..	Meadow Rue ..	June 13.	H, C.
Helleborus Viridis ..	Green Hellebore ..	May 24..	Gr.
Caltha Palustris ..	Marsh Marigold ..	Mar. 22..	H.
Aquilegia Vulgaris ..	Columbine ..	May 29 .	H.
Nuphar Lutea ..	Yellow Water Lily ..	June 20..	K, B, Gr, Co.
Papaver Rhoeas ..	Field Poppy ..	May 12..	Gr. [2, W.
,, Dubium ..	Long-headed Poppy ..	May 17..	C.
,, Argemone ..	Pale ,, ..	May 24..	H.
Chelidonium Majus ..	Common Celandine ..	April 24..	H, C.
Fumaria Officinalis ..	,, Fumitory ..	April 24..	H, C.
Corydalis Lutea ..	Yellow ,, ..	May 17..	Gr.
Barbarea Vulgaris ..	Yellow Rocket ..	May 10..	H.
Nasturtium Officinale ..	Common Water Cress ..	May 14..	Gr.
,, Palustre ..	Marsh ,, ..	June 13..	J, H, C, O.
,, Amphibium ..	Great ,, ..	June 20..	K, B, Gr, F,
Arabis Hirsuta ..	Hairy Rock Cress ..	May 1..	C. [Co. 2, W.
Cardamine Pratensis ..	Cuckoo Flower ..	Mar. 22..	J.
,, Hirsuta ..	Hairy Bitter Cress ..	Mar. 8..	C.
Hesperis Matronalis ..	Dame's Violet ..		Pl.
Sisymbrium Officinale ..	Yellow Hedge Mustard ..	May 3..	Cr.
Alliaria Officinalis ..	Garlic Mustard ..	Mar. 26..	Pr.
Erysimum Cheiranthoides ..	Treacle Mustard ..	July 4..	C.
Brassica Muralis ..	Wall Brassica ..	Mar. 16..	Pr.
,, Oleracea ..	Cabbage ..	May 10..	H.
,, Campestris ..	Field Brassica ..	May 11..	Gr.
,, Sinapistrum ..	Charlock ..	May 16..	C. [W.
,, Nigra ..	Black Mustard ..	June 20..	K, B, Co. 2,
Cochlearia Armoracia ..	Horse Radish ..	May 10..	G.
Draba Verna ..	Whitlow Grass ..	Mar. 19..	Pr, S, St, Pl.
Thlaspi Arvense ..	Penny Cress ..	June 8..	Gr.
Capsella Bursa-pastoris ..	Shepherd's Purse ..	Feb. 23..	H.
Lepidium Campestre ..	Common Pepperwort ..	May 1..	C.
,, Draba ..	Hoary Cress ..	May 19..	F.
,, Smithii ..	Smith's ,, ..	May 10..	G.

Latin Name.	*English Name.*	*Date.*	*Record.*
Senebiera Coronopus ..	Wart Cress ..	June 18..	Gr.
,, Didyma ..	Lesser ,, ..	May 13..	C.
Iberis Amara ..	Candytuft ..	June 27..	Gr.
Isatis Tinctoria ..	Woad ..	July 14..	Gr, H. C.
Reseda Luteola ..	Dyer's Weed ..	May 24..	H.
,, Lutea ..	Cut Leaved Mignonette..	May 17..	Gr.
Helianthemum Vulgare ..	Rock Rose ..	May 17..	Gr.
Viola Odorata ..	Sweet Violet ..	Mar. 19..	Pl.
,, Hirta ..	Hairy ,, ..	Mar. 27..	C.
,, Canina ..	Dog ,, ..	Mar. 15..	Ch, O.
,, Tricolor ..	Pansy ..	April 13..	C.
Polygala Vugaris ..	Milkwort ..	May 10..	H.
Silene Inflata ..	Bladder Campion ..	May 24..	Gr.
Lychnis Vespertina ..	White ,, ..	May 8..	Gr.
,, Diurna ..	Red ,, ..	April 23..	H, C.
,, Githago ..	Corn Cockle ..	June 27..	H.
,, Flos-cuculi ..	Ragged Robin ..	May 23..	J.
Sagina Procumbens ..	Procumbent Pealwort ..	May 5..	Pr.
,, Nodosa ..	Knotted ,, ..	July 18..	H.
Arenaria Serpyllifolia ..	Thyme-leaved Sandwort	May 23..	H.
,, Trinervis ..	Three-nerved ,, ..	April 18..	C.
Cerastium Vulgatum ..	Mouse-ear Chickweed ..	Mar. 22..	H, C.
Stellaria Aquatica ..	Water Starwort ..	June 13..	J, H.
,, Media ..	Chickweed ..	Feb. 23..	Ch, C, H.
,, Uliginosa ..	Bog Starwort ..	May 28..	Gr.
,, Graminea ..	Lesser ,, ..	May 24..	C.
,, Holostea ..	Common Starwort ..	April 5..	Ch.
Hypericum Perforatum ..	Common St. John's Wort	June 13..	J, H.
,, Dubium ..	Imperforate ,, ,,	July 24..	H.
,, Quadrangulum	Square-stalked ,, ,,	July 14..	H, C.
,, Humifusum ..	Trailing ,, ,,	..	*C.I.G.*
,, Hirsutum ..	Hairy ,, ,,	June 20..	B, Gr.
Linum Catharticum ..	Purging Flax ..	May 17..	H.
Malva Rotundifolia ..	Dwarf Mallow ..	June 23..	Gr.
,, Sylvestris ..	Common ,, ..	May 31..	C, Gr.
,, Moschata ..	Musk ,, ..	June 27..	H.
Tilia Europea ..	Lime ,, ..	June 18..	C.
Geranium Pratense ..	Meadow Cranesbill ..	May 24..	Pr.
,, Robertianum ..	Herb-Robert ..	April 28..	H.C.
,, Molle ..	Dove's-foot Cranesbill ..	May 3..	O.
,, Dissectum ..	Jagged ,, ..	May 24..	H, B, Gr.
Oxalis Acetosella ..	Wood Sorrel ..	Mar. 25..	J.
Acer Campestre ..	Maple ..	April 30..	C.
,, Psendo-Platanus ..	Sycamore ..	April 24..	C.
Aesculus Vulgaris ..	Horse Chestnut ..	April 27..	C.
Ilex Aquifolium ..	Holly ..	May 10..	H.
Euonymus Europaeus ..	Spindle Tree ..	May 21..	Gr.
Ulex Europaeus ..	Gorse ..	Feb. 23..	H.

Latin Name.	*English Name.*	*Date.*	*Record.*
Genista Tinctoria ..	Dyer's Greenweed ..	June 14..	H, C.
Cytisus Scoparius ..	Broom ..	April 21..	H.
Ononis Arvensis ..	Rest Harrow ..	June 20..	H, Gr.
Medicago Sativa ..	Lucern ..	July 14..	H, C.
Melilotus Officinalis ..	Melilot ..	June 20..	B.
Trifolium Arvense ..	Hare's Foot Trefoil ..	July 24..	H.
,, Pratense ..	Purple Clover ..	May 3..	C, M.
,, Repens ..	Dutch ,, ..	May 17..	C, B.
,, Procumbens ..	Hop Trefoil ..	June 3..	H, C.
,, Minus ..	Lesser ,, ..	April 30..	C.
Lotus Corniculatus ..	Birds' Foot Trefoil ..	May 6..	C.
Anthyllis Vulneraria ..	Kidney Vetch ..	May 17..	H.
Hippocrepis Comosa ..	Horse-shoe Vetch ..	May 17..	H, Gr.
Onobrychis Sativa ..	Sainfoin ,, ..	May 20..	Gr.
Vicia Hirsuta ..	Hairy ,, ..	May 24..	C, Pr.
,, Cracca ..	Tufted ,, ..	June 13..	J, H.
,, Sylvatica ..	Wood ,, ..	May 30..	Gr.
,, Sepium ..	Bush ,, ..	April 20..	C.
,, Sativa ..	Common ,, ..	May 10..	C.
Lathyrus Pratensis ..	Yellow ,, ..	May 31..	C, B.
,, Macrorrhizus ..	Tuberous Bitter Vetch ..	April 20..	C.
Prunus Communis ..	Blackthorn ..	Mar. 22..	Ch, H, C.
,, Cerasus ..	Cherry ..	April 12..	H.
,, Padus ..	Bird Cherry ..	May 18..	Gr.
Spiraea Ulmaria ..	Meadow Sweet ..	June 13..	J, H.
,, Filipendula ..	Dropwort ..	June 28..	Gr.
Geum Urbanum ..	Wood Avens ..	April 17..	C.
Rubus Idaeus ..	Raspberry ..	May 11..	Gr.
,, Fruticosus ..	Common Blackberry ..	May 17..	C, Co. 1.
,, Caesius ..	Dewberry ..	July 8..	J, O.
,, Corylifolius ..	Hazel-leaved ,, ..	June 30..	H, C.
Fragaria Vesca ..	True Strawberry ..	April 23..	C.
Potentilla Fragariastrum ..	Barren ,, ..	Mar. 8..	H.
,, Reptans ..	Creeping Cinquefoil ..	May 17..	C.
,, Tormentilla ..	Tormentil ..	May 3..	C.
,, Anserina ..	Silverweed ..	May 1..	C.
Achemilla Vulgaris ..	Lady's Mantle ..	June 13..	J, H, C.
Sanguisorba Officinalis ..	Great Burnet ..	..	..
Poterium Sanguisorba ..	Salad Burnet ..	May 17..	H, Pr.
Agrimonia Eupatoria ..	Agrimony ..	June 21..	C.
Rosa Canina ..	Dog Rose ..	May 24..	C, Co.2, B, F.
,, Arvensis ..	Trailing Rose ..	June 14..	Gr, C.
Pyrus Communis ..	Pear ..	..	..
,, Malus ..	Apple ..	April 19..	C.
,, Aucuparia ..	Mountain Ash ..	May 17..	B.
,, Aria ..	Beam Tree ..	May 22..	Gr.
Crataegus Oxyacantha ..	Hawthorn ..	May 3..	J, O, Cr.
Epilobium Angustifolium ..	Rose-bay Willow Herb ..	June 24..	Gr.

Latin Name.	*English Name.*	*Date.*	*Record.*
Epilobium Hirsutum ..	Hairy Willow Herb ..	June 20..	Co. 2.
,, Parviflorum ..	Small-flowered ,, ..	June 22..	H, C.
,, Montanum ..	Common ,, ..	May 24..	Pr.
Circaea Lutetiana ..	Euchanter's Nightshade..	June 14.	Gr.
Oenothera Biennis ..	Evening Primrose ..	July 13..	H, C.
Lythrum Salicaria ..	Purple Loosestrife ..	July 9..	J, O.
Bryonia Dioica ..	Bryony ..	May 14..	Gr.
Sedum Acre ..	Biting Stonecrop ..	June 3..	Gr.
,, Rupestre ..	Rock ,, ..	June 28..	H, C.
Ribes Grossularia ..	Gooseberry ..	Mar. 30..	H, C.
,, Rubrum ..	Red Currant ..	April 13..	H.
Saxifraga Granulata ..	Meadow Saxifrage ..	May 14..	*F.J.C.*
Chrysosplenium Opposifoli'm	Golden ,, ..	Mar. 25..	J.
,, Alternifoli'm	,, ,, ..	June 10..	*J.R.W.E.*
Sanicula Europea ..	Wood Sanicle ..	April 29..	H, C.
Apium Graveolens ..	Celery ..	July 14..	H, C, Gr.
,, Nodiflorum ..	Procumbent Celery ..	June 27..	J, H, C, O,
Aegopodium Podagraria ..	Goutweed ..	May 23..	M. [Gr.
Petroselinum Sativa ..	Parsley ..	July 24..	H.
Pimpinella Saxifraga ..	Burnt Saxifrage ..	May 24..	Gr.
Oenanthe Fistulosa ..	Water Dropwort ..	June 13..	J, H.
Silaus Pratensis ..	Pepper Saxifrage ..	June 27..	J, H, C, Co.1.
Aethusa Cynapium ..	Fool's Parsley ..	May 24..	H.
Pastinaca Sativa ..	Parsnip ..	June 20..	B, Gr.
Heracleum Spondylium ..	Cow Parsnip ..	May 10..	H.
Scandix Pecten-veneris ..	Shepherd's Needle ..	May 19..	Gr.
Bunium Flexuosum ..	Earth Nut ..	May 12..	Gr.
Chaerophyllum Sylvestre ..	Wild Chervil ..	May 5..	B, Ch, C, Cr.
Daucus Carrota ..	Carrot ..	June 18..	Gr.
Conium Maculatum ..	Hemlock ..	June 13..	H, C.
Viscum Album ..	Mistletoe ..	Feb. 29..	H, C.
Cornus Sanguinea ..	Dogwood ..	May 28..	B.
Adoxa Moschatellina ..	Moschatel ..	April 12..	C.
Sambucus Nigra ..	Elder ..	May 10..	J.
Viburnum Lantana ..	Wayfaring Tree ..	April 28..	H, C.
,, Opulus ..	Guelder Rose ..	May 2..	J
Lonicera Periclymenum ..	Honeysuckle ..	May 24..	B.
Galium Cruciatum ..	Cresswort ..	April 26..	C.
,, Verum ..	Yellow Bedstraw ..	June 13..	H, J.
,, Palustre ..	Marsh ,, ..	June 13..	H, C. [2, W.
,, Vliginosum ..	Bog ,, ..	June 20..	K, B, Gr, Co.
,, Saxatile ..	Rock ,, ..	June 28..	H, C.
,, Mollugo ..	Great Hedge ,, ..	May 31..	Gr. [2, W.
,, Aparine ..	Cleavers ..	May 17..	Pr, Pl, Gr, Co.
Asperula Odorata ..	Woodruff ..	April 24..	H.
,, Cynanchica ..	Squinancywort ..	June 17..	H, C.
Valeriana Officinalis ..	Great Valerian ..	June 20..	Gr.
,, Dioica ..	Marsh ,, ..	May 22..	Gr.

Latin Name	*English Name.*	*Date.*	*Record.*
Sherardia Arvensis ..	Field Madder ..	May 22..	Mo, Co. 2
Dipsacus Pilosus ..	Small Teasel ..	July 22..	*J.R.W.E.*
,, Sylvestris ..	Common ,, ..	July 18..	*J.R.W.E.*
,, ,, ..	,, ,, ..	July 25..	H, C.
Scabiosa Succisa ..	Devil's-bit Scabious ..	June 27..	Gr.
,, Columbaria ..	Small ,, ..	June 8..	Gr.
,, Arvensis ..	Field ,, ..	June 20..	Gr.
Eupatorium Cannabinum ..	Hemp Agrimony ..	July 11..	*J.R.W.E.*
Tussilago Farfara ..	Colts' Foot ..	Feb. 23..	G.
,, Petasites ..	Butterbur ..	April 14..	H, C.
Gnaphalium Gallicum ..	Narrow Cudweed ..	July 19..	M.-D, Gr.
Inula Dysenterica ..	Fleabane ..	July 24..	H.
,, Coniza ..	Ploughman's Spikenard..	July 16..	H, C.
,, Pulicaria ..	Small Fleabane ..	July 16..	H, C.
Bellis Perennis ..	Daisy ..	Feb. 23..	Ch.
Chrysanthemum Leucanthemum..	Dog Daisy ..	May 16..	B.
,, Inodorum	Feverfew ..	Feb. 22..	H, C.
Matricaria Chamomilla ..	Camomile ..	June 18..	Gr.
Anthemis Cotula ..	Stinking Mayweed ..	May 17..	B.
Achillea Millefolium ..	Yarrow ..	Mar. 27..	H.
,, Ptarmica ..	Sneezewort ..	July 25..	H, C.
Tanacetum Vulgare ..	Tansy ..	July 9..	J, O.
Artemesia Vulgaris ..	Mugwort ..	July 24..	H.
Senecio ,, ..	Groundsel ..	Feb. 22..	G.
,, Sylvaticus ..	Wood Groundsel ..	July 24..	Gr.
,, Erucifolius ..	Narrow-leaved Ragwort..	June 24..	Gr.
,, Aquaticus ..	Marsh ,, ..	June 20..	B, Gr.
,, Jacobaea ..	Common ,, ..	June 27..	H, Co. 1.
Arctium Lappa ..	Burdock ..	July 16..	H, C.
Carduus Nutans ..	Musk Thistle ..	June 8..	Gr.
,, Acanthoides ..	Welted ,, ..	July 8..	*J.R.W.E.*
,, Lanceolatus ..	Spear ,, ..	July 8..	J, O.
,, Palustris ..	Marsh ,, ..	May 24..	Pr, Gr.
,, Arvensis ..	Creeping ,, ..	July 8..	J, O.
,, Pratensis ..	Meadow ,, ..	July 8..	P.
,, Acaulis ..	Dwarf ,, ..	June 28..	P.
,, Eriophorus ..	Woolly ,, ..	July 24..	Gr.
Carlina Vulgaris ..	Carline ,, ..	June 30..	Gr.
Centaurea Nigra ..	Black Knapweed ..	May 21..	C, B.
,, Scabiosa ..	Seabious ,, ..	June 15..	Gr.
Tragopedon Pratensis ..	Goat's Beard ..	May 17..	C, Co.2, B.
Picris Hieracioides ..	Hawkweed Picris ..	July 24..	H.
Leontodon Hispidus ..	Hawkbit ..	May 17..	Pl, M-D.
Hypochaeris Radicata ..	Cat's Ear ..	May 14..	C.
Lactuca Muralis ..	Wall Lettuce ..	June 27..	H, C.
Sonchus Arvensis ..	Corn Sow Thistle ..	July 5..	C.
,, Oleraceus ..	Common ,, ..	May 4..	Pr.

Latin Name	*English Name.*	*Date.*	*Record.*
Taraxacum Dens-leonis ..	Dandelion ..	Feb. 23..	H.
Crepis Virens ..	Common Crepis ..	May 17..	Gr.
,, Biennis ..	Rough ,, ..	May 22..	M, Co. 2.
,, Taraxacifolia ..	Beaked ,, ..	May 31..	C. [M.-D.
Hieracium Pilosella ..	Mouse-ear Hawkweed ..	May 17..	H, Pr, Pl, Gr,
,, Murorum ..	Wall ,, ..	May 22..	Mo, Co.2.
Lapsana Communis ..	Nipplewort ..	June 6..	H.
Campanula Glomerata ..	Clustered Bell Flower ..	June 24..	Gr.
,, Trachelium ..	Nettle-leaved ,, ..	June 28..	H, C.
,, Rapunculoides..	Creeping ,, ..	July 10..	H, C.
,, Rotundifolia ..	Harebell ..	June 30..	Gr.
Monotropa Hypopitys ..	Bird's Nest ..	June 25..	Gr.
Primula Veris ..	Cowslip ..	Mar. 30..	H, C.
,, Vulgaris ..	Primrose ..	Mar. 30..	Pr.
Lysimachia ,, ..	Yellow Loosestrife ..	July 9..	J, O.
,, Nemorum ..	Moneywort ..	May 20..	Gr.
,, Nummularia ..	Creeping Jenny ..	July 9..	J, O.
Anagallis Arvensis ..	Scarlet Pimpernel ..	May 28..	Gr.
Fraxinus Excelsior ..	Ash ..	May 16..	
Ligustrum Vulgare ..	Privet ..	May 28..	B.
Vinca Major ..	Greater Periwinkle ..	May 17..	Pr.
,, Minor ..	Lesser ,, ..	Feb. 23..	H.
Erythraea Centaurium ..	Centaury ..	June 30..	Gr.
Limnanthemum Nymphaeoides ..	..	July 9..	J, O.
Chlora Perfoliata ..	Yellowwort ..	June 20..	Gr.
Convolvulus Arvensis ..	Small Bird Weed ..	May 30..	B, Gr.
,, Sepium ..	Great ,, ..	June 20..	Gr, W.
Echium Vulgare ..	Viper's Bugloss ..	June 8..	Gr.
Myosotis Palustris ..	True Forget-me-not ..	May 30..	J, H, C, O.
,, Arvensis ..	Field ,, ..	April 28..	C.
,, Collina ..	Early ,, ..	May 10..	H.
,, Versicolor ..	Changing ,, ..	June 21..	C.
,, Sylvatica ..	Wood ,, ..	May 3..	H.
,, Repens ..	Creeping ,, ..	May 17..	D.
Symphytum Officinale ..	Comfrey ..	May 10..	G.
Borago Officinalis ..	Borage ..	July 20..	Gr.
Cynoglossum Officinale ..	Hound's-tongue ..	June 6..	H.
Hyoscyamus Niger ..	Henbane ..	June 20..	Gr.
Solanum Dulcamara ..	Bitter Sweet ..	May 20..	Gr, C.
,, Nigrum ..	Black Nightshade ..	June 23..	Gr.
Atropa Belladonna ..	Deadly Nightshade ..	May 30..	J, O, H, Co.
Lathraea Squamaria ..	Toothwort ..	Mar. 8..	Ch. [Co. 1.
Orobanche Major ..	Great Broomrape ..	July 25..	C, H.
Verbascum Thapsus ..	Common Mullein ..	June 27..	J, C, H. [1.
,, Nigrum ..	Black ,, ..	June 27..	J, C, H, Co.
Linaria Vulgaris ..	Yellow Toad Flax ..	June 20..	B, Gr, W, C
,, Minor ..	Lesser ,, ..	June 20..	B, C.

Latin Name.	*English Name.*	*Date.*	*Record.*
Linaria Cymballaria ..	Ivy-leaved Toad Flax ..	Mar. 31..	C.
,, Spuria ..	Round ,, ,, ..	July 27..	Gr.
Scrophularia Nodosa ..	Knotted Figwort ..	May 17..	B, C.
,, Aquatica ..	Marsh ,, ..	June 14..	H. [1.
Mimulus Luteus ..	Monkey Flower ..	June 27..	J, C, H, Co.
Digitalis Purpurea ..	Foxglove ..	July 14..	H, C.
Veronica Serpyllifolia ..	Thyme-leaved Speedwell	May 7..	Gr.
,, Officinalis ..	Common ,, ..	June 11..	O.
,, Anagallis ..	Water ,, ..	June 13..	C. [Gr.
,, Beccabunga ..	Brooklime ,, ..	May 17..	H, Pl, M.-D,
,, Montana ..	Mountain ,, ..	May 6..	C.
,, Chamaedrys ..	Germander ,, ..	April 26..	C.
,, Hederaefolia ..	Ivy-leaved ,, ..	May 8..	C.
,, Agrestis ..	Procumbent ,, ..	Feb. 23..	H.
,, Buxbaumii ..	Buxbaum's ,, ..	Mar. 8..	H, C.
,, Arvensis ..	Wall ,, ..	April 26..	C.
Bartsia Odontites ..	Red Bartsia ..	July 16..	H, C.
Euphrasia Officinalis ..	Eye-bright ..	June 27..	F.
Rhinanthus Cristi-galli ..	Yellow Rattle ..	May 17..	H.
Pedicularis Palustris ..	Marsh Lousewort ..	May 16..	Gr.
,, Sylvatica ..	Common ,, ..	April 22..	C.
Melampyrum Pratense ..	Cow Wheat ..	May 30..	Gr.
Mentha Aquatica ..	Water Mint ..	July 19..	B, Gr, C, W.
,, Sativa ..	Whorled ,, ..	July 25..	C.
,, Arvensis ..	Corn ,, ..	July 10..	Gr.
Thymus Serpyllum ..	Thyme ..	June 6..	H.
Origanum Vulgare ..	Marjoram ..	July 16..	H, C.
Calamintha Acinos ..	Basil Thyme ..	June 20..	Gr.
,, Clinopodium ..	Wild Basil ..		
,, Officinalis ..	Common Calamint ..	June 28..	Co. 1.
Nepeta Glechoma ..	Ground Ivy ..	Mar. 29..	J.
Prunella Vulgaris ..	Self Heal ..	June 20..	B, C.
Scutellaria Galericulata ..	Scull Cap ..	June 13..	J, H, C, O.
Stachys Betonica ..	Betony ..	June 9..	Gr.
,, Sylvatica ..	Hedge Woundwort ..	May 31..	F. [Co. 2, W.
,, Palustris ..	Marsh ,, ..	June 20..	K, B, F, Gr,
,, Arvensis ..	Corn ,, ..	July 6..	Gr.
Galeopsis Ladanum ..	Hemp Nettle ..	July 19..	C.
Ballota Nigra ..	Black Horehound ..	June 14..	H, C.
Lamium Purpureum ..	Red Dead Nettle ..	Feb. 24..	Ch.
,, Album ..	White ,, ..	Feb. 25..	Ch.
,, Maculatum ..	Spotted ,, ..	May 17..	Gr.
,, Galeobdolon ..	Yellow ,, ..	April 18..	C.
,, Amplexicaule ..	Henbit ,, ..	May 13..	Gr.
,, Incisum ..	Small ,, ..	May 31..	C.
Teucrium Scorodonia ..	Wood Germander ..	June 28..	H, C.
Ajuga Reptans ..	Bugle ..	April 23..	H, C.
Plantago Major ..	Great Plantain ..	May 18..	Pl.

Latin Name.	*English Name.*	*Date.*	*Record.*
Plantago Media ..	Hoary Plantain ..	May 24..	Gr.
,, Lanceolata ..	Ribwort ,, ..	April 19..	C.
Chenopodium Bonus-henricus	Good King Henry ..	July 19..	Gr.
,, Urbicum ..	Upright Goosefoot ..	June 29..	H, C.
,, Murale ..	Nettle-leaved ,, ..	June 18..	Gr.
,, Album ..	White ,, ..	June 4..	C.
Atriplex Patula ..	Orache ..	July 27..	Gr.
Rumex Acetosa ..	Common Sorrel ..	May 17..	C.
,, Acetosella ..	Sheep's ,, ..	May 10..	H.
,, Obtusifolius ..	Common Dock ..	May 20..	Gr.
,, Crispus ..	Carled ,, ..	June 27..	Co.
Polygonum Aviculare ..	Knot Grass ..	June 21..	B, C, Gr.
,, Convolvulus ..	Black Bindweed ..	July 4..	C.
,, Amphibium ..	Amphibious Bistort ..	June 20..	B, Gr. F, W.
,, Persicaria ..	Persicaria ..	June 6..	H.
,, Lapathafolium	Pale Bistort ..	June 30..	C.
Euphorbia Helioscopia ..	Sun Spurge ..	Feb. 29..	H, C.
,, Peplus ..	Petty ,, ..	Feb. 23..	H.
,, Exigua ..	Small ,, ..	June 27..	Gr.
,, Amygdaloides ..	Wood ,, ..	April 12..	H.
,, Platyphyllos ..	Broad ,, ..	June 27..	H.
,, Lathyris ..	Caper ,, ..	May 30..	H.
Mercurialis Perennis ..	Dog's Mercury ..	Feb. 29..	C.
Urtica Urens ..	Small Nettle ..	Mar. 22..	H, C.
,, Dioca ..	Common ,, ..	May 16..	Gr.
Parietaria Officinalis ..	Pellitory-of-the-Wall ..	July 8..	J. O.
Humulus Lupulus ..	Hop ..	..	..
Ulmus Campestris ..	Common Elm ..	Feb. 29..	H, C.
,, Montana ..	Wych ,, ..	Feb. 29..	H, G.
Alnus Glutinosa ..	Alder ..	May 4..	K.
Betula Alba ..	Birch ..	May 3..	J, O.
Carpinus Betulus ..	Hornbeam ..	Mar. 29..	J, Cr.
Corylus Avellana ..	Hazel Nut ..	Feb. 22..	Ch, Cr.
Fagus Sylvatica ..	Beech ..	May 12..	H, C, Ch.
Quercus Robur ..	Oak ..	April 23..	Gr.
Salix Capæra ..	Sallow Willow ..	Mar. 22..	H, C.
,, Purpurea ..	Purple ,, ..	..	.. Ch, C, H.
,, Fragilis ..	Crack ,, ..	April 17..	
Populus Nigra ..	Black Poplar ..	April 1..	C.
Pinus Sylvestris ..	Scotch Fir ..	Mar. 19..	H, C.
Taxus Baccata ..	Yew ..	..	.. Pr, S, St, Pl.
Typha Latifolia ..	Bulrush ..	July 3..	*J.W.R.E.*
Sparganum Ramosum ..	Branched Bur-reed ..	July 19..	M.-D, B, Y, M.1, M.2, W.
Arum Maculatum ..	Lords and Ladies ..	April 26..	C.
Potamogeton Natans ..	Pondweed ..	July 14..	H, C.
Butomus Umbellatus ..	Flowering Rush ..	July 10..	*J.R.W.E.*
Sagittaria Sagittifolia ..	Arrowhead ..	June 13..	H, C.

Latin Name.	*English Name.*	*Date.*	*Record.*
Alisma Plantago ..	Water Plantain ..	June 20..	K, Gr, F, Co.
Triglochin Palustre ..	Arrowgrass ..	July 16..	H, C. [2.
Epipactis Latifolia ..	Broad Helleborine ..	June 27..	B.
Cephalanthera Grandiflora ..	Large ,, ..	May 30..	H.
Listera Ovata ..	Twayblade ..	May 24..	Cn.
Neottia Nidusavis ..	Birds'-nest Orchid ..	May 30..	Co.
Orchis Morio ..	Green-winged ,, ..	May 1..	H, C.
,, Maculata ..	Spotted ,, ..	May 21..	J.
,, Latifolia ..	Marsh ,, ..	May 24..	Gr.
,, Pyramidalis ..	Pyramidal ,, ..	June 14..	H, C.
,, Conopsea ..	Fragrant ,, ..	June 24..	Gr.
Habenaria Bifolia ..	Butterfly ,, ..	May 27..	C.
Herminium Monorchis ..	Musk ,, ..	June 14..	H, C.
Ophrys Apifera ..	Bee ,, ..	June 14..	C.
,, Muscifera ..	Fly ,, ..	May 30..	H.
Iris Pseudacorus ..	Yellow Flag ..	June 8..	P.
Tamus Communis ..	Black Bryony ..	May 22..	Gr.
Paris Quadrifolia ..	Herb Paris ..	April 22..	C.
Polygonatum Officinale ..	Angular Solomon's Seal	May 12..	Pr.
,, Multiflorum ..	Common ,, ..		Gr.
Convallaria Majalis ..	Lily-of-the-Valley ..	May 12..	Gr.
Scilla Nutans ..	Wild Hyacinth ..	Mar. 28..	H, C.
Ornithogalum Umbellatum	Star of Bethlehem ..	May 30..	Gr.
Allium Ursinum ..	Garlic ..	April 12..	H.
Juncus Communis ..	Common Rush ..	June 13..	J.
,, Articulatus ..	Jointed ,, ..	May 30..	H, C.
Carex Praecox ..	Early Sedge ..	Mar. 29..	H, C.
,, Pendula ..	Pendulous Sedge ..		H, C.
Anthoxanthum Odoratum ..	Vernal Grass ..	May 10..	H.
Phalaris Canaricus ..	Canary ,, ..	July 13..	H, C.
Phleum Pratense ..	Timothy ,, ..	June 18..	H, C, Co. 1.
Alopecurus Pratensis ..	Meadow Foxtail Grass ..	May 10..	H.
,, Geniculatus ..	Marsh ,, ..	May 30..	H, C.
Avena Fatua ..	Wild Oat ..	June 27..	H.
Arrhenatherum Avenaceum	False ,, ..	June 3..	H, C.
Holcus Lanatus ..	Common Holaus ..	June 7..	Co. 1.
Hordeum Pratense ..	Meadow Barley ..	July 24..	H.
Lolium Perenne ..	Darnel ..	May 30..	H.
Dactylis Glomerata ..	Cock's-foot Grass ..	June 3..	H, C.
Briza Media ..	Quaking ,, ..	June 3..	H, C.
Poa Annua ..	Common Meadow Grass ..	Mar. 8..	C.
,, Pratensis ..	Smooth ,, ,, ..	June 3..	H, C.
,, Nemoralis ..	Wood ,, ,, ..	May 30..	H.
,, Fluitans ..	Floating ,, ,, ..	July 14..	H, C.
Equisetum Palustre ..	Marsh Horse-tail ..	May 23..	J.
,, Arvense ..	Field ,, ..	April 18..	C.
Polypodium Vulgare ..	Common Polypody ..	April 12..	C.
Asplenium Tridactylites ..	Wall Rue ..	Mar. 29..	H, C.

Latin Name.	*English Name.*	*Date.*	*Record.*
Scolopendrium Vulgare	Hart's Tongue	June 27	H, C, Co. 1.
Pteris Aquilina	Bracken	May 30	H, C.
Aspidium Filix-mas	Male Fern	May 30	H.

Junior Department.

In the Junior Department there were many collectors, and the prize fell to T. Griffin, who did excellent work, obtaining 291 specimens, of which 187 were records. Sedges, grasses and ferns were not accepted. Butt was second with 156, and Collett third. The result of the competition was as follows :—

Griffin	291	Plowden	68
Butt	156	Marsden, S.	65
Collett	121	Moore, C. W.	64
Falle	114	Young, G. A. W.	63
Whittuck	110	King	46
Pruen	96	Reynolds	41
Pearce	81	Handley	34
Mitchell-Dawson	70	Marsden, A.	23

On July 18th an expedition was made by train to Chedworth, whence we walked to the Roman Villa, and thence to Foss Bridge, where we had tea, returning by the valley to Chedworth. Among the specimens found were Epilobium Parviflorum (which grows by the stream on Foss Bridge), Antennaria Dioica, Campanula Trachelium, Verbascum Nigrum (always a denizen of Chedworth), Origanum Vulgare, and Zysimachia Vulgaris, which covers the Chedworth woods with a golden carpet.

ENTOMOLOGICAL SECTION.

President - - - J. C. SALTER, ESQ.

wo collections only (by D. Reynolds and A. N. J. Harrison) were sent in for the Senior Competition, through several others were made. They contained about a hundred different species, mostly moths, of which those in the following list were obtained in the neighbourhood of Cheltenham. Reynolds' collection, which was large and well set up, easily won the prize.

The small Elephant Hawk and Drinker were both common here this year.

A good specimen of Grapta C. Album was caught at Leckhampton, as late as October 1st.

Butterflies.

Brimstone	Meadow Brown	Small Tortoise-shell
Large White	Ringlet	Comma
Small ,,	Small Heath	Silver Washed Fritillary
Green Veined White	Painted Lady	Small Copper
Orange Tip	Red Admiral	Common Blue
Wood Argus	Peacock	Large Skipper
Wall		

Moths.

Privet Hawk	Satin Moth	Lesser Yellow Underwing
Small Elephant Hawk	Pale Tussock	Large ,, ,,
Eyed ,,	Lackey	Gothic
Poplar ,,	Barred Hook Tip	Old Lady
Lime ,,	Buff Tip	Hebrew Character
Six Spot Burnet	Grey Dagger	Clouded Drab
Five ,, ,,	Knotgrass	Red Line Quaker
Cinnabar	Bright-lined Brown Eye	Centre-barred Sallow
Buff Ermine	Striped Wainscot	Broad-barred White
White ,,	Common ,,	Angle Shades
Ghost Swift	Light Arches	Brown-lined Bright Eye
Common ,,	Dark ,,	Shark
Brown Tail	Clouded Brindle	Herald
Gold ,,	Cabbage Moth	

Light Spectacle
Dark ,,
Burnished Brass
Golden Y
Silver Y
Burnet Noctua
Antler
Figure of Eight
Swallow Tail
Brimstone
Canary-shouldered Thorn
Feathered ,,
September ,,
Emerald
Blood-vein
Willow Beauty
Barred Yellow
Currant Moth
Garden Carpet
Yellow Shell
Scallop ,,
Scalloped Oak
Barred Straw
Large Snout
Small ,,
Meal Moth
Mother of Pearl
Small Magpie
V Moth
Tiger
White Plume
Stone ,,
Heart and Club
Small Mallow
Common White Wave
Golden-bordered Purple
Dun Bar
Common Rustic
Chimney Sweep
Common Footman
Mother Shipton
Drinker
Scalloped Hazel
Wood Swift.

In addition there were several unnamed specimens.

GEOLOGICAL SECTION.

President - - - C. I. GARDINER, ESQ

Members:

G. W. Hedley, Esq. A. H. Macdonald, Esq. C. Noad.
N. Porteous. J. E. Thornhill. W. H. Williams.

A GOOD deal of collecting has been done and a collection of local fossils has been started in the Museum. There appears to be no collection of fossils from the Lias of Battledown or Leckhampton, and any fossils from these localities would be welcome. *Ammonites Henleyi* and a large Bivalve probably an *Inoceramus* seem common at the former place while the latter has yielded many small bivalves and a few ammonites. The brick pit close to Leckhampton Station is another place which would well repay a search, *Belemnites* and *Ammonites* being fairly common.

The pit near the Workhouse close to Pittville is in quite a different bed of the Lias, and contains *Gryphœa incurva* and *Belemnites.*

Of the localities visited by the Society during the year Wainlode Cliff proved one of the best from the geologists' point of view. Here the fish bed in the Rhœtic Beds, which come above the New Red Sandstone and below the Lias, is seen in the face of a cliff overhanging the Severn. The bed is easily found, a few feet above the Sandstone, and on splitting it up is seen to contain multitudes of scales, bones and teeth of fishes. Higher up in the series a sandy Limestone yielded numerous Pectens.

The other excursion which proved of extreme interest to the Geological Section was the one to Crickley Hill towards Birdlip. Here the beds immediately above the Upper Freestone, a bed in the Oolite exposed at the top of the face of Leckhampton Hill, are seen on one side of the valley running down to the plain and on the other side is a long line of cliff, due to an old quarry once

formed here and on the face of this is seen a very fine exposure of Pea-Grit, and the beds immediately underlying it. The Pea-Grit is also exposed just above the first windlass on Leckhampton Hill, and is a very marked bed in the Oolites of the Cheltenham district.

On one occasion the Geological and the Archaelogical Sections combined and walked to Prestbury, where they went over the old House there, and then the geologists went up Cleeve Hill, and did a little collecting.

Amongst the fossils presented to the Museum, we note some very fine *Belemnites* found by J. E. Thornhill in the topmost beds of Leckhampton Hill.

It is hoped that more will become working members of the Section next year. Everyone who wishes to collect should bring a hammer back with him from home after the Easter Holidays.

ORNITHOLOGICAL SECTION.

President - - - - M. TANNER, ESQ.

Secretary - - - - A. F. THOMSON.

Working Members.

Arbuthnot, A. D. S.	Denoted by A.
Cresswell, C. S.	,, ,, C.
Collett, L. G.	,, ,, Ct.
Fort, L.	,, ,, F.
Hodson, F. A...	,, ,, H.
Reynolds, D.	,, ,, R.
Birtwhistle, J. C. D.	,, ,, B.

THE work done in this Section has shown signs of improvement, more arrivals having been noted, but more notes as to the habits of birds should be sent in.

Among the list of eggs those of the Hawfinch and Longtailed Titmouse reappear.

The Sectional Prize was won by

Arbuthnot, A. D. S.
Reynolds, D. } Equal.

NOTICES IN 1896.

NAME OF EGG.	LOCALITY.	DATE.	NAME OF FINDER.
Robin ..	Hatherley ..	March 6 ..	R.
Song Thrush ..	Leckhampton ..	,, 12 ..	B., C.
Blackbird ..	,, ..	,, 20 ..	A., R., B., C.
Hedge Sparrow ..	Hatherley ..	,, 21 ..	A., R.
Wood Pigeon ..	Charlton Kings ..	April 3 ..	F.
Starling ..	Hatherley ..	,, 4 ..	R.
Longtailed Titmouse..	Leckhampton ..	,, 7 ..	F.
Rook ..	Hatherley ..	May 2 ..	A., R.
Chaffinch ..	,, ..	,, ..	A., R.
Green Finch ..	,, ..	,, ..	A., R., C.
House Sparrow ..	Lansdown ..	,, ..	A., R.

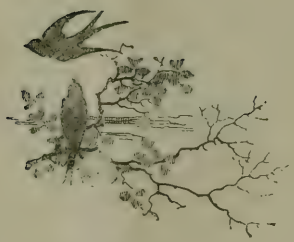
Name of Egg.	*Locality.*	*Date.*	*Finder.*
Jackdaw	Leckhampton	May 2	A., R.
Great Tit	Hatherley	,,	A., R.
Chiffchaff	,,	,,	C.
Linnet	,,	,,	C.
Yellow Hammer	,,	,,	C.
Bullfinch	Shurdington	May 5	C.
Hawfinch	,,	,, 5	C.
Whitethroat	Leckhampton	,, 8	C.
Willow Wren	Charlton Kings	,, 10	F., C.
Cuckoo	,,	,, 10	H.
Blue Titmouse	Hatherley	,, 11	A., R.
Pied Wagtail	Leckhampton	,, 11	C.
Redstart	,,	,, 12	Ct.
Lesser Whitethroat	Charlton Kings	,, 14	H.
Redbacked Shrike	Hatherley	,, 17	A., R.
Sedge Warbler	,,	,, 17	A., R.
Jay	Leckhampton	,, 21	A., R.
Black Cap	,,	,, 21	A., R.
Turtle Dove	Charlton Kings	,, 23	H.
Spotted Flycatcher	Leckhampton	,, 24	F., Ct.
Swallow	Dowdeswell	,, 29	C.
Sand Martin	,,	,, 29	C.
Meadow Pipit	Charlton Kings	June 7	F., Ct.
House Martin	Birdlip	,, 10	A., R.
Cole Titmouse	Charlton Kings	,, 14	F.

ARRIVALS.

NAME OF BIRD.	LOCALITY.	DATE.	OBSERVER.
Chiffchaff	Charlton Kings	April 3	F.
Swallow	Leckhampton	May 2	C.
Swift	,,	,, 2	C.
Cuckoo	Charlton Kings	,, 2	C.
Sand Martin	Hatherley	,, 2	C.
Flycatcher	,,	,, 8	C.
Fieldfare	,,	,, 8	C.
Redstart	,,	,, 8	C.
Wryneck	,,	,, 11	A., R.
House Martin	Leckhampton	,, 12	F., C.
Black Cap	,,	,, 21	A., R.
Sedge Warbler	,,	,, 21	A. R.

Junior Department.

The different species of eggs obtained were not quite as numerous as in past years. This is partly accounted for by the fact that the County Council have very properly prohibited the taking of the eggs of several rare birds. We believe that the list is to be extended in the coming year. A. K. Boyd obtained the prize with 25 specimens, including the hawfinch, found on May 15th. E. H. Pemberton being second with 18 varieties, of which one was the lesser spotted woodpecker. This egg was found but not taken, being one of the prohibited species. B. E. Reinold was third with 15. The redstart appears to be much rarer now than it was a year or two back, while, on the other hand, the hawfinch is certainly more common.



PHOTOGRAPHIC SECTION.

President - - - - A. H. MACDONALD, ESQ.

Members:

Balfour, J. M.
Beazley, H. L.
Birkett, J.
Biscoe, A. J.
Brettell, H. G.
Chambers, P. R.
Cleaver, A. B.
Coddington, H. F. H.
Cohen, G. H.
Conran, W. D. B.
Cottrell, V. S.
Fitz Herbert, E.
Gilchrist, W. F. C.
Graesser, N. H.
Greer, S. H. A.
Grieve, C. C.
Grose, F. M.
Houghton, A. T.
Houston, J. B.
Joseph, E. M.
Kershaw, F.
Little, C. H.
Mackie, T.
May, H. S.
Mortimer, A. F.
Nothmann, V.
Pery-Knox-Gore, W. H. C.
Pery-Knox-Gore, A. F. G.
Phillips, L.
Rawlins, H. St. G.
Rider, W. M.
Roberts, F. R.
Russell, R. E. M.
Samuelson, C. L.
Sanders, J. G.
Sanders, C. S.
Simeon, C. J.
Skinner, J.
Stephen, H. C.
Stephens, E. G. W.
Stooks
Thomson, A. F.
Thomson, D. A.
Thwaite, F.
Wallace, C. I. S.
Wells, F. W. A.
White, G.

URING the past year there has been a large increase in the number of working members of this section, which is no doubt mainly due to the many advantages offered by the different forms of hand-camera now so generally in use. As in the Summer Term there were thirty members, the accommodation in the dark room proved insufficient; but we must hope that during the many alterations in College, some opportunity may arise of building a larger dark room.

The lantern-slide exhibition was held in the Big Classical on December 16th, when Gen. Dawson, C.B., kindly acted as judge. Before looking at the slides, Gen. Dawson made a few general remarks on the making of lantern-slides. He pointed out that an oblong is as a rule the best shape for a picture, a square being inartistic, and a circle also objectionable, except for certain subjects. He also drew attention to the importance of binding the slides securely and spotting them so as to show which is the front.

Gen. Dawson then proceeded to criticize each slide exhibited, explaining when necessary how the picture might have been improved. One of the most general faults lay in making the shadows too dense, so that detail was lost and the slide lacked transparency. The first prize was awarded to A. B. Cleaver, who showed some very fascinating pictures of yachts taken as snap-shots. Some Scotch views by A. T. Houghton were placed second, whilst J. M. Balfour took the third prize with some scenes in Algiers. The other competitors were C. J. Simeon, T. Mackie and H. St. G. Rawlins, all of whose work was promising and above the average of last year. Besides these, other slides were shown by A. B. Cleaver, A. T. Houghton, J. M. Balfour, A. F. Thomson, and Mr. Macdonald. It is to be hoped that some members of the Society will avail themselves of Gen. Dawson's kind offer to give some practical help in lantern-slide making to anyone who applies to him through Thomas'.

As members have had no opportunity lately of showing their prints, it is proposed that towards the end of the Summer Term there should be an exhibition of all prints made during this Term and next.

LECTURES.

"ARGON AND HELIUM,"

BY G. W. HEDLEY, ESQ.

Of all the numerous and important discoveries made within recent years in the Science of Chemistry none have evoked so much interest as those of the two new gaseous elements,—Argon and Helium.

Some hundreds of years ago it was supposed that all kinds of matter were made up of only four elements, viz., earth, air, fire and water. This belief was accepted by the ancestors of modern Chemists,—the Alchemists. They argued that every form of matter being composed of these four elements in different proportions, it ought to be possible by altering these proportions to change one substance such as lead into another such as gold. This belief in the possibility of transmuting the base metals into the noble metals is the keynote of Alchemy, and it was not until the adherents of this creed had worn themselves out in their fruitless attempts to gain their end that the original hypothesis of the four elements was finally abandoned.

In the seventeenth century Robert Boyle defined the terms "element" and "compound" much as they are defined now. An element henceforth was any substance incapable of being split up into two or more dissimilar substances. From this time substances such as Gold, Copper, Sulphur, Tin, etc., were called elements, since they could not be decomposed. It was natural that those occurring in the free state and in large quantities should be first discovered, these being all known a century ago. Since that time about forty others have been found, occurring always in the combined state Three important agencies have led to their recognition.

(1) Early in this century Sir Humphrey Davy conceived the idea of trying the effect of an electric current on substances like Lime, Caustic Potash, Caustic Soda, etc. These, although suspected by some chemists to be Compounds, had resisted all attempts at decomposition, so that they were logically held to be elements.

By this new method Davy was enabled to isolate the now well-known Alkali metals, together with some others— nine in all.

(2) Another valuable means of discovery was found in the spectroscope, an instrument invented in 1860 by Professors Kirchoff and Bunsen.

In its simplest form it consists of a prism and two telescopes. Light is allowed to pass through a narrow slit into the tube of one telescope, the effect of which is merely to make the rays parallel to one another when they emerge and fall on the prism. The objective of the second telescope receives the rays from the prism, and on looking through the eye-piece the observer, in the case of white light, sees a band of colours termed the Spectrum.

The use of this instrument in Chemistry depends on the fact that every element when raised to a sufficiently high temperature gives out its own rays of light, differing from those coming from any other element, and these if passed through the spectroscope yield a Spectrum peculiar to the particular element. This is so delicate a means of detecting the presence of an element that the most minute quantities may be readily perceived. Bunsen himself discovered the rare element Cæsium in the ash of his cigar, and others, as Lithium, Didymium, Thallium, etc. Eight in all have been found by means of this instrument.

(3) The third agent which has been used to discover new elements is neither a force nor a new instrument, but merely a theory, the effect of which was to stimulate chemists to search for unknown elements which were predicted by its author—Mendeléeff.

This chemist arranged the known elements in the order of their atoime weights, and found that they could be divided into groups of seven.

Every element resembled markedly in its properties the element seven places in front of it and seven places behind it. To make his law apparent he had however to leave several gaps unfilled by any known element ; these, however, Mendeléeff predicted would be filled with elements which had not then been

discovered, and the properties of these unknown elements he had the courage to foretell.

The impulse thus given to fresh research resulted in the discovery of Gallium, Scandium, etc., every one of the newly discovered elements entirely fulfilling the prediction made about it.

As for the future, a few rare elements might be expected to turn up in rare minerals, but beyond this little hope could be entertained of discovery in this direction, unless indeed some new instrument or new method of decomposition should enable chemists to decompose the present elements into still simpler ones.

It is easier to imagine therefore than describe the excitement felt among members of the British Association at the Oxford Meeting in August, 1894, when Lord Rayleigh and Professor Ramsay were rumoured to have found a new element independently of any of the means above mentioned. The interest was kept up by the statement that it occurred in large quantities in the free state in the very air we breathed.

At first the discoverers were very guarded in their language, and did not definitely call the body a new element, and five months elapsed before anything more than the bare announcement was heard from the discoverers, and during this time a large amount of scepticism was expressed.

In the first place the composition of the air had so frequently been determined by experimenters of undoubted ability that it was customary to write down its composition by volume to five places of decimals. An error in the third or fourth decimal place was within the bounds of possibility, but scarcely one in the units—the amount hinted at by Lord Rayleigh.

In the second place, Professor Dewar had recently liquified air, and had not noticed any new constituent as one might have expected that he would.

All these doubts were finally laid to rest at the meeting of the Royal Society on January 31st, 1895, when the original discovery was confirmed and a full account of the experimental details, needed to establish it, given.

Omitting accidental impurities, the proportion of the gases in the air used to be given as follows:—

Nitrogen	77·90600
Oxygen	20·65940
Moisture	1·40000
Carbon dioxide	·03360

Ammonia	·00080
Ozone	·00015
Nitric Acid	·00015

By passing the air through a solution of Potash and then through strong Sulphuric Acid all the gases (except the Nitrogen and Oxygen) may be absorbed.

By adding sufficient Hydrogen Gas to these and passing an electric spark through the mixture the Oxygen combines with the Hydrogen to form water. The gaseous residue over and above any excess of Hydrogen was considered to be Nitrogen.

Another method of obtaining Nitrogen from the air is by burning Phosphorus in air which has been purified by passing it through potash solution and strong Sulphuric Acid. The Oxygen all combines with the Phosphorus, and since the residue extinguishes a lighted taper, has no effect on lime water, does not smell, and will not burn in air, it was called Nitrogen, these being the tests which distinguished that gas from all others.

The first suspicion that this residue contained some other additional substance arose from the very careful researches carried out by Lord Rayleigh on the density of the principal gases. He found that a volume of Nitrogen prepared from the air by the above methods weighed slightly more than the same volume of Nitrogen prepared by heating Ammonium Nitrite and other chemical compounds.

This difference was so very small that elaborate means were taken to ensure freedom from errors of manipulation and observation. Time after time the experiments were repeated. The "chemical" Nitrogen was prepared in every possible way, but in every case this difference between it and "atmospheric" Nitrogen was observable.

Lord Rayleigh was entirely at a loss for a probable explanation, and in 1893 invited the opinion of others on the point. No explanation was forthcoming, but it was pointed out that in 1785 Cavendish, in experimenting to see whether all or only part of the Nitrogen in the air would combine with Oxygen to form the brown Oxide of Nitrogen, came to the conclusion that all, *except a minute quantity, probably not more than 1-120th part of the total volume, would do so.*

Lord Raleigh at once repeated Cavendish's experiment, using an improved form of apparatus and found an obstinate residue almost of the same amount as Cavendish. The residue, though it

obeyed the various tests for Nitrogen must obviously be a different substance, as no amount of coaxing would induce it to combine with Oxygen.

The method employed was to pass a stream of electric sparks through a mixture of Oxygen and Atmospheric Nitrogen contained in a flask inverted over a weak Solution of Caustic Soda, which absorbed the oxide as soon as it was formed. Although the modern apparatus worked 3,000 times faster than Cavendish's original one, it took nine days to obtain four cubic inches of the inert residue.

Another method of separating this new body was devised by Professor Ramsay, who now joined in the research.

Nitrogen from the air was first passed over red hot Copper to remove the last traces of oxygen and then through tubes containing red hot Magnesium, which combines with true Nitrogen. It was found difficult to get rid of the last traces of this gas by this method, so that the process concluded with passing electric sparks through it in presence of Oxygen. The yield in this case was greater than before, some thirty cubic inches being obtained in a week.

A third method consists in passing "atmospheric nitrogen" through a dozen long clay pipes connected in series and surrounded by a glass cylinder partially exhausted. In this way the lighter of the gases (true Nitrogen) diffuses through the porous clay into the cylinder, leaving the heavier gas mixed with less true Nitrogen than before in the pipes' stems.

This does not effect a complete separation, but as before the product has to be mixed with oxygen and sparked through.

Having by one or other of these laborious methods got rid of the true Nitrogen, the first experiment with the residual gas was the finding of its Vapour Density.

It was found to be 20; that of pure Nitrogen being 14, and of Hydrogen 1. The amount of the gas present in the air was about 1 per cent. by volume and this exactly accounted for the discrepancy between the densities of "atmospheric" and "chemical" Nitrogen from the observation of which the discovery originated.

Experiments on the gas were then performed to discover its properties. These brought out the remarkable result that (up to the present) under no condition and with no element, compound or mixture, will it enter into chemical combination. Hundreds of substances have been tried including the most energetic but in

vain. It is in consequence of this that the discoverers chose the name (Argon = laziness) to express the fact of its extreme chemical inertness.

There is only one way of satisfactorily recognising Argon, and that is by observing its spectrum. A glass tube, with two platinum wires passing into it, is taken and filled with the gas. The majority of this is afterwards pumped out leaving only a small quantity at a low pressure. The tube is then sealed off and the wires connected to an induction coil. The sparks which pass through the gas raise it to incandescence, so that if placed before a Spectroscope we can see its Spectrum. This consists of a large number of bright lines, chief among which are two in the red, one in the yellow and several in the green and blue. By altering the potential of the current the blue may be made more prominent at the expense of the red, and *vice versa*. It is this fact that has made several observers conclude that Argon is a mixture of two gases.

Experiments have been made to see whether plants or animals contain Argon. Some peas were dried, powdered and treated with certain chemicals. The nitrogen given off was mixed with Oxygen, and on sparking through the mixture no residue was left and hence there was no Argon in the original peas. Some mice were chloroformed, dried in an oven, powdered up and treated like the peas. Eleven per cent. of Nitrogen was obtained, but no Argon.

General interest may perhaps stop at this point, but for the chemist the interest only begins. One important question was to determine whether Argon is (1) a compound, (2) a mixture of gases, (3) an allotrope of Nitrogen, or (4) an Element.

(1) It is not a compound for all methods of decomposition have been applied in vain.

(2) Diffusion, solution, etc., have failed to separate into it two dissimilar portions. Moreover Olsjewski determined its melting and freezing points, and found them constant, this being a most reliable test for the homogenity of a substance. Argon cannot therefore be considered a mixture of gases.

(3) Its density is 20, and in no single determination has a higher number been obtained. If it were allotropic Nitrogen its density might be 21, but could not be 20.

Hence experiment points to the elementary nature of Argon.

Another question to the chemist is the number of atoms in its molecule, and hence its atomic weight. As Argon forms no com-

pounds the best means of answering the question are removed. Another method, depending on Dulong and Petit's Law gives untrustworthy results for gases. So that resource was had to the indirect determination of the ratio of its specific heats at constant volume and constant pressure. If a gas has two atoms in its molecule this ratio should be 1·41, if only one atom 1.6. The latter number was found and hence the atomic weight of Argon is considered to be 40. A great difficulty now arises. There is no room in this list of elements in Mendeléeffs table for an element of this atomic weight, as the place is already occupied by a well known element. The method of obtaining Specific Heats or the Atomic Theory itself must therefore be seriously questioned.

Thus the discovery of Argon and the investigation of its properties has profoundly disturbed the very foundations of our present Chemical Theory.

"HELIUM."

The history of this substance dates from 1868. In that year Professor Norman Lockyer in subjecting the blood-red light visible when the Sun was just getting eclipsed to spectrum analysis thought he observed a yellow line very near but not coincident with either of the yellow lines characteristic of the spectrum of Sodium.

On his return from India, where the observations were made, he further investigated this line but was unable to find any known substance, which would produce it artificially.

Astronomical inventions soon enabled observers to see this light without waiting for an eclipse. The result was to enable Professor Norman Lockyer to assert that they were due to some substance unknown on Earth but existing as a gas in the Sun, in nebulæ and in very hot stars. This gas he called Helium and he inferred that it was a very light gas.

In 1888, Hillebrand, during a research on the rare mineral Uraninite found that an inert gas was evolved on the addition of Sulphuric Acid. It obeyed the tests for Nitrogen and under the conditions be employed gave, as he thought, the spectrum of Nitrogen.

In March, 1895, the attention of Professor Ramsay was drawn to this peculiar fact, and as Nitrogen is never liberated from its compounds by Sulphuric Acid, he at once suspected that it had

been mistaken for Argon. Thinking that this might present an easy method for the preparation of this gas he repeated the experiment. Judge then of his surprise when on examining the spectrum of the gas he found neither Nitrogen nor Argon lines, but a very prominent bright yellow line. Professor Lockyer on being informed of this result was soon able to confirm the fact that the element Helium, which had been teasing astronomers for over a quarter of a century, was at last run to earth.

Several other minerals were found to evolve the gas, Clevite being the most important. Thus the source of most, but not of all, of the strange lines in the sun's light was explained. The remaining ones are doubtless due to some other body still unknown.

The properties of Helium bear a very marked resemblance to those of Argon. It unites with no other substance and seems to be merely included in the minerals from which it is obtained. Its density is 2, and therefore, after Hydrogen, it is the lightest known gas.

Like Argon, its molecule appears to contain only one atom. Like Hydrogen it is exceptional among gases in being a good conductor of Electricity. Careful observations on its spectrum, points to its being a mixture of two gases. The same was said of Argon, but unlike that gas the latest experiments of Professor Ramsay have shown that Helium is divisible into two portions by diffusion, the one gas having a density of 2·1 and the other 1·5. These might naturally be expected to exhibit different spectra, but as far as is known at present, they do not. Hence we have the extraordinary phenomenon of the same element apparently possessing different atomic weights. It rests with the future to either confirm or deny the accuracy of these experiments. If they are correct then the atomic theory will stand in need of considerable alteration.

"CHELTENHAM IN THE OLDEN DAYS."

BY A. S. OWEN, ESQ.

STRANGER visiting Cheltenham might perhaps wonder how it could be said to have any history at all; everything wears such a modern appearance that it might be thought that there was nothing to interest the archæological student in the place. But although we cannot claim for the town that it has the same historic interest as its neighbours of Gloucester and Tewkesbury, we shall find that there is enough in the past of Cheltenham to interest us and lend additional interest to the present.

The oldest building in Cheltenham of which there is any record is a *cromlech* found when the G.W.R. Station was being made, near that part of the town called the Knapp, a name associated in these parts with tumuli or barrows. Who the people were that erected these things, and for what purpose they were erected, are much disputed subjects. They may have been burial places, scenes of religious worship, or treasure chambers, but all we know is that they go back to a period beyond any historic record in this country. This is the only trace in the town, I believe, of a period before the coming of the Romans, and it is unfortunate that even that is destroyed, but there are numerous remains of the ancient Britons in the hills.

To the Romans Gloucestershire was very important. The Severn was for some time one of the frontiers of the Empire, and the Second Augustian Legion was quartered in this shire to keep back the savage Silurians. Gloucester and Cirencester were both Roman colonies, and the Romans were so much scattered over the shire that we find traces of them in one-third of the Gloucestershire parishes. Our own local interest in them is that they altered the old British encampments on the neighbouring hills, and that they constructed a road to connect their camps at Cleeve and Leckhampton. This road, which from immemorial times constituted the parish boundary, I am told, took the line of the Old Bath Road and Hales Road, which gives that road a very creditable antiquity; in one part of it a great find of about 1,000 Roman coins, dating from the time of Claudius

to that of Gratian, was made some years ago. Other remains have also been discovered. Behind *Bayshill Terrace* were found the remains of a Roman Villa with a bath, and at other places in the town isolated Roman coins have been discovered.

Little is known to us of this district while it was part of the Saxon kingdom of Mercia; it had been a place where the vine grew very abundantly, but the first solid fact that we have to go upon is the existence of a Saxon Benedictine priory in this town. How old it was we do not know, but it existed in 803, *i.e.*, some time before Alfred, when it was the subject of warm discussion at a Church Synod. Its site was 403 and 404, High Street (Caudle's, and Gough and Edward's shops), at a time when the part where the High Street runs was much raised above the level of the marsh of Cambray, and formed probably the slight hill which is a possible derivation of the first part of Cheltenham. The Benedictines from this priory served in the old chapels of Arle and Hatherley, of which traces have been found. After the dissolution the lands passed into the hands of the Essex family, whose name survives in Essex Place.

From the time of *Edward the Confessor*, the saintly but unsuccessful King of England, Cheltenham has been a royal manor, and is described as *Terra Regis* in Domesday Book; it was charged with helping to maintain the King's dogs which were used to keep down foxes and other vermin, so that the Cotswold Hounds of the present day may regard themselves as a public institution of venerable antiquity.

The manor passed through various besides royal hands, *e.g.*, the Norman abbey of Fecamp, who obtained it from Henry VIII. in exchange for Winchilsea and Rye, and the nunnery of Zion in Middlesex with whom the priory was connected. In the 17th century, when it was in the hands of the Prince of Wales, afterwards Charles I., its rights were clearly settled by an Act, which still exists, and not only have we got the Act, but we have the expenses in connection with this private bill tabulated, down to the pound which was paid to the doorkeeper in the House of Lords, whereas the doorkeeper in the Commons only got five shillings.

The rights of the manor were numerous. They included exemption from tolls throughout the kingdom, exemption from supporting the eldest sons of kings, and the right of sending two members to Parliament. The inhabitants of Cheltenham found this rather a burden than a privilege, and when Queen Elizabeth rated a member of the Norwood family for neglect of this duty, the inhabitants

petitioned against the further infliction and were relieved from the trouble of electing members. In the Reform Act of 1842 Cheltenham, now a big place, was once more enfranchised, and the Liberals of the town showed their gratitude to the reigning monarch (William IV.) by erecting a statue to him in the Promenade. It is gratifying to know that the statue in a burst of gratitude some years ago complimented those who erected it by being tastily painted in yellow and green (the Liberal colours) at an election.

Another right was the erection of a pillory and gallows of their own. The gallows was an oak tree which stood almost on the site of Mr. Salter's house.

A court of the manor (Court Leet) used to sit which discussed all manner of subjects ; I quote one case out of many, as an amusing forerunner of the action of the Health Committee during the present year :—" Presentment, 5 April, 9, James I. That Dobbins sounded his drum up and down the town of Cheltenham in the market, accompanied by R. Clarke and divers other young fellows ; Clarke following Dobbins with a truncheon like a lieutenant or marshalman, and proclaiming that whosoever would hear a play should come to the sign of the Crown. This the bailiff of the Town unliking, the rather for the neighbouring towns of Tredington and Prestbury were infected by the plague, and the town itself much suspected, and greatly doubted that the infection was there also, sent them to forbear ; they reviled his messenger, and he had to go himself and suppress them, but they departed."

Since the reign of Charles I. the Dutton family were Lords of the Manor till this reign ; the present Lord of the Manor is a member of the College Council, Mr. Agg-Gardner.

It was early in the Norman period that S. Mary's Church was built, and various parts dating from that period remain, though the windows were added later. The Church and Churchyard are well worth a visit. In the latter we notice the fine old Cross dating from the reign of Edward I., and formerly bearing two sun dials. In the churchyard are two quaint inscriptions, one of John Higgs, pig killer :

" Here lies John Higgs
A famous man for killing pigs,
For killing pigs was his delight
Both morning, afternoon and night,
Both heat and cold he did endure,
Which no physician could ere cure.
His knife is laid, his work is done
I hope to heaven his soul is gone."

Another of Isaac Ballinger has

"Reader pray covet not the world,
Out of it you may soon be hurled,
For as a wheel it turns about;
It was a wheel that turned me out."

In another, the deceased commits his public house to GOD and his children to a faithful friend, a curious distribution. But you look in vain for the often quoted inscription :

"Here lie I and my three daughters
Died of drinking Cheltenham waters.
If we only had stuck to Epsom Salts
We shouldn't have now been in these vaults."

The Church is very beautiful inside ; we may notice especially the marigold window, the ballflower decoration and the little chamber in the North porch, one of the most interesting in the country. Several of the tombs are interesting; by the high altar is buried William Payne, a past owner of Charlton Park, who played no little part in the reign of Charles I. For writing a pamphlet in 1633 called "Histriomastix," he was tried by the Star Chamber and his sentence helped to bring that Court to its well-merited destruction ; his crime was that he wrote against masques and sabbath-wakes though he knew the Queen attended them. He was found guilty with the following sentence :—

"That his book be burned by the common hangman ; to be put from the bar and to be for ever incapable of his profession ; to be turned out of the Society of Lincoln's Inn ; to be degraded at Oxford ; to stand in the Pillory at Westminster and Cheapside ; to lose both his ears, one in each place ; to pay a fine of £5000 and to suffer perpetual imprisonment."

For a later offence he had the rest of his ears sawn off, and S.L. branded on his cheeks with a red hot iron. Subsequently being restored to his profession, having had his fine paid back to him out of the estates of those who spoke against him on his trial, he grew rich and purchased Charlton Park.

There is a fine brass of Judge Grevile (time of Henry VII.) which shows well the costume of the period. There is also the tomb of Captain Skillicorne whose enterprise brought George III. to Cheltenham, among whose virtues it is recorded that he was never once intoxicated. Those who like horrors can see the tomb of Katherine Comt, killed by a revengeful servant for detection in a crime. It is recorded that the murderer was found guilty, executed at Glo'ster and according to the horrible practice of the time his body was hanged

as near the scene of his crime as could be allowed. This was in what was then the marshes behind Clarence Square. One day the body and chains were missing, being removed by the relatives of the murderer. Search was in vain. The one place where nobody looked was in the ground just under the gibbet, where years afterwards they were found a few feet below the surface.

Besides the oldest part of S. Mary's Church another relic of these far-past times was found when some alterations were being made near the Old Market House, now destroyed, when a large stone was discovered with Norman devices and the date 1107 clearly visible.

Of the middle ages, though Gloucestershire is full of relics, we have no traces in Cheltenham, though we may visit the picturesque Church of Leckhampton, and view in its interior an interesting effigy of a crusader. The Wars of the Roses are usually regarded as the close of the middle ages, and in this tragic drama Cheltenham was interested, in the fact that Edward IV. passed through it on May 3rd, 1471, the day before the Battle of Tewkesbury. Here it was that he heard that Queen Margaret's army was within an easy march of him. Toil-stained and travel-worn though his army was, it proceeded on its way, after slight refreshment, and having spent the night at or near Tredington, won the Battle of Tewkesbury the next day on what is still locally known as the Bloody Meadow.

In the reign of Queen Elizabeth, although the borough lost its two representatives, it was regarded as of sufficient importance for the worthy Richard Pate to make provision for the education of the young and the comfort of the old in the foundation of the Grammar School and the Alms House. Few of you probably remember the quaint old building of Elizabethan date that stood in the High Street with "Schola Grammatica" carved on its front—and even though we may congratulate the School on their commodious and handsome new buildings, we must regret the departure of the old. Some of the conditions of the original foundation are very quaint. In order to secure the diligence of the Schoolmaster it is ordered "that if at any time hereafter there shall not be placed at, and remaining to be taught in the said School the number of 50 Scholars at the least, of whom 4 at the least shall have knowledge of Greek and Latin tongues, and be able to make exercises of form and verse in these tongues and speak the Latin tongue extempore; and 4 others able to translate any piece of familiar English speech into Latin, and 4 others able to make a sentence of true Latin between the nominative case of the verb; and 14 others able and ready to learn the rules and accidence

to the rules of construction, and the residue children of good aptness to learn . . . the pay of the Schoolmaster sthould be reduced to 20 marks the year and the Usher to 40 shillings."

The Schoolmaster was to be given 4 days' notice of the Examination, and the reward for distinctions was of a curious character. The four most successful in the first form received as prizes :

1. A pen of silver wholly gilt ... ... 2/6.
2. A pen of silver partly gilt ... ... 1/8.
3. A pen of silver ... ... 1/4.
4. A pen and inkhorn ... ... /6d.

The three most creditable in the next three forms received a quire of paper value 4d. With these quires of paper in their right hands while the four others wore laurel garlands, they proceeded in procession of the whole School to the Parish Church, where a suitable ceremony was performed.

It was this same Richard Pate's important connections that gave Cheltenham her next advantage. This was the first place in which the tobacco plant was cultivated, and here it throve greatly, covering the sides of Bays Hill till its growth was made illegal by Parliament in the time of the Commonwealth, from the fear that its home production would injure the monopoly of those who inported the weed from Virginia. It was necessary to send for soldiers from Gloucester to put the act into force ; but Cornet Wakefield and his men who came to destroy the plantations found that the country rose against them and they had to retreat. In Ogilby's Britannia, 1675, we find it said that the men of Cheltenham still planted tobacco largely, though it was illegal.

Cheltenham was not unaffected by the Civil Wars between the King and the Parliament. In September, 1643, when Gloucester was holding out against the King, the Parliamentary army under Essex was expected to come to its relief. On the 5th, Essex reaching the top of Hewletts Hill above Prestbury, signified his arrival to the inhabitants of Gloucester. Cheltenham then held out for the King (perhaps as being a Royal Manor) and Essex seems to have been compelled to skirmish with the Royalist troops : there are numerous traces of a battle in Imperial Square and the neighbourhood of the G.W.R. Station. In laying the foundations of the Infant School bodies hastily buried were found with bullets and coins of the period about them. Essex's army seem to have found that the Royalists had eaten every thing available, and the town providing insufficient

to meet their needs they went on to Norton, where they obtained sufficient refreshment.

With the decay of the tobacco plantationing Cheltenham seemed to have lost all possible means of prosperity, but one was discovered shortly which was to eclipse all that had gone before, and the benefactors in this case were to be pigeons. You may have noticed them in the Town Arms. They were the discoverers of the mineral waters which made Cheltenham so prosperous in the last century. In the year 1715 it was noticed that pigeons frequented a certain field on Bays Hill where they picked up a salt sediment left by a spring; it had been remarked that this spring did not freeze with other springs in winter. A roof was put over the spring and its waters subjected to medical analysis, and in 1738 Captain Skillicorne built a Dome over it and founded the original Pump-room; five years later Old Well Walk was planted with its fine rows of elms. The name is still applied to the lane that issues from the Churchyard, but the real Well Walk went up the slope of Bayshill. You can still see a trace of it here and there; a few trees stand between Fauconberg Terrace and the Ladies' College and a few more in the gardens of Glenlee, but the Walk was destroyed some years back and the Ladies' College stands on its site. It is to be hoped that Lord Northwick's poplars may never receive the fate at our hands that has been meted out to the elms by the sister institution.

But the greatness of Cheltenham did not come all at once; during the bulk of the 18th century it was a struggling, straggling village, consisting only of one street, the High Street from the Plough to the Fleece, while a stream till 1786 flowed down the middle only to be crossed by stepping stones; you may still find houses in the High Street that date from that period. It was still remote and sleepy enough in 1738, the *Gloucester Journal* announced that "if God permitted, the Gloucester Flying Machine (not a motor-car but a stage-coach) would perform the journey to London in the short space of 3 days." But this was daring providence, and we find a notice of one Dormer, a suggestively sleepy name, who being about to journey to London, felt it necessary, considering that it was uncertain whether he should live to return, to make his last will and testament. One gentleman visiting Cheltenham in 1736 found it impossible to obtain a night's lodging there, so that he had to proceed to Gloucester, the coach from thence being fetched for him.

But an event occurred which put the prosperity of Cheltenham on a sure basis from which it has never been shaken. In 1788 George

III. was advised to try the effects of Cheltenham waters and in the July of that year visited the town with the Queen and three of the Princesses. They had their quarters in Bayshill House, lent by Lord Fauconberg, and the King, who contemplated an annual visit, made large additions to it in order to secure greater space. Space was certainly needed, for Miss Fanny Burney, who accompanied the Queen, gives a lively account of the cramped character of the royal quarters. The Queen had to use the drawing room to dress and undress in ; the little court had to have its tea in the passage ; the pages slept in outhouses, and the maids a quarter of a mile off in the town. But the discomfits of the interior were compensated in Miss Burney's mind by the prettiness of the landscape, the fields sloping down to the town, and the charming walks round the Spa. The King used to begin his day betimes, drinking the water at the Spa at six, and then promenading in the Walks. He was everywhere received with rapturous loyalty ; the crowd following him down the High Street when he came away from the Church on Sunday, where to celebrate the royal visit the hymn was performed on the bassoon. He seems to have enjoyed his two-months' visit hugely and came away saying that he felt no worse, but if anything rather better. A year afterwards when in Dorsetshire he made a remark which will be re-echoed by many here, that the finest part of his dominions was the Vale of Gloucester.

The town now became the rage. The *Morning Post* of the same year tell us that the fashions throughout the kingdom were *Cheltenhamised :* Cheltenham bonnets, buckles, buttons being 'all the go.' The town went up by leaps and bounds ; everybody that was anybody visited Cheltenham during the next thirty years. At Cambray stayed the exile Bourbons, Louis XVIII. among them. The fat man with dark intellectual features, with every mark of disipation, is C. J. Fox. The handsome, distinguished man with padded limbs, seeking to disguise the trail of one of his legs is Byron. But of all the visitors the one received with the greatest enthusiasm was the Duke of Wellington ; he used to stay in a house now pulled down, the tradition of which still survives in the name of Wellington Street, and in the gardens an obelisk was erected to commemorate the victories of the great General. It was sold for building materials in 1843 !

The fashionable residences were in the High Street and Cambray. Early in this century the Montpellier and Lansdown estates were bought for a purely nominal price ; previous to that they were so wild and uncultivated that they were regarded as extra parochial and not rated. On this estate in 1809 a Spa was built, with its adjoining

Musical Promenade, which now is Montpellier Walk with its armless ladies. Adjoining this Spa was a Museum much frequented by visitors, where Beard's shop now stands. Beyond this was the rustic farm (Gallipot Farm) which is now Suffolk House, taking its name from Lord Suffolk, who bought the whole Suffolk Estate from Montpellier to the Park for the sum which is now given for a single house in Suffolk Square. In this century the Promenade was a marsh where the visitor had to cross the Chelt by a plank, but if he wanted a securer passage there was a drawbridge a little lower down the stream. At the head of the Avenue used to stand Sherborne Spa, named like the Promenade after the then Lord of the Manor. The site is now occupied by the familiar façade of the Queen's Hotel, in front of which are the cannons taken at Sebastopol; the materials of which the Spa was built were largely used to erect what are now called the Imperial Rooms. When the society swell was not taking his waters to cure his real or imaginary ailments at the Royal Spa, there were other amusements for him: there was the Medical Promenade, where a band played, "where every player was respectable and some eminent"; there was the famous Williams' Library, only dispersed the other day, and the Club Room of Weller's, a fashionable haunt, and at a somewhat later date he could stroll into the Park, when it was a Park, and look at the flowers in the quaintly devised geographical beds, or entertain himself at the Assembly Rooms, which then presented an appearance curiously like Newgate, and within whose walls a stern discipline of etiquette was rigidly maintained.

Such was Cheltenham in the days when it was a Health Resort, when its population was going up at the rate of 2000 a year.

Cheltenham has had a long list of worthies, too long to enumerate, but I must mention a few. I have already spoken of Prynne. Besides him there was Macready, the actor, who lived in Wellington Square, Dr. Jenner who practised in this town and who first vaccinated in Alpha House on Bayshill; in the Cemetery rests T. Haynes Bayly who wrote songs like "She wore a wreath of roses" and "Oh no, we never mention her," which were household words with the last generation and the butt of this. Few perhaps of you, when you get out at the G.W.R. realise that the house you first see was often occupied by the poet Tennyson, whose mother lived there, and that he must have spent many hours walking on the site of the Station when composing *In Memoriam*. Then there were Close, Boyd, Robertson, all three great divines, many of whose sermons must have been heard by past Collegians in the days when there was no Chapel.

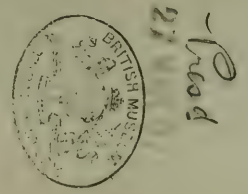
In a distant part of the town stands a venerable tree about which a romantic legend has gathered, of which I will give you the summary though I do not vouch for its authenticity. The inhabitants of Swindon village found one day a certain Maude Bowen lying dead in a brook and by her her uncle Godfrey pierced by an arrow. The coroner found that it was a case of *felo de se*, and unlike Ophelia's coroner would not give Christian burial. She was buried in the cross road with an elm stake run through her, which in course of time became the present grand tree. Here her widowed mother used at times to sit, and there on one occasion she was taunted by the Lord of the Manor who had wished to woo Maude ; he sent his vassal to take her away, when lo ! his vassal fell dead, transfixed by an arrow. This in the opinion of those times was witchcraft and nothing else. The old mother was condemned to perish by burning at the same spot, but when the sentence was being executed the Lord of the Manor fell a victim to the same sudden death. Who had shot those three arrows ? Years after a white-haired man confessed to the deed. He was called Walter the Archer, he had loved Maude, had killed her uncle while he was trying to secure her in order to turn her mother out of her cottage, and from his place of concealment had subsequently shot the insolent vassal and the oppressive lord. Hence the tree is known as Maude's Elm.

I have mentioned the various causes that have given the town its success in the past, and we here feel proud of belonging to an institution that is so sure a basis of its present and future prosperity, and when we sing " Floreat Cheltonia " about the College we feel that we are praying for the surest means of the success of the Garden Town of England.

BALANCE SHEET FOR 1896.

Receipts.

	£	s.	d.
Balance in hand from 1895	14	5	6
Grant from Council for Lantern ...	10	0	0
Subscriptions for Lent Term (per C.I.G.) ...	5	0	0
Dark Room „ „ („ A.H.M.)...	4	0	0
Subscriptions for Summer Term („ C.I.G.) ...	3	16	0
Dark Room „ „ („ A.H.M.)...	7	0	0
Subscriptions for Xmas Term („ C.I.G.) ...	4	18	0
Dark Room „ „ („ A.H.M.)...	4	12	6
	£53	12	0



W. M. BAKER,
Hon. Treasurer.

Expenditure.

	£	s.	d.
March, Towels for Dark Room ...	0	5	3
„ King for Lectures	0	10	0
„ King for Superintendence of Dark Room	3	9	0
June, Grant to Whitcomb Expedition ...	0	3	0
July, „ Wainlode „ ...	1	19	9
„ Case for Ducks in Museum (per F.J.C.)	2	10	0
„ King for Superintendence of Dark Room	3	16	0
„ Grant to 3rd Excursion... ...	1	18	6
„ „ 4th „	1	2	6
„ Thomas, Repairs in Dark Room ...	0	18	4
Dec., Servants for Lantern Slide Exhibition...	0	9	6
„ Extra Botany Prize	0	9	0
„ King, for Superintendence of Dark Room	4	1	0
„ King, for Lectures	0	12	6
Balance in hand	31	7	8
	£53	12	0

Audited and found correct, March 6th, 1897,
A. A. BOURNE.

CHELTENHAM COLLEGE

Natural History Society

REPORT FOR THE YEAR 1897.

SUMPTIBUS EDITORUM CHELTONIENSIUM.

CHELTENHAM:
BARTLE'S COLLEGE BOOK AND STATIONERY DEPÔT,
NORTHWICK TERRACE.

CHELTENHAM COLLEGE

Natural History Society.

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1897

Sumptibus Editorum Cheltoniensium.

CHELTENHAM:
DARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

CHELTENHAM :
THOMAS HAILING, OXFORD PRINTING WORKS.
1898.

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PREFACE.

As the records of the various sections show, this year has been by no means an idle one. A considerable amount of work has been done, and an increasing amount of keenness is visible amongst members of the Society.

The Museum still wants a great deal of arranging and setting in order before it can be regarded as satisfactory, but a certain amount of progress has been made during the year, the mineralogical collection having been re-arranged and a good deal of room made for the display of other objects during the course of re-arrangement. The Griffiths' collection is temporarily on view in one of the centre cases, but will gradually be further arranged and more space given to it.

We have to mourn the loss of Mr. Macdonald and Mr. Tanner as heads of the Photographical and Ornithological Sections, over which they have so kindly and so energetically presided, Mr. Youngman has consented to become President of the former Section and Mr. Montford of the latter.

The lectures to the Society have been very well attended and we have several times felt the awkwardness of having no room intermediate between the Chemical Lecture Theatre and the Big Classical in size.

The Botanical Section is to be congratulated on the large list of flowers and their dates of first recorded blossomings, which are of great scientific value.

It is somewhat to be deplored that there is no Microscopical Section of the Society, if any members, who could bring back microscopes from home, would care to form such a section, no doubt arrangements could be made and objects procured for the section to examine and discuss.

The thanks of the Society are due to Dr. Pruen and Dr. Wilson for having been so kind as to give Lectures to us. Of one of these Lectures we are able to print an account.

THE COUNCIL, 1897.

President...	THE PRINCIPAL.
Vice-President	REV. J. MUGLISTON.
Treasurer	W. M. BAKER, ESQ.
Secretary	C. I. GARDINER, ESQ.
President of Archæological Section...	A. S. OWEN, ESQ.
President of Botanical Section ...	J. R. WYNNE-EDWARDS, ESQ.
President of Entomological Section...	J. C. SALTER, ESQ.
President of Geological Section ...	C. I. GARDINER, ESQ.
President of Ornithological Section...	M. TANNER, ESQ.
President of Photographic Section...	A. H. MACDONALD, ESQ.
President of Junior School ...	F. J. CADE, ESQ.

RULES.

1.—That this Society be called the Cheltenham College Natural History Society, and have for its object the promotion of the study of Natural History.

2.—That Ordinary Meetings of this Society be held on Fridays once in three weeks at 5.30 p.m., or at such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal Subscriptions, be exempt from any further payment.

6.—That any Member whose subscription shall be a whole term in arrears shall cease to be a Member of the Society.

7.—That Members be encouraged to join Sections for the more accurate study of the different branches of Natural History: that the formation of these be arranged, and the work settled at the first Meeting of each Term: that each Section be under a President, who is responsible for its Meetings and organisation, and that a Secretary be appointed by each Section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the Presidents

and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President, or, in his absence, a Member of the Council shall preside.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of the two Auditors, to be appointed at the last Meeting of each year, be laid on the table at the first Meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a Special or Ordinary meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-Member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.

Cheltenham College Natural History Society.

LENT TERM, 1897.

President: THE REV. R. DE C. LAFFAN.

Secretary: C. I. GARDINER, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Baines
Beasley, R. L.
Biscoe
Chamier
Clarke
Cohen
Collins
Congreve
Crawford, A.
Cresswell
Curnick
Davenport-Handley
Edge
Eldridge
Fawkes
Fowler
Fraser, A. C.
Fraser, J. F.
Greer
Hedge
Hill
Hill-Thomson
Holford
Hood
Hooper
Houghton
James
Kershaw
King
Knox-Brown
Lanyon
Lee, M. G.
Levy, H.
Levy, R.
Little
Lock
Maclean
Marcan
May
McLeod
Middleton, G. V.
Middleton
Morris, T.
Murray, H. K.
Murray, M.
Neame
Newton
Noad
Noel, E. W.
Noel
Osborne
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Phillips, G.
Rawlins
Rider
Roberts, F. R.
Rollo
Selby
Sparrow
Spencer
Stephens
Thomson
Torrie, C.
Torrie, J.
Turnbull
Wallace
Watson
White, G.
Willcox
Williams, W. H.
Wilson
Woods

ORDINARY MEMBERS.

Adair
Balfour, J. M.
Balfour, J. R. B.
Birkett
Birtwhistle
Black
Boothby
Brettell, V.
Brierly
Carson
Clarendon
Collett, L. G.

Conran
Copland
Crookes
Currie
Denne
Dixon
Dixon
Dunsterville
Fisher
Fitzherbert, C.
Fitzherbert, E.
Fort
Fry
Garratt
Gosnall
Grey, A. J.
Grieve
Griffin
Griffith
Grose, F.
Grose, W.
Haldinstein
Hare
Harrison, A.
Hart
Hawkins, A.
Hawkins, E.
Hodson, A.
Houston
Johnson
Jordan
Kent
Lathbury
Lee, A.
Lewer
Lloyd, A. M.
Lloyd
Lynch-Staunton
Mackie
Macrae
Maitland
Martin, N.
Medlicott
Milton
Moore, C.
Moore, H. F.
Mortimer-Booth
Moss
Murray, G.
Nothmann
Penny
Ponsonby
Porteous
Porter
Rickford
Robert
Samuelson
Sanders, H.
Sanders, J.
Schnurmann
Sharp
Sington
Smith, D.
Soutry
Stamp
Stephens
Stranack
Stuart
Suarez
Tillard
Thomas, R. A.
Thwaite, E.
Thwaite, N.
Turner
Upton
Vaca Diez
Vere
Walter
Wells
Wheatcroft
White
Wolff

SUMMER TERM, 1897.

President: THE REV. R. DE C. LAFFAN.
Secretary: C. I. GARDINER, ESQ.
Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Baines
Beasley, R. L.
Birtwhistle
Biscoe
Boothby
Brierly
Chamier
Collins
Congreve
Conran
Crawford, A.
Cresswell
Currie
Davenport-Handley
Edge
Eldridge
Fawkes
Fisher
Fitzherbert, E.
Fowler
Fraser, A. C.
Fraser, G. F.
Greer
Grey, A. J.

Griffith
Grose, W.
Hill
Hill-Thomson
Holford
Hood
Hooper
Houghton
James
Johnson
Kershaw
King
Lanyon
Lee, M.
Levy, R.
Little
Lloyd
Lynch-Staunton
Maclean
Marcan
May
McLeod
Middleton, G. V.
Morris, T.
Murray, H. K.
Murray, M.
Neame
Newton
Noad
Noel
Noel, E. W.
Osborne
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Phillips, G.
Rawlins
Roberts, F. R.
Rollo
Selby
Sparrow
Stephens
Thomson
Torrie, E.
Torrie, T.
Turnbull
Wallace
Walter
White, G.
Willcox
Wilson
Woods

ORDINARY MEMBERS.

Adair
Arbuthnot
Balfour, J. M.
Balfour, J. R. B.
Birkett
Black
Brettell
Bouch
Clarendon
Collett
Copland
Crookes
Denne
Dixon
Dixon
Dodington
Dunsterville
Fitzherbert, C.
Footner
Fort
Fry
Garratt
Gosnall
Grieve
Griffith
Grose, F.
Haldinstein
Hare
Harrison, A.
Hart
Hawkins, A.
Hawkins, E.
Hodson, A.
Houston
Jordan
Kent
Lathbury
Lee, A.
Lewer
Mackie
Macrae
Maitland
Martin, N.
Medlicott
Milton
Moore, C.
Moore, H. F.
Mortimer-Booth
Moss
Murray, G.
Nothmann
Oliver
Oppenheim, G. P.
Peel
Penny
Ponsonby
Porteous
Porter
Rickford
Roberts
Samuelson
Sanders, H.
Sanders, J.
Saville
Schnurmann
Sharp
Shaw
Sington
Smith, D.
Stamp
Stephen
Stranack
Stuart
Suarez
Tillard
Thomas, C. V. R.
Thomas, R. A.
Thwaite, E.
Thwaite, N.
Turner
Upton
Vaca Diez
Vere
Wells
Wheatcroft
White
Willis
Wolff

MICHAELMAS TERM, 1897.

President: THE REV. R. DE C. LAFFAN.

Secretary: C. I. GARDINER, ESQ.

Treasurer: W. M. BAKER, ESQ.

LIFE MEMBERS.

Baines
Birtwhistle
Biscoe
Boothby
Brierly
Chamier
Congreve
Conran
Crookes
Currie
Dixon
Eldridge
Fitzherbert, C.
Fitzherbert, E.
Fort
Fraser, G. F.
Griffith
Hill
Hill-Thomson
Holford
Hood
Hooper
Houghton
Johnson, E. F.
Kershaw
Lanyon
Lee, A.
Lee, M.
Levy, R.
Little
Lloyd
Lynch-Staunton
Macrae
Marcan
May
McLeod
Medlicott
Middleton, G. V.
Morris, T.
Murray, H. K.
Murray, M.
Neame
Noad
Noel
Noel, E. W.
Osborne
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Porteous, N.
Rawlins
Roberts, F. R.
Rollo
Selby
Sington
Sparrow
Stephens
Torrie, C.
Torrie, T.
Turnbull
Upton
Walter
Wells
Wheatcroft
White
Willcox
Wilson
Wölff
Woods

ORDINARY MEMBERS.

Adair
Adamthwaite, C. J.
Anderson
Balfour, J. R.
Bickerdike
Bird
Birkett
Black
Black
Brettell
Bride
Brinton
Bouch
Campbell, J. Donald
Clarendon
Clarke
Collett, L. G.
Copland
Crosse
Dicken
Dixon
Dodington
Dunsterville
Foord
Footner
Fowke
Fry
Garratt
Gosnall
Greer, H.
Griffin
Grose, F.
Haldinstein

Handley
Hare
Harrison, A.
Hart
Hawkins, A.
Hawkins, E.
Hodson
Holliday
Houston
Irvine
Jenkins
Johnstone
Jordan
Kent
Lathbury
Lewer
Lodwick
Mackie
Maitland
Martin, A. G.
Martin, N.
Milton
Moore, H. F.
Mortimer-Booth
Mortimore
Moss
Murray, G.
Nothmann
Oakey
Oliver
Oppenheim
Peel
Penny
Phillips, C.
Piggott
Ponsonby
Porter
Radcliffe
Reynolds
Rickford
Roberts
Rosenberg, P.
Rosenberg, S.
Samuelson
Sanders, H.
Sanders, J.
Sawyer
Schnurmann
Seaton-Taylor
Shann
Sharp
Shaw
Sloane
Smith, D.
Stamp
Stephen, H.
Stranach
Stuart
Suarez
Tillard
Tillard, S.
Thomas, C. V. R.
Thwaite, F.
Thwaite, H.
Thwaite, N.
Turner
Unett
Vere
Walker, M.
White
Whyte
Whittuck
Wilkins
Willis

LECTURES AND EXCURSIONS.

Feb. 12...Lecture on India and its Architecture, by S. H. Reynolds, Esq.

Feb. 18...Lecture on Earthquakes and Volcanoes, by C. I. Gardiner, Esq.

Mar. 5...Lecture on Pond Life, by A. H. Macdonald, Esq.

May 22...Excursion to Witcombe.

June 12...Excursion to Colesbourne.

June 22...Excursion to Withington.

July 3...Excursion to Sudeley.

Oct. 22...Lecture on Microbes, by Dr. Wilson.

Nov. 2...Lecture on Birds and Birds-nesting, by C. Montford, Esq.

Nov. 19...Lecture on Old Bones, by Dr. Pruen.

Dec. 8...Exhibition of Slides taken by Members of the Photographic Section.

ADDITIONS TO THE MUSEUM.

Crystal of Selenite ...	...	E. B. CARDEW.
Three Muskets ...	...	LIEUT. H. A. CARLETON.
Humming Bird's Nest Chinese Coins Crocodile's Egg	...	J. C. H. HOLLIDAY.
Bullets and Grape Shot	...	CAPT. HYDE SMITH.

Reports from Sections.

ARCHAEOLOGICAL SECTION.

President - - A. S. OWEN, ESQ.

MEMBERS:

J. M. BALFOUR.
G. R. MURRAY.
J. R. BALFOUR.
N. PORTEOUS.
ST. G. J. C. HEATH.
M. A. WOLFF.
T. BOUCH.

THE work of this Section was considerably curtailed by the extreme length of the Cricket Challenge Cups of the House to which most of the members belonged. A small party went on Friday the 21st of May, to visit Bishop's Cleeve. Arriving at the Church about 5.30 on our bicycles, we were met by the Rector, who very kindly conducted us round: the Church is one of the finest in this part of the country, and well worth a visit for its interesting Norman work in the porch and West end; it has a small upper chamber or parvise over the porch, in which was once kept an Academy of which traces survive in the terms of the various studies marked on the walls. While the three R's range from 3 to 5 shillings, grammar is at the prohibitive price of 15 shillings, and that it was regarded as an unnecessary luxury can be proved from an inscription in the churchyard—

"Eternal life was best for she."

A general excursion of the whole Society took place on the Saturday after Speech Day, July 3rd, to visit Sudeley Castle, where

by the great kindness of Mrs. Dent, we were taken round in detachments, and at the end of the afternoon tea was provided for us in the old hall. The house, which has been the home of many noble families and the lodging of several sovereigns, is interesting in itself, but, perhaps, still more for the art-treasures and curios with which Mrs. Dent has enriched it. One might leave the Castle with a very fair knowledge of the periods of the Tudors and Stuarts by examining the relics that crowd these old chambers, and it certainly makes the dead past live to see the actual chest of Charles I., found at Naseby, that contained the incriminating papers, and the portrait of the Infanta that helped to stimulate him to undertake the ill-fated journey to Spain. Not the least attractive part was the maze, resembling that at Hampton Court, which has been recently planted. The final resting-place of the Queen, Katharine Parr, is in the adjoining Chapel.

A lecture on Architecture, illustrated by magic lantern slides of the English Cathedrals, was delivered by the President of the Section at Thirlestaine Villa, on December 2nd, and on the following Wednesday, as a supplement to it, a party visited the Parish Church, which serves excellently to illustrate some of the periods of English Architecture, and which should be better known than it is.

Anybody wishing to join this section is requested to give his name to its President, or to G. R. Murray.

BOTANICAL SECTION.

SENIOR.

President - - Rev. J. R. Wynne-Edwards.
Secretary - - C. H. C. Noad.

JUNIOR.

President - - F. J. Cade, Esq.

WORKING MEMBERS.

SENIOR.

L. G. Collett, *Cl.*	T. Griffin, *G.*	N. Thwaite, *T.*
M. M. L. Currie, *C.*	C. P. James, *J.*	H. C. Whittuck, *W.*
T. Bouch, *Bo.*	H. R. Sanders, *S.*	
T. A. Hodson, *H.*	T. M. Salter, *Sa.*	

JUNIOR.

H. V. Reynolds, *Re.*	G. Perkins, *Pg.*	F. R. Jones, *Jo.*
S. Collett, *Cs.*	H. Perkins, *Ph.*	W. R. Paterson, *Pa.*
H. T. Butt, *B.*	C. T. H. Walker, *Wa.*	P. d'A. Banks, *Ba.*
G. Marsden, *M.*	G. Porcher, *P.*	R. I. Kinloch, *K.*
J. T. Winterbotham, *Wi.*	G. A. W. Young, *Y.*	A. A. Roberts, *R.*
F. Adkin, *A.*	H. de C. Falle, *F.*	W. H. Leir, *L.*

[The initials after the names refer to the list of records].

SENIOR DEPARTMENT.

The work of the season has been fairly successful. Unfortunately Griffin and Whittuck were absent for a considerable part of the term, or the numbers would have compared more favourably with last year's.

In the competition the following got over 50 specimens:

T. Griffin	.. 272	N. Thwaite	.. 98
H. R. Sanders	.. 148	C. P. James	.. 82
H. C. Whittuck	120	T. Bouch	.. 71

On Saturday, May 22nd, we had our annual excursion to Whitcombe woods and Birdlip, but the very cold winds of May prevented our finding as much as usual. None of the rareties of the district were out.

On Saturday, June 12th, there was an expedition to Colesbourne. The Monkey Flower (Mimulus Luteus), White Helleborine (Cephalanthera Grandiflora), Butterfly Orchid (Habenaria Bifolia), and Beam Tree (Pyrus Aria) were among the finds.

A small expedition on Jubilee Day to the woods beyond Whittington produced several rare flowers, among which were the Wood Vetch (Vicia Sylvatica), Butterwort (Pinguicula Vulgaris), the Cotton Grass (Eriophorum Polystachyum), which have not been previously recorded, and also the Bog Bedstraw (Galium Uliginosum), the Bee Orchid (Ophrys Apifera).

Among the new records we were glad to welcome Geranium Lucidum and Erodium Cicutarium which are curiously rare in this district, although the former is a common weed at Malvern ; Geranium Pusillum found at Whittington ; Cerastium Verna found on Leckhampton, where the orange Alpine Hawk-weed seems to have established itself; Lathyrus Sylvestris, Smyrnium Olusatrum near Haw Bridge ; Epilobium Tetragonum ; Inula Helenium on Painswick Common.

Hodson and Currie, the winners of last year's prize pressed some flowers, with a view to starting a new collection for the Museum. Currie was most successful in drying his specimens without their losing their colour, which is always a difficulty. This year we hope to have a competition for previous winners in the identification of the rarer plants of the district.

It is interesting to compare the dates of first flowering with those of previous years. After the very mild winter the earliest Spring flowers were recorded about a fortnight earlier than usual, but the cold winds of the latter part of April and May completely altered the aspect of things, and we had a very late Summer; in fact a large number of the July flowers were not out before the end of the Summer term.

The competition for 1898 will begin as soon as possible, and a special look out should be kept for early records after the exceptionally mild Winter. Flowers should be brought to the Museum at 2.30 on Mondays during this Lent term, at 2 o'clock on school-days during the Summer term.

JUNIOR DEPARTMENT.

The number of members this year was 45 and of these about 30 did some work in one or other of the Sections. In the Botanical Section 25 competed and 11 shewed up over 50 specimens. H. T. Butt came first with 205 specimens, R. I. Kinloch being second with 193. After these A. A. Roberts 172, H. de C. Falle 130, G. Perkins 111, P. D'A. Banks 105, S. Collett 93, H. Perkins 91, C. T. H. Walker 82, G. Marsden and G. Porcher 57.

Among records new to the Department were Helminthia Echioides, Sedum Rhodiola and Album, while Lysimachia Vulgaris and Campanula Hybrida made their appearance again after an interval of some years. We are told that Parnassia Palustris has been found near Puckham but it has not been presented yet at College.

The annual expedition took place on July 17 to Whitcombe and Birdlip and though late in the season nine or ten hitherto unrecorded species were found.

During a walk, on Oct. 25, to the Seven Springs 51 species were found in bloom, including two records, viz. Campanula Hybrida and Geranium Columbinum. The latter was flowering abundantly in the large field to the north of the Seven Springs.

LIST OF FIRST FLOWERINGS.

Latin Name.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba ..	Traveller's Joy	.. July 18..	B.
Anemone Nemorosa ..	Wood Anemone	.. Mar. 2 ..	Wi.
Ranunculus Aquatilis ..	Water Crowfoot	.. April 24..	P.
,, Flammula ..	Spearwort	.. June 22..	W.
,, Ficaria ..	Celandine	.. Feb. 22..	Pg.
,, Sceleratus ..	Scelery-leaved Crowfoot	.. May 9..	F.
,, Auricomus ..	Goldilocks	.. April 3..	G.
,, Acris	Common Buttercup	.. April 2..	Pa.
,, Repens		.. May 8..	G.
,, Bulbosus		.. April 23..	Sa.
,, Arvensis ..	Corn Buttercup	.. May 28..	G.
,, Hederaceus ..	Water Crowfoot	.. April 21..	G.
Thalictrum Flavum ..	Meadow Rue	.. June 26..	G.
Helleborus Viridis ..	Green Hellebore	.. Mar. 20..	G.
Caltha Palustris ..	Marsh Marigold	.. Mar. 7..	G.
Aquilegia Vulgaris ..	Columbine	.. May 22..	J. G. W.

Latin Name.	*English Name.*	*Date.*	*Record.*
Berberis Vulgaris ..	Common Barberry ..	May 23..	Ba.
Nuphar Lutea ..	Yellow Water Lily ..	June 24..	G.
Nymphæa Alba ..	White Water Lily ..	June 18..	K.
Papaver Rhoeas ..	Field Poppy ..	June 6..	G.
,, Dubium ..	Long-headed Poppy ..	May 20..	G.
,, Argemone ..	Pale Poppy ..	May 27..	G.
Chelidonium Majus ..	Common Celandine ..	April 18..	G.
Fumaria Officinalis ..	,, Fumitory ..	April 18..	T.
Corydalis Lutea ..	Yellow ,, ..	June 2..	Ba.
Barbarea Vulgaris ..	Yellow Rocket ..	May 3..	G.
Nasturtium Officinale ..	Common Water Cress ..	June 6..	G.
,, Palustre ..	Marsh ,, ..	June 29..	S.
,, Amphibium ..	Great ,, ..	June 19..	G.
Arabis Hirsuta ..	Hairy Rock Cress ..	May 10..	G.
Cardamine Amara ..	Large Bitter Cress ..	June 15..	G.
,, Pratensis ..	Cuckoo Flower ..	Mar. 10..	G.
,, Hirsuta ..	Hairy Bitter Cress ..	Feb. 28..	B, C.
Hesperis Matronalis ..	Dame's Violet		
Sisymbrium Officinale ..	Yellow Hedge Mustard ..	April 22..	G.
Alliaria Officinale ..	Garlic Mustard ..	April 6..	J, G.
Erysimum Cheiranthoides..	Treacle Mustard ..	May 16..	B.
Brassica Muralis ..	Wall Brassica ..	June 14..	B.
,, Oleracea ..	Cabbage ..	May 18..	B.
,, Campestris ..	Field Brassica ..	June 8..	G.
,, Alba ..	Cultivated Mustard ..	July 2..	W.
,, Sinapistrum ..	Charlock ..	May 23..	G, T.
,, Nigra ..	Black Mustard		
Cochlearia Armoracia ..	Horse Radish ..	May 16..	B.
Draba Verna ..	Whitlow Grass ..	Feb. 20..	J.
Thlaspi Arvense ..	Penny Cress ..	June 11..	B.
Capsella Bursa-pastoris ..	Shepherd's Purse ..	Feb. 22..	Wi.
Lepidium Campestre ..	Common Pepperwort ..	May 16..	B.
,, Draba ..	Hoary Cress ..	May 23..	Cs, Pg, Ph.
,, Smithii ..	Smith's ,,		
Senebiera Coronopus ..	Wart Cress ..	June 6..	F.
,, Didyma ..	Lesser ,,		
Iberis Amara ..	Candytuft		
Isatis Tinctoria ..	Woad ..	July 2..	G.
Reseda Luteola ..	Dyer's Weed ..	June 6..	G.
,, Lutea ..	Cut Leaved Mignonette..	June 29..	G.
Helianthemum Vulgare ..	Rock Rose ..	May 22..	G, J, W.
Viola Odorata ..	Sweet Violet ..	Feb. 28..	C, G. B.
,, Hirta ..	Hairy ,,		
,, Canina ..	Dog ,, ..	Mar. 10..	Cl.
,, Tricolor ..	Pansy ..	Mar. 28..	G
Polygala Vulgaris ..	Milkwort ..	May 20..	G.
Silene Inflata ..	Bladder Campion ..	May 31..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Lychnis Vespertina	White Campion	May 16	B.
„ Diurna	Red „	April 24	M.
„ Githago	Corn Cockle	July 11	B.
„ Flos-cuculi	Ragged Robin	May 12	W.
Sagina Procumbens	Procumbent Pearlwort	May 16	Pg, Ph.
„ Nodosa	Knotted „		
Arenaria Serpyllifolia	Thyme-leaved Sandwort	June 7	W.
„ Trinervis	Three-nerved „	April 21	G.
Cerastium Vulgatum	Mouse-ear Chickweed	May 9	M, G.
„ Arvense	Field „	May 23	G.
Stellaria Aquatica	Water Starwort	June 29	G.
„ Media	Chickweed	Jan. 21	C.
„ Uliginosa	Bog Starwort	June 11	B.
„ Graminea	Lesser „	June 20	R.
„ Holostea	Common Starwort	Mar. 27	G.
Hypericum Perforatum	Common St. John's Wort	June 29	S.
„ Dubium	Imperforate „ „	June 11	K.
„ Quadrangulum	Square-stalked „ „	July 6	Bo.
„ Humifusum	Trailing „ „		
„ Pulchrum	Slender „ „	July 8	G.
„ Hirsutum	Hairy „ „	June 19	R.
Linum Cartharticum	Purging Flax	May 16	Pg, Ph.
Malva Rotundifolia	Dwarf Mallow	June 15	Cs, B, Wa.
„ Sylvestris	Common „	June 17	S.
„ Moschata	Musk „	July 6	Bo.
Tilia Europea	Lime „	July 1	G.
Geranium Pratense	Meadow Cranesbill	June 12	B.
„ Robertianum	Herb-Robert	May 6	Wa.
„ Molle	Dove's-foot Cranesbill	April 4	G.
„ Dissectum	Jagged „	May 25	Ba.
„ Lucidum	Shining „	May 18	G.
„ Pusillum	Small-flower „	June 22	G.
„ Columbinum	Long-stalked „	July 5	M.
Erodium Cicutarium	Common Storksbill	April 23	J.R.W.E.
Oxalis Acetosella	Wood Sorrel	Mar. 27	B.
Acer Campestre	Maple	April 24	G.
„ Pseudo-Platanus	Sycamore	April 12	G.
Ilex Aquifolium	Holly	May 11	G.
Euonymus Europaeus	Spindle Tree	June 12	G, S.
Ulex Europaeus	Gorse	Feb. 27	C.
Genista Tinctoria	Dyer's Greenweed	June 15	Cs, B, Wa.
Cytisus Scoparius	Broom	May 18	G.
Ononis Arvensis	Rest Harrow	June 27	G.
„ Campestris	Spiny „		G.
Medicago Sativa	Lucern		
Melilotus Officinalis	Melilot	June 27	S.
Trifolium Arvense	Hare's Foot Trefoil		

Latin Name.	*English Name.*	*Date.*	*Record.*
Trifolium Incarnatum ..	Crimson Clover ..	July 1..	K, R.
,, Pratense ..	Purple ,, ..	May 8..	G.
,, Repens ..	Dutch ,, ..	May 23..	G, A.
,, Procumbens ..	Hop Trefoil ..	June 4..	G.
,, Minus ..	Lesser ,, ..	May 9..	M.
Lotus Corniculatus ..	Bird's Foot Trefoil ..	May 16..	B, Pg, Ph.
Anthyllis Vulneraria ..	Kidney Vetch ..	June 3..	Wa.
Hippocrepis Comosa ..	Horse-shoe Vetch ..	June 6..	G.
Onobrychis Sativa ..	Sainfoin ..	May 20..	G.
Vicia Tetrasperma ..	Slender Vetch ..	June 6..	B.
,, Hirsuta ..	Hairy ,, ..	July 5..	*C.I.G.*
,, Cracca ..	Tufted ,, ..	June 15..	B.
,, Sylvatica ..	Wood ,, ..	June 19..	W.
,, Sepium ..	Bush ,, ..	May 9..	J, G, T, Cs, M, F, Pg, Ph.
,, Sativa ..	Common ,, ..	May 8..	*J.R.W-E.*
Lathyrus Pratensis ..	Yellow ,, ..	May 31..	B.
,, Sylvestris ..	Everlasting Vetch ..	July 6..	Bo.
,, Macrorrhizus ..	Tuberous Bitter Vetch		
Prunus Communis ..	Blackthorn ..	Mar. 30..	B.
,, Cerasus ..	Cherry		
,, Padus ..	Bird Cherry		
Spiraea Ulmaria ..	Meadow Sweet ..	June 13..	B.
,, Filipendula ..	Dropwort ..	July 15..	G.
Geum Urbanum ..	Wood Avens ..	May 3..	G.
Rubus Idaeus ..	Raspberry ..	May 23..	B.
,, Fruticosus ..	Common Blackberry ..	June 3..	G.
,, Caesius ..	Dewberry ..	May 28..	G.
,, Corylifolius ..	Hazel-leaved Blackberry ..	May 30..	S.
Fragaria Vesca ..	True Strawberry ..	Mar. 7..	B.
Potentilla Fragariastrum ..	Barren ,, ..	Feb. 27..	G.
,, Reptans ..	Creeping Cinquefoil ..	June 15..	R.
,, Tormentilla ..	Tormentil ..	May 13..	G.
,, Anserina ..	Silverweed ..	May 16..	J, G, W.
Alchemilla Vulgaris ..	Lady's Mantle ..	May 11..	J, G, W.
Sanguisorba Officinalis ..	Great Burnet ..	June 17..	S.
Poterium Sanguisorba ..	Salad Burnet ..	May 13..	Ba.
Agrimonia Eupatoria ..	Agrimony ..	June 27..	G.
Rosa Canina ..	Dog Rose ..	May 23..	Ba.
,, Arvensis ..	Trailing Rose ..	June 15..	Cs, B, Wa.
Pyrus Communis ..	Pear		
,, Malus ..	Apple ..	May 9..	G, T.
,, Aucuparia ..	Mountain Ash		
,, Aria ..	Beam Tree ..	June 12..	G, S.
Crataegus Oxyacantha ..	Hawthorn ..	May 9..	Y.
Epilobium Angustifolium ..	Rose-bay Willow Herb ..	June 29..	G.
,, Hirsutum ..	Hairy ,, ,, ..	June 15..	G.

Latin Name.	*English Name.*	*Date.*	*Record.*
Epilobium Parviflorum ..	Small-flowered Herb	.. July 3..	G, S, W.
,, Montanum ..	Common ,,	.. June 6..	B.
,, Tetragonum ..	Square Willow ,,	.. July 6..	Bo.
Circaea Lutetiana ..	Enchanter's Nightshade	.. July 6..	Bo.
Oenothera Biennis ..	Evening Primrose		
Lythrum Salicaria ..	Purple Loosestrife	.. July 1..	S.
Bryonia Dioica ..	Bryony	.. May 22..	G, T.
Sedum Rhodiola ..	Rose-root Stonecrop	.. July 18..	K.
,, Album ..	White ,,	.. July 18..	K.
,, Acre ..	Biting ,,	.. June 20..	R.
,, Rupestre ..	Rock ,,	.. July 18..	G.
Ribes Grossularia ..	Gooseberry	.. April 4..	M, Jo.
,, Rubrum ..	Red Currant	.. April 23..	M, Jo.
Saxifraga Granulata ..	Meadow Saxifrage		
,, Tridactylites ..	Red-leaved ,,	.. April 23..	*J.R.W-E.*
Chrysosplenium Oppositifolium ..	Golden ,,	.. Feb. 27..	J.
,, Alternifolium	,, ,,	.. Mar. 28..	*C.I.G.*
Sanicula Europea ..	Wood Sanicle	.. May 9..	M.
Apium Graveolens ..	Celery		
,, Nodiflornm ..	Procumbent Celery	.. July 2..	G.
Aegopodium Podagraria ..	Goutweed	.. July 11..	R.
Petroselinum Sativa ..	Parsley		
Pimpinella Saxifraga ..	Burnt Saxifrage	.. June 6..	G.
Oenanthe Fistulosa ..	Water Dropwort	.. June 27..	G.
Silaus Pratensis ..	Pepper Saxifrage		
Aethusa Cynapium ..	Fool's Parsley	.. May 11..	G.
Pastinaca Sativa ..	Parsnip	.. May 23..	B.
Heracleum Spondylium ..	Cow Parsnip	.. April 14..	M.
Scandix Pecten-veneris ..	Shepherd's Needle		
Bunium Flexuosum ..	Earth Nut	.. May 13..	G.
Chaerophyllum Sylvestre ..	Wild Chervil	.. Mar. 28..	G.
,, Temulum ..	Rough ,,	.. July 8..	G.
Daucus Carrota ..	Carrot	.. June 29..	G.
Conium Maculatum ..	Hemlock	.. June 22..	G.
Smyrnium Olusatrum ..	Alexanders	.. April 23..	*J.R.W-E.*
Viscum Album ..	Mistletoe	.. Mar. 7..	G.
Cornus Sanguinea ..	Dogwood	.. May 11..	S.
Adoxa Moschatellina ..	Moschatel	.. Mar. 20..	G.
Sambucus Nigra ..	Elder	.. May 26..	G.
Viburnum Lantana ..	Wayfaring Tree	.. May 9..	Cs.
,, Opulus ..	Guelder Rose	.. May 30..	Ba.
Lonicera Periclymenum ..	Honeysuckle	.. May 23..	A.
Galium Cruciatum ..	Crosswort	.. April 21..	Sa.
,, Verum ..	Yellow Bedstraw	.. May 13..	B.
,, Palustre ..	Marsh ,,	.. June 19..	G.
,, Uliginosum ..	Bog ,,	.. June 22..	W.

Latin Name.	*English Name.*	*Date.*	*Record.*
Galium Saxatile ..	Rock Bedstraw ..	July 18..	B.
,, Mollugo ..	Great Hedge Bedstraw ..	June 22..	B.
,, Aparine ..	Cleavers ..	May 17..	T.
Asperula Odorata ..	Woodruff ..	May 9..	G, T.
,, Cynanchica ..	Squinancywort ..	June 27..	B.
Valeriana Officinalis ..	Great Valerian ..	June 22..	B, K, W.
,, Dioica ..	Marsh ,, ..	May 28..	G.
Sherardia Arvensis ..	Field Madder ..	May 9..	G.
Dipsacus Pilosus ..	Small Teasel ..	July 5..	*C.I.G.*
,, Sylvestris ..	Common ,, ..	July 13..	K.
Scabiosa Succisa ..	Devil's-bit Scabious ..	July 27..	*J.R.W-E.*
,, Columbaria ..	Small ,, ..	June 29..	G.
,, Arvensis ..	Field ,, ..	June 22..	W.
Eupatorium Cannabinum ..	Hemp Agrimony ..	July 4..	F, K, R.
Tussilago Farfafa ..	Colt's Foot ..	Feb. 14..	C.
,, Petasites ..	Butterbur ..	April 12..	G.
Gnaphalium Gallicum ..	Narrow Cudweed		
,, Sylvaticum ..	Wood Cudweed ..	July 6..	G.
Inula Dysenterica ..	Fleabane		
,, Coniza ..	Ploughman's Spikenard		
,, Pulicaria ..	Small Fleabane		
,, Helenium ..	Elecampane ..	July 12..	G.
Bellis Perennis ..	Daisy ..	Feb. 22..	M, Wi.
Chrysanthemum Leucanthemum..	Dog Daisy ..	May 15..	G.
,, Inodorum	Feverfew		
,, Segetum..	Corn Marigold ..	July 9..	K.
Matricaria Chamomilla ..	Camomile ..	Mar. 9..	M.
Anthemis Cotula ..	Stinking Mayweed ..	May 23..	P.
,, Arvensis ..	Corn Camomile ..	May 12..	G.
Achillea Millefolium ..	Yarrow ..	May 23..	B.
,, Ptarmica ..	Sneezewort		
Tanacetum Vulgare ..	Tansy ..	July 17..	S.
Artemesia Vulgaris ..	Mugwort		
Senecio ,, ..	Groundsel ..	Jan. 21..	C, H.
,, Sylvaticus ..	Wood Groundsel		
,, Erucifolius ..	Narrow-leaved Ragwort..	July 8..	*C.I.G.*
,, Aquaticus ..	Marsh ,, ..	July 18..	K.
,, Jacobaea ..	Common ,, ..	July 1..	G.
Arctium Lappa ..	Burdock ..	July 17..	Cs, B, F,
Carduus Nutans ..	Musk Thistle ..	June 22..	G. [K, R.
,, Acanthoides ..	Welted ,, ..	June 24..	G, T, S.
,, Lanceolatus ..	Spear ,, ..	July 13..	K.
,, Palustris ..	Marsh ,, ..	June 5..	G.
,, Arvensis ..	Creeping ,, ..	June 29..	G, T, S.
,, Pratensis ..	Meadow ,, ..	July 2..	G, S, W,
,, Acaulis ..	Dwarf ,, ..	July 3..	W. [Bo.

Latin Name.	*English Name.*	*Date.*	*Record.*
Carduus Eriophorus ..	Woolly Thistle ..	June 22..	*C.I.G.*
Carlina Vulgaris ..	Carline ,, ..	July 15..	G.
Centaurea Nigra ..	Black Knapweed ..	June 4..	Ba.
,, Scabiosa ..	Scabious ,, ..	June 22..	W.
,, Cyanus ..	Cornflower ..	June 27..	K, R.
Tragopedon Pratensis ..	Goat's Beard ..	May 16..	B.
Helminthia Echioides ..	Ox-tongue ..	July 13..	K.
Picris Hieracioides ..	Hawkweed Picris		
Leontodon Hispidus ..	Hawkbit ..	June 27..	R.
Hypochaeris Radicata ..	Cat's Ear ..	May 31..	B.
Lactuca Muralis ..	Wall Lettuce ..	June 25..	G.
Sonchus Arvensis ..	Corn Sow Thistle ..	July 13..	K.
,, Oleraceus ..	Common ,, ..	May 11..	G.
Taraxacum Dens-leonis ..	Dandelion ..	Feb. 20..	C.
Crepis Virens ..	Common Crepis ..	July 2..	G.
,, Biennis ..	Rough ,, ..	May 31..	*F.J.C.*
,, Taraxacifolia ..	Beaked ,, ..	May 31..	B.
Hieracium Pilosella ..	Mouse-ear Hawkweed ..	May 18..	G.
,, Murorum ..	Wall ,, ..	May 22..	J, W.
Lapsana Communis ..	Nipplewort ..	May 25..	Wi.
Campanula Glomerata ..	Clustered Bell Flower ..	June 13..	F.
,, Trachelium ..	Nettle-leaved ,, ..	July 8..	*C.I.G.*
,, Rapunculoides..	Creeping ,, ..	July 5..	B.
,, Rotundifolia ..	Harebell ..	July 8..	B.
,, Hybrida ..	Corn Ball Flower ..	July 8..	M.
Monotropa Hypopitys ..	Bird's Nest ..	July 15..	B.
Primula Veris ..	Cowslip ..	Mar. 13..	G, Y.
,, Vulgaris ..	Primrose ..	Feb. 20..	Cl.
Lysimachia ,, ..	Yellow Loosestrife ..	July 17..	G, B, F, K, R.
,, Nemorum ..	Moneywort ..	April 9..	J, G, T, W.
,, Nummularia ..	Creeping Jenny ..	June 19..	G.
Anagallis Arvensis ..	Scarlet Pimpernel ..	June 9..	B.
Pinguicula Vulgaris ..	Butterwort ..	June 22..	W.
Fraxinus Excelsior ..	Ash ..	Mar. 28..	G.
Ligustrum Vulgare ..	Privet ..	June 5..	B.
Vinca Major ..	Greater Periwinkle ..	April 4..	L.
,, Minor ..	Lesser ,, ..	Feb. 27..	H.
Erythraea Centaurium ..	Centaury ..	July 4..	K, R.
LimnanthemumNymphaeoides ..	..	July 2..	G.
Chlora Perfoliata ..	Yellowwort ..	June 27..	G, B.
Convolvulus Arvensis ..	Small Bind Weed ..	June 14..	B.
,, Sepium ..	Great ,, ..	July 2..	G.
Echium Vulgare ..	Viper's Bugloss ..	June 20..	S, Pg.
Myosotis Palustris ..	True Forget-me-not ..	June 22..	G.
,, Arvensis ..	Field ,, ..	May 9..	T.

Latin Name.	*English Name.*	*Date.*	*Recora.*
Myosotis Collina ..	Early Forget-me-not ..	May 22..	*J.R.W-E.*
,, Versicolor ..	Changing ,,		
,, Sylvatica ..	Wood ,,		
,, Repens ..	Creeping ,, ..	June 19..	G.
Symphytum Officinale ..	Comfrey ..	May 12..	K.
Borago Officinalis ..	Borage ..	May 23..	F, Ba.
Cynoglossum Officinale ..	Hound's-tongue ..	July 17..	K, R.
Hyoscyamus Niger ..	Henbane		
Solanum Dulcamara ..	Bitter Sweet ..	June 2..	Ba.
,, Nigrum ..	Black Nightshade ..	July 19..	R.
Atropa Belladonna ..	Deadly Nightshade ..	June 12..	G.
Lathraea Squamaria ..	Toothwort ..	Mar. 28..	*C.I.G.*
Orobanche Major ..	Great Broomrape		
Verbascum Thapsus ..	Common Mullein ..	June 20..	B.
,, Nigrum ..	Black ,, ..	June 18..	K.
Linaria Vulgaris ..	Yellow Toad Flax ..	June 20..	B.
,, Minor ..	Lesser ,,		
,, Cymballaria ..	Ivy-leaved Toad Flax ..	April 21..	Sa.
,, Spuria ..	Round ,, ,,		
Scropularia Nodosa ..	Knotted Figwort ..	May 13..	Bo.
,, Aquatica ..	Marsh ,, ..	June 20..	S.
Mimulus Luteus ..	Monkey Flower ..	June 12..	G.
Digitalis Purpurea ..	Foxglove		
Veronica Serpyllifolia ..	Thyme-leaved Speedwell	May 9..	J, Pg, Ph.
,, Officinalis ..	Common ,, ..	June 15..	R.
,, Anagallis ..	Water ,, ..	May 13..	K.
,, Beccabunga ..	Brooklime ,, ..	May 16..	Pg. Ph.
,, Montana ..	Mountain ,, ..	April 21..	J, S, W.
,, Chamaedrys ..	Germander ,, ..	April 23..	Sa.
,, Hederaefolia ..	Ivy-leaved ,, ..	Feb. 20..	C.
,, Agrestis ..	Procumbent ,, ..	Feb. 21..	H.
,, Buxbaumii ..	Buxbaum's ,, ..	Feb. 20..	C.
,, Arvensis ..	Wall ,, ..	..	Pg, Ph.
Bartsia Odontites ..	Red Bartsia ..	July 3..	S, W.
Euphrasia Officinalis ..	Eye-bright ..	June 22..	M.
Rhinanthus Cristi-galli ..	Yellow Rattle ..	May 21..	K.
Pedicularis Palustris ..	Marsh Lousewort		
,, Sylvatica ..	Common ,, ..	May 9..	G, T.
Melampyrum Pratense ..	Cow Wheat		
Mentha Aquatica ..	Water Mint		
,, Sativa ..	Whorled ,,		
,, Arvensis ..	Corn ,,		
Thymus Serpyllum ..	Thyme ..	June 6..	G.
Origanum Vulgare ..	Marjoram ..	July 10..	K.
Calamintha Acinos ..	Basil Thyme ..	June 20..	Pg, Ph, F.
,, Clinopodium ..	Wild Basil ..	July 6..	G.
,, Officinalis ..	Common Calamint		

Latin Name.	*English Name.*	*Date.*	*Record.*
Nepeta Glechoma	Ground Ivy	April 4	G.
Prunella Vulgaris	Self Heal	June 6	T.
Scutellaria Galericulata	Scull Cap	June 19	G.
Stachys Betonica	Betony	June 5	W.
,, Sylvatica	Hedge Woundwort	June 5	B.
Stachys Palustris	Marsh Woundwort	July 2	G.
,, Arvensis	Corn ,,		
Galeopsis Ladanum	Hemp Nettle	July 4	B.
Ballota Nigra	Black Horehound	June 19	G.
Lamium Purpureum	Red Dead Nettle	Feb. 22	M, Wi.
,, Album	White ,,	Feb. 27	G.
,, Maculatum	Spotted ,,	June 13	F.
,, Galeobdolon	Yellow ,,	Mar. 20	G.
,, Amplexicaule	Henbit	May 16	B.
,, Incisum	Small ,,		
Teucrium Scorodonia	Wood Germander	July 6	B.
Ajuga Reptans	Bugle	May 6	Wa.
Plantago Major	Great Plantain	July 3	G.
,, Media	Hoary Plantain	May 22	W.
,, Lanceolata	Ribwort ,,	May 8	G.
Chenopodium Bonos-henricus	Good King Henry	July 3	G.
,, Urbicum	Upright Goosefoot	July 4	B.
,, Murale	Nettle-leaved ,,		
,, Album	White ,,	July 3	S.
Atriplex Patula	Orache		
Rumex Acetosa	Common Sorrel	May 23	T.
,, Acetosella	Sheep's ,,	May 23	B.
,, Obtusifolius	Common Dock	May 28	G.
,, Crispus	Curled ,,	July 3	G, W.
Polygonum Aviculare	Knot Grass	June 27	G, R, B.
,, Convolvulus	Black Bindweed	July 8	*C.I.G.*
,, Amphibium	Amphibious Bistort	July 2	G.
,, Persicaria	Persicaria	July 2	K.
,, Lapathafolium	Pale Bistort		
Euphorbia Helioscopia	Sun Spurge	Feb. 28	G.
,, Peplus	Petty ,,	Mar. 31	R.
,, Exigua	Small ,,	June 20	B.
,, Amygdaloides	Wood ,,	Mar. 28	K.
,, Platyphyllos	Broad ,,	.. ..	
,, Lathyris	Caper ,,	.. ..	
Mercurialis Perennis	Dog's Mercury	Feb. 20	Wi.
Urtica Urens	Small Nettle	Mar. 20	G.
,, Dioca	Common ,,	May 27	Wi.
Parietaria Officinalis	Pellitory-of-the-Wall	May 25	S.
Humulus Lupulus	Hop		
Ulmus Campestris	Common Elm	Feb. 24	J.
,, Montana	Wych ,,	Feb. 24	J.

Latin Name.	*English Name.*	*Date.*	*Record.*
Alnus Glutinosa ..	Alder	.. Feb. 24..	Wi.
Betula Alba ..	Birch	.. April 4..	*C.I.G.*
Carpinus Betulus ..	Hornbeam		
Corylus Avellana ..	Hazel Nut	.. Feb. 13..	Wi.
Fagus Sylvatica ..	Beech	.. May 7..	Y.
Quercus Robur ..	Oak	.. June 2..	S.
Salix Capræa ..	Sallow Willow	.. Feb. 22..	B.
,, Purpurea ..	Purple ,,		
,, Fragilis ..	Crack ,,		
,, Viminalis ..		.. April 4..	*C.I.G.*
Populus Nigra ..	Black Poplar	.. Mar. 7..	G.
Pinus Sylvestris ..	Scotch Fir	.. Mar. 21..	R.
Taxus Baccata ..	Yew	.. Feb. 10..	J.
Typha Latifolia ..	Bulrush	.. July 13..	K.
Sparganum Ramosum ..	Branched Bur-reed	.. July 13..	K.
Acorus Calamus ..	Sweet Flag	.. July 13..	K.
Arum Maculatum ..	Lords and Ladies	.. April 18..	Sa.
Potamogeton Natans ..	Pondweed	.. July 2..	G.
Butomus Umbellatus ..	Flowering Rush	.. June 24..	G.
Sagittaria Satittifolia ..	Arrowhead	.. June 29..	S.
Alisma Plantago ..	Water Plantain	.. July 11..	B.
Triglochin Palustre ..	Arrowgrass		
Epipactis Latifolia ..	Broad Epipactis	.. June 5..	Cs,B,F,K,
Cephalanthera Grandiflora..	Large Helleborine	.. June 12..	G.
Listera Ovata ..	Twayblade	.. June 12..	G.
Neottia Nidusavis ..	Birds'-nest Orchid	.. May 14..	G.
Orchis Morio ..	Green-winged ,,	.. May 8..	G.
,, Maculata ..	Spotted ,,	.. May 30..	B.
,, Mascula ..	Early Purple ,,	.. April 22..	Sa.
,, Latifolia ..	Marsh ,,	.. May 28..	G.
,, Pyramidalis ..	Pyramidal ,,	.. June 22..	W.
,, Conopsea ..	Fragrant ,,		
Habenaria Bifolia ..	Butterfly ,,	.. June 12..	G.
Herminium Monorchis ..	Musk ,,	.. July 13..	G.
Ophyrs Apifera ..	Bee ,,	.. June 22..	W.
,, Muscifera ..	Fly ,,		
Iris Pseudacorus ..	Yellow Flag	.. May 20..	G.
Tamus Communis ..	Black Bryony	.. May 30..	Ba.
Paris Quadrifotia ..	Herb Paris	.. April 4..	G.
Polygonatum Officinale ..	Angular Solomon's Seal		
,, Multiflorum ..	Common ,,		
Convallaria Majalis ..	Lily-of-the-Valley	.. May 16..	Ba.
Scilla Nutans ..	Wild Hyacinth	.. April 4..	B, G, T.
Ornithogalum Umbellatum	Star of Bethlehem	.. June 2..	Ba.
Allium Ursinum ..	Garlic	.. April 25..	G.
Juncus Communis ..	Common Rush	.. July 6..	Bo.
,, Articulatus ..	Jointed ,,		

Latin Name.	*English Name.*	*Date.*	*Record.*
Juncus Glaucus ..	Hard Rush ..	July 6..	Bo.
Luzula Pilosa ..	Wood ,, ..	Mar. 28..	*C.I.G.*
Eriphorum Polystachyum ..	Cotton Grass ..	June 22..	W.
Scirpus Sylvaticus ..	Wood Scirpus ..	July 1..	S.
Carex Praecox ..	Early Sedge ..	Mar. 27..	G.
Carex Pendula ..	Pendulous Sedge ..	May 22..	G.
Anthoxanthum Odoratum ..	Vernal Grass		
Phalaris Canaricus ..	Canary ,,		
Phleum Pratense ..	Timothy ,,		
Alopecurus Pratensis ..	Meadow Foxtail Grass ..	May 25..	S.
,, Geniculatus ..	Marsh ,,		
Avena Fatua ..	Wild Oat		
Arrhenatherum Avenaceum	False ,,		
Holcus Lanatus ..	Common Holcus ..	July 3..	Bo.
Hordeum Pratense ..	Meadow Barley		
Lolium Perenne ..	Darnel		
Dactylis Glomerata ..	Cock's-foot Grass ..	July 3..	Bo.
Briza Media ..	Quaking ,, ..	June 20..	S.
Poa Annua ..	Common Meadow Grass..	June 7..	S.
,, Pratensis ..	Smooth ,, ,,		
,, Nemoralis ..	Wood ,, ,,		
,, Fluitans ..	Floating ,, ,,		
Melica Uniflora ..	Wood Melick ..	May 22..	*J.R.W-E.*
Equisetum Palustre .	Marsh Horse-tail		
,, Arvense ..	Field ,, ..	Mar. 21..	C.
Polypodium Vulgare ..	Common Polypody		
Asplenium Tridactylites ..	Wall Rue		
Scolopendrium Vulgare ..	Hart's Tongue		
Pteris Aquilina ..	Bracken		
Aspidium Filix-mas ..	Male Fern ..	May 22..	J, W.

ENTOMOLOGICAL SECTION.

President: J. W. SALTER, ESQ.

HE prize was given to T. A. Worsey, who sent in a rather small but beautifully set collection. It is a pity that there is so little competition : but it may be due to the fact that all specimens shewn have to be collected within the current year, which necessitates the re-collection of the common kinds. Suggestions on this head are invited.

A large number of Catocala Nupta (Large Red Underwing) were caught in August at Nafford Mills on the Avon. One was also caught in the Park.

On June 7th two Kitten Moths were found in the Playground. Early in the same month Oak-Eggers brought from Yorkshire the previous summer, began to hatch out.

Worsey's collection contained :—

RHOPALOCERA.

Large White	Ringlet	Little Blue
Small ,,	Wall	Common ,,
Green-Veined ,,	Comma	Large Skipper
Brimstone	Meadow-Brown	Grizzled ,,
Marbled White	Pearl-Bordered Fritillary	Dingy ,,
Orange Tip	Clifden Blue	Green Hair Streak
Tortoiseshell	Azure ,,	Small Heath

HETEROCERA.

Privet Hawk	Wood Tiger	Six-spot Burnet
Lime ,,	Common Wainscot	Forester
Small Elephant ,,	Early Grey	Common Pug
Humming-Bird ,,	Yellow Tail	Buff Tip
Ghost Swift	Brimstone	Puss Moth
Common ,,	Mother Shipton	Herald
Dark Arches	Yellow Shell	Pale Prominent
Currant	Small Magpie	Large Red Underwing
Buff Ermine	Chimney-Sweeper	Large Emerald
Large Yellow Underwing	Latticed Heath	Spinach
Heart and Club	Common Rustic	and two others.

GEOLOGICAL SECTION.

President: C. I. GARDINER, ESQ.

N last year's Report an appeal was made for fossils from the Lias clay of the district, and a fair number of fossils were obtained by M. Walker from the brickpit at the bottom of Leckhampton Hill which is opened in that formation.

Few members of the Society seem to think it worth their while to present fossils to the School Museum; this is a great mistake as we have no good local collection and such a collection is one which our School Museum should contain.

During the Easter term excursions to Leckhampton Hill were made by Thornhill, James, N. Porteous, and Pownall, who collected chiefly from the Oolite beds. During the Summer term the excursions of the whole Society to Witcomb and Withington proved the most successful from the Geologists' point of view.

In the pit at the top of the Oolite escarpment, near Birdlip, N. Porteous got Rhynconella Subtetrahedra, Terebratula Globata, Avicula Inœquivalvis, and Serpuloe, while Wheatcroft got Rhynconella Subtetrahedra, Rhyconella Angulata, Terebratula Globata, and Avicula Inœquivalvis, the beds from which they collected being the Upper Trigonia Grit. It was from this bed, too, that fossils were obtained in the neighbourhood of Withington.

The Museum is now in the process of being re-arranged. One of the standing cases in the middle of the room is being utilised as a mineralogical case, and another for a collection of local fossils.

Those Geologists who hammer away up on Leckhampton Hill will no doubt occasionally raise their eyes from the pieces of Oolite they are chipping and look across the Valley of the Severn to the hills in the distance, and the hills which are visible are, it is easy to see, of very different outline to that of the Cotteswolds, of which Leckhampton forms a part. The Malverns with their jagged,

mountainous edges, and the dome shaped mass of May Hill, which being crowned with a clump of firs is easy to mark, have no corresponding hills in the Cotteswold range, and this difference in appearance is accompanied by, and is in truth due to, a difference in the rock material of which they are built. The Malverns are made up of crystalline rocks, which have been heated to the melting point, and then crystallised out, and are amongst the very oldest rocks in our Islands. The name Archean has been given to them. Down the whole of the Eastern side of the Malverns runs a great earth crack. And now beds of red sandstone formed many long ages after the rocks of the Malverns rest against those hills. These slope gradually towards Leckhampton Hill, are covered about half way across the Valley by Lias clays, a few feet of White Lias, as it is termed, intervening, and these Lias clays continue to the foot of Leckhampton Hill, where they, in their turn are covered by the Oolite Limestone.

But to the South of the Malverns occurs another set of beds which lie beneath the red sandstone, and these are termed the Silurian beds, and are composed of limestones and sandstones, and May Hill is carved out of these. Some of these limestones are extremely fossiliferous, but their fossils are very different from those found in the limestones of Leckhampton, for the animals which lived in them existed many thousands of years before the Leckhampton beds were formed, and when the latter were laid down had entirely ceased to exist. No doubt in time now long gone by the Leckhampton Hill beds extended much further West possibly over the Malverns, but the rivers and the rain and the frost has gradually cut them back Eastwards and the hard Oolite cracking and dissolving much more easily than the thick clay on which it rests has been worn back so as to form more or less of an inland cliff, which goes by the name of an escarpment. This clift we see now running from Cleeve Cloud, behind Battledown, to Leckhampton Hill, and away South past Gloucester. And even now it is being worn back little by little, though so gradually that none of us can see it going on. But every rainy day swells the brooks and streams that come down to the plain, and they get a yellow colour because they are bringing down from the hills little pieces of rock and are carrying them down and away from the hills.

ORNITHOLOGICAL SECTION.

President: M. TANNER, ESQ.

Secretary: A. D. S. ARBUTHNOT.

WORKING MEMBERS.

SENIOR.

A. D. S. ARBUTHNOT, *A.* L. FORT, *Ft.* J. C. D. BIRTWHISTLE, *B.*
L. G. COLLETT, *Ct.* C. S. CRESSWELL, *C.* G. F. G. FRASER, *F.*

JUNIOR.

G. L. HODSON, *H.* D. A. SORE, S.

IN this Section, Arbuthnot and Birtwhistle appear to have been the keenest competitors, both have made some very interesting notes on birds nests and eggs from their own observations.

Birtwhistle has notes on thirty-four species and Arbuthnot twenty. Their collection of eggs was nearly equal. The prize was awarded to Birtwhistle.

Nuthatches and Hawfinches have been unusually plentiful this year, and Grasshopper Warblers have been seen and heard in several places near Cheltenham.

It is to be hoped that more notes on the habits of birds will be sent in next year. It is not necessary to wait until Spring to commence, notes may be made all the year round. Birds are interesting at other times than the breeding season. Notes should be taken on the ones that remain all the Winter with us. What do they feed on? Where do they roost? Is their plumage the same in Winter as in Summer? Which go in flocks and which not?, etc.

Careful notes should be taken in early Spring on the arrivals of migratory species and of the nesting places, nests, eggs, and localities, with dates of all birds, and then the dates of departure as nearly as

possible of the migrants. The notes cannot be too profuse. A very large amount of pleasure is to be derived from studying birds in this way without ever taking an egg at all.

MR. C. H. MONTFORD will be President of this Section next year in place of Mr. Tanner.

NOTICES IN 1897.

NAME OF EGG.	LOCALITY.	DATE.	FINDER.
Robin	Charlton Kings	March 12	H.
Song Thrush	Leckhampton	,, 14	C.
Blackbird	Charlton Kings	,, 18	H.
Brown Owl	Leckhampton	,, 21	Ct, Ft.
Missel Thrush	Swindon	,, 23	A.
Rook	,,	,, 26	A.
House Sparrow	Hatherley	,, 31	A.
Hedge Sparrow	Charlton Kings	April 2	C.
Wild Duck	Swindon	,, 3	A.
Stock Dove	Charlton Kings	,, 9	H.
Dipper	,,	,, 12	H.
Jackdaw	,,	,, 22	H.
Magpie	,,	,, 26	H.
Long-tailed Tit	,,	,, 26	H.
Greenfinch	Wainlode	,, 27	H.
Chaffinch	Charlton Kings	May 2	H.
Blackcap	,,	,, 4	H.
Linnet	Dowdeswell	,, 4	H.
Great Tit	Leckhampton	,, 5	B.
Chiffchaff	,,	,, 5	B.
Starling	,,	,, 5	B, A.
Pied Wagtail	Swindon	,, 5	A.
Lesser Whitethroat	Leckhampton	,, 5	B.
Gorse Linnet	Hatherley	,, 6	C.
Meadow Pipit	Dowdeswell	,, 7	H.
Whitethroat	Charlton Kings	,, 7	H.
Redstart	Leckhampton	,, 9	Ct, Ft.
Yellowhammer	,,	,, 9	C.
Tree Pipit	,,	,, 10	B.
Cuckoo	,,	,, 12	B.
Yellow Wagtail	Charlton Kings	,, 13	Ct, Ft.
Waterhen	Shurdington	,, 14	F.
Tree Sparrow	Leckhampton	,, 14	B.
Common Wren	,,	,, 15	B, A.
Bullfinch	,,	,, 15	B.
Garden Warbler	,,	,, 15	B.
Blue Tit	,,	,, 15	B.
Willow Warbler	,,	,, 15	B.

NAME OF EGG.	LOCALITY.	DATE.	FINDER.
Marsh Tit	Crippits	,, 17	Ct, Ft.
Whinchat	Withington	,, 18	B, A.
Wood Pigeon	Hatherley	,, 18	A.
Hawfinch	Crippits	,, 19	Ct, Ft.
Tree Creeper	Witcomb	,, 22	A.
Swallow	Leckhampton	,, 25	B, A.
Flycatcher	Prestbury	,, 29	A.
Turtle Dove	Leckhampton	,, 31	B.
Red-backed Shrike	Hatherley	,, 31	A.
Skylark	Leckhampton	June 3	B.
Sedge Warbler	Cirencester	,, 4	S.
House Martin	Leckhampton	,, 5	A.
Sand Martin	Charlton Kings	,, 12	A.

Migratory Birds.

From notes taken by J. C. D. Birtwhistle.

NAME OF BIRD.	FIRST SEEN.	LAST SEEN.
Cuckoo	April 21	June 18
Redstart	,, 27	Aug. 15
Greater Whitethroat	,, 30	Sept. 25
Garden Warbler	May 2	Sept. 18
Chiffchaff	,, 2	June 29
Swallow	,, 5	Aug. 12
Sand Martin	,, 8	Aug. 12
Lesser Whitethroat	,, 9	Sept. 17
Blackcap	,, 10	,, 21
House Martin	,, 14	Oct. 7
Willow Warbler	,, 14	Sept. 14
Swift	,, 24	July 22
Flycatcher	June 1	,, 28
Young Cuckoo	,, 10	Aug. 19

JUNIOR DEPARTMENT.

The best work was done by G. L. Hodson, who, with twenty-nine species in his collection, all but two being records, was very far ahead of any other competitor. D. A. Sole came next with ten species.

Hodson was successful in finding the Dipper's nest, and it is worth notice how near to the town this bird, which we usually associate with the wildest mountain streams, is fonnd. Both Kingfisher and Dipper habitually breed within the Parliamentary Borough of Cheltenham.

PHOTOGRAPHIC SECTION.

President - - A. H. MACDONALD, ESQ.

MEMBERS:

COLLETT, L. G.
COTTRILL, H. L.
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SANDERS, J. G.
SHARP.
STEPHENS, E. G. W.
WHEELER, P.
WELLS, F. M. A.
WOLFF, M. A.

OWING to the President of this Section having left us, the records of the past year's work done in it are scanty. The Section seems to have been fairly vigorous during the Summer term, but at the exhibition of slides taken by members at the end of the Winter term, only M. A. Wolff and H. L. Cottrill showed slides; the former was awarded the Prize.

It is to be hoped that Members of the Section will photograph buildings of architectural interest in the neighbourhood, so that we could keep in the Museum a book of such photographs; and if another book were kept of photographs of important quarries in the neighbourhood, it would be of great geological interest.

Mr. Youngman has consented to act as President of this Section, and anyone wishing to belong to it or to obtain information about the use of the dark room should go to him.

LECTURES.

"MICROBES."

By Dr. Wilson.

The first person to see a microbe appears to have been a Dutchman, Lewenhock, as early as 1675, but very little account was taken of his observation until Schwann, in 1837, discovered that fermentation was produced by a minute organism, and that putrefaction was brought about by some cause which existed in air and could be destroyed by heat.

This discovery was the starting point for many others. Pasteur began his classical work, and for many years was occupied in finding out the connection between various diseases and the microscopic organisms, to which the names of microbes or bacteria have been given.

Following on the lines of Schwann's work, he proved satisfactorily that no putrefaction could go on without living organisms, and that these came from the air. Another school of biologists fought long against the position taken up by Pasteur and maintained the counter theory of spontaneous generation. Life, they said, could start up suddenly at places where no life had been, and though by the end of the sixties they had been beaten all along the line, the controversy was anything but unfruitful as the experiments of Tyndall and Lord Lister, which set the question at rest for ever, laid the foundations of antiseptic surgery and of our present knowledge of infectious diseases. Pasteur, moreover, investigated the changes due to fermentation of alcoholic liquors, and the viscosity and bitterness, occasionally so destructive, were traced to the presence of special microbes, by the exclusion or destruction of which the vintage was saved.

Again, in 1865, when the French silk industry was seriously threatened by the mysterious "spot disease," Pasteur discovered the cause in a microbe, which attacked the eggs and bodies of the worms. The diseased eggs were detected under the microscope, and destroyed, and so the disease was crushed out.

In 1849, a Frenchman, Davaine, had observed a microbe, *Bacillus Anthracis*, in the blood of cattle which had died of enteric fever, a disease which was then very prevalent amongst the French herds, and which is now such a terror to the African farmer. Later, Pasteur, while experimenting on Fowl Cholera, made a startling discovery. He cultivated the bacterium, that is to say preserved in such a liquid that it could feed and grow, and found that if he kept it for some time it was not nearly so virulent, so that when he injected some of it into a healthy fowl, instead of the animal dying, it merely became slightly unwell and then got right again, and further to the astonishment of the experimenter, gave complete protection to the animal when what would have been a fatal dose of the poison was administered.

It had long been known from the experiments of Jenner that cow-pox, an attenuated small-pox, gave as complete a protection against the latter disease as an attack of small-pox itself, but for nearly a hundred years this had remained an isolated fact, it was now by Pasteur's work linked to other similar observations and extended by that experimentor and his pupil Koch to Hydrophobia and Anthrax. Since then disease after disease has been found to be caused by some particular bacillus and its antidote has been found to be an injection of the same bacillus in a less virulent form.

The average microbe is some one-twenty-thousandth of an inch long, and the forms of these minute organisms are very varied. They are undoubtedly vegetable in their nature, they increase by splitting into two parts, each part going on living, and also by forming little round bodies called spores, which are very hard and difficult to kill, some resisting even boiling water and the intensest cold. The spores of Anthrax will stand a temperature of 100 degs. Cent. for some time, while the bacilli are killed by ten minutes boiling. Microbes increase at an enormous rate, one observer states that seven in twenty drops of water had multiplied to 495,000 in the course of two days.

It is a curious thing that a microbe which is poisonous to one animal is not necessarily so to another. Anthrax for example, is a virulent poison to cattle, sheep, rabbits, guinea-pigs and mice, and has

no effect on rats, fowls, frogs, white mice or the carnivora. Glanders, though fatal to man, to the horse, to guinea-pigs, and to field mice, has no effect on cattle, house mice, rabbits or pigs.

To the question where do these all powerful, almost invisible, organisms dwell, the answer is everywhere. In earth, air and water they are equally at home. In the air they appear to be borne along like seeds or motes. Far out to sea but few are found, and none or next to none at the highest altitudes. Sunshine has a destructive effect even on the spores of certain bacteria. By six or seven hours exposure cholera bacilli were entirely destroyed, and the effects of sunshine was found to penetrate some five or six feet of clear water. It is thus that the germs of disease are destroyed in vast numbers by exposure to the action of those powerful disinfectants, the wind and the sun.

In water and liquids of all kinds microbes thrive. Fortunately for us it appears difficult for them to leave this element and pass into the air. In twenty drops of unfiltered Thames water Dr. Frankland found about 20,000 microbes, and when filtered there were 400. They abound most in winter from the access of surface water and the absence of sun.

Our only safety lies in a pure source of our water supply, but boiling does much for bad or doubtful water or milk. Filters of the old type are worse than useless for the charcoal in them forms a convenient breeding ground for the microbe.

In the earth, bacteria are most active and vigorous—it has probably been the original home of most varieties even of those now parasitic in the bodies of living animals. The lockjaw bacillus has been found in mangrove swamps, whence it is obtained by the South Sea Islanders, who dip their poisoned arrows in the water in which it abounds. It is also present in garden soil and gutters and its wide distribution should make us careful in the cleansing of any wound. There are also living in the earth the useful microbes who carry on their work of putrefaction even deep down in the dark.

The remaining home of the microbe is the body of some living animal, which they enter by the breath, or with the food, or by some injured surface.

Some kinds seem always with us, eight or ten species are constantly to be found in the mouth, one of which has a digestive power, and attacks the teeth, especially when the enamel has been injured by acids. The best antidote for this one is a good tooth brush, to be applied frequently.

The next question is—How do microbes act?

Firstly, they are nature's scavengers. Wherever dead vegetable or animal matter exists there they assemble in their millions, breaking down the complex organic compounds into simpler ones, which can again be usefully taken up by other plants or animals.

The true key to the answer as to how the microbe acts is found in the fermentation by yeasts. Of yeasts there are different kinds, and the difference between the beers of England, Scotland and North Germany, and that of South Germany and Austria, which we know as Lager beer, is due to the difference in the yeast. In the former an organism growing at a high temperature and forming a frothy scum at the surface is the active agent; in the latter a bottom growing yeast, which thrives independently of air and at a low temperature, brings about similar changes but with different results, less alcohol being formed and a more delicate flavour.

Of ferments due to microbes there are no end. The conversion of alcoholic liquors into vinegar is due to one microbe, the souring of milk is due to another, while the turning butter rank and cheese ripe are also effects of microbes.

Having thus learned something about the manner of the microbe, we can understand better the aims of those who are now working at the diseases some of them cause. It had long been common in the East to inoculate small-pox virus in order to protect the patient from a more serious attack, but Lady Wortley Montagu, after submitting her own child to the operation in 1718, introduced the practice into Europe, where it became common till it was found that small-pox was being spread in all directions from those who had been inoculated and gained for themselves protection. It was then that Jenner, having heard that persons who had caught cow-pox while milking and were protected from small-pox, took the hint and by experiment convinced himself of the country-side tradition. And we are now with a fuller knowledge following along the direction pointed out by Jenner more than a hundred years ago.

"BIRDS AND BIRDS-NESTING."

BY C. MONTFORD, ESQ.

THE term "birds-nesting" is one which the true lover of birds instinctively dislikes. It seems to imply the hunting of every bank, hedge and tree and the robbing of every nest that is found, and such things are an abomination to the true lover of birds. To such an one there is an indescribable charm about an early Spring morning, when you seem to have all the country to yourself and you see and hear the first migrants, such as the Chiff-chaff, the Cuckoo, and the Swallow. To such an one, too, there is a pleasure in making a collection of eggs or of birds, not because he possesses an egg of great pecuniary worth, or because it is one which many collectors do not possess, but because each of his eggs has a history and his collection is like a diary reminding him of days now long gone by.

The first thing for a collector to do is to get to know the birds by their song, plumage and habits, and to be able in most cases to tell the males from the females and the old from the young. He should always make a point of making profuse notes on everything he sees and hears in connection with birds, particularly of the dates of arrivals of migrants and of the finding of nests, whether they are taken or not, and also of the position and materials of the nests and any other matters of interest about them.

The bird-observer will find that birds do not always build in the regulation places or with the regulation materials. For instance the lecturer found a fly catcher's nest almost entirely built of cotton waste and a chaffinch's nest suspended under a spruce low down like a golden-crested wren's and all the eggs were blue. Robins will build in kettles and cans on an ash heap and down rabbit holes. The lecturer once found a wren's nest in an old boot that had been thrown away and had stuck in an elder bush, and in India he had heard of a kite which had built its nest entirely of wires off soda-water bottles. In Norway he had seen magpies' nests in the woodwork under the

eaves of houses and one was built in a small cherry tree growing between the windows of a house and not more than seven feet from the ground. At Witcomb last year he saw two swallows' nests side by side on a coach-house door, which swung with the door every time it was opened or shut, the birds sitting all the time. One of the nests eventually hatched off.

In a workshop in Derbyshire there was a wall box in which was a bearing for shafting built in the wall with a wheel close to the wall outside. A fly-catcher built for two years in this recess and it could only get in or out when the wheel was not revolving but it would sit there with all the noise and the wheel going round and did not appear to mind a bit.

Other curious things which he had noticed were a redstart and a willow warbler which had laid in the same nest, a golden-crested wren's nest in a holly bush, five blackbirds' nests in a hayrick in a shed, the five nests being all woven together and there were eggs in three of them.

It is a very great mistake if you find a nest of which you have any doubt to take the eggs without first seeing the bird and making notes about her and the nest.

Suppose a bird is sitting and you put her off unseen, if you go away and return in a few minutes quietly you will probably find she is on the nest and then you can have a good look at her. This is of the first importance in the case of birds that are very much alike in their eggs and nests. For instance it is very often impossible to say whether certain eggs are blackcaps' or garden warblers', but when you see the birds you can tell in a moment, for the cock blackcap has a black cap and the hen a reddish one, while the garden warbler has none at all.

The chiffchaff and willow warblers, too, are very confusing as they both build the same nests and willow warblers' eggs vary so very much both as to shape and markings. But you may take it as a rule that willow warblers' nests are on the ground, often in so deep a recess that they are very difficult to find, while a chiffchaff's is always built off the ground, in a briar or some other bush. If you are quiet and quick you may often catch the bird on the nest with your hand and have a good look at her before letting her go, she does not seem to forsake the nest in consequence. Such an inspection of the bird will tell you at once which of the two it is, for a chiffchaff has black legs while a willow warbler has greenish brown ones. The chiffchaff is the first warbler to come and the last to go.

You will find more nests by keeping a look-out for the birds and watching their ways than by looking for the nests themselves and you can generally tell by the actions of the bird whether she has a nest near by or not. Story books tell pretty tales of the cock bird singing to his mate as she sits on the eggs. As a matter of fact in most cases the cock sings very little after the nest is begun and stops entirely when the sitting stage arrives. Moreover birds as a rule do not sing near the nest or where the nest is going to be.

During the sitting season the cock's chief business is to keep watch but it is through this very watchfulness that you can often find the nest. Take the case of wheatears, you can spend a long time in watching them for they are as artful as any bird and the only way to find their nest is by watching, unless, of course, you just chance to find one by pure luck. Leckhampton Hill is a good place to watch them for between Charlton Common and the Devil's Chimney there are always a dozen or more nests. Suppose you catch sight of one sitting on a stone, he will take no notice of you until you get to where he considers to be dangerously near his nest when he will fly off, sound his alarm note and in a few seconds you will see the hen, but to see exactly where she came from is quite another story. But you will have a rough idea, to within twenty yards or so, as to where the nest is. The next thing to do is to hide and watch, but you will find there is no hiding from a wheatear. If you lie up behind a bank or stone, the wheatear promptly gets on to another stone higher up and watches you in his turn, but if you keep still for about a quarter-of-an-hour he will fly down and join the hen and they will run about and feed, or pretend to feed. Presently, if all is quiet, the hen will run under a stone or something else and stop there and you think that you have won the game, but if you are drawn from your shelter you will find you are hoaxed, so you will have to hide again and go through the whole performance once more, and with a greater supply of patience you will be this time rewarded by seeing her go to the nest under some loose stones or in a rabbit burrow.

It appears to be a great trick of the smaller birds when you are at their nest to pretend to feed or to carry building materials about in their mouths as if they were just beginning to make a nest and and consequently any idea of yours that they already had one must be quite absurd and so you had better give up hunting for one and go away. All birds if you take away all their eggs will sit on their nest for an hour or more before they leave it.

Having found a nest and taken specimens you should blow them on the spot, as if carried empty they are not so liable to break. A tin box is the best thing to carry them in, each egg should be wrapped up separately in cotton-wool and not laid in layers with wool between each layer. The best form of egg drill is made of a piece of steel rod ground to a conical point. One hole only should be made in the egg by twisting the drill between the fingers and the contents blown out by blowing air in with a glass or brass blow pipe. A glass blow-pipe is easily made by heating a piece of glass tubing in a gas flame and drawing it out to a point at one end. With small fresh eggs the end of the blow pipe need not be inserted into the egg, the jet of air from the pipe, held just outside, being sufficient to force out the contents.

If the egg is small and hard set the best way to get the inside out of it is to wind very narrow strips of gummed paper round and round it in all directions and leave it until quite dry. A large hole may then be drilled into the shell through the paper and the contents may then be picked out with a hooked needle and small scissors. All eggs should be washed out with plain water, but care should be taken never to wash the outsides unless it is absolutely necessary as the colouring matter in many cases washes off easily and the specimens are then spoilt. This warning will be found especially useful in the case of the eggs of waders. The skin round the hole should be cut away, a small etching pen being a very good implement to use for this purpose and the egg should finally be allowed to drain and dry before being put away.

In the case of large thick-yolked eggs it is better to cut the skin away before blowing as the contents will then come out much more easily. When eggs are hard set the skin lining the egg should always be drawn out, a hooked needle being useful for this purpose, as otherwise the egg will become discoloured and will not keep well.

It is advisable to write round the hole the name of the bird, the date on which the egg was found, the place at which it was taken, and if more than one egg is taken from the same nest, a letter should be put on each egg from the same clutch.

The neighbourhood of Cheltenham is a very good one for birds, as during the past three years the lecturer had found the nests of eighty-three different sorts of birds within a few miles of the town and there are most certainly very many more to be found

The process of nest building is one which well repays a little

attention. Thus the golden-crested wren builds on the under side of a spruce or yew bough. It begins by fixing a piece of cobweb and moss to a certain spot and goes on adding to this till a strip some six inches long hangs down from the bough. Then it takes the lower end of this and fastens it to another point and thus forms a sling on which the rest of the nest is built.

Last Spring boys were continually bringing the lecturer tits' eggs to identify, but no one can tell with certainty whether an egg is a cole tits', a blue tits' or a marsh tits'. You must see the birds when you find the nest. A blue tit you can of course distinguish at once but marsh tits and cole tits must be seen close or may be mistaken for one another. The cole tit's head is white on the sides, black on the crown, chin and throat, and the bird has a white patch on the back of the neck. The marsh tit has the top of its head all black and the throat white with the exception of a tiny patch of black under the bill.

If you find a tit's nest in a hole in the ground or close to the ground it is almost sure to be a cole tit's and not a marsh tits'. All three tits will cut out holes in dead stumps and pollards just like a woodpecker.

A wagtail's nest needs careful searching for as the bird is extremely watchful, and particularly is this true of yellow wagtails. These birds build their nests out in the middle of a fallow, or a grass field, or in young corn, and you can never get near enough to see the bird get off the nest. The cock is always on the watch and as soon as you show yourself he lets the hen know and she runs off the nest and nothing will induce her to return while you are anywhere near. But if you have sufficient patience and can see far enough the cock will go to the nest and you will see somewhere about where the nest is and must then hunt about for it.

On the other hand some birds are remarkably confidential about the locality of their nests, the red backed shrikes or butcher birds are probably the most foolish ones of all, they build in thick hedges and isolated bushes in the fields and are generally to be seen and heard near their nests, or if he happens to be at some distance from them and the hen is sitting, the cock bird will fly and sit on the bush where the nest is. It seems probable that they begin sitting as soon as the first egg is laid, as all the eggs that the lecturer had blown from the same nest have been of different degrees of hardness and the hen is always to be seen on the nest.

Another common bird in this locality is the green woodpecker. It is a common thing for this bird to allow its holes to be appropriated by starlings, and the lecturer had seen one pair make four holes two feet or more deep and starlings took the first three in possession, yet the woodpecker looks as if he could easily slay a starling with one peck of his beak. The green woodpecker will often cut through three or four inches of green wood in a solid oak, elm or ash, in order to get to the rotten interior. At times they will lay in old holes, and, if not turned out by starlings will come back to the same hole year after year. Lesser and spotted woodpeckers are not so common, and their nests are not so easily found as they often build very high up in a hole in the limb of a large tree.

Tree creeper's nests are frequently overlooked as they are so hidden and the birds do not show up when disturbed but dodge round the tree when you get near. They are very fond of building behind a piece of loose bark on a pollard, a crack in a wall or a crevice in a tree. Thus they differ from tits as they never seem to build in a hole but always in a crevice.

This is a great country for nuthatches and the difference in the way nuthatches and tree creepers feed is most marked. They both feed on insects which they find in the bark of trees. A tree creeper begins at the bottom and climbs up to the top, feeding as it goes, and when it gets to the top flies down and repeats the performance. But a nuthatch begins at the top and walks down head first and when it gets to the bottom flies up to the top and starts down once more. Nuthatches have a weakness for feeding upside down and if you cut a cocoanut in half and nail a bit up near your window in winter, if there are any nuthatches near they will be sure to come, and you will see them feeding busily head downwards. In most of the large rough-barked trees about Cheltenham you will see hazel-nut shells jammed in crevices of the bark, these have been put there by nuthatches who jam them in and then split them open, for they feed on nuts as well as insects.

The lecturer had once seen a pair of these birds building in an old woodpecker's hole, high up in the trunk of a tall tree, and they never stopped, while they were watched, flying up and down from the ground to the hole with dead leaves. Ten days afterwards a second visit proved that a greater spotted woodpecker had turned out the nuthatches for the bird was sitting on five eggs which were all then taken. A third visit after another fourteen days showed that the

nuthatches had returned, clayed up the mouth of the hole and filled up the interior with large pieces of rotten wood and leaves and had laid seven eggs, after this the woodpecker returned and hatched off.

The green plover or pee-wit has a nest which is hard to find until you know how to find it. The popular idea is that when the bird comes swooping round crying out and making a great fuss there is a nest with eggs near, but this is quite a mistake. When plover have eggs they make no noise at all, though they make noise enough when they have young ones and before laying commences.

To find the nest you must creep up to the hedge of the field where the nests are and then suddenly show yourself and if you see a bird get straight up off the ground and fly out of the field without uttering a sound, there is sure to be a nest there with eggs in it. If they see you coming they will run off the nest for some way before flying and so deceive you as to its exact position. Anyone who has made a study of finding plover's nests can mark down several plover's nests at once, and can tell you by the way the bird flys how many eggs there are in each nest and he will generally be right.

Wood warblers give one a lot of trouble in nest finding. They are birds you must watch in order to find their nests, which are always very cunningly concealed under dead leaves and twigs in the woods about here. The cock bird will sit on a particular twig and seems to sing incessantly in the early Spring, and if you disturb him and drive him away he quickly returns to the old twig and continues to sing and does this till the nest is begun when he only sings at intervals. Then is the time to watch and you will possibly be lucky enough to see the hen carrying building materials to the nest. The only other way to find the nest is to walk the piece of wood over very carefully where you think the nest is until you put the hen off, and you can always hear when you have done so by her cry which is very like that of the willow wren, when disturbed from the nest. When you have found the nest you will see that it is very like that of the chiffchaff and of the willow wren, but the opening is higher up and it is never lined with feathers as the nests of those birds are.

The wood wren is not very plentiful about here, but there are two or three pairs in all the larger woods in the neighbourhood. There was a nest this Spring in the belt of trees by the side of the East Gloucestershire cricket ground on the Old Bath Road, under the beech tree at the end. These birds seem always to build under beech trees if they can.

At Chatcomb, Witcomb, and Coomb Hill, a good number of grasshopper warblers are to be found. The nest is open like a meadow pipit's, but is very hard to find as it is built in amongst long grass. The only way to find them is to walk the ground up and down very closely, and when you have put up a bird, you must go down on hands and knees, and turn every tuft of grass over in the hopes of finding the nest. The birds themselves are apt to run off through the grass and consequently are very difficult to see. Their name is given them because their note is like the noise of a grasshopper and unless you were told it came from a bird you would scarcely believe it. When you have found its nest the bird becomes quite confiding, coming up close to you, making a growling noise and writhing its body and tail about in a most peculiar manner.

A bird which is probably to be found on the larger ponds near here and on the Avon and Severn is the dabchick or little greeb. Their nest is merely an accumulation of rotten weeds and rushes actually floating on the water but held in position by a growing reed or overhanging rush and the eggs are always wet from the moment they are laid. At first they are white but in a few hours they get discoloured by the rotten weeds of which the nest is made.

The old bird always covers the eggs up on leaving the nest so that there is nothing to catch the eye beyond what appears to be a natural accumulation of rubbish. The young birds when first hatched can swim at once and look like baby mice with yellow and brown stripes and fine hair rather than little birds with down. When too weak to walk and not a day old they may be seen crawling out of the water, pulling themselves up the side by taking hold of the materials of the nest with their beaks and so shuffling themselves back into the nest. Young waterhens are in just the same hurry to get into the water as soon as they are hatched, only they are like little black balls of down and are so buoyant that they have quite a struggle to get under water.

The early part of egg-collecting is easy enough but as soon as you begin to look for particular sorts all kinds of difficulties crop up. Still, if you make a point of noticing every little thing you see, you will always find a pleasure in your expeditions, and it is quite possible to make a study of birds without making a collection at all. Do not take eggs just because you find a nest and think it is the proper thing to do. You could find a nest and watch it for an hour or two every day and find out something fresh about the habits of the birds that built it each time. And if you want to do the thing thoroughly get to know the birds and their nests first and their eggs afterwards.

EXTRACTS FROM "NOTES ON BIRDNESTING."

By J. Birtwhistle.

Robin Redbreast.

Found at Leckhampton on March 19th. The nest was placed in ivy on a wall, it was a very big one composed of leaves, paper and string, and lined with hair, it was very firm and well concealed. The bird was not at all shy, but sat within a few feet of me, and went back directly I had gone. The nest was about 3ft. 6in. from the ground. Six eggs were laid, very good specimens and rather big.

Blackbird.

Found at Leckhampton on March 20th, placed in a laurel bush and fastened on to the branches with clay and dead leaves, paper and bits of sticks, and lined with clay, then after that lined with very fine grass. The same pair began in another bush but a very windy night disturbed the few leaves and grass they had collected, and then they left that for the other place, where they were successful. The bird after a time got very tame. The nest was about 8ft. 4in. from the ground, very neat and tightly built.

Chiffchaff.

Found at Leckhampton on May 5th. The nest which was domed was placed on some brambles, which had been thrown out of a stream, it looked very much like a thrush's nest turned upside down, it was made of hay and dead leaves and lined with feathers, and was about 1ft. 6in. from the ground. I only saw the birds once and then they were off like a shot.

Chaffinch.

Found at Leckhampton on May 5th. The nest, which was extremely neat, was placed in the fork of a hedge and well surrounded with thorns. It was made of lichen and moss, and was lined with feathers. It was rather low down, being just low enough to look into.

Lesser Whitethroat.

Found at Leckhampton on May 5th. This nest was so light and very loosely placed in a hedge that one wondered how it managed to stay in its place in the windy days. It was only made of thin hay, and you were able to see right through it, but this one was fairly deep, else I think the eggs would have been blown out. It was only 3ft. 9in. from the ground.

Tree Pipit.

Found at Leckhampton on May 10th. The nest was placed in a hole in the ground protected by nettles. It would not have been found had not the bird flown from off the nest, as it was we had some difficulty in finding it. The nest was made of hay and fairly deep.

Common Wren.

Found at Leckhampton on May 15th. The nest was placed in the ivy growing on a willow tree which hung over a pond, and was made of dead leaves and moss, and round the hole there were a few ticks ; it was lined with feathers, being exceedingly cosy inside.

Swallow.

Found at Leckhampton on May 26th. The nest was placed on the beam of an old barn, and was made of mud with hay in it, and was well lined with feathers. The old birds were very tame, they did not move until I had climbed right up to their nest. Then they would not leave the barn, but rested on another beam. The nest was about 8ft. from the ground.

Red Backed Shrike.

Found at Leckhampton on June 9th. The nest was placed in the hedge and was very open, made of stalks, moss, and grass, and lined with wool. The old birds were always very near the nest, and when the hen bird was on the nest the old cock bird was generally within 5 or ten yards of the nest. The nest was placed in the fork of a branch of the hedge, it was about 5ft. from the ground.

Cheltenham College Natural History Society Accounts for 1897.

Receipts.

	£	s.	d.
Balance in hand	31	7	8
Lent Term—Subscriptions ...	4	14	0
„ „ Dark Room ...	2	5	0
Summer Term—Subscriptions	4	8	0
„ „ Dark Room ...	5	5	0
Christmas Term—Subscriptions	5	6	0
„ „ Dark Room	3	10	0
Excursion to Sudeley ...	0	14	0
	£57	9	8

W. M. BAKER,
Hon. Treasurer.

Expenses.

		£	s.	d.
April.	Darter—Prizes ...	1	6	0
„	King—Dark Room ...	3	9	0
„	„ —Lectures ...	0	5	0
July.	First Excursion ...	2	9	0
„	Second „ ...	2	10	0
„	Third „ ...	0	14	6
„	Prize and Hire of Slides	0	18	6
„	King—Dark Room ...	5	3	0
Dec.	„ „ „ ...	4	1	0
„	„ Lectures ...	0	5	0
„	Garner—Hire of Vehicles	3	0	0
„	Darter—Prizes ...	1	5	0
Balance in hand ...		32	3	8
		£57	9	8

Audited and found correct, February, 1898.
A. A. BOURNE.

CHELTENHAM COLLEGE

Natural History Society

REPORT FOR THE YEAR 1898.

SUMPTIBUS EDITORUM CHELTONIENSIUM.

CHELTENHAM:
DARTER'S COLLEGE BOOK AND STATIONERY DEPÔT,
NORTHWICK TERRACE.

BRITISH MUSEUM
NATURAL HISTORY

Prize Photographs, by L. C. Willcox.

CHELTENHAM COLLEGE

Natural History Society.

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1898

Sumptibus Editorum Cheltoniensium.

CHELTENHAM :
DARTER'S COLLEGE BOOK AND STATIONERY DEPÔT,
NORTHWICK TERRACE.

CHELTENHAM :
THOMAS HAILING, OXFORD PRINTING WORKS.
1899.

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PREFACE.

HE past year has been marked by two great features, the increase in the number of members of the Photographic Section, and the beginning of the rearrangement of the fossils in the Museum. So numerous are the members of the Photographic Section that the question of a new dark room is becoming very pressing, the one we have at present being most inconveniently small. The collection of fossils in our Museum is a very large one, but having been accumulated by donations spread over a considerable number of years we possess a large number of duplicates, and when the whole collection is properly overhauled it will be found that many specimens can be taken out of the cases where they are now and kept for exchange purposes. It was thought advisable to start arranging the Jurassic fossils as these contained all the local specimens and the rearrangement was put into the hands of S. S. Buckman, Esq., of Charlton Kings. We may consider ourselves very fortunate indeed in having one so intimately acquainted with fossils from the Jurassic beds living so close to us and able to assist us, and any one who looks at the fossils arranged by him will see in a moment what a work he has done. We must also be deeply grateful to the Council for having assisted us with a grant towards this arrangement. The Cambrian and Silurian fossils are also being arranged and the rest of the fossils will be dealt with in turn. A very good collection of fossils from the Derbyshire Carboniferous Limestone, the Norfolk Forest Bed, and other rocks, has been presented to us by the Rev. E. Montford and this collection will shortly be on view. Besides fossils there is also in this collection a very nearly perfect skeleton of the gigantic extinct New Zealand bird, the Dinornis Elephant-

opus or the Moa. The Montford Egg Collection, purchased by the colleagues of the late C. Montford, Esq., as a memorial of him, has been placed in the case prepared for it, and several birds' nests have been very tastefully arranged above it by our Curator, Mr. White.

We are very glad to have this opportunity of thanking Dr. Wilson for having presented to us several of these nests, and also many photographs of birds' nests which have been put in a book and are on view in the Museum.

Most of the other nests have been collected and presented by Ll. Bullock-Webster, O.C., whose notes on Cheltenham birds, sent in for the prize given in the Ornithological Section, formed one of the best productions we have ever had in our Society.

The Meetings and Excursions of the Society were very well attended and the activity of individual members of Sections was very marked. The Botanical Section in the Senior Department, though not producing any more Hodsons and Curries, yet contained several energetic members, whose energy we hope will be even more visible next year, while in the Junior Department, Banks has done remarkably well, and we hope he will continue to assist the Society to obtain flower records for many years to come. The Ornithological Section possessed in Bullock-Webster one of the best observers we have had for a long time in the Society, and his having left Cheltenham leaves a gap which we shall find hard to fill.

There seems every chance of a Microscopical Section being started. Mr. Scott has kindly consented to take charge of it and give anyone who joins it all possible assistance and help. Such a Section should appeal to all fellows who are going in for the medical profession, as they will be able to get accustomed to microscope work before they leave school, while botanists also will find it useful, as a mere knowledge of a plant as one sees it in a field is not sufficient to tell us all about it. Anyone, therefore,

who would like to join, and anyone who would be kind enough to lend a microscope, is invited to communicate with Mr. Scott.

From the Balance Sheet it will be seen that the Society paid out of its funds besides the usual expenses, a certain sum towards the rearrangement of the fossils in the Museum, and also gave a subscription to the fund for the purchase of the Montford Egg Collection.

THE COUNCIL, 1898.

President...	THE PRINCIPAL.
Vice-President	REV. J. MUGLISTON.
Treasurer	W. M. BAKER, ESQ.
Secretary	C. I. GARDINER, ESQ.
President of Archæological Section...	A. S. OWEN, ESQ.
President of Botanical Section ...	REV. J. R. WYNNE-EDWARDS.
President of Entomological Section...	J. C. SALTER, ESQ.
President of Geological Section ...	C. I. GARDINER, ESQ.
President of Ornithological Section...	M. TANNER, ESQ.
President of Photographic Section ...	C. E. YOUNGMAN, ESQ.
President of Junior School ...	F. J. CADE, ESQ.

RULES.

1.—That this Society be called the Cheltenham College Natural History Society, and have for its object the promotion of the study of Natural History.

2.—That Ordinary Meetings of this Society be held on Fridays once in three weeks at 5.30 p.m., or at such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal Subscriptions, be exempt from any further payment.

6.—That any Member whose Subscription shall be a whole term in arrears shall cease to be a Member of the Society.

7.—That Members be encouraged to join Sections for the more accurate study of the different branches of Natural History: that the formation of these be arranged, and the work settled at the first Meeting of each Term: that each Section be under a President, who is responsible for its Meetings and organisation, and that a Secretary be appointed by each Section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the Presidents

and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President, or, in his absence, a member of the Council shall preside.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

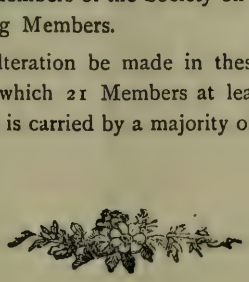
13.—That the Treasurer's accounts, after the approval and signature of the two Auditors, to be appointed at the last Meeting of each year, be laid on the table at the first Meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a Special or Ordinary Meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.



Cheltenham College Natural History Society.

President: The Rev. R. de C. Laffan.

Secretary: C. I. Gardiner, Esq.

Treasurer: W. M. Baker, Esq.

EASTER TERM, 1898.

LIFE MEMBERS.

Baines
Birkett
Biscoe
Boothby
Brettell
Brierly
Clarendon
Collett, L. G.
Conran
Congreve
Currie
Dixon
Eldridge
Fitzherbert, C.
Fitzherbert, E.
Fort
Fraser, G.
Griffith
Hill-Thomson
Hodson
Holford
Hooper
Houghton
Houston
Johnson
Kershaw
Lanyon
Lee, A.
Levy
Lloyd
Macrae
Marcan
McLeod
Medlicott
Middleton
Murray
Neame
Noad
Noel, C.
Noel, E.
Oliver
Pery-Knox-Gore, A.
Pery-Knox-Gore, W.
Roberts
Rollo
Sington
Sparrow
Spencer
Stuart
Turnbull
Turner
Upton
Vere
Walker
Wells
Wheatcroft
Whyte
Willcox
Wilson
Wolff
Woods

ORDINARY MEMBERS.

Adair
Adams
Adamthwaite, C. J.
Anderson
Armitage
Balfour, J. R.
Black
Black
Beazley
Bentley
Berry-Torr
Bickerdyke
Bird
Bouch
Bride
Brinton
Campbell J. Donald
Chambers
Clarke
Clarke, G. M.
Collett, S.
Congreve
Copland
Corfield

Crosse
Dicken
Dixon, W.
Dixon, O.
Dobell
Dodington
Douglas
Dunn
Dunsterville
Dyer
Foord
Footner
Fowke
Fox
Fraser
Fry
Gardiner
Garratt
Glanvile
Gosnall
Greer
Grieve
Grose
Haldinstein, G.
Haldinstein, L.
Hannam-Clarke
Hamilton
Handley
Hare
Harrison, A.
Hart
Hawkins, A.
Hawkins, E.
Hewett, G.
Holliday
Jenkins
Johnstone
Jordan
Kent
Lathbury
Lewer
Long, J. V. T.
Lousada
Macalister
Mackie, T.
Maitland
Martin, A.
Martin, N.
Milton, T.
Milton, R.
Moore, H. F.
Mortimer-Booth
Mortimore
Moss
Murray, G.
Nicholls
Nothmann
Oakey
Oppenheim
Peel
Penny, H.
Penny, R.
Phillips
Piggott
Ponsonby
Ponting
Porter
Pownall
Radcliffe
Raper
Reynolds
Rickford
Roberts
Rosenberg, S.
Salter, W. E.
Samuelson
Schnurmann
Sawyer
Shann
Sharp
Shaw
Seaton-Taylor
Sherwill
Sloan
Smith, D.
Spooner
Stamp
Stephen
Stranack
Suarez
Symonds
Talbot, S. C.
Thomas, C. V. R.
Thwaite, E.
Thwaite, H.
Tillard, A.
Tillard, S.
Unett
Walker, M.
Walter, W.
White
Whittuck
Whyte, C.
Wilkins
Willis, H.
Young, G. A. W.

SUMMER TERM, 1898.

LIFE MEMBERS.

Adair
Baines
Biscoe
Boothby
Brettell
Brierley
Clarendon
Collett, L. G.
Conran
Congreve
Copland
Currie
Dixon, W.
Eldridge
Fitzherbert, C.
Fitzherbert, E.
Fort
Fraser
Grieve
Griffith
Grose
Haldinstein, L.
Hare
Harrison, A.

Hart
Hawkins, C.
Hill-Thomson
Hodson
Holford
Hooper
Houghton
Houston
Johnson
Jordan
Kershaw
Lanyon
Lee, A.
Levy
Lewer
Lloyd
Mackie, T.
Macrae
Marcan
Martin, W.
McLeod
Medlicott
Middleton
Moore, H. F.
Moss
Neame
Noad
Noel, C.
Noel, E.
Nothmann
Oliver
Peel
Penny
Pery-Knox-Gore, A.
Rickford
Roberts
Rollo
Samuelson
Sanders, H.
Sanders, J.
Schnurmann
Singtон
Smith
Sparrow
Spencer
Stamp
Stephen
Stuart
Tillard, A.
Turnbull
Turner
Upton
Walker
Wells
Wheatcroft
White
Whyte
Willcox
Wilson
Wolff
Woods

ORDINARY MEMBERS.

Adams
Adamthwaite, C. J.
Anderson
Armitage
Balfour, H.
Balfour, J. R.
Black
Black
Beazley
Bentley
Berry-Torr
Bickerdyke
Bird
Bouch
Bride
Brinton
Burke
Campbell, J. Donald
Cardew, J.
Clark, G.
Clarke, T.
Clarke, G. M.
Clerk, R. V.
Collett, S.
Congreve
Cooper
Corfield
Cottrill
Crailsheim
Crosse
Davids
Dicken
Dixon, W.
Dixon, O.
Dobell
Dodington
Douglas
Dunn
Dunsterville, K.
Dyer
Foord
Footner
Fowke
Fox
Fraser
Fry
Furse, C.
Gardiner
Garratt
Geoghegan
Glanvile
Gosnall
Greer
Griffiths
Hadden
Haldinstein, G.
Hannam-Clark
Hamilton
Handley
Handy
Handy, T.
Harries
Hawkins. E.
Hewett
Holliday
James
Jenkins
Johnstone, A. A.
Kent
Ker, A.
Lemon
Long, J. V. T.
Lousada
Macalister
Maitland

Maitland-King
Martin, A.
Milton, T.
Milton, R.
Mitchell-Dawson
Mortimore
Morton
Moutray
Murray, G.
Nathan
Nicholls, W. A.
Nixon
Oakey
Ogle
Oppenheim
Orpen-Palmer
Payne
Penny, R.
Phillips, C.
Piggott
Ponsonby
Porteous
Porter
Pottinger
Radcliffe
Raper
Reynolds
Roberts
Rosenberg, S.
Rosenberg, P.
Salter, W. E.
Saunders, H. R.
Sawyer
Seaton-Taylor
Shann
Sharp
Shaw
Sherwill
Sloan
Spooner
Steel
Stranack
Symonds
Talbot, S. C.
Thomas, C. V. R.
Thomson
Thwaite, F.
Thwaite, H.
Tillard, S.
Trewheler, A.
Trewheler, V.
Turner
Unett
Walker, M.
Weddell
Wheeler
Whittuck
Whyte
Wilkins
Wilson, W. A.
Young
Young, G. A. W.

MICHAELMAS TERM, 1898.

LIFE MEMBERS.

Balfour, J. R.
Black
Boothby
Brettell
Clarendon
Collett, L. G.
Conran
Congreve
Copland
Currie
Dunsterville, K.
Fitzherbert, C.
Fort
Fry
Grieve
Griffith
Haldinstein, L.
Hare
Harrison, A.
Hart
Hawkins, E.
Hill-Thomson
Hodson
Holford
Houston
Jordan
Kent
Lathbury
Lee, A.
Levy
Lewer
Lloyd
Mackie, T.
Macrae
Maitland
Marcan
Martin, N.
Medlicott
Milton, T.
Moore, H. F.
Moss
Murray, G.
Murray, M.
Neame
Noad
Noel, E.
Oliver
Peel
Penny, H.
Ponsonby
Porter
Roberts
Samuelson
Sanders, H.
Sharp
Sington
Sparrow
Spencer
Stephens
Stranack

Stuart
Tillard, A.
Turner
Upton
Walter
Wells
White
Willcox
Wilson
Wolff

ORDINARY MEMBERS.

Adams
Adamthwaite, C. E.
Adamthwaite, C. J.
Anderson
Armitage
Aston
Balfour, H.
Beadon
Beazley
Berry-Torr
Bickerdyke
Bignall
Bird
Bouch
Bourke
Black
Bride
Brinton
Buckby
Burke
Campbell, J. Donald
Cardew, E.
Cardew, J.
Chapman
Chapman
Chard
Cheeke
Clark, G.
Clark, G. M.
Clarke, R. C.
Clarke, T.
Clerk, R. V.
Collett, S.
Congreve
Cooper
Corfield
Cottrill
Cox
Crailsheim
Crosse
Davids
Davis
Dicken
Dill
Dixon, O.
Dobell
Dodington
Dunn
Dunsterville, G.
Elworthy
Exham
Ferguson
Flack
Foord
Footner
Fowke
Fox
Fraser
Furse, C.
Gardiner
Garratt
Gatacre
Geoghegan
Glanvile
Greer
Griffiths
Grose
Grylls
Hadden
Haldinstein G.
Hamilton
Handley
Handy
Harriès
Holliday
Howlden
James
Jenkins
Johnston, R.
Johnstone, A. A.
Ker, A.
Knowling
Lemon
Lesser
Lewis
Long
Lowther
Macalister
Macintosh
Maitland-King
Martin, A.
Meyers
Milton, R.
Mitchell-Dawson
Moore
Morton
la Motte
Moutray
Nathan
Nicholls
Nixon
Norton
Oakey
Ogle
Oppenheim
Oppenheim, D.
Orpen-Palmer
Payne
Paxton
Penny, R.
de Perigny
Perkins
Phillips, C.
Piggott
Porteous
Porter, M. T.
Pottinger
Quill
Radcliffe
Raper
Rendle
Rosenberg, P.
Rosenberg, S.
Salter, W. E.
Saward
Sawyer
Seaton-Taylor
Shann
Shaw, G. H.

Sherwill
Simpson
Sloan
Solomon, L.
Stockwell
Studd, E. G.
Talbot, S. C.
Thomas, C. V. R.
Thrupp
Thwaite, F.
Thwaite, H.
Trewheler, V.
Unett
Walter, A. T.
Weddell
Whittuck.
Wilkins
Williams
Wilson, W. A.
Young

LECTURES AND EXCURSIONS.

Feb. 4...Lecture on Röntgen Rays, by Dr. Ferguson.

Mar. 4...Lecture on Electric Lamps, by H. Kilgour, Esq.

May 22...Excursion to Colesbourne.

June 9...Excursion to Wainlode Cliff.

June 25...Excursion to Andoversford.

July 10...Excursions to Tewkesbury and Birdlip.

Nov. 8...Lecture on Shooting Stars, by W. G. Borchardt, Esq.

Nov. 18...Lecture on Early Man in the Cotteswolds, by J. Witts, Esq.

Dec. 5...Lecture on the Romance of Astronomy, by A. A. Bourne, Esq.

LIST OF ARTICLES PRESENTED TO THE MUSEUM DURING 1898.

April...Minerals from Krugersdorf, S. Africa, by W. H. Stansfeld, O.C.

May ...Birds' Nests (British), by L. Bullock-Webster, C.

„ „ „ by G. L. Collett, C.

„ „ „ by —. Penny, C.

June ...Corals, by Mrs. Pagan.

July ..."Solitary Wasp's" Nest, by N. M. Jenkins, C.

Eight Birds' Nests, by Dr. Wilson.

Sept....Wasps' Nest, by Mrs. Cade.

Blind Worm (in bottle), by —. Noel, C.

Oct. ...Wasps' Nest, by S. C. Talbot, C.

Several articles from Chili, by J. L. and F. C. Prain, O.C's.

Nov. ...Head of Bush-bock, by T. Griffiths, Esq.

Nest of Weaver Bird, by —. Dixon, C.

Dec. ...Box containing Fossils, by W. E. H. Lecky, Esq., O.C.

Globe Fish from Barbadoes, by —. Willoughby, C.

Reports from Sections.

ARCHAEOLOGICAL SECTION.

President: A. S. Owen, Esq.

Secretary: G. R. Murray.

MEMBERS:

T. Bouch.
J. R. B. Balfour.
H. R. C. Balfour.
E. A. H. James.
R. Glanvile.
St. G. J. C. Heath.
M. A. Wolff.

RCHAEOLOGISTS had a good chance of doing work at the general excursions of the Society this year, as on three there were ancient buildings to be seen. On the Deerhurst expedition there were the two old churches dating from pre-Conquest days, to be inspected. On the expedition to Andoversford, a contingent armed with cameras made an invasion of Whittington Church, with its quaint carvings and ancient effigies. While Tewkesbury with the magnificent Norman Abbey and medieval street architecture made an excellent meeting place for the third expedition.

As well as these excursions, in which the whole Society could take part, there was an expedition on bicycles, in September, to Deerhurst and Tewkesbury, for members of the Archaeological Section, when these places were studied with greater minuteness.

The President of the Section hopes that it will be possible to arrange more of these small excursions during 1899.

A most interesting lecture was given to the Society by G. B. Witts, Esq., on prehistoric man, and the life of those early inhabitants of the Cotswolds was reconstructed with extraordinary ingenuity from the illustrations afforded by local antiquities. Camps, roads and burrows for miles around were made to yield their secrets and disclose the events of a very remote past. On the table were skulls from Belas Knapp, and prehistoric stone implements, the sharpness of which was really phenomenal. We must thank Mr. Witts for a very kind offer of an excellent map of local antiquities for the Museum, and also for the proposal to take some members of the Society round Leckhampton Camp, an offer which was gratefully accepted by some present for the next Sunday.

BOTANICAL SECTION.

SENIOR.

President - - Rev. J. R. Wynne-Edwards.

Secretary - - C. H. C. Noad (1).

JUNIOR.

President - - F. J. Cade, Esq.

WORKING MEMBERS:

SENIOR.

M. M. L. Currie (2).
T. Bouch, *Bo.*
T. A. Hodson (2).
H. R. Sanders (3). *S.*
T. M. Salter, *St.*
G. A. W. Young (3) *Y.*
G. B. Lemon, *L.*
R. V. Clerk, *C.*
J. A. Pottinger, *P.*
G. G. Griffiths.
H. Ogle, *O.*
W. E. Salter, *Sa.*

(1) Winner of Prize in 1895.
(2) ,, ,, ,, 1896.
(3) ,, ,, ,, 1898.

JUNIOR.

G. B. Allen, *A.*
P. d'A. Banks, *B.*
J. C. Browning, *Br.*
D. Mitchell-Dawson, *D.*
H. de C. Falle, *F.*
G. G. Griffiths, *G.*
R. I. Kinloch, *K.*
G. Marsden, *Ma.*
E. Morris, *Mo.*
E. M. Mulliken, *M.*
G. Perkins, *Pg.*
H. Perkins, *Ph.*
G. Porcher, *Pr.*
W. R. Paterson, *Pa.*
E. A. Osborne, *Os.*
A. A. Roberts, *Ra.*
F. Roberts, *Rf.*
W. R. F. Ryan, *R.*
C. R. Wilson, *W.*
—. Young, *Yo.*

[The initials after the names refer to the list of records].

SENIOR DEPARTMENT.

E have again to record the results of a successful season, but we must especially congratulate Banks, of the Junior Department, who succeeded in breaking all previous records by getting 392 specimens, exclusive of Rushes, Sedges and Grasses, besides drying and mounting a very creditable collection of these, which are excluded from the Junior competition.

In the Senior competition there were nine competitors, of whom the following got over 50 specimens :—H. R. Sanders 275 and G. A. W. Young 267 tied for the prize, Ogle 118, Clark 110, Pottinger 86, Unett 85, Lemon 52, T. Bouch 50.

In consequence of the almost total absence of cold weather last Winter, some very curious specimens were found in the early part of the year—they must have been partly late flowerings surviving from the Autumn before, but many of them were genuine Spring flowerings. We append a list of the most remarkable cases.

Jan.	17	.. Lapsana Communis (Nipplewort).
,,	17	.. Draba Verna (Whitlow Grass).
,,	17	.. Primula Vulgaris (Primrose).
,,	18	.. Geum Urbanum (Wood Avens).
,,	18	.. Lamium Galeobdolon (Yellow Dead Nettle).
,,	18	.. Crepis Virens (Hawkbit).
,,	20	.. Tussilago Farfara (Coltsfoot).
,,	22	.. Primula Veris (Cowslip).
,,	28	.. Salix Capraea (Willow).
,,	30	.. Veronica Chamaedrys (Germander Speedwell).
Feb.	2	.. Nepeta Glechoma (Ground Ivy).
,,	2	.. Ajuga Reptans (Bugle).
,,	2	.. Linaria Cymballaria (Ivy-leaved Toadflax).
,,	2	.. Fragaria Vesca (True Strawberry).
,,	2	.. Lychnis Diurna (Red Campion).
,,	10	.. Anagallis Arvensis (Scarlet Pimpernel).
,,	10	.. Borago Officinalis (Borage).
,,	12	.. Cardamine Pratensis (Cuckoo Flower).
,,	14	.. Ranunculus Acris (Buttercup).
,,	15	.. Carduus Nutans (Musk Thistle).
,,	21	.. Sonchus Oleraceus (Sow Thistle).
,,	22	.. Ranunculus Repens (Buttercup).
,,	28	.. Stellaria Holostea (Stitchwort).
Mar.	17	.. Scilla Nutans (Hyacinth).
,,	20	.. Adoxa Moschatellina (Moschatel).

Apparently the colder winds of April and May were sufficient to retard vegetation generally, as the late Spring and Summer flowers were rather later than usual.

During the Summer Term there were three expeditions, to Colesbourne on May 22nd, to Andoversford on June 25th, and a special Botanical expedition to Tewkesbury on July 10th.

JUNIOR DEPARTMENT.

THE work of this year has been done almost entirely by one boy, P. d'A. Banks, who has beaten the records of both Senior and Junior Departments. He soon got so far ahead that it took the heart out of the other competitors. His record of 392 is remarkable, and includes many plants not observed here before. Among these may be noted: Cochlearia officinalis, Cotyledon umbilicus, Armeria plantaginea, Lithospermum officinale, Pulmonaria officinalis, which last appeared to be truly wild, though it is said to be indigenous in very few spots in the kingdom. In one place, the precise locality of which it would be unwise to mention, he found Parnassia palustris, Menyanthes trifoliata, Epipactus palustris, Pinguicula vulgaris. The number of ferns shown, too, is noticeable in a place so singularly deficient in them. The next in order were:

R. I. H. Kinloch	170
A. A. L. Roberts	157
E. A. Osborne	115
H. de C. Falle	107
G. Perkins	89
H. Perkins	85
W. R. F. Ryan	73

LIST OF FIRST FLOWERINGS.

Latin Name.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba ..	Traveller's Joy ..	July 15..	B.
Anemone Nemorosa ..	Wood Anemone ..	Mar. 2..	B.
Ranunculus Aquatilis ..	Water Crowfoot ..	May 1..	K.
,, Flammula ..	Spearwort ..	June 17..	B.
,, Ficaria ..	Celandine ..	Jan. 30..	R, Ra, Rf,
,, Sceleratus ..	Celery-leaved Crowfoot ..	June 22..	B. [Mo, K.
,, Auricomus ..	Goldilocks ..	Mar. 31..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Ranunculus Acris		.. Feb. 14..	B, Mo.
,, Repens	Common Buttercup	.. Feb. 22..	B.
,, Bulbosus		.. April 25..	St.
,, Arvensis ..	Corn Buttercup	.. May 27..	B.
,, Hederaceus ..	Water Crowfoot	.. July 19..	C.
Thalictrum Flavum ..	Meadow Rue	.. July 14..	Y, P.
Helleborus Viridis ..	Green Hellebore	.. Feb. 28..	C.I.G.
Caltha Palustris ..	Marsh Marigold	.. Feb. 28..	M, B, Mo.
Aquilegia Vulgaris ..	Columbine	.. May 29..	B.
Berberis Vulgaris ..	Common Barberry	.. May 17..	B.
Nuphar Lutea ..	Yellow Water Lily	.. June 19..	B.
Nymphæa Alba ..	White Water Lily	.. June 16..	B.
Papaver Rhoeas ..	Field Poppy	.. May 19..	B.
,, Dubium ..	Long-headed Poppy	.. May 8..	B.
,, Argemone ..	Pale Poppy	.. May 15..	S.
Chelidonium Majus ..	Common Celandine	.. May 5..	B.
Fumaria Officinalis ..	,, Fumitory	.. May 22..	B.
Corydalis Lutea ..	Yellow ,,	.. May 15..	B.
Barbarea Vulgaris ..	Yellow Rocket	.. May 18..	C.
Nasturtium Officinale ..	Common Water Cress	.. June 3..	B.
,, Palustre ..	Marsh ,,	.. July 4..	B.
,, Amphibium ..	Great ,,	.. June 28..	B.
Arabis Hirsuta ..	Hairy Rock Cress	.. May 15..	Ra, F.
Cardamine Amara ..	Large Bitter Cress		
,, Pratensis ..	Cuckoo Flower	.. Feb. 12..	B.
,, Impatiens ..	Narrow-leaved Bitter Cress	.. June 17..	B.
,, Hirsuta ..	Hairy Bitter Cress	.. Feb. 2..	B.
Hesperis Matronalis ..	Dame's Violet	.. May 29..	B.
Sisymbrium Officinale ..	Yellow Hedge Mustard	.. Mar. 1 .	Ra.
Alliaria Officinale ..	Garlic Mustard	.. Jan. 26..	B.
Erysimum Cheiranthoides..	Treacle Mustard	.. July 24..	Y.
Brassica Muralis ..	Wall Brassica	.. May 19..	B.
,, Oleracea ..	Cabbage	.. Mar. 31..	B.
,, Campestris ..	Field Brassica	.. Mar. 18..	Y.
,, Alba ..	Cultivated Mustard		
,, Sinapistrum ..	Charlock	.. May 19..	B.
,, Nigra ..	Black Mustard	.. June 30..	S.
Cochlearia Armoracia ..	Horse Radish	.. June 11..	K.
,, Officinalis ..	Scurvy Grass	.. July 1..	B.
Draba Muralis ..	Wall Whitlow Grass	.. May 4..	B.
,, Verna ..	Common ,,	.. Jan. 17..	K.
Thlaspi Arvense ..	Penny Cress	.. June 10..	B.
Capsella Bursa-pastoris ..	Shepherd's Purse	.. Jan. 17..	R, M.
Lepidium Campestre ..	Common Pepperwort	.. Feb. 10..	B.
,, Draba ..	Hoary Cress	.. May 27..	B.
,, Smithii ..	Smith's ,,	.. May 28..	Y.
Senebiera Coronopus ..	Wart Cress	.. May 11..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Arenaria Serpyllifolia ..	Thyme-leaved Sandwort ..	Feb. 15 ..	K.
,, Trinervis ..	Three-nerved ,, ..	May 5 ..	B, Ma.
Cerastium Vulgatum ..	Mouse-ear Chickweed ..	Feb. 4 ..	Pg, Ph.
,, Arvense ..	Field ,,		
Stellaria Aquatica ..	Water Starwort ..	July 10 ..	Y.
,, Media ..	Chickweed ..	Jan. 27 ..	K.
,, Uliginosa ..	Bog Starwort		
,, Graminea ..	Lesser ,, ..	June 8 ..	B.
,, Holostea ..	Common Starwort ..	Feb. 28 ..	B.
Hypericum Perforatum ..	Common St. John's Wort ..	June 28 ..	S.
,, Dubium ..	Imperforate ,, ,,		
,, Quadrangulum ..	Square-stalked ,, ,, ..	July 9 ..	B.
,, Humifusum ..	Trailing ,, ,, ..	July 24 ..	Y.
,, Pulchrum ..	Slender ,, ,,		
,, Hirsutum ..	Hairy ,, ,, ..	June 28 ..	B.
Senebiera Didyma ..	Lesser Cress ..	June 17 ..	Y.
Iberis Amara ..	Candytuft ..	July 17 ..	B.
Isatis Tinctoria ..	Woad ..	May 18 ..	L.
Reseda Luteola ..	Dyer's Weed ..	June 7 ..	B.
,, Lutea ..	Cut Leaved Mignonette ..	June 7 ..	B.
Helianthemum Vulgare ..	Rock Rose ..	May 29 ..	S, K.
Viola Odorata ..	Sweet Violet ..	Feb. 12 ..	K, B.
,, Hirta ..	Hairy ,,		
,, Canina ..	Dog ,, ..	Feb. 18 ..	B.
,, Tricolor ..	Pansy ..	April 15 ..	St.
Polygala Vulgaris ..	Milkwort ..	May 11 ..	B.
Silena Inflata ..	Bladder Campion ..	May 24 ..	Y.
Lychnis Vespertina ..	White ,, ..	May 15 ..	B.
,, Diurna ..	Red ,, ..	Feb. 2 ..	B.
,, Githago ..	Corn Cockle ..	July 1 ..	B.
,, Flos-cuculi ..	Ragged Robin ..	May 31 ..	Ra, B.
Sagina Procumbens ..	Procumbent Pearlwort ..	April 3 ..	B.
,, Nodosa ..	Knotted ,,		
Linum Catharticum ..	Purging Flax ..	May 5 ..	B.
Malva Rotundifolia ..	Dwarf Mallow ..	July 4 ..	B.
,, Sylvestris ..	Common ,, ..	June 17 ..	K, B.
,, Moschata ..	Musk ,, ..	June 28 ..	S, L, O, U.
Tilia Europea ..	Lime ..	July 9 ..	B.
Geranium Pratense ..	Meadow Cranesbill ..	June 24 ..	Y, O.
,, Robertianum ..	Herb-Robert ..	Jan. 28 ..	B.
,, Molle ..	Dove's-foot Cranesbill ..	May 3 ..	B.
,, Dissectum ..	Jagged ,, ..	May 10 ..	B.
,, Lucidum ..	Shining ,, ..	May 24 ..	B.
,, Pusillum ..	Small-flower ,, ..	July 4 ..	R.
,, Columbinum ..	Long-stalked ,, ..	June 25 ..	B.
,, Sylvaticum ..	Wood ,, ..	June 28 ..	R, B.
Erodium Cicutarium ..	Common Storksbill ..	May 19 ..	B.
Oxalis Acetosella ..	Wood Sorrel ..	April 15 ..	St.

Latin Name.	*English Name.*	*Date.*	*Record.*
Impatiens Noli-me-tangere..	Yellow Balsam	.. June 19..	B.
Acer Campestre ..	Maple	.. May 15..	Pg, Ph, B, Os.
,, Pseudo-Platanus ..	Sycamore	.. May 1..	R.B.
Ilex Aquifolium ..	Holly	.. May 15..	Ra, Pg, Ph, F.
Euonymus Europaeus ..	Spindle Tree	. May 23..	B.
Rhamnus Catharticus ..	Buckthorn	.. June 7..	B.
Ulex Europaeus ..	Gorse	.. Jan. 28..	R, B.
Genista Tinctoria ..	Dyer's Greenweed	.. July 1..	B.
Cytisus Scoparius ..	Broom	.. June 1..	B.
Ononis Arvensis ..	Rest Harrow	.. July 9..	B.
,, Campestris ..	Spiny ,,		
Medicago Sativa ..	Lucern	.. July 9..	R, F.
,, Lupulina ..	Nonsuch	.. April 25..	St.
Melilotus Officinalis ..	Melilot	.. June 1..	Os
Trifolium Arvense ..	Hare's Foot Trefoil		
,, Hybridum ..	Alsike Clover	.. July 9..	B.
,, Incarnatum ..	Crimson ,,	.. May 27..	B.
,, Pratense ..	Purple ,,	.. May 8..	Ra, B, Pr.
,, Repens ..	Dutch ,,	.. June 4..	Y.
,, Procumbens ..	Hop Trefoil	.. May 10..	S, Y, Sa.
,, Minus ..	Lesser ,,	.. May 1..	B.
Lotus Corniculatus ..	Bird's Foot Trefoil	.. May 10..	Pg, Ph, B.
Anthyllis Vulneraria ..	Kidney Vetch	.. June 7..	K.
Hippocrepis Comosa ..	Horse-Shoe Vetch	.. June 4..	B.
Onobrychis Sativa ..	Sainfoin	.. May 8..	B.
Vicia Tetrasperma ..	Slender Vetch	.. May 10..	B.
,, Hirsuta ..	Hairy ,,		
,, Cracca ..	Tufted ,,	.. June 18..	L.
,, Sylvatica ..	Wood ,,	.. July 8..	B.
,, Sepium ..	Bush ,,	.. May 1..	B.
,, Sativa ..	Common ,,	.. May 5..	B.
,, Lathyroides ..	Spring ,,	.. May 10..	*C.I.G.*
Lathyrus Pratensis ..	Yellow ,,	.. June 7..	Os.
,, Sylvestris ..	Everlasting ,,	.. July 24..	Y.
,, Macrorrhizus ..	Tuberous Bitter	.. May 3..	B.
Prunus Communis ..	Blackthorn	.. March 7..	B.
,, Cerasus ..	Cherry	.. March17..	B.
,, Padus ..	Bird Cherry	.. May 15..	B.
Spiraea Ulmaria ..	Meadowsweet	.. June 22..	B.
,, Filipendula ..	Dropwort		
Geum Urbanum ..	Wood Avens	.. Jan. 18..	Y.
Rubus Idaeus ..	Raspberry	.. June 22..	B.
,, Fruticosus ..	Common Blackberry	.. May 27..	B.
,, Corylifolius ..	Hazel Leaved ,,		
,, Caesius ..	Dewberry	.. June 12..	Y, Sa.
Fragaria Vesca ..	True Strawberry	.. Feb. 2..	R, K, Ra, Rf.

Latin Name.	*English Name.*	*Date.*	*Record.*
Potentilla Fragariastrum ..	Barren Strawberry ..	Jan. 17..	St.
,, Reptans ..	Creeping Cinquefoil ..	May 22..	Bo.
,, Tormentilla ..	Tormentil ..	May 10..	Ra, B.
,, Anserina ..	Silverweed ..	May 22..	B, Os.
Alchemilla Vulgaris ..	Lady's Mantle ..	April 7..	St.
Sanguisorba Officinalis ..	Great Burnet ..	June 12..	*J.R.W-E.*
Poterium Sanguisorba ..	Salad ,, ..	May 3..	B.
Agrimonia Eupatoria ..	Agrimony ..	June 10..	S, Y.
Rosa Canina ..	Dog Rose ..	June 7..	K, B, Os.
,, Arvensis ..	Trailing ,, ..	July 6..	B.
Pyrus Communis ..	Pear		
,, Malus ..	Apple ..	May 5..	B.
,, Aucuparia ..	Mountain Ash ..	May 11..	B.
,, Aria ..	Beam Tree ..	June 4..	K, B.
,, Torminalis ..	Service Tree		
Crataegus Oxyacantha ..	Hawthorn ..	May 1..	B.
Epilobium Angustifolium ..	Rose-bay Willow Herb ..	July 10..	Y.
,, Hirsutum ..	Hairy ,, ,, ..	July 8..	Ra, F.
,, Parviflorum ..	Small-flowered Herb ..	July 7..	B.
,, Montanum ..	Common ,, ..	June 10..	B.
,, Tetragonum ..	Square Willow ,,		
Circaea Lutetiana ..	Enchanter's Nightshade..	July 6..	B.
Oenothera Biennis ..	Evening Primrose		
Lythrum Salicaria ..	Purple Loosestrife ..	July 1..	K.
Bryonia Dioica ..	Bryony ..	May 31..	K, B.
Cotyledon Umbilicus ..	Pennywort ..	July 7..	B.
Sedum Rhodiola ..	Rose-root Stonecrop		
,, Album ..	White ,, ..	June 28..	B.
,, Acre ..	Biting ,, ..	June 12..	B.
,, Rupestre ..	Rock ,, ..	July 3..	S, O.
,, Telephium ..	Orpine ..	July 17..	B.
Semper-virens Tectorum ..	Houseleek		
Ribes Grossularia ..	Gooseberry ..	May 5..	R.
,, Rubrum ..	Red Currant ..	May 1..	B.
Saxifraga Granulata ..	Meadow Saxifrage ..	June 17..	B.
,, Tridactylites ..	Red-leaved ,, ..	May 27..	B.
,, Umbrosa ..	London Pride ..	May 15..	B.
Chrysosplenium Oppositifolium ..	Golden Saxifrage ..	Jan. 28..	B.
,, Alternifolium..	,, ,, ..	Feb. 28..	*J.R.W-E.*
Parnassia Palustris ..	Grass of Parnassus ..	Sept. 3..	B.
Sison Amomum ..	Hedge Sison ..	July 19..	B.
Carum Carvi ..	Caraway ..	July 25..	B.
,, Segetum ..	,, ..	July 17..	B.
Sanicula Europea ..	Wood Sanicle ..	May 8..	B.
Apium Graveolens ..	Celery ..	July 7..	B.
,, Nodiflorum ..	Procumbent Celery ..	July 1..	B.
Aegopodium Podagraria ..	Goutweed ..	June 1..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Petroselinum Sativa ..	Parsley		
Pimpinella Saxifraga ..	Burnt Saxifrage		
Oenanthe Fistulosa ..	Water Dropwort ..	May 28..	K.
,, Phellandrium ..	Fine Leaved ,, ..	July 1..	K.
Silaus Pratensis ..	Pepper Saxifrage ..	July 10..	S.
Aethusa Cynapium ..	Fool's Parsley ..	May 19..	B.
Angelica Sylvestris ..	Angelica ..	July 17..	B.
Pastinaca Sativa ..	Parsnip ..	May 5..	B.
Heracleum Spondylium ..	Cow Parsnip ..	May 1..	B.
Scandix Pecten-veneris ..	Shepherd's Needle ..	June 22..	B.
Bunium Flexuosum ..	Earth Nut ..	May 17..	B.
Chaerophyllum Sylvestre ..	Wild Chervil ..	Jan. 30..	B.
,, Temulum ..	Rough ,,		
,, Anthriscus..	Burr ,, ..	June 3..	B.
Caucalis Nodosa ..	Hedge Parsley, Knotted..	June 28..	B.
,, Anthriscus ..	,, ,, Upright ..	July 7..	B.
Daucus Carrota ..	Carrot ..	June 13..	B.
Conium Maculatum ..	Hemlock ..	June 28..	B.
Smyrnium Olusatrum ..	Alexanders ..	April 26..	St.
Viscum Album ..	Misletoe ..	Feb. 16..	B.
Cornus Sanguinea ..	Dogwood ..	May 19 .	C, Sa.
Adoxa Moschatellina ..	Moschatel ..	Mar. 20..	B.
Sambucus Nigra ..	Elder ..	May 23..	B.
Viburnum Lantana ..	Wayfaring Tree ..	May 8..	B.
,, Opulus ..	Guelder Rose ..	June 17..	S.
Lonicera Periclymenum ..	Honeysuckle ..	May 23..	B.
Galium Cruciatum ..	Crosswort ..	May 1..	B.
,, Verum ..	Yellow Bedstraw ..	June 22..	B.
,, Palustre ..	Marsh ,, ..	July 1..	B.
,, Uliginosum ..	Bog ,, ..	July 16..	S.
,, Saxatile ..	Rock ,, ..	July 9..	B.
,, Mollugo ..	Great Hedge Bedstraw ..	May 21..	B.
,, Aparine ..	Cleavers ..	May 22..	S, C, L, Y.
Asperula Odorata ..	Woodruff ..	May 4..	B.
,, Cynanchica ..	Squinancywort ..	July 3..	S, O.
Sherardia Arvensis ..	Field Madder ..	May 7..	B, Mo.
Valeriana Officinalis ..	Great Valerian ..	May 17..	B.
,, Dioica ..	Marsh ,, ..	May 12..	B.
Valerianella Olitoria ..	Lamb's Lettuce ..	May 15..	B.
Centranthus Ruber ..	Red Valerian ..	June 19..	B.
Dipsacus Pilosus ..	Small Teasel ..	July 16..	K, Ra, B.
,, Sylvestris ..	Common ,, ..	July 29..	B.
Scabiosa Succisa ..	Devil's-bit Scabious ..	July 9..	Ra, B.
,, Columbaria ..	Small ,, ..	July 18..	S, C.
,, Arvensis ..	Field ,, ..	June 25..	R, B.
Eupatorium Cannabinum ..	Hemp Agrimony ..	July 16..	B.
Tussilago Farfara ..	Colt's Foot ..	Jan. 20..	B.
,, Petasites ..	Butterbur ..	Jan. 28..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Gnaphalium Gallicum ..	Narrow Cudweed		
,, Sylvaticum ..	Wood Cudweed		
Inuia Dysenterica ..	Fleabane	.. Aug 14..	B.
,, Coniza ..	Ploughman's Spikenard		
,, Pulicaria ..	Small Fleabane		
,, Helenium ..	Elecampane		
Solidago Virga-aurea ..	Golden Rod	.. July 16..	Os.
Bellis Perennis ..	Daisy	.. Jan. 17..	R, K.
Chrysanthemum Leucanthemum..	Dog Daisy	.. May 11..	B.
,, Inodorum..	Feverfew	.. May 29..	C.
,, Segetum ..	Corn Marigold		
Matricaria Chamomilla ..	Camomile	.. ..	Pg, Ph, Br.
Anthemis Cotula ..	Stinking Mayweed	.. June 28..	B.
,, Arvensis ..	Corn Camomile		
Achillea Millefolium ..	Yarrow	.. June 28..	B.
,, Ptarmica ..	Sneezewort		
Tanacetum Vulgare ..	Tansy	.. July 17..	B.
Artemesia Vulgaris ..	Mugwort	.. July 29..	B.
Senecio ,, ..	Grounsel	.. Jan. 17..	R. K.
,, Sylvaticus ..	Wood Grounsel		
,, Erucifolius ..	Narrow-leaved Ragwort	.. July 7..	B.
,, Aquaticus ..	Marsh ,,	.. July 20..	*C.I.G.*
,, Jacobaea ..	Common ,,	.. July 3..	S.O.
Arctium Lappa ..	Burdock ,,	.. July 9..	Ra, B.
Serratula Tinctoria ..	Sawwort ,,	.. July 9..	B.
Carduus Nutans ..	Musk Thistle	.. Feb. 15..	B.
,, Acanthoides ..	Welted ,,	.. June 3..	Y, P.
,, Lanceolatus ..	Spear ,,	.. July 9..	B.
,, Palustris ..	Marsh ,,	.. May 25..	Y.
,, Arvensis ..	Creeping ,,	.. June 17..	B.
,, Pratensis ..	Meadow ,,	.. July 14..	*C.I.G.*
,, Acaulis ..	Dwarf ,,	.. July 9..	B.
,, Pycnocephalus ..	Slender ,,	.. July 17..	B.
,, Eriophorus ..	Woolly ,,		
Carlina Vulgaris ..	Carline ,,	.. July 13..	S, O, U.
Centaurea Nigra ..	Black Knapweed	.. June 19..	B.
,, Scabiosa ..	Scabious ,,	.. July 10..	O, U.
,, Cyanus ..	Cornflower	.. July 7..	B.
Tragopedon Pratensis ..	Goat's Beard	.. May 25..	B.
Helminthia Echioides ..	Ox-tongue	.. July 19 .	B.
Picris Hieracioides ..	Hawkweed Picris		
Leontodon Hispidus .	Hawkbit	.. June 12..	B.
Hypochaeris Radicata ..	Cat's Ear	.. May 19..	B.
Lactuca Muralis ..	Wall Lettuce	.. June 28..	B.
Sonchus Arvensis ..	Corn Sow Thistle	.. Feb. 21..	B.
,, Oleraceus ..	Common ,,	.. May 24..	*C.I.G.*
Taraxacum Dens-leonis ..	Dandelion	.. Jan. 17..	Pg, Ph.

Latin Name.	*English Name.*	*Date.*	*Record.*
Crepis Virens ..	Common Crepis	.. Jan. 17..	K, B.
,, Biennis ..	Rough ,,	.. May 19..	B.
,, Taraxacifolia ..	Beaked ,,	.. June 25..	S, Bo, Sa.
Hieracium Pilosella ..	Mouse-ear Hawkweed	.. May 19..	B.
,, Murorum ..	Wall ,,	.. May 31..	B.
,, Aurantiacum ..	Orange ,,	.. June 28..	S, Y.
Cichorium Intybus ..	Succory	.. July 9..	Ra, F.
Lapsana Communis ..	Nipplewort	.. Jan. 13..	B.
Campanula Glomerata ..	Clustered Bell Flower	.. June 25..	S, U.
,, Trachelium ..	Nettle-leaved ,,	.. July 13..	B.
,, Rapunculoides..	Creeping ,,	.. July 28..	B.
,, Rotundifolia ..	Harebell	.. July 3..	S.
,, Hybrida ..	Corn Ball Flower	.. June 17..	B.
Monotropa Hypopitys ..	Bird's Nest	.. July 7..	Y.
Primula Veris ..	Cowslip	.. Jan. 22..	B.
,, Vulgaris ..	Primrose	.. Jan. 17..	K.
,, Elatior ..	Oxlip	.. April 25..	St.
Lysimachia Vulgaris ..	Yellow Loosestrife		
,, Nemorum ..	Moneywort	.. May 15..	B.
,, Nummularia ..	Creeping Jenny	.. July 4..	B.
Anagallis Arvensis ..	Scarlet Pimpernel	.. Feb. 10..	B.
Pinguicula Vulgaris ..	Butterwort	.. June 17..	B.
Fraxinus Excelsior ..	Ash		
Ligustrum Vulgare ..	Privet	.. June 7..	B.
Vinca Major ..	Greater Periwinkle	.. June 2..	Y.
,, Minor ..	Lesser ,,	.. April 22..	St.
Erythrae Centaurium ..	Centaury	.. July 10..	S, Y.
Gentiana Campestris ..	Common Gentian	.. July 24..	Y.
Menyanthes Trifoliata ..	Buckbean	.. June 17..	B.
Limnanthemum Nymphaeoides		.. July 12..	Y. P.
Chlora Perfoliata ..	Yellowwort	.. June 17..	B.
Convolvulus Arvensis ..	Small Bind Weed	.. June 22..	B.
,, Sepium ..	Great ,,	.. July 7..	B, Y.
Echium Vulgare ..	Viper's Bugloss	.. June 12..	B.
Myosotis Palustris ..	True Forget-me-not	.. June 3..	B.
,, Arvensis ..	Field ,,	.. May 1..	B.
,, Collina ..	Early ,,	.. May 10..	S.
,, Versicolor ..	Changing ,,	.. May 18..	Bo.
,, Sylvatica ..	Wood ,,		
,, Repens ..	Creeping ,,	.. May 8..	St, K, B.
Pulmonaria Officinalis ..	Lungwort	.. May 4..	B.
Lithospermum Officinale ..	Gromwell	.. June 4..	B.
Anchusa Semper-virens ..	Alkanet	.. May 31..	B.
Symphytum Officinale ..	Comfrey	.. May 4..	K, Ra.
Borago Officinalis ..	Borage	.. Feb. 10..	B.
Cynoglossum Officinale ..	Hound's-tongue	.. June 19..	B.
Hyoscyamus Niger ..	Henbane		

Latin Name.	*English Name.*	*Date,*	*Record.*
Solanum Dulcamara	Bitter Sweet	June 4	B.
,, Nigrum	Black Nightshade	July 8	*C.I.G.*
Atropa Belladonna	Deadly ,,	June 7	K, B.
Lathraea Squamaria	Toothwort	May 8	B.
Orobanche Major	Great Broomrape	July 7	B.
Verbascum Thapsus	Common Mullein	June 12	B.
,, Nigrum	Black ,,	July 17	B.
Linaria Vulgaris	Yellow Toad Flax	June 28	S.
,, Minor	Lesser ,,	July 1	B.
,, Cymballaria	Ivy-leaved ,,	Feb. 2	B, Mo.
,, Spuria	Round ,,		
Scrophularia Nodosa	Knotted Figwort	May 17	K.
,, Aquatica	Marsh ,,	June 13	B.
Mimulus Luteus	Monkey Flower		
Digitalis Purpurea	Foxglove	June 19	B.
Veronica Serpyllifolia	Thyme-leavedSpeedwell	May 1	B.
,, Officinalis	Common ,,	June 17	B.
,, Anagallis	Water ,,	June 17	K.
,, Beccabunga	Brooklime ,,	May 27	B.
,, Montana	Mountain ,,	May 3	B.
,, Chamaedrys	Germander ,,	Jan. 30	B.
,, Hederaefolia	Ivy-leaved ,,	Feb. 10	B.
,, Agrestris	Procumbent ,,	Jan. 17	K.
,, Buxbaumii	Buxbaum's ,,	Feb. 28	St.
,, Arvensis	Wall ,,	May 15	Pg, Ph.
Bartsia Odontites	Red Bartsia	July 9	B.
Euphrasia Officinalis	Eye-bright	July 9	B.
Rhinanthus Cristi-galli	Yellow Rattle	May 24	L.
Pedicularis Palustris	Marsh Lousewort	May 15	C.
,, Sylvatica	Common ,,	May 1	B.
Melampyrum Pratense	Cow Wheat	May 21	S.
Mentha Aquatica	Water Mint		
,, Sativa	Whorled ,,	July 23	*C.I.G.*
,, Arvensis	Corn ,,	July 20	S.
,, Rotundifolia	Round-leaved Mint	July 29	B.
Thymus Serpyllum	Thyme	June 7	B.
Origanum Vulgare	Marjoram	July 15	B.
Calamintha Acinos	Basil Thyme	June 28	B.
,, Clinopodium	Wild Basil	July 15	S, C, B.
,, Officinalis	Common Calamint		
Nepeta Glechoma	Ground Ivy	Feb. 2	K.
Prunella Vulgaris	Self Heal	June 17	B, C.
Scutellaria Galericulata	Scull Cap	June 30	S.
Marrubium Vulgare	White Horehound	June 28	B.
Stachys Betonica	Betony	June 17	S.
,, Sylvatica	Hedge Woundwort	June 13	B.
,, Palustris	Marsh Woundwort	July 17	B.
,, Arvensis	Corn ,,		

Latin Name.	*English Name.*	*Date.*	*Record.*
Galeopsis Ladanum ..	Hemp Nettle	.. July 4..	*C.I.G.*
Ballota Nigra ..	Black Horehound	.. June 28..	B.
Lamium Purpureum ..	Red Dead Nettle	.. Jan. 17..	R, M.
,, Album ..	White ,,	.. Jan. 17..	R, K.
,, Maculatum ..	Spotted ,,	.. Mar. 28..	B.
,, Galeobdolon ..	Yellow ,,	.. Jan. 18..	B.
,, Amplexicaule ..	Henbit ,,	.. May 19..	B.
,, Incisum ..	Small ,,	.. Feb. 28..	B.
Teucrium Scorodonia ..	Wood Germander	.. July 14..	S, U.
Ajuga Reptans ..	Bugle	.. Feb. 2..	K.
Armeria Plantaginea ..	Plantain Thrift	.. June 8..	B.
Plantago Major ..	Great Plantain	.. June 1..	B
,, Media ..	Hoary ,,	.. June 3..	B.
,, Lanceolata ..	Ribwort ,,	.. May 1..	B.
Chenopodium Bonus-Henricus..	Good King Henry	.. May 29..	B.
,, Urbicum ..	Upright Goosefoot	.. July 17..	B.
,, Murale ..	Nettle-leaved ,,		
,, Album ..	White ,,	.. July 10..	S, Y.
Atriplex Patula ..	Orache		
Rumex Acetosa ..	Common Sorrel	.. May 8..	St.
,, Acetosella ..	Sheep's ,,	.. May 5 .	Ma.
,, Obtusifolius ..	Common Dock	.. May 15..	B.
,, Crispus ..	Curled ,,		
,, Hydropathalium ..	Water ,,	.. July 4..	B.
Polygonum Fagopyrum ..	Buckwheat	.. July 9..	S, Y, U.
,, Aviculare ..	Knot Grass	.. July 1..	B.
,, Convolvulus ..	Black Bindweed	.. July 7..	B.
,, Amphibium ..	Amphibious Bistort	.. July 3..	S.
,, Persicaria ..	Persicaria	.. May 29..	B.
,, Lapathafolium..	Pale Bistort		
Euphorbia Helioscopia ..	Sun Spurge	.. Feb. 12..	B.
,, Peplus ..	Petty ,,	.. Jan. 17..	St.
,, Exigua ..	Small ,,	.. June 13..	B.
,, Amygdaloides ..	Wood ,,	.. Mar. 28..	Bo.
,, Platyphyllos ..	Broad ,,		
,, Lathyris ..	Caper ,,	.. June 17..	B.
Mercurialis Perennis ..	Dog's Mercury	.. Jan. 18 .	Ra.
Urtica Urens ..	Small Nettle	.. June 28..	B.
,, Dioica ..	Common ,,	.. May 15..	B.
Parietaria Officinalis ..	Pellitory-of-the-Wall	.. July 9..	Bo.
Humulus Lupulus ..	Hop	.. July 9..	Ra.
Ulmus Campestris ..	Common Elm	.. Feb. 18..	Bo.
,, Montana ..	Wych ,,	.. May 9..	B.
Alnus Glutinosa ..	Alder	.. Feb. 10..	B, Mo.
Betula Alba ..	Birch	.. May 4..	Ra, F.
Carpinus Betulus ..	Hornbeam		
Corylus Avellana ..	Hazel Nut	.. Jan. 28..	R, B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Fagus Sylvatica ..	Beech	.. May 11..	B.
Quercus Robur ..	Oak	.. May 8..	B.
Salix Capræa ..	Sallow Willow	.. Jan. 28..	B.
„ Purpurea ..	Purple „		
„ Fragilis ..	Crack „	.. May 22..	C.
„ Alba ..	White „	.. May 8..	S.
Populus Nigra ..	Black Poplar		
Pinus Sylvestris ..	Scotch Fir	.. Mar. 19..	B.
Taxus Baccata ..	Yew	.. Feb. 15..	R, B.
Typha Latifolia ..	Bulrush	.. July 4..	B.
Sparganum Ramosum ..	Branched Bur-reed	.. July 1..	K.
Acorus Calamus ..	Sweet Flag		
Arum Maculatum ..	Lords and Ladies	.. April 15..	St.
Potamogeton Natans ..	Pondweed	.. July 10..	S, Y.
Butomus Umbellatus ..	Flowering Rush	.. July 14..	Y, P.
Sagittaria Sagittifolia ..	Arrowhead	.. July 4..	B.
Alisma Plantago ..	Water Plantain	.. June 28..	B.
Triglochin Palustre ..	Arrowgrass	.. June 22..	B.
Epipactis Latifolia ..	Broad-Helleborine	.. July 8 .	*C.I.G.*
„ Palustris ..	Marsh „	.. Sept. 3..	B.
Cephalanthera Grandiflora..	Large „	.. June 4..	Y.
Listera Ovata ..	Twayblade	.. May 15..	St.
Neottia Nidusavis ..	Bird's-nest Orchid	.. June 4..	B.
Orchis Morio ..	Green-winged „	.. May 11..	B.
„ Maculata ..	Spotted „	.. May 31..	K, B.
„ Mascula ..	Early Purple „	.. April 25..	St.
„ Latifolia ..	Marsh „	.. June 1..	B.
„ Pyramidalis ..	Pyramidal „	.. June 22..	S, Y, O, Sa.
„ Conopsea ..	Fragrant „	.. July 20..	B.
Habenaria Bifolia ..	Butterfly „	.. June 2..	B.
Herminium Monorchis ..	Musk „	.. July 1..	B.
Ophrys Apifera ..	Bee „	.. June 17..	B.
„ Muscifera ..	Fly „	.. June 7..	Os.
Iris Pseudacorus ..	Yellow Flag	.. June 1..	B.
Narcissus Pseudonarcissus ..	Lent Lily	.. Mar. 23..	B.
Galanthus Nivalis ..	Snowdrop	.. Feb. 13..	B.
Tamus Communis ..	Black Bryony	.. May 29..	B.
Paris Quadrifolia ..	Herb Paris	.. May 1..	B.
Polygonatum Officinale ..	Angular Solomon's Seal	.. May 8..	St.
„ Multiflorum ..	Common „	.. May 18..	B.
Convallaria Majalis ..	Lily-of-the-Valley	.. May 11..	B.
Scilla Nutans ..	Wild Hyacinth	.. Mar. 17..	B.
Ornithogalum Umbellatum..	Star of Bethlehem		
Allium Ursinum ..	Garlic	.. May 1..	R.
Juncus Communis ..	Common Rush	.. June 12..	S.
„ Articulatis ..	Jointed „		
„ Glaucus ..	Hard „	.. July 3..	S, Y.
„ Obtusiflorus ..	Obtuse „	.. July 10..	S, Y.

Latin Name.	*English Name.*	*Date.*	*Record.*
Luzula Pilosa ..	Wood Rush ..	May 22..	Y, L.
Eriophorum Polystachyum..	Cotton Grass ..	..	B.
Scirpus Sylvaticus ..	Wood Scirpus		
,, Palustris ..	Marsh ,, ..	July 12..	S, Y.
Carex Praecox ..	Early Sedge ..	May 10..	B.
,, Pendula ..	Pendulous ,, ..	..	S, Y.
,, Glauca ..	Glaucous ,, ..	May 8..	St.
Blysmus Compressus ..	Broad Blismus ..	July 10..	S, Y.
Anthoxanthum Odoratum ..	Vernal Grass ..	May 22..	L, C, Y.
Phalaris Canaricus ..	Canary ,, ..	..	B.
Phleum Pratense ..	Timothy ,, ..	..	B.
Alopecurus Pratensis ..	Meadow Foxtail Grass ..	May 18..	L.
,, Geniculatus ..	Marsh ,, ,, ..	June 17..	S.
,, Agrestis ..	Slender ,, ,, ..	..	B.
Calamagrostis Epigeios ..	Smallreed ..	July 14..	Y.
Avena Fatua ..	Wild Oat ..	..	B.
Arrhenatherum Avenaceum..	False ,, ..	..	B.
Holcus Lanatus ..	Common Holcus ..	July 10..	U.
,, Mollis ..	Soft ,, ..	..	B.
Hordeum Pratense ..	Meadow Barley ..	..	B.
,, Murinum ..	Wall ,, ..	..	*J.R.W-E.*
Lolium Perenne ..	Darnel ..	July 10..	Y.
Bromus Sterilis ..	Barren Brome ..	..	B.
Dactylis Glomerata ..	Cock's-foot Grass ..	June 12..	S, O.
Briza Media ..	Quaking ,, ..	July 19..	S, U.
Poa Annua ..	Common Meadow Grass..	Jan. 17..	S.
,, Pratensis ..	Smooth ,, ,,		
,, Nemoralis ..	Wood ,, ,,		
,, Fluitans ..	Floating ,, ,, ..	July 10..	S.
Melica Uniflora ..	Wood Melick		
Equisetum Palustre ..	Marsh Horse-tail ..	June 17..	S.
,, Arvense ..	Field ,, ..	..	B.
Ophioglossum Vulgatum ..	Adder's Tongue ..	..	B.
Polypodium Vulgare ..	Common Polypody ..	Jan. 17..	B.
,, Phegopteris ..	Beech ,, ..	..	B.
Aspidium Filix-mas ..	Male Fern ..	..	B.
,, Aculeatum ..	Prickly Shield Fern ..	June ..	B.
,, Angulare ..	,, ,, ,, ..	May 24..	B.
Asplenium Ruta-muraria ..	Wall Rue Spleenwort ..	July 14..	Y.
,, Trichomanes ..	Black ,, ..	..	B.
,, Felix-foemina ..	Lady Fern ..	..	B.
Scolopendrium Vulgare ..	Hart's Tongue ..	Jan. 17..	Y.
Ceterach Officinarum ..	Scaly Fern ..	..	B.
Pteris Aquilina ..	Bracken ..	July 24..	Y.

ENTOMOLOGICAL SECTION.

President: J. W. SALTER, ESQ.

THE new conditions under which the prize for the best collection was offered did not result in any keen competition : a return to the old rules will probably take place next term. H. F. B. S. Moore won the prize. His collection was chiefly remarkable for including a Mazarine Blue and a Camberwell Beauty —the latter a German specimen.

The expedition to Deerhurst and Wainlode Hill was disappointing from an entomological point of view—that to Birdlip was far more successful ; and we were able to get an almost unlimited supply of Marbled Whites. Collectors who want Fritillaries (High Brown, Silver Wash, and Dark Green) may like to know that there were a large number last year at the lower corner of the Chedworth Woods (to the right, just beyond Withington). The time to go for them is just at the end of the Summer term, and it is an easy distance to cycle on a half-holiday. There were a number of Purple Hair-streaks in the same place last August, but they are difficult to catch, unless taken by surprise on the low oak-clumps.

Intending collectors are asked to give in their names *early* next term.

GEOLOGICAL SECTION.

President: C. I. GARDINER, ESQ.

THE excursions to Wainlode and Whittington were the ones which proved best for the hammer-bearers. At Wainlode, where the White Lias is seen over the New Red Sandstone, several fish remains were found, but the search for these was conducted under rather difficult and dangerous conditions, owing to the perpendicularity of the section, and the possibility of immersion in the Severn if one lost one's foothold. At Whittington we went up to the exposure of the Stonesfield slate to the North where we found the typical fossil of those beds *Ostræa Acuminata* and also a specimen of *Ammonites.*

During the year several small excursions have been made to Leckhampton where fossils have been collected by Wolff, Haldinstein, and others. Several of these have been put in the Museum.

We are still in want of a good collection of fossils from the Leckhampton Hill brickpit, and as this is not a mile from the College it is to be hoped that some member of the Society will manage to procure us some specimens.

As mentioned in the Preface, a collection of fossils has been presented to the Museum by the Rev. E. Montford. The most important gaps in our general collection have been in the Primary and in the later Tertiary beds. The collection made by the Rev. E. T. Griffiths, and presented in 1897 by his son, has gone a long way to filling up the void in our collection where the Early Primary fossils should have been. This collection, every one of the fossils from which has been labelled as coming from "The Griffiths' Collection," was especially rich in Trilobites, some of the specimens from the Wenlock Limestone of Malvern and Dudley being hardly possible to beat. Other specimens from the Gault and other later beds were also of great value.

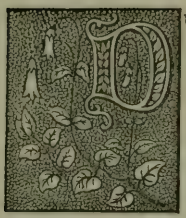
While this presentation was therefore of very great value, the Montford collection was no less welcome. For the specimens, which are not yet arranged, will be found to represent the Carboniferous Limestone remarkably well. The fish remains and plant remains being particularly good and the bivalves very well preserved. Another great addition will be the remains of Mammalia from the Norfolk Forest Bed, some of the jaw bones and deer's antlers being splendid specimens. A further account of this collection will be given next year, after the specimens have been properly displayed and named. When they are set out they will be seen to be a collection for which we owe our very deepest thanks to the Rev. E. Montford, who has so generously given it to us.

ORNITHOLOGICAL SECTION.

President - M. TANNER, ESQ.

Working Members:

LL. BULLOCK-WEBSTER	denoted by	B.W.
R. HADDEN	,,	H.
F. W. A. WELLS	,,	W.
G. YOUNG	,,	Y.
W. H. LEIR	,,	L.
A. K. HANDY	,,	Hy.
L. G. COLLETT		
W. M. CONGREVE.		



URING the season the best work done has been that of Bullock-Webster, to whom the Sectional Prize has been awarded. In addition to sending in records of eggs, members were asked to keep a notebook and there state fully the habits and appearance of birds and the nests that they found. Bullock-Webster's notebook was excellent and was made the more interesting by photographs of nests which had been given him by Dr. Wilson. Bullock-Webster says:—"Going in for the Competition has taught me much about birds and their habits." Collett's notebook also deserves special mention.

We hope that members who photograph will follow Dr. Wilson's example and take photographs of nests. Among the rarer birds the Redstart, Nuthatch and Hawfinch are becoming more common visitants. Mr. Hedley saw in a garden by St. Luke's Church, close to the busiest part of the Town, a Pied Flycatcher on April 30th and four following days, a Hawfinch in May, two Grey Wagtails by the Chelt in Turner's field on April 4th, also a Kingfisher near the same spot on Nov. 29th.

Bullock-Webster found a Cole-Tit's nest 5ft from the ground in a willow-tree, noticed a Kestrel killing a Pigeon, and during the late mild Autumn noted Sparrows building in October and a Blackbird building in November. He also found at the Crystal Palace a Pigeon's Nest composed almost entirely of hairpins and wire.

In losing Mr. Montford we have lost not only an Ornithologist whose experience and careful observation had made him a sound authority, but one who, by his real love for birds, inspired others to try and follow his example. There was hardly a day in the Spring and Summer but he would be up in the early morning and pass quiet hours away in the country, observing birds and carefully noting all that he saw. Some idea of the useful information he obtained may be got by studying the paper which he read to the Society and which was published in last year's report. His collection of eggs has been acquired by the Society and has been carefully arranged by White, who has also arranged the new case of Birds' Nests: these are a picturesque and useful addition to the Museum, and we hope that more nests will be given to the Society during this next season.

A Sectional Meeting was held during the Christmas Term, when a paper on "Migration" was read by the President. Some diagrams illustrating the subject were exhibited by W. L. Mellersh (O.C.), and Mr. Cade also gave us some interesting information.

We would draw attention to the list of birds posted in the Museum whose eggs may not be taken in Gloucestershire.

In conclusion we would ask more members to keep notebooks, starting from the beginning of the season and carefully noting everything that they see about birds, their habits, and their nests. The dates of the arrival of migratory birds should be noted and a list of dates, which may be useful for reference, is printed below.

	Name of Species.	*General Date of First Arrival.*	*Range of First Arrival.*
1.	Lapwing ..	March 2 ..	Feb. 15 to March 23.
2.	Pied Wagtail ..	„ 18 ..	„ 11 „ „ 25.
3.	Wheatear ..	„ 18 ..	Mar. 13 „ April 23.
4.	Chiffchaff ..	„ 30 ..	„ 11 „ „ 12.
5.	Ring Ousel ..	„ 30 ..	„ 14 „ „ 17.
6.	Wryneck ..	April 11 ..	„ 29 „ „ 25.
7.	Sand Martin ..	„ 14 ..	„ 4 „ May 1.
8.	Common Sandpiper	„ 14 ..	„ 7 „ April 22.
9.	Nightingale ..	„ 15 ..	„ 5 „ „ 30.
10.	Blackcap Warbler ..	„ 15 ..	„ 5 „ „ 28.
11.	Willow Warbler ..	„ 15 ..	„ 29 „ „ 28.
12.	Redstart ..	„ 17 ..	„ 26 „ May 12

	Name of Species.	*General Date of First Arrival.*	*Range of First Arrival.*
13.	Swallow ..	April 15 ..	March 27 „ May 30.
14.	Cuckoo ..	„ 16 ..	April 1 „ „ 5.
15.	Meadow Pipit ..	„ 17 ..	„ 8 „ „ 5.
16.	Tree Pipit ..	„ 18 ..	„ 8 „ „ 3.
17.	Com. Whitethroat ..	„ 19 ..	„ 4 „ „ 5.
18.	Ray's Wagtail ..	„ 19 ..	„ 3 „ „ 8.
19.	Martin ..	„ 20 ..	„ 1 „ „ 3.
20.	Whinchat ..	„ 23 ..	„ 16 „ „ 9.
21.	Reed Warbler ..	„ 23 ..	„ 12 „ „ 6.
22.	Lesser Whitethroat	„ 24 ..	„ 12 „ „ 11.
23.	Sedge Warbler ..	„ 26 ..	„ 1 „ „ 15.
24.	Garden Warbler ..	„ 26 ..	„ 12 „ „ 15.
25.	Woodwarbler ..	„ 28 ..	„ 5 „ „ 12.
26.	Grasshopper Warbler	May 2 ..	„ 16 „ „ 11.
27.	Turtle Dove ..	„ 4 ..	May 1 „ June 1.
28.	Night-Jar ..	„ 6 ..	April 15 „ May 25.
29.	Land Rail ..	„ 6 ..	„ 25 „ „ 28.
30.	Swift ..	„ 6 ..	„ 21 „ „ 31.
31.	Red-backed Shrike	„ 8 ..	„ 27 „ „ 30.
32.	Spotted Flycatcher ..	„ 11 ..	„ 13 „ „ 31.
33.	Common Snipe ..	Sept. 15 ..	Aug. 12 „ Oct. 30.
34.	Jack Snipe ..	„ 24 ..	Sept. 6 „ „ 30.
35.	Woodcock ..	Oct. 10 ..	„ 14 „ „ 31.
36.	Short-eared Owl ..	„ 10 ..	„ 30 „ „ 21.
37.	Fieldfare ..	„ 20 ..	„ 27 „ „ 13.
38.	Redwing ..	„ 22 ..	Oct. 1 „ Nov. 23.
39.	Golden Plover ..	„ 30 ..	Sept. 11 „ „ 21.
40.	Teal ..	„ 30 ..	„ 24 „ „ 26.
41.	Snow Bunting ..	Nov. 7 ..	Nov. 7 „ „ 15.
42.	Mountain Finch ..	Dec. 7 ..	„ 19 „ Dec. 20.

RECORDS IN 1898.

Name of Egg.	*Locality.*	*Date.*	*Finder.*
Song Thrush ..	Old Bath Road ..	March 30 ..	Y.
Robin	Shurdington ..	April 30 ..	B.W.
Pied Wagtail ..	„ ..	„ 30 ..	B.W.
Blackbird	„ ..	„ 30 ..	B.W.
Jackdaw	Charlton Kings ..	„ 30 ..	H.
Magpie	„ ..	„ 30 ..	H.
Crest Tit	„ ..	„ 30 ..	H.
Chaffinch	„ ..	„ 30 ..	H.
Hedge Sparrow ..	„ ..	„ 30 ..	H.
Starling	„ ..	May 1 ..	W.
Kestrel	„ ..	„ 3 ..	W.

Name of Egg.	*Locality.*	*Date.*	*Finder.*
Dipper	Charlton Kings	May 3	W.
House Sparrow	Shurdington	,, 3	B.W.
Linnet	,,	,, 3	B.W.
Tree Creeper	Charlton	,, 3	W.
Greenfinch	Old Bath Road	,, 3	Y.
Wood Pigeon	Sandy Lane	,, 6	B.W.
Bullfinch	Charlton Kings	,, 6	H.
Willow Wren	,,	,, 6	H.
Redstart	Leckhampton	,, 7	B.W.
Nuthatch	Hatherley	,, 9	B.W.
Red-legged Partridge	Charlton Kings	,, 9	H.
Moorhen	,,	,, 9	H.
Carrion Crow	Crippets	,, 10	H.
Missel Thrush	Shurdington	,, 10	B.W.
Marsh Tit	,,	,, 10	B.W.
Cole Tit	,,	,, 10	B.W.
Partridge	,,	,, 11	B.W.
Gold-Crested Wren	Chatcomb	,, 12	B.W.
Pheasant	,,	,, 12	B.W.
Lesser Whitethroat	Pigham	,, 12	W.
Reed Bunting	Shurdington	,, 12	B.W.
Common Wren	Chatcomb	,, 13	H.
Black Cap	,,	,, 16	H.
Blue Tit	,,	,, 16	H.
Tree Sparrow	,,	,, 16	H.
Yellowhammer	Cirencester Road	,, 16	B.W.
Sedge Warbler	Shurdington	,, 17	B.W.
Garden Warbler	Prestbury	,, 18	W.
Siskin	Shurdington	,, 20	L.
Skylark	Crippets	,, 23	B.W.
Sand Martin	Charlton Kings	,, 23	B.W.
Tree Pipit	,,	,, 23	B.W.
Green Woodpecker	Hatherley	,, 23	L.
Redpole	Andoversford	,, 23	Y.
Corn Crake	Cowley	,, 29	B.W.
Turtle Dove	,,	,, 29	B.W.
Corn Bunting	,,	,, 29	B.W.
House Martin	,,	,, 29	B.W.
Swallow	,,	,, 29	B.W.
Red-backed Shrike	,,	June 1	B.W.
Mealy Redpole	Andoversford	,, 1	Hy.
Whitethroat	Sandy Lane	,, 2	Y.
Chiffchaff	Crippets	,, 3	B.W.
Spotted Flycatcher	,,	,, 3	B.W.
Fire-Crested Wren	Cowley	,, 8	B.W.
Tawny Owl	Shurdington	,, 11	B.W.
Stock Dove	Cowley	,, 28	B.W.
Barn Owl	,,	,, 28	B.W.

JUNIOR DEPARTMENT.

E. Morris with 39 different species gained a prize. C. B. Hodson was a good second with 31. Among interesting finds were the Sedge Warbler within 1½ miles of Cheltenham, where it is not common. It is perhaps worthy of record that the Nightjar was heard near Teighmore in September, and that the Kingfisher was seen within 30 yards of the High Street on December 26th.

PHOTOGRAPHIC SECTION.

President: C. E. YOUNGMAN, ESQ.

MEMBERS.

THREE TERMS.

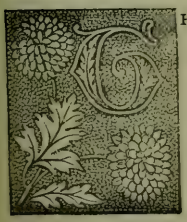
Clarke, T. H.
Collett, L. G.
Cottrill, H. L.
Holliday, J. C. H.
Johnston, A. A.
Ponsonby, H. E.
Wells, F. W. A.

TWO TERMS.

Bentley, O.
Clerk, R. V.
Crailsheim, H. R.
Davids, W. da F. B.
Dunsterville, K. F.
Garratt, T. A.
Houghton, A. T.
Mackintosh, W. A. O. C.
Mitchell-Dawson, H. C.
Morton, C. A.
Moss, W. C.
Moutray, A. G.
Payne, J. O.
Samuelson, C. L.
Symonds, F. H.
Trewheler, A.
Weddell, J. M.
Wheeler, P.
Young, J. A. R.

ONE TERM.

Armitage, F. A. W.
Brinton, C. C.
Buckby, R. G.
Cheeke, A. M. M.
Clarke, G. A. E.
Conran, W. D. B.
Cooper, W. R. F.
Dixon, W. H.
Dyer, H. G.
Fox, G.
Haldinstein, L. A.
Hare, H. A.
Ker, A. M.
Ker, C. H.
Kershaw, S. R.
Milton, T. St. M.
Moore, H. F. B. S.
Mortimore, F. R.
Nathan, E. S.
Orpen-Palmer, G. de M. H.
Pemberton, E. H.
Phillips, C. J. M.
Porteous, H. B.
Rosenberg, P.
Rosenberg, S.
Sanders, H. R.
Saunders, H. S.
Sharp, L.
Steel, B.
Stranack, C. E.
Taylor, R. Seaton
Thomson, G. M.
Trewheler, V.
Turner, G. P.
Walker, A. T.
Walker, M.
Wilkins, W. G.
Willcox, L. C.
Wilson, W. A.



THIS section has been working with appreciable enthusiasm and energy during the last year, with results that are at any rate notable in quantity. The hand-camera is perhaps too much a favourite, since the ease with which results of some sort are obtained does not sufficiently encourage the loving study and care needed for real excellence.

The suggestion in last year's report that a series of photographs of architectural subjects should be obtained has not as yet borne much fruit: convenient opportunities for such work are few during term. The Summer excursions included some of the churches round about, but only the visit to Tewkesbury had any photographic success. Yet it is very desirable that members should take up some definite line of work; and it may be possible to institute prizes next term for particular series of photographs. Flowers, animals, clouds, school games and incidents, would afford all the necessary difficulty and interest; and other subjects might be suggested. There was a member last year who had the idea of securing snapshots, one by one, of all his unconscious pastors and masters—a sufficiently terrible design, as yet happily incomplete.

A collection of prints made by members during the Summer term was exhibited at the end of the term, the prize for the best set of three going to L. C. Willcox. Only three competed for the prize. Willcox was also first-prize winner at the annual exhibition of lantern-slides held in December; for this prize, eleven competitors sent in slides, the judging of which was very kindly undertaken by Captain C. M. Harrisson, who expressed a favourable opinion of the average merit of the slides, considering that in many cases they were the work of beginners. The prize winner was fortunate in his models—a tribe of dogs, very happily posed and taken, and his work won high praise from the judge. The second prize was taken by A. A. Johnston with some pretty scenes "from foreign parts." Besides the slides of members of the section, others were lent for exhibition by W. B. Wilson, H. F. H. Coddington, Mr. Borchardt, and Capt. Harrisson. Some of the prize photographs are reproduced.

The Society's present dark room seems to grow smaller; in the heat of the Summer it was often over-full: but the wish expressed here some years ago that a better might be in the future, remains still but a pious hope.

REPORT

ON

THE COLLECTION OF JURASSIC FOSSILS

IN THE

CHELTENHAM COLLEGE MUSEUM,

BY

S. S. Buckman, F.G.S.,

Hon. Member Yorkshire Philosophical Society; Hon. Sec. Cotteswold Naturalists' Field Club; etc.

Introduction.

As Cheltenham is situated in an area world-famous for its Jurassic deposits, and for the fossils which they have yielded, it is eminently desirable that the College Museum should be able to boast a good, representative collection of Jurassic specimens. In my opinion it has such a collection now—a valuable series of fossils, not only well suited for teaching purposes, but also worthy of the attention of geologists who may visit the district for the purpose of studying its Jurassic rocks and their fauna.

To show where lies the particular interest of fossils from the Cheltenham neighbourhood, it is necessary to glance for a moment at the history of the Jurassic rocks. Cheltenham is situated on the Lias. The sea, which deposited the rocks of the Lias, not only spread over the greater part of England, but also over very

much of the Continent of Europe. So that in the main the Lias fossils found in the Cheltenham neighbourhood do not differ in any noteworthy degree from Lias fossils found in many other parts of England, France, Germany, and so forth. A collection of Lias fossils is most necessary, and that the species should be represented by fossils obtained from the neighbourhood of Cheltenham is desirable; but, broadly speaking, except for some special work, such local fossils have not a particular interest.

The case, however, is very different in regard to the Inferior Oolite rocks, whereof the Cotteswold Hills surrounding Cheltenham are mainly composed. Their fossils have a special character of their own.

Towards the close of the Liassic period the accumulation of deposits would seem to have produced, in certain places, a shallowing of the sea. More or less contemporaneously, perhaps, some earth-movements occurred, elevating certain areas of the Liassic sea-bottom, so that its rocks formed land when some of the Inferior Oolite strata were being laid down. The Cotteswold area of the Inferior Oolite sea was presumably cut off from direct communication with the South England and Continental areas of the same sea. And its eastward connection with any other sea seems to have been disturbed. So there was left to it only a northward communication—over Cheshire and beyond, past the North of Ireland. But of that we shall never know anything, for from Leckhampton Hill to the mouth of the Dee all the Inferior Oolite rocks have been destroyed by denudation during the Cainozoic Era.

There was, then, a land-locked sea of the Inferior Oolite opening towards the north, and cut off from communication to south and east by some barriers. Direct westward communication of the Jurassic sea there was not—any such communication had always been prevented by the great land-mass of Ireland, Wales and the Malverns.

In this land-locked Inferior Oolite sea special local conditions obtained. It was a region where outside influences were little felt. Consequently the species pursued their own development; and the fauna entombed in the Inferior Oolite rocks of the Cheltenham district has special local features. Many of the species are not to be found elsewhere in England or on the Continent. The best example of a local species abundant here but not to be found elsewhere is *Terebratula fimbria* of the Oolite Marl. But many

other Brachiopods tell the same tale. And another feature due to some local causes is the paucity of Ammonites, though a few miles to the south they were overwhelmingly abundant.

It is this local character which gives to a collection of Cheltenham Inferior Oolite fossils their special interest. It is the local collection which the visitor from a distance has in this case a more than usual desire to see. And though it may be outside the scope of the College Museum, yet this is what gives a particular value to any good local collection.

Towards the close of the Inferior Oolite time more general sea communication appears to have been re-established; and the special local character of the fauna is not so pronounced. But by the time of the Great Oolite there again obtained, to a certain degree, special local conditions, well exemplified in the Minchinhampton fossils, of which the Museum has a good series.

It is with the strata from the Lias to the Cornbrash that the Cheltenham district is most concerned. The Upper Jurassic deposits lie further away, and do not therefore come so well within its area. But a collection from these upper rocks is necessary to complete the series of Jurassic fossils.

Method of Arrangement.

Having given this introduction, I may now explain the method which has been adopted in the arrangement of the collection.

The Jurassic fossils have been placed in the two wall cases on the right hand side towards the further end of the Museum. Those from the lowest Jurassic rocks have been placed at the furthest end, and coming towards the door, those from higher and higher beds are found. So far as it was possible the arrangement has been both vertical and horizontal. The vertical view of the portion of the case before the observer shews the different fossils which lived during a particular time. A horizontal view shews—to the left, according to the shelf—the fossils of a particular group which preceded them in time; to the right those which succeeded. So a vertical view shows the species of any particular rock in which the student may be interested; while following a shelf from left to right he will see how different species of a particular group succeed one another in the rocks.

This is the ideal arrangement. It will be easily understood that it could not be followed out entirely. How far it has been accomplished may be seen from the annexed Diagrams, I., II.

DIAGRAM I.—FIRST CASE.

Lower Lias.	Middle Lias.	Upper Lias.
	Duplicate Bivalves (Pelecypoda)	
Large Ammonites		
Bivalves (Pelecypoda dimyaria)		Liassic Brachiopoda
Bivalves (Pelecypoda monomyaria). Gastropoda, in the front part of the shelf.		
Cephalopoda: Ammonites. Belemnites, in the front part of the shelf.		Ammonites.
Cephalopoda: Ammonites and Nautili.		
Cephalopoda: Large Ammonites and Nautili, on the floor.		

DIAGRAM II.—SECOND CASE.

Inferior Oolite	Great Oolite Series. (Fullers' Earth, Stonesfield Slate, Great Oolite, Bradford Clay, Forest Marble, and Cornbrash.)	Upper Oolites.
	Corals, at the back of the shelf. Brachiopoda, in the front part of the shelf.	
	Bivalves (Pelecypoda dimyaria).	Jurassic Echinodermata.
	Bivalves (Pelecypoda monomyaria) at the back. Gastropoda, in the front part of the shelf.	
	Cephalopoda: Ammonites and Nautili. Belemnites and small Nautili, in front part of shelf.	
	Cephalopoda: Large Ammonites and Nautili, on the floor.	

The series enclosed within square lines are those which it was not possible to bring into the special arrangement.

The Stratigraphical Terms.

A little explanation is perhaps required as regards the use of the stratigraphical terms. Just as there are differences of opinion as to the precise years of a man's life comprehended in the terms 'youth,' 'maturity' and 'old age,' so there are individual differences of opinion as to the particular rocks to be denoted Lower, Middle, or Upper Lias, and so forth. It becomes necessary then to state, in certain cases, what meaning has been attached to particular terms. Thus to the Middle Lias, following certain well-known authorities, has been given a wider significance than Marlstone : it has been intended to include some of the clay beds immediately below, wherefore the fossils from the brickyards of Cheltenham and Battledown will be found inserted as Middle Lias. But such a matter of naming does not affect their position in the case, which is designed to represent actual relative position in the rocks irrespective of any detail of nomenclature.

Then in regard to the respective limits of Upper Lias and Inferior Oolite, it has been deemed advisable to follow the recommendation of the International Geological Congress, though the division so made seems peculiarly arbitrary for this district. Thus the Cotteswolds to the south of Stroud shew a few feet of rock particularly rich in Cephalopoda ; known in consequence as the Cephalopod Bed. But the adopted line divides the lower part of this bed from the upper, placing the former to the Upper Lias, and the latter to the Inferior Oolite. Wherefore certain of the labels read thus, "Cephalopod Bed, Upper Lias," and others, "Cephalopod Bed, Inferior Oolite."

The Great Oolite Series as a major division should include the rocks from the Fullers' Earth to the Cornbrash. It has not been possible to keep the fossils from these different sub-divisions always in their true line. The reason will be seen by an inspection of the case. The bulk of the specimens come from the strata of Minchinhampton often known for distinction as "Great Oolite, proper," a sub-division of the whole Great Oolite Series. And these fossils take up what may be said to be more than their share of space. But this is a detail of the arrangement which may be easily understood.

The Localities.

It is necessary to say something concerning the localities given on the labels now attached to the fossils. In the majority of cases the specimens were without any such labels at all. But a knowledge of the specimens themselves, and of the different charact ers of the rocks in which they occur, has enabled me to assign to the specimens not only the localities from which they were obtained but also the particular rocks from which they were derived. It is not contended that these labels are in all cases correct; but they are possibly a very near approximation to the truth. In order that such suggested localities should not appear unduly authoritative, and that they should be distinguished from the actual records, they have been placed within brackets. So those names of localities which appear without brackets are transcriptions of the actual records found on the fossils; while those with brackets are set down as suggestions from my own knowledge.

Special Features of the Collection.

I would now notice some of the fossils which are well represented, or which have some particular interest. There is a good and representative series of Lias Ammonites. There are some large and magnificent Lower Lias Ammonites on the floor of the first case, particularly those of the genera, *Coroniceras*, and *Asteroceras*. The attention of the specialist may be directed to *Coroniceras gmuendense* — *Microceras Dudressieri*, a large specimen but with a poor centre — *Microderoceras Birchi*, a giant—*Asteroceras acceleratum*—*Coroniceras rotator*—*Echioceras Oosteri*, and *Echioceras tardecrescens* (Dumortier, non Hauer).

The series of Lias Belemnites is more than usually good; among them the rare *Belemnites oxyconus* may be found. And the Upper Lias section of Belemnites is, for a general collection, very well represented.

Of Liassic Nautili there are some valuable specimens. Especially may be noticed *Nautilus intermedius* of the Lower Lias.

From the Inferior Oolite there are some good polished Nautili; and there is quite a superabundance of polished Ammonites of the *Parkinsonia dorsetensis* type.

From the Great Oolite of Minchinhampton there is a *Nautilus* of very special value: it is, at least so I conclude from comparing it with the figure, the type-specimen of *Nautilus subtruncatus* figured and described by Morris and Lycett in their '*Monograph of the Great*

Oolite Mollusca.' If this identification is correct it is a most valuable fossil.

Another gem from the Great Oolite is a new species of *Nautilus* allied to *N. Baberi*, but more umbilicate.

Among the Gastropoda there is a good series from the Inferior Oolite, mostly, however, from Dorset. Attention may be drawn to examples of what are known as reversed Gastropoda, those which coil the opposite way to what is usual among these shells : such are *Cirrus* and *Hamusina*. It may be suggested that they should be specially indicated in the labelling.

The local Inferior Oolite rocks are somewhat deficient in Gastropoda, but perhaps the Museum collection is not quite so representative as it might be. The genus *Nerinaea* which is so distinctive of many horizons in the Cotteswold Inferior Oolite, might be better represented; and in displaying such specimens there should be sections shewing the internal structure. Enlarged drawings of these internal folds might be affixed to tablets of specimens with advantage.

From the Great Oolite of Minchinhampton there is a very good series of Gastropoda. The rare and striking genus *Purpuroidea* is well represented—such specimens it is almost impossible to obtain at the present day. A good *Alaria* is another noticeable fossil; and there is also a good series of those interesting shells which seem to have departed so far from the normal style of Gastropod growth—namely *Patella* and *Capulus*.

Among the Pelecypoda, more usually known as Lamellibranchiata, or Bivalves there are very good series from the Lias, from the Inferior Oolite, and from the Great Oolite.

There is almost a superabundance of some of the Liassic forms, such as *Lima gigantea*, *L. punctata*, and *Gryphæa cymbium*. There is one magnificent example of *Lima gigantea*, with both valves in an unusually good state of preservation. Of the rare *Hippopodium ponderosum* there are many fine examples. And the genus *Cardinia* shews many good specimens.

In the Inferior Oolite series there are, of a shell which it seems impossible to obtain now, more specimens than there was room to display. This is a striking *Perna* of, I believe, a new, undescribed species. It comes from Cold Comfort, where it used to be found in sufficient numbers to cause a certain rock-layer to be named the "*Perna*-bed." But at the present day we are quite unable to say where this *Perna*-bed is to be found.

In the Great Oolite section there is a good series of *Pelecypoda* from the Minchinhampton beds, making perhaps all the more noticeable a failure of specimens from other strata and other localities of the Great Oolite Series. In connexion with the Minchinhampton fossils perhaps what is most noticeable is the absence of that remarkable shell, *Pachyrisma grande*—a void very difficult to fill up.

Among Brachiopoda, there is but a small series from the Lias; but fair series from rocks from Inferior Oolite to Cornbrash, inclusive.

Mention might here be made of a matter of interest to Brachiopod specialists. In a box of odd Brachiopods in the Museum collection I found specimens of *Eudesia leckhamptonensis*, from a matrix identical with that attached to such specimens as *Eudesia cardium*, *Zeilleria digona*, *Dictyothyris coarctata* and *Pecten vagans*, which were with it. Now *Eudesia leckhamptonensis* was figured by Davidson in his Monograph of Jurassic Brachiopoda as *Waldheimia cardium* var. *leckhamptonensis*; and it was stated to have come from the "Pea grit, Leckhampton Hill," and another specimen from "Inferior Oolite, Andoversford," was "in the Museum of the Geological Survey, Jermyn Street."

But the series of shells from the same matrix in the Museum collection showed that it could only have come from the Great Oolite series. And this was confirmed by a Brachiopod specialist from Bristol, Mr. J. W. D. Marshall, who visited the Museum: he at once recognised the specimens and their matrix as being from the Great Oolite of the Bath neighbourhood. He says the bed is a little lower that what is called Bradford Clay.

The explanation of the published records is probably this—that the specimens were obtained from a dealer in Cheltenham; that he, deceived by the resemblance between their matrix and that of the Pea grit, and forgetting where he had really obtained them, gave them the recorded locality and origin.

But the name *leckhamptonensis* will remain attached to this fossil, which has no connection with Leckhampton except through this fictitious history, of which the name will be a record. It has long been a puzzle; and it is interesting to have cleared it up.

The Echinodermata are well represented by some very good specimens. And among other fossils there is a fairly large series of Corals.

Suggestions concerning the Collection.

I would now call attention to certain deficiencies in the collection. In the first place the series of specimens from Jurassic rocks superior to the Cornbrash is, with the exception of some Ammonites, and some Corals, rather too weak. It need not be expected that it should bulk as largely as the collection from Lias to Cornbrash, which may be considered the special local feature, but a somewhat more complete series is desirable.

Coming to the special Lias-Cornbrash collection, the Ammonite series from so special a local deposit as the Cotteswold Cephalopod Bed might be more increased as a feature of particular interest. Local Inferior Oolite rocks above that horizon do not yield much in the way of Ammonites; but everything which they do yield should if possible be preserved, especially when the particular bed can be recorded. It might be suggested that to supplement the Inferior Oolite series, more specimens from the contemporaneous Dorset-Somerset rocks might be added. At present the collection rather gives the idea that there was a sudden diminution of the Ammonite fauna with the close of the Lias. Locally that is true; otherwise, and not so many miles away, there was a great increase.

With the exception of good examples of *Pleurotomaria anglica*, the Lias Gasteropod collection may be described as *non est*. This deficiency might in part be remedied by investigations of the local brickyards. As the number of species of Lias Gastropods is reckoned by hundreds, the few species in the collection is hardly representative.

It is somewhat different with the Upper Lias Pelecypoda. There is almost a blank here too; but specimens to fill it would be procurable with difficulty, except in one case, namely from the local arenaceous and calcareous Upper Lias strata—known as Cotteswold Sands and Cephalopod Bed. Such strata yield somewhat plentifully, and an improvement could be effected.

Among the Inferior Oolite Pelecypoda there might be an improvement. Many of the species from Dorset-Somerset are represented by what seem poor examples to anyone acquainted with the high standard of the specimens obtainable from these deposits. Of the local examples, many suffer from not having been sufficiently developed from the matrix—the attention of a skilled operator would make a remarkable difference. He could, too, effect another important improvement, he could expose the hinge and the internal portions of the shells. This is very

necessary for any systematic study; and particularly for pointing out affinities to, and differences from, present-day representatives.

Among Brachiopods, too, it is important to have specimens showing the characters of the internal structure. On the whole perhaps the Brachiopod collection, at any rate the local series, might be improved by rather better specimens. They hardly seem up to the standard which might be expected from common shells.

It is on account of being common that Brachiopods are among the first shells to attract the student's attention. It is very unfortunate, therefore, that they should have to be placed on a shelf where they are practically out of sight. Of course the same remark, though in a less degree, applies to anything put on the upper shelves. They are unsuited to the display of any specimens on tablets. It is a question whether the Brachiopod collection might not be more satisfactorily arranged by itself.

One last suggestion I may make in regard to the Ammonites and Nautili. It is particularly important, first, that the different patterns made by the edges of their air-chambers should be clearly shown. Next, it is important that the differences in this respect which obtain among the Ammonites themselves should be indicated. A very good plan is to paint alternate chambers red and white, a work requiring considerable skill, but its effect is instructive.

Conclusion.

I have now indicated the various features of the Jurassic collection; and I have pointed out the different directions in which development might take place. It will be seen that there is on the whole a valuable collection well worthy of all the efforts that might be undertaken for its improvement.

LECTURES.

"THE ROMANCE OF ASTRONOMY."

By A. A. Bourne, Esq.

If a stone be attached to a string and then swung round there is a certain force keeping the stone in the circle it describes. In the case of the planets which are describing curves which are nearly circles, this force is the force of attraction to the Sun, and since to every force there is an equal and opposite reaction there is also a force, called the centrifrugal force tending to force the planets away from the Sun. Without this centrifrugal force the planets would be absorbed into the Sun.

The heat given out by the Sun is enormous, one square foot being able to supply 7,000 Horse Power! and with this tremendous loss of heat it is natural to look ahead and picture to ourselves the Sun a comparatively cold body. If the Sun were a solid body we might expect a few centuries to make an appreciable difference in its temperature, and the only reasonable explanation we can give of its keeping up its temperature is that it is a huge mass of glowing gas, at any rate in its outward parts. As it parts with its heat it shrinks and so the heat remaining is sufficient to keep up its temperature. The total heat is less, but the body it is heating is smaller and so the temperature is as high as before.

If we could only measure the rate of decrease of the Sun's size we could satisfy ourselves on this point, but the Sun might decrease its diameter by 86 miles and yet our telescopes would not be able to inform us of the fact. Still though it may shrink and keep its temperature up for a time, its ultimate fate is to grow cold.

Just as we have storms in our atmosphere owing to colder and therefore denser air settling down and replacing air which is less

dense because it has been warmed by contact with the Earth, so we find storms exists in the Sun's atmosphere, but of far greater magnitude. Flames are shot out from the burning envelope round the Sun travelling at the rate of more than 30 miles a second and reaching more than 10,000 miles, while their smoke may extend for 70,000 miles. These are best seen during an eclipse when the bright disc of the Sun is shut off from us by the Moon.

The Moon has always been an object of deep interest to man. It is our closest heavenly companion, If you went in a train to the Moon and travelled at the rate of 60 miles an hour you would get there in 8 months, while you would take 260 years to get to the Sun. The Moon always shows the same face to us and therefore is rotating round its axis once every time it moves round the Earth. It has no atmosphere. This we know because when the Moon passes between us and a star, the star disappears suddenly and does not first become blurred as it would if the Moon's atmosphere came between us and the star before the Moon itself intervened.

The Moon of course attracts the Earth and all things on it: when that thing happens to be water the water is piled beneath the Moon and so tides are produced. The Sun too has a similar action but the Moon tides are so much greater than the Sun tides that for our present purpose we may neglect the latter. Owing to the huge body of water being pulled round by the Moon a certain amount of friction is set up which tends to check the motion of the Earth, and this action of the Moon on the Earth is accompanied by an action of the Earth on the Moon, and as our speed of rotation gets slower the Moon gets further off. Follow this line of reasoning backwards instead of pursuing it forwards and it is easy to see that long, long ago the two bodies were close together and in very rapid movement, the Moon rushing round the Earth and very close to it, the Earth at the same time spinning round on its own axis at a very rapid rate.

Before that it seems probable that they were together as a mass of nebulous matter, such as we can see in Andromeda or Orion now, a mass of glowing gas which as it cooled shrunk till it condensed to a more or less spherical ball. Along some line of weakness a rupture occurred and a part of our mass got ejected into space and became our satellite, the Moon. The subsequent difference in the histories of the two bodies is simply due to their difference in size.

The Earth as it cooled formed a solid crust, which got repeatedly broken up by the internal attraction, but it was formed again and again, until its thickness was such that it remained permanent, after-

wards clouds condensed on its surface and so the sea was formed.

In the Moon the same course of events occurred, but owing to the smallness in size of the Moon the internal pull on the solid crust was soon insufficient to break it up and then the still cooling interior shrank away from the solid crust, and when afterwards the latter developed weak places the waters rushed in, came into contact with the heated interior and the resulting explosions, whose magnitude we can scarcely conceive, rent the crust and left it permanently altered, so that at the present day, when we look at the Moon, its surface looks just like one mass of ancient volcanoes.

The Planets are to be distinguished from other stars by the fact that they appear to wander about in the heavens, new ones are being continually being discovered, the last one being found in Germany last August.

Saturn is one of the most beautiful of the planets on account of its rings. For a long time the composition of these rings was not proved. If they were solid rings they would have to be far stronger than anything we know of on Earth, or they would get ruptured as they swung round the planet. And we now know that they are really composed of a large number of small bodies and not of one solid mass. If they were a solid the outer rim would have to be travelling at a faster rate than the inner one for the ring to keep together. But if they were a number of little bodies, the inner ones would have to be rotating faster than the outer ones, for they are nearer to the planet and therefore the attraction towards the planet is greater, and so in order to prevent themselves being drawn in they must be swinging round at a very rapid pace and faster than the outer rim.

Now by means of an instrument, called the Spectrometer, we can tell whether a body is approaching or departing from us and also its speed, by observing the light it gives out during its motion. And the Spectrometer informs us that the inner parts of Saturn's rings are going round faster than the outer parts and consequently the rings cannot be solid but must be formed by a number of little bodies all sweeping round their planet.

RECEIPTS.	£	s.	d.
Balance from 1897	32	3	8
April—Subscriptions	6	15	0
„ Dark Room Subscriptions ...	2	17	6
July—Subscriptions	5	7	0
„ Dark Room Subscriptions ...	12	0	0
Dec.—Subscriptions	6	7	0
„ Dark Room Subscriptions ...	8	10	0
	£74	0	2

W. M. BAKER, *Hon. Treas.*

EXPENSES.	£	s.	d.
March—Hospital, use of 'X' rays apparatus	3	3	0
„ College Servants Attendance at Lectures	0	7	6
April—Printing	0	5	0
„ Postage of Reports	0	2	8
„ Lecture Expenses	0	10	11
„ Contribution to Montford Egg Collection	2	0	0
„ King (Dark Room Attendance) ...	3	3	0
„ „ (Lectures)	0	7	6
June—1st (Colesbourne) Expedition ...	4	5	3
„ Towels for Dark Room (Mills) ...	0	4	6
July—Mr. Buckman, arranging fossils ...	10	0	0
„ Prizes (Webb and Norton) ...	0	13	8
„ King (Dark Room Attendance) ...	5	12	0
„ 2nd Excursion	4	5	6
„ 3rd „	3	7	6
„ 4th „	2	19	0
„ Prize for Photography	0	10	0
Dec.—2 Prizes „ „ ..	1	10	0
„ King (Attendance at Lectures) ...	0	7	6
„ „ (Dark Room Attendance) ...	4	1	0
„ Christmas Term Expenses ...	0	19	0
„ Darter (Prizes)	0	18	0
„ 31st, Balance in hand	24	7	8
	£74	0	2

Audited and found correct, February 1st, 1899.
A. A. BOURNE,

CHELTENHAM COLLEGE

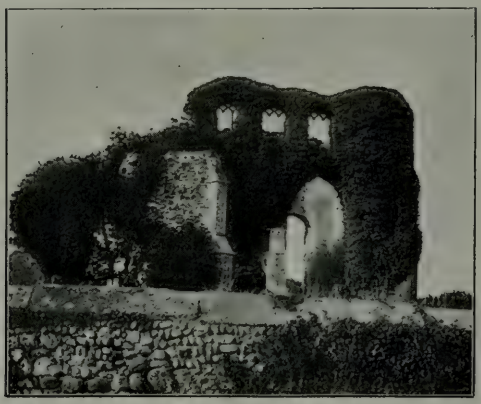
Natural History Society

REPORT FOR THE YEAR 1899.

SUMPTIBUS EDITORUM CHELTONIENSIUM.

CHELTENHAM:
DARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

BRITISH MUSEUM



Walberswick Church—by J. D. Campbell.

Tewkesbury—by G. P. Oppenheim.

Ashchurch Station—by G. P. Oppenheim.

Pelicans—by J. D. Campbell.

Statue at Dunkirk—by G. P. Oppenheim.

BRITISH MUSEUM
NATURAL HISTORY

CHELTENHAM COLLEGE

NATURAL HISTORY SOCIETY

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1899

Sumptibus Editorum Cheltoniensium.

CHELTENHAM :
JOHN DARTER, COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

CHELTENHAM:
THOMAS HAILING, PRINTER, THE OXFORD PRESS.
1800.

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PREFACE.

THE past year has been marked by the creation of a new section, and we must thank Mr. Scott for having made the arrangements for it and for looking after it. Its object is to study the minute under the microscope. We would especially urge all those who are intending to enter the medical profession to join it. They will have to become familiar with microscope work and the sooner the better.

Further advance has been made in the arrangement of the fossils in the museum, and as during the year two collections were given to us, these are being incorporated in the general collection. Mrs. Falkener has given us a large collection of fossils, chiefly Jurassic and Cretaceous, and also some minerals. Each specimen as it is placed in the general collection has attached to the board on which it is mounted a label, on which is printed "Falkener Collection," so that any one can see what beautiful specimens belonged to this collection. They form a very valuable addition to our collections.

Mr. Buckman, who arranged our Jurassic fossils for us, and who therefore knows the weak spots in our collection of specimens from that geological period, has very kindly given us several Jurassic fossils. These will still further enhance the value of our collection of local fossils, the point in which our Museum should be strongest.

We print with great pleasure in the report, several extracts from "Notes on Birds," which J. H. Cardew sent in for the Ornithological Section's prize. It is a pity we have not space to print all his notes, but the extracts chosen, show what good work he has done during the year, and that we have a worthy successor to Bullock-Webster, many of whose notes we printed last year, in the Society's Report.

The Lectures and Excursions of the Society have been very well attended, the excursions being so popular that a fourth one was arranged for during the Summer term, in order that any member might have a chance of going on three at least.

It is proposed to have an excursion, next Summer, to visit the excavations at Hailes. We have to thank the Rev. W. Bazeley for coming over and lecturing to us on these excavations, which were carried out last Autumn, and superintended by him, and he very kindly offered to show us over the excavations if we came next Summer. A unanimous vote of the Society on the occasion of his lecture gave the fund which is being raised to carry on these excavations a grant from the Society's funds.

The great want of the Society, at present, seems to be a new Dark Room. The numbers of the Photographic Section have grown so large of late that the present Dark Room is too small for the Section, and moreover it is so damp that it is impossible to keep plates in it.

We have to thank very heartily the various people who have made presentations to the Museum during the year. A list of these presentations will be found in the Report.

THE COUNCIL, 1899.

President...	THE PRINCIPAL.
Vice-President	REV. J. MUGLISTON.
Treasurer	W. M. BAKER, ESQ.
Secretary...	C. I. GARDINER, ESQ.
President of Archæological Section...	A. S. OWEN, ESQ.
President of Botanical Section ...	REV. J. R. WYNNE-EDWARDS.
President of Entomological Section...	J. C. SALTER, ESQ.
President of Geological Section ...	C. I. GARDINER, ESQ.
President of Microscopical Section...	S. D. SCOTT, ESQ.
President of Ornithological Section...	M. TANNER, ESQ.
President of Photographic Section ...	C. E. YOUNGMAN, ESQ.
President of Junior School ...	F. J. CADE, ESQ.

RULES.

1.—That this Society be called The Cheltenham College Natural History Society, and have for its object the promotion of the study of Natural History.

2.—That Ordinary Meetings of this Society be held on Fridays once in three weeks, at 5.30 p.m., or at such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal subscriptions, be exempt from any further payment.

6.—That any Member whose Subscription shall be a whole term in arrears, shall cease to be a Member of the Society.

7.—That Members be encouraged to join Sections for the more accurate study of the different branches of Natural History : that the formation of these be arranged, and the work settled at the first Meeting of each term : that each Section be under a President, who is responsible for its meetings and organisation, and that a Secretary be appointed by each Section to keep minutes of its proceedings, of which a summary shall appear in the report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the Presidents

and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President shall preside, or, in his absence, a member of the Council.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of the two Auditors, to be appointed at the last Meeting of each year, be laid on the table at the first Meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a Special or Ordinary Meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these Rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.

Cheltenham College Natural History Society.

President - - - THE PRINCIPAL.

Secretary - - - C. I. GARDINER, ESQ.

Treasurer - - W. M. BAKER, ESQ.

LIST OF MEMBERS.

EASTER TERM, 1899.

LIFE MEMBERS.

Balfour, J.
Black
Bouch
Collett, L. G.
Congreve, F. L.
Copland
Currie
Dodington
Dunsterville, K.
Fitzherbert
Footner
Fort
Fry
Grieve
Hare
Harrison, A.
Hawkins
Hill-Thomson
Hodson
Houston
Kent
Lathbury
Lee
Lloyd
Mackie
Macrea
Martin, N.
Maitland
Milton, T.
Moore
Moss
Murray, G. M.
Murray, M.
Neame
Noad
Oliver
Oppenheim, G.
Peel
Penny, H.
Ponsonby
Roberts
Samuelson
Saunders, H. R.
Sharp
Shaw, G. H.
Sington
Sparrow
Spencer
Stranack
Stuart
Thomas
Tillard
Upton
White
Whittuck
Wilson
Wells
Wolff

ORDINARY MEMBERS.

Adams
Adamthwaite
Anderson
Armitage
Aston
Bake
Balfour, H.
Beazeley
Begbie
Bickerdike
Bignell
Bird
Blockley
Blundell
Bride
Brinton
Burke, E.
Burke, H.
Campbell, J. Donald
Cardew, E. B.
Cardew, J. H.
Chapman, H. A. W.
Chapman, F. L. B.
Chard
Clark, G. M.
Clarke, G.
Clarke, G. A. E.
Clarke, R. C.
Clarke, T.
Collett, S.
Congreve, W. M.
Cooper
Cooper
Corfield
Crailsheim
Crosse
Cox
Davids
Dicken
Dickinson
Dill
Dixon
Dobell
Dunsterville, G.
Earle
Edwards
Elworthy
Exham
Ezra, D.
Ezra, E.
Ferguson
Flack
Fowke
Fox
Frazer
Freeland
Furnell
Furse
Gale
Gard'ner
Gardiner
Gatacre, G.
Glanvile
Griffiths
Grylls
Guthrie
Hadden
Haldinstein
Hamilton
Handley
Handy
Harries
Holford
Holliday
Howlden
James
Jenkins
Johnston
Ker
Kershaw
King
Knowling
Lamotte
Lemon
Lesser
Lewis
Locke
Long
Lowther
Macalister
Macintosh
Macpherson
Maitland-King
Martin, A.
Meyer
Milton, R.
Mitchell-Dawson, D.
Mitchell-Dawson, H.
Mortimore
Moore
Moutray
Nathan
Nicholls
Nicholson
Norton
Oakey
Ogle
Oppenheim, D.
Payne
Penny, R.
Perkins
Phillips
Piggott
Porteous
Porter
de Perigny
Quill
Raper
Redfern
Rendle
Roberts, A.
Robinson
Salter
Sawyer
Seaton-Taylor
Shaw, G. M.
Sherwill
Sidebottom
Simpson
Sloan
Solomon, D.
Solomon, L.
Steel
Stephen
Stockwell
Studd, E. G.
Talbot
Thrupp
Thwaite, H.
Torr
Trewheler
Turner
Tyzack
Watson-Smyth
Wells
Williams

SUMMER TERM, 1899.

LIFE MEMBERS.

Balfour, J.
Bickerdike
Bird
Black
Bouch
Bride
Brinton
Campbell, J. Donald
Clarke, G.
Collett, L. G.
Congreve, F. L.
Congreve, W. M.
Copland
Crosse
Currie
Dicken
Dobell
Dodington
Dunsterville, K.
Fitzherbert
Fort
Fowke
Fry
Greer, C. I.
Grieve
Handley
Hare
Harrison, A.
Hawkins
Hill-Thomson
Hodson
Holford
Holliday
Houston
Jenkins
Johnston, A.
Kent
Lee
Lloyd
Mackie
Macrae
Martin, A.
Martin, N.
Maitland
Milton, T.
Moore
Mortimore
Murray, G. M.
Neame
Noad
Oakey
Oliver
Oppenheim, G.
Peel
Penny, H.
Phillips
Piggott
Ponsonby
Roberts
Samuelson
Sanders
Sawyer
Sharp
Shaw, G. H.
Sington
Sloan
Sparrow
Spencer
Stephen
Stranack
Stuart
Thomas
Thwaite
Tillard
Unett
Upton
White
Whittuck
Wilkins
Wilson
Wells
Wolff

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Adams
Adamthwaite
Allan
Allen
Anderson
Armitage
Aston
Bake
Balfour, H.
Beazeley
Begbie
Bignell
Blockley
Blundell
Browning
Burke, E.
Burke, H.
Capel-Davies
Cardew, E. B.
Cardew, J. H.
Chapman
Chapman
Chard
Cheeke
Clark, G. M.
Clarke, G.
Clarke, G. A. E.
Clarke, R. C.
Clarke, T.
Collett, S.
Congreve, C. R
Cooper
Cooper
Corfield
Crailsheim
Crosse
Courtney
Cox
Davids
Davidson
Dickinson
Dill
Dixon
Dunsterville, G.
Earle

Edwards
Elworthy
Exham
Ezra, D.
Ezra, E.
Ferguson
Flack
Fox
Fraser
Freeland
Furnell
Furse
Gale
Gard'ner
Gardiner
Gatacre, G.
Glanvile
Griffiths
Grylls
Guthrie
Hadden
Handy
Haldinstein
Hamilton
Harries
Higgon
Howell
Howlden
James
Ker
Kershaw
King
Knowling
Kruger
Laming
Lamotte
Lemon
Lesser
Lewis
Lock
Long
Lowther
Macalister
Macintosh
Macpherson
McCulloch
Maitland-King
Meyer
Milton, R.
Mitchell-Dawson, D.
Mitchell-Dawson, H.
Moore
Moores
Morris
Murray, G.
Moutray
Nathan
Nicholls
Nicholson
Norton
Ogle
Oppenheim, D.
Orr-Ewing
Payne
Penny, R.
Perkins
Porteous
Porter
de Perigny
Quill
Raper
Redfern
Rendle
Roberts, A.
Robinson
Salter
Saunderson
Seaton-Taylor
Shaw, G. M.
Sherwill
Simpson
Solomon, D.
Solomon, L.
Steel
Stockwell
Studd, E. G.
Talbot
Thwaite
Torr
Trewheler
Turner
Tyzack
Watson-Smyth
Wells
Williams
Wilson

MICHAELMAS TERM, 1899.

LIFE MEMBERS.

Adams
Armitage
Balfour, J.
Bickerdike
Bird
Black
Bouch
Bride
Brinton
Campbell, J. Donald
Clark, G. M.
Clarke, G.
Collett, S.
Congreve, F. L.
Congreve, W. M.
Copland
Corfield
Crailsheim
Crosse
Currie
Davids
Dicken
Dixon, O.
Dobell
Dunn
Dunsterville, K.
Fitzherbert
Fort
Fowke
Fox
Fraser
Fry
Gardiner

Glanvile
Greer, C. I.
Hadden
Haldinstein
Handley
Hare
Harrison, A.
Hawkins
Hodson
Holford
Holliday
Jenkins
Johnston, A.
Kent
Lee
Lloyd
Long
Macalister
Mackie
Martin, N.
Milton, R.
Milton, T.
Moore
Neame
Nicholls
Oakey
Oliver
Oppenheim, G.
Peel
Penny, H.
Penny, R.
Phillips
Piggott
Ponsonby
Radcliffe
Raper
Salter
Sanders, H. R.
Sawyer
Seaton-Taylor
Sharp
Shaw, G. H.
Sherwill
Sington
Sloan
Spencer
Stephen
Stranack
Thomas
Tillard
Torr
Unett
White
Whittuck
Wilkins
Wilson
Wells
Wolff
Young, J. A. R.
Young, C. A. E.

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Beazeley
Begbie
Bignell
Blockley
Blundell
Bourke
Browning
Burke, E.
Burke, H.
Capel-Davies
Cardew, E. B.
Cardew, J. H.
Chapman
Chapman
Chard
Cheeke
Clarke, G. A. E.
Clarke, R. C.
Clarke, T.
Cohen, D.
Cohen, E.
Collett, S.
Congreve, C. R.
Conran
Cooper
Cooper
Courtney
Cox
Davidson
Davies
Davis, F.
Davis, W.
Dickinson
Dill
Dunsterville, G.
Earle
Edwards
Elworthy
Exham
Ezra, D.
Ezra, E.
Ferguson
Flack
Freeland
Furnell
Furse
Gale
Gatacre
Gatacre, G.
Greer, T.
Griffiths
Grylls
Guthrie
Handy
Hamilton
Harington
Harries
Herbert
Hetherington
Higgon
Hill
Howe
Howell
Howlden
James
Ker
Kershaw
King
Klein
Knowling
Kruger
Laming

Lamotte
Lawford
Lawson
Lemon
Lesser
Lewis
Lock
Lowther
Macintosh
Macpherson
Maitland-King
Maxwell
McCulloch
Meyer
Mitchell-Dawson, D.
Mitchell-Dawson, H.
Montagu
Moores
Morris
Murray, G.
Moutray
Nathan
Nicholson
Norton
O'Donel
Ogle
Oppenheim, D.
Orr-Ewing
Payne
Pemberton
Perkins
Porteous
Porter
Quill
Radcliffe, F. V.
Redfern
Rendle
Roberts, A.
Robinson
Russell
Samuelson, E.
Samuelson, V.
Saunderson
Shaw, G. M.
Simpson
Solomon, D.
Solomon, L.
Steel
Stockwell
Studd, E. G.
Talbot
Thwaite
Trewheler
Turner
Tyzack
Vicat
Watson-Smyth
Wheeler
Williams
Willoughby

LECTURES AND EXCURSIONS.

Feb. 9 ... Lecture on Meteorology, by M. Ll. Evans, Esq., O.C.

Feb. 23 ... Lecture on Animal Coloration, by S. D. Scott, Esq.

May 26 ... Excursion to Birdlip.

June 9 ... Excursion to Colesbourne.

June 26 ... Excursion to Wainlode.

July 18 ... Excursion to Andoversford.

Oct. 26 ... Lecture on The Deep Blue Sea, by C. I. Gardiner, Esq.

Nov 17 ... Lecture on Indian Architecture, by S. H. Reynolds, Esq.

Dec. 5 ... Lecture on Hailes Abbey, by Rev. W. Bazeley, O.C.

ARTICLES PRESENTED TO MUSEUM

DURING THE YEAR.

Date.	*Articles.*	*Presented by.*
Jan. 28	Dervish's Sword, Spears, and Bernous, from Omdurman	Clinton E. Dawkins, Esq., O.C.
„ 28	Mandrin Gold Fish	Mr. R. A. Watkins.
„ 30	Cocoon of Lesser Moth ...	Ll. Bullock-Webster, Esq., O.C.
Feb. 2	Two Grass-body Dresses (S. India)	J. Rohde, Esq., O.C.
„ 18	Calamites	R. C. Howlden, C.
Mar. 10	Five Spears, Knife, Sheath, Shield, and Ear-rings ...	T. A. Vans-Best, Esq.
„ 17	Moon Stone	—. Clay, Esq.
April 3	Four Travancore Coins ...	J. Rohde, Esq., O.C.
„ 28	Two Green Parrots and Apteryx	Mr. Banning.
May 1	Fossils and Minerals	Mrs. Falkener.
„ 1	Dervish's Saddle, from Omdurman	W. H. C. Despard, Esq., O.C.
„ 8	Four Birds' Nests	J. H. Cardew, C.
„ 22	Tussock Moth	R. Dixon, Esq., O.C.
„ 24	Programme...	Ll. Bullock-Webster, Esq., O.C.
June 1	Nest of Long-tailed Tit ...	Miss M. Cox.
„ 3	Nest of Nightingale	Miss M. Edmeades.
„ 7	Birds from Brazil	Ll. Bullock-Webster, Esq., O.C.
„ 10	Nest of Lesser Redpole ...	W. Chard, C.

Date.	*Article.*	*Presented by*
June 20	Oolite Fossils	S. S. Buckman, Esq.
July 7	Nest of Willow Wren... ...	W. W. Wilson, C.
„ 15	Egg of Siskin	R. V. D. Holwell, C.
August 9	Old Terra Cotta from Italy...	Hon. W. G. Thesiger, O.C.
„ 9	Tail of Lyre Bird	Rev. P. Hattersley Smith.
Sept. 9	Dried Fruit and Newspaper from Siam...	H. D. Willis, Esq., O.C.
„ 22	Skin of Boa	—. Studd, Esq., O.C.
„ 24	Skull of Leopard	Evelyn Gray, Esq., O.C.
„ 27	Butterflies from S. America	T. G. Blackmore, Esq., O.C.
Octo. 7	Stuffed Jay...	J. Flack, C.
Nov. 4	Burmese Butterflies	Mrs. Banks.
„ 20	Collection of British Birds Eggs	T. G. Mellersh, Esq.
„ 27	Stuffed Redstart...	W. Dixon, C.
Dec. 12	Several Articles, including Saw of Saw Fish and Nest of Weaver Bird...	Dr. Phillips.
„ 12	Seven Birds from India ...	—. Browne, Esq.
„ 12	Ammonites...	Mr. Butler.

Reports from Sections.

ARCHAEOLOGICAL SECTION.

President: A. S. Owen, Esq.

MEMBERS :

T. Bouch.
J. G. Black.
J. R. Balfour.
H. R. C. Balfour.
E. A. H. James.
E. C. Willoughby.
G. R. Murray (Jan.-July—Sec.)
R. Glanvile (Sept.-Dec.—Sec.)

In 1898 this section had especial opportunities at the general meetings; this year none of the excursions gave the archaeologist much of a chance, but two of the lectures have been on subjects which should be of special interest to our section, namely Mr. S. H. Reynolds' lecture on Indian Architecture, which was illustrated by most beautiful lantern slides, and the extremely interesting lecture on the recent excavations at Hailes Abbey, delivered by the Rev. W. Bazeley, O.C. In connection with the last it may be stated that it is hoped during the present year to let members of the N.H.S. see something of the excavations in actual operation.

Two sectional excursions were made to Southam de-la-Bere, one in the Summer, and the other in the Autumn term. In the first we investigated the little Norman Church, restored by Lord Ellenborough and filled with memorials to his friends, and the two ancient and extremely picturesque farmhouses. In the second, by the kindness of the trustees, we were enabled to go over the mansion and see the various treasures it contained. We also had time to visit the interesting Church at Bishop's Cleeve which has several features of antiquarian interest.

BOTANICAL SECTION.

SENIOR.

President: Rev. J. R. Wynne-Edwards.

Secretary: C. H. C. Noad (1).

JUNIOR.

President: F. J. Cade, Esq.

WORKING MEMBERS.

SENIOR.

Banks, P. D'A. (*B*) (5).
Congreve, C. (*Cc.*)
Congreve W. M. (*C.*)
Currie, M. M. L. (2).
Grant, E. B. (*G.*)
Hodson, T. A. (2)
Kinloch, R. I. (*K.*)
Kruger, C. H. (*Kr.*)
Ogle, H. (*O.*)
Passingham, C. W. (*Ps.*)
Perkins, G. (*Pe.*)
Pottinger, J. A. (*P.*)
Redfern, J. (*Re.*)
Roberts, A. A. (*R.*) (4).
Salter, W. E. (*S.*)
Sanders, H. R. (3.)
Sawyer, R. E. (*Sa.*)
Turner, R. M. (*T.*)
Unett, W, H. (*U.*)
Walter, A. T. (*W.*)
Young, G.A.W. (*Y.*)(3).

(1) Winner of Prize in 1895.
(2) ,, ,, 1896.
(3) ,, ,, 1898.
(4) ,, ,, 1899.
(5) ,, Junior Prize in 1898.

The initials in Italics refer to the list of records.

SENIOR DEPARTMENT.

We have to record the results of a very successful season, although there have not been as many additions as usual to our list of local flowers, which is now becoming fairly complete. The competition for the prize was very close, and would have been still closer if the Congreves had not

been absent from College for a fortnight. There were seven competitors, of whom the following got over 50 specimens.

A. A. Roberts	347	J. A. Pottinger	72
G. A. W. Young	343	R. I. Kinloch	71
W. M. Congreve	308	C. H. Kruger	65
C. Congreve	243	A. T. Walter	60
R. M. Turner	164	J. Redfern	52
E. B. Grant	87		

There were four expeditions during the Summer term.

On Friday, May 26th, we went to Birdlip, 107 species were found in all, including Atropa Belladonna (Deadly Nightshade), but we failed to find the Fly Orchid.

On Friday, June 9th, there was an expedition to Hilcot and Colesbourne, when Convallaria Majolis (Lily of the Valley), Cephalanthera Grandiflora (White Helleborine), Polygonatum Angulare (Solomon's Seal) and Valeriana Dioica (Marsh Valerian) were found.

On Saturday, July 8th, we went to Wainlode Hill. The Botanical Section "detrained" at Coombe Hill and walked along the old canal to the Severn, and several additions were made to our list of local plants, Cuscuta Europaea (Greater Dodder), Lithospermum Arvense (Corn Gromwell) and Hydrocharis Morsus-ranae (Frogbit). The last grows very plentifully but somehow had been overlooked. Oenanthe Phellandrium (Fine-leaved Water Dropwort), Butomus Umbellatus (Flowering Rush) and Scutellaria Galericulata (Scull Cap) were also found. One hundred and thirty-six in all were recorded.

On Tuesday, July 18th, we drove to Andoversford and walked through Sevenhampton and Puckham Woods. No less than 178 species were found, including Ranunculus Flammula (Spearwort), Geranium Columbinum (Long-stalked Cranesbill), Carduus Eriophorus (Woolly Thistle), Campanula Hybrida (Corn Bell Flower), Epipactis Palustris (Marsh Helleborine) and Eriophorum Polystachyum (Cotton Grass).

The number of plants on our list is now 540.

JUNIOR DEPARTMENT.

The records were unfortunately lost, so that we are unable to give any report of the work done.

LIST OF FLOWERS, WITH DATES OF FIRST BLOOM.

Latin Name.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba ..	Traveller's Joy ..	July 16..	Y, R.
Anemone Nemorosa ..	Wood Anemone ..	Mar. 28..	W.
Ranunculus Aquatilis ..	Water Crowfoot ..	May 10..	Y.
,, Flammula ..	Spearwort ..	June 25 .	R.
,, Ficaria ..	Celandine ..	Feb. 28..	R.
,, Sceleratus ..	Celery-leaved Crowfoot..	June 1..	R.
,, Auricomus ..	Goldilocks ..	May 6..	K.
,, Acris		April 30..	C.
,, Repens	Common Buttercup ..	May 15..	T.
,, Bulbosus		April 15..	Y, C.
,, Arvensis ..	Corn Buttercup ..	June 25..	Y, C, Cc,
,, Hederaceus ..	Water Crowfoot ..	May 20..	R. [Ps.
Thalictrum Flavum ..	Meadow Rue		
Helleborus Viridis ..	Green Hellebore ..	Feb. 25..	*J.R.W.E.*
Caltha Palustris ..	Marsh Marigold ..	Mar. 31..	Y.
Aquilegia Vulgaris ..	Columbine		
Berberis Vulgaris ..	Common Barberry		
Nuphar Lutea ..	Yellow Water Lily ..	June 1..	R.
Nymphæa Alba ..	White Water Lily		
Papaver Rhoeas ..	Field Poppy ..	June 1..	R.
,, Dubium ..	Long-headed Poppy ..	June 18..	Y.
,, Argemone ..	Pale Poppy ..	May 12..	Y.
Chelidonium Majus ..	Common Celandine ..	May 10 .	C.
Fumaria Officinalis ..	,, Fumitory ..	June 11..	R.
Corydalis Lutea ..	Yellow ,, ..	July 2..	Y.
Cheiranthus Cheiri ..	Wall Flower ..	June 1..	R.
Barbarea Vulgaris ..	Yellow Rocket ..	May 11..	C.
Nasturtium Officinale ..	Common Water Cress ..	May 26..	Y.
,, Palustre ..	Marsh ,, ..	July 8..	Y, R, C.
,, Amphibium ..	Great ,, ..	June 16..	R, C.
Arabis Hirsuta ..	Hairy Rock Cress ..	May 15..	C.
Cardamine Amara ..	Large Bitter Cress ..	May 26 .	Y, R.
,, Pratensis ..	Cuckoo Flower ..	Mar. 8..	Y, T, W.
,, Impatiens ..	Narrow-leaved Bitter Cress		
,, Hirsuta ..	Hairy Bitter Cress ..	Mar. 14..	K.
Hesperis Matronalis ..	Dame's Violet		
Sisymbrium Officinale ..	Yellow Hedge Mustard..	May 21..	C.
Alliaria Officinale ..	Garlic Mustard ..	May 6..	K.
Erysimum Cheiranthoides..	Treacle Mustard ..	July 27..	R.
Brassica Muralis ..	Wall Brassica ..	May 9..	C.
,, Oleracea ..	Cabbage ..	June 9..	Y, T, C,
,, Campestris ..	Field Brassica ..	July 2..	R.
,, Alba ..	Cultivated Mustard ..	June 18..	R.
,, Sinapistrum ..	Charlock ..	May 15..	R, Kr, O.

Latin Name.	*English Name.*	*Date.*	*Record.*
Brassica Nigra ..	Black Mustard ..	June 15..	T.
Cochlearia Armoracia ..	Horse Radish ..	June 3..	Y.
,, Officinalis ..	Scurvy Grass		
Draba Muralis ..	Wall Whitlow Grass ..	Mar. 31..	Y.
,, Verna ..	Common ,, ..	Feb. 26..	*C.I.G.*
Thlaspi Arvense ..	Penny Cress		
Capsella Bursa-pastoris ..	Shepherd's Purse ..	Feb. 26..	Y.
Lepidium Campestre ..	Common Pepperwort ..	July 8..	Y, R, C.
,, Draba ..	Hoary Cress		
,, Smithii ..	Smith's ,, ..	May 30 .	Y.
Senebiera Coronopus ..	Common Wart Cress ..	July 1..	Y, C, Cc.
,, Didyma ..	Lesser ,, ..	May 15..	Y.
Iberis Amara ..	Candytuft		
Isatis Tinctoria ..	Woad ..	June 1..	R,Y,C,Cc.
Arenaria Serpyllifolia ..	Thyme-leaved Sandwort..	May 21..	R.
,, Trinervis ..	Three-nerved ,, ..	May 21..	C.
Cerastium Vulgatum ..	Common Mouse-ear Chickweed	May 9..	C.
,, Arvense ..	Field ,, ,, ..	June 18..	R.
Stellaria Aquatica ..	Water Starwort ..	July 1..	Y, K.
,, Media ..	Chickweed ..	Feb. 11..	R.
,, Uliginosa ..	Bog Starwort		
,, Graminea ..	Lesser ,, ..	June 18..	R, T.
,, Holostea ..	Common ,, ..	May 7..	C.
Hypericum Perforatum ..	Common St. John's Wort..	July 4..	R.
,, Dubium ..	Imperforate ,, ..	July 22..	R.
,, Quadrangulum..	Square-stalked ,, ..	June 24 .	C.
,, Humifusum ..	Trailing ,,		
,, Pulchrum ..	Slender ,,		
,, Hirsutum ..	Hairy ,, ..	June 18..	R.
Reseda Luteola ..	Dyer's Weed ..	June 18..	Y.
,, Lutea ..	Cut Leaved Mignonette..	July 23..	R.
Helianthemum Vulgare ..	Rock Rose ..	June 4..	Y, C, Cc.
Viola Odorata ..	Sweet Violet ..	Mar. 22..	Y.
,, Hirta ..	Hairy ,,		
,, Canina ..	Dog ,, ..	Mar. 26..	Y, T, W.
,, Tricolor ..	Pansy ..	May 26..	C.
Polygala Vulgaris ..	Milkwort ..	May 26..	R.
Silena Inflata ..	Bladder Campion ..	June 25..	Y,R,C,Cc.
Lychnis Vespertina ..	White ,, ..	May 24..	T.
,, Diurna ..	Red ,, ..	May 7..	Y.
,, Githago ..	Corn Cockle ..	July 23..	Y, R.
,, Flos-cuculi ..	Ragged Robin ..	June 4..	*C.I.G.*
Sagina Procumbens ..	Procumbent Pearlwort ..	May 14..	K, R.
,, Nodosa ..	Knotted ,, ..	July 2..	C, Cc.
Linum Catharticum ..	Purging Flax ..	May 16..	R.
Malva Rotundifolia ..	Dwarf Mallow ..	July 14..	C, Cc.
,, Sylvestris ..	Common ,, ..	June 4..	K.

Latin Name.	*English Name.*	*Date.*	*Record.*
Malva Moschata ..	Musk Mallow ..	July 2..	R.
Tilia Europea ..	Lime ..	June 21..	Y.
Geranium Pratense ..	Meadow Cranesbill ..	June 9..	Y.
,, Robertianum ..	Herb-Robert ..	May 13..	C.
,, Molle ..	Dove's-foot Cranesbill ..	May 19..	R.
,, Dissectum ..	Jagged ,, ..	May 26..	Y.
,, Lucidum ..	Shining ,, ..	July 2..	*C.I.G.*
,, Pusillum ..	Small-flower ,,		
,, Columbinum ..	Long-stalked ,, ..	July 2..	R.
,, Sylvaticum ..	Wood ,,		
Erodium Cicutarium ..	Common Storksbill		
Oxalis Acetosella ..	Wood Sorrel ..	May 6..	K.
ImpatiensNoli-me-tangere..	Yellow Balsam		
Acer Campestre ..	Maple ..	May 24..	C, Cc.
,, Pseudo-Platanus ..	Sycamore ..	May 10..	C.
Ilex Aquifolium ..	Holly ..	May 21..	C.
Euonymus Europaeus ..	Spindle Tree ..	June 9..	R, T, O.
Rhamnus Catharticus ..	Buckthorn		
Ulex Europaeus ..	Gorse ..	Feb. 2..	G.
Genista Tinctoria ..	Dyer's Greenweed ..	July 1..	Y, C, Cc,
Cytisus Scoparius ..	Broom ..	June 16 .	*C.I.G.* [Ps.
Ononis Arvensis ..	Common Rest Harrow ..	June 25..	R.
,, Campestris ..	Spiny ,, ,, ..	June 30..	Y, C, Cc.
Medicago Sativa ..	Lucern		
,, Lupulina ..	Nonsuch ..	May 13..	C.
Melilotus Officinalis ..	Melilot ..	July 1..	Y, C, Cc,
Trifolium Arvense ..	Hare's Foot Trefoil		[Ps.
,, Hybridum ..	Alsike Clover		
,, Incarnatum ..	Crimson ,, ..	July 11..	R.
,, Pratense ..	Purple ,, ..	May 14..	K.
,, Repens ..	Dutch ,, ..	June 4..	Y, C, Cc.
,, Procumbens ..	Hop Trefoil ..	May 25..	Y.
,, Minus ..	Lesser ,, ..	May 6..	C, Cc.
Lotus Corniculatus ..	Bird's Foot Trefoil ..	May 21..	T.
Anthyllis Vulneraria ..	Kidney Vetch ..	July 23..	Y, R.
Hippocrepis Comosa ..	Horse-Shoe Vetch ..	June 4..	Y.
Onobrychis Sativa ..	Sainfoin ..	June 4..	Y.
Vicia Tetrasperma ..	Slender Vetch ..	June 6..	*C.I.G.*
,, Hirsuta ..	Hairy ,,		
,, Cracca ..	Tufted ,, ..	June 23..	R.
,, Sylvatica ..	Wood ,, ..	June 25..	T, W, G.
,, Sepium ..	Bush ,, ..	May 13..	C.
,, Sativa ..	Common ,, ..	May 13..	R.
,, Lathyroides ..	Spring ,,		
Lathyrus Pratensis ..	Yellow ,, ..	June 1..	R.
,, Sylvestris ..	Everlasting ,, ..	June 24..	*C.I.G.*
,, Macrorrhizus ..	Tuberous Bitter Vetch ..	April 15..	B.
Prunus Communis ..	Blackthorn ..	April 7..	B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Prunus Cerasus ..	Cherry	.. May 7..	Y, C.
,, Padus ..	Bird Cherry		
Spiraea Ulmaria ..	Meadowsweet	.. June 22..	T.
,, Filipendula ..	Dropwort		
Geum Urbanum ..	Wood Avens	.. May 21..	C.
Rubus Idaeus ..	Raspberry		
,, Fruticosus ..	Common Blackberry	.. June 25..	C.
,, Corylifolius ..	Hazel-leaved ,,	.. June 9..	P.
,, Caesius ..	Dewberry	.. May 29..	C.
Fragaria Vesca ..	True Strawberry	.. May 13..	C.
Potentilla Fragariastrum ..	Barren Strawberry	.. Mar. 12..	R.
,, Reptans ..	Creeping Cinquefoil	.. June 1..	R.
,, Tormentilla ..	Tormentil	.. May 18..	R.
,, Anserina ..	Silverweed	.. May 20..	K. [Ps.
Alchemilla Vulgaris ..	Lady's Mantle	.. May 26..	Y, R, Kr,
Sanguisorba Officinalis ..	Great Burnet	.. June 20..	*J. R. W. E.*
Poterium Sanguisorba ..	Salad ,,	.. May 24..	P.
Agrimonia Eupatoria ..	Agrimony	.. July 1..	Y, C, Cc,
Rosa Canina ..	Dog Rose	.. June 1..	R. [Ps.
,, Arvensis ..	Trailing ,,	. June 25..	Y.
Pyrus Communis ..	Pear	.. May 2..	Y.
,, Malus ..	Apple	.. May 7..	Y.
,, Aucuparia ..	Mountain Ash	.. May 24..	Y.
,, Aria ..	Beam Tree	.. June 4..	Y, R.
,, Torminalis ..	Service Tree		
Crataegus Oxyacantha ..	Hawthorn	.. May 14..	K.
Epilobium Angustifolium ..	Rose-bay Willow Herb	.. June 29..	Y.
,, Hirsutum ..	Hairy ,, ,,	.. June 24..	C.
,, Parviflorum ..	Small-flowered,, ,,	.. July 9..	Y, R, T.
,, Montanum ..	Common ,, ,,	.. June 24..	Y, R.
,, Tetragonum ..	Square ,, ,,	.. July 23..	Y.
Circaea Lutetiana ..	Enchanter's Nightshade	.. July 2..	T.
Oenothera Biennis ..	Evening Primrose		
Lythrum Salicaria ..	Purple Loosestrife	.. July 7..	Y, R, C.
Bryonia Dioica ..	Bryony	.. May 29..	K, Cc.
Cotyledon Umbilicus ..	Pennywort		
Sedum Rhodiola ..	Rose-root Stonecrop		
,, Album ..	White ,,	.. July 9..	Y.
,, Acre ..	Biting ,,	.. June 7..	Y.
,, Rupestre ..	Rock ,,		
,, Telephium ..	Orpine		
Semper-virens Tectorum ..	Houseleek		
Ribes Grossularia ..	Gooseberry		
,, Rubrum ..	Red Currant		
Saxifraga Granulata ..	Meadow Saxifrage		
,, Tridactylites ..	Rue-leaved ,,		
,, Umbrosa ..	London Pride	.. May 24..	R, T.

Latin Name.	*English Name.*	*Date.*	*Record.*
Chrysosplenium Oppositifolium..	Golden Saxifrage	.. Feb. 27..	Y, C.
,, Alternifolium..	,, ,,		
Parnassia Palustris ..	Grass of Parnassus	.. July 31..	R.
Sison Amomum ..	Hedge Sison		
Carum Carvi ..	Caraway		
,, Segetum ..	,,		
Sanicula Europea ..	Wood Sanicle	.. May 13..	K.
Apium Graveolens ..	Celery	.. July 21..	R.
,, Nodiflorum ..	Procumbent Celery	.. July 1..	Y, Cc.
Aegopodium Podagraria ..	Goutweed		
Petroselinum Sativa ..	Parsley		
Pimpinella Saxifraga ..	Burnet Saxifrage	.. July 18..	Y, C.
Oenanthe Fistulosa ..	Water Dropwort	.. June 1..	R.
,, Phellandrium ..	Fine-leaved ,,	.. July 8..	Y, R, C.
,, Pimpenelloides ..	Parsley ,,	.. July 1..	Y,C,Cc,Ps.
Silaus Pratensis ..	Pepper Saxifrage		
Aethusa Cynapium ..	Fool's Parsley	.. June 19..	Ps.
Peucadanum Ostruthium ..	Masterwort	.. July 2..	C, Cc.
Pastinaca Sativa ..	Parsnip	.. July 1..	Y, C, Cc.
Heracleum Spondylium ..	Cow Parsnip	.. May 26..	C.
Scandix Pecten-Veneris ..	Shepherd's Needle		
Bunium Flexuosum ..	Earth Nut	.. May 26..	C.
Chaerophyllum Sylvestre ..	Wild Chervil	.. Mar. 14..	Y, R.
,, Temulum ..	Rough ,,	.. ..	K.
,, Anthriscus..	Burr ,,		
Caucalis Nodosa ..	Knotted Hedge Parsley		
,, Anthriscus ..	Upright ,, ,,		
Daucus Carrota ..	Carrot	.. July 1..	Y,C,Cc,Ps.
Conium Maculatum ..	Hemlock	.. July 1..	Y,C,Cc,Ps.
Smyrnium Olusatrum ..	Alexanders	.. April 15..	B.
Viscum Album ..	Mistletoe	. Mar. 12..	T, W.
Cornus Sanguinea ..	Dogwood	.. June 11..	K.
Adoxa Moschatellina ..	Moschatel	.. May 9 .	K.
Sambucus Nigra ..	Elder	.. June 4..	C, Cc,
Viburnum Lantana ..	Wayfaring Tree	.. May 21..	Y, C.
,, Opulus ..	Guelder Rose	.. June 1..	C, Cc.
Lonicera Periclymenum ..	Honeysuckle	.. June 4..	C, Cc.
Galium Cruciatum ..	Crosswort	.. May 4..	C.
,, Verum ..	Yellow Bedstraw	.. June 23..	R.
,, Palustre ..	Marsh ,,	.. June 25..	R.
,, Uliginosum ..	Bog ,,	.. June 27 .	R.
,, Saxatile ..	Rock ,,	.. July 2..	C, Cc.
,, Mollugo ..	Great Hedge Bedstraw	.. June 3..	Y,R,C,Cc.
,, Aparine ..	Cleavers	.. May 21..	C.
Asperula Odorata ..	Woodruff	.. May 14..	K.
,, Cynanchica ..	Squinancywort	.. June 18..	R.
Sherardia Arvensis ..	Field Madder	.. May 26..	Y.

Latin Name.	*English Name.*	*Date.*	*Record.*
Valeriana Officinalis ..	Great Valerian	.. June 25..	R.
,, Dioica ..	Marsh ,,	.. May 14..	Y.
Valerianella Olitoria ..	Lamb's Lettuce	.. June 4..	Y.
Centranthus Ruber ..	Red Valerian	.. July 1..	Y.
Dipsacus Pilosus ..	Small Teasel		
,, Sylvestris ..	Common ,,	.. July 23..	Y, R.
Scabiosa Succisa ..	Devil's-bit Scabious	.. July 4..	R.
,, Columbaria ..	Small ,,	.. July 7..	R, Ps.
,, Arvensis ..	Field ,,	.. June 27..	Y, R.
Eupatorium Cannabinum ..	Hemp Agrimony	.. July 20..	T.
Tussilago Farfara ..	Colt's Foot	.. Feb. 14..	Y,T,W,K.
,, Petasites ..	Butterbur	.. Mar. 31..	Y.
Gnaphalium Gallicum ..	Narrow Cudweed		
,, Sylvaticum ..	Wood ,,		
Inula Dysenterica ..	Fleabane	.. July 18..	C.
,, Coniza ..	Ploughman's Spikenard		
,, Pulicaria ..	Small Fleabane		
,, Helenium ..	Elecampane		
Solidago Virga-aurea ..	Golden rod		
Bellis Perennis ..	Daisy	.. Feb. 2..	Y.
Chrysanthemum Leucanthemum ..	Dog Daisy	.. May 27..	R.
,, Inodorum ..	Feverfew	.. May 26..	Y, R, P.
,, Segetum ..	Corn Marigold	.. July 2..	R.
Matricaria Chamomilla ..	Camomile	.. Mar. 31..	Y.
Anthemis Cotula ..	Stinking Mayweed	.. July 4..	R.
,, Arvensis ..	Corn Camomile		
Achillea Millefolium ..	Yarrow	.. June 6..	R.
,, Ptarmica ..	Sneezewort		
Tanacetum Vulgare ..	Tansy	.. July 22..	Y, R, Cc.
Artemesia Vulgaris ..	Mugwort	.. July 22..	Y, R.
Senecio ,, ..	Groundsel	.. Feb. 2..	Y.
,, Sylvaticus ..	Wood Groundsel		
,, Erucifolius ..	Narrow-leaved Ragwort	.. July 29..	R.
,, Aquaticus ..	Marsh ,,		
,, Jacobaea ..	Common ,,	.. June 27..	R.
Arctium Lappa ..	Burdock	.. July 20..	T, C.
Serratula Tinctoria ..	Sawwort	.. July 1..	Y,C,Cc,Ps.
Carduus Nutans ..	Musk Thistle	.. June 13..	Ps.
,, Acanthoides ..	Welted ,,	.. July 18..	C, Cc.
,, Lanceolatus ..	Spear ,,	.. July 4..	C.
,, Palustris ..	Marsh ,,	.. May 24..	R.
,, Arvensis ..	Creeping ,,	.. June 22..	Y.
,, Pratensis ..	Meadow ,,		
,, Acaulis ..	Dwarf ,,	.. June 25..	T.
,, Pycnocephalus ..	Slender ,,	.. July 8..	R.
,, Eriophorus ..	Woolly ,,	.. July 18..	Y, R, T, C,
Carlina Vulgaris ..	Carline ,,	.. July 16..	Y, R. [Cc.

Latin Name.	*English Name.*	*Date.*	*Record.*
Centaurea Nigra ..	Black Knapweed ..	June 20..	R.
,, Scabiosa ..	Scabious ,, ..	July 4..	O, U.
,, Cyanus ..	Cornflower ..	June 13..	Ps.
Tragopedon Pratensis ..	Goat's Beard ..	May 26..	Y,R,Kr,G,
Helminthia Echioides ..	Ox-tongue ..	July 1..	C,Cc. [Ps.
Picris Hieracioides ..	Hawkweed Picris ..	July 18..	Y, R, Ps.
Leontodon Hispidus ..	Hawkbit ..	June 9..	Y, R.
Hypochaeris Radicata ..	Cat's Ear ..	June 4..	Y.
Lactuca Muralis ..	Wall Lettuce ..	June 18..	Y.
Sonchus Arvensis ..	Corn Sow Thistle ..	June 25..	R.
,, Oleraceus ..	Common ,, .	June 9..	Y, R.
Taraxacum Dens-leonis ..	Dandelion ..	Feb. 2..	K, R.
Crepis Virens ..	Common Crepis ..	June 9..	R.
,, Biennis ..	Rough ,, ..	June 25 .	Y, R.
,, Taraxacifolia ..	Beaked ,,		
Hieracium Pilosella ..	Mouse-ear Hawkweed ..	June 11..	K.
,, Murorum ..	Wall ,, ..	June 25 .	Y,T,C,Cc.
,, Aurantiacum ..	Orange ,, ..	June 25..	Y.
Cichorium Intybus ..	Succory ,, ..	July 22..	Cc.
Lapsana Communis ..	Nipplewort ,, ..	June 25 .	Y,R,C,Cc.
Campanula Glomerata ..	Clustered Bell Flower ..	June 25 .	T. [G,W.
,, Trachelium ..	Nettle-leaved ,, ..	July 2..	C, Cc.
,, Rapunculoides..	Creeping ,,		
,, Rotundifolia ..	Harebell ..	July 4 .	R.
,, Hybrida ..	Corn Bell Flower ..	July 18 .	Y,R,C,Cc,
Monotropa Hypopitys ..	Bird's Nest		[T.
Primula Veris .	Cowslip ..	April 30..	K.
,, Vulgaris ..	Primrose ..	Feb. 14..	K, R.
,, Elatior ..	Oxlip		
Lysimachia Vulgaris ..	Yellow Loosestrife		
,, Nemorum ..	Moneywort ..	May 26..	Y, R, Sa.
,, Nummularia ..	Creeping Jenny ..	July 8 .	Y, R, C.
Anagallis Arvensis ..	Scarlet Pimpernel ..	June 11..	Y.
Pinguicula Vulgaris ..	Butterwort ..	June 25..	R.
Fraxinus Excelsior ..	Ash ..	May 7..	Y.
Ligustrum Vulgare ..	Privet ..	June 11..	K.
Vinca Major ..	Greater Periwinkle ..	April 16..	B.
,, Minor ..	Lesser ,, ..	Mar. 31..	Y.
Erythraea Centaurium ..	Centaury ..	July 1..	C, Y, Cc.
Gentiana Campestris ..	Common Gentian		
Menyanthes Trifoliata ..	Buckbean		
Limnanthemum Nymphaeoides ..		June 29 .	Y,R,C,Rf.
Chlora Perfoliata ..	Yellowwort ..	June 18 .	Y, R.
Convolvulus Arvensis ..	Small Bind Weed ..	June 19..	Y, Ps.
,, Sepium ..	Great ,, ..	June 25..	R.
Cuscuta Europæa ..	Greater Dodder ..	July 8..	R.
Echium Vulgare ..	Viper's Bugloss ..	July 2 .	C, Cc.

Latin Name.	*English Name.*	*Date.*	*Record.*
Myosotis Palustris	True Forget-me-not	June 27	R.
,, Arvensis	Field ,,	May 14	K.
,, Collina	Early ,,	July 18	Y.
,, Versicolor	Changing ,,	June 4	C, Cc.
,, Sylvatica	Wood ,,	June 9	Y.
,, Repens	Creeping ,,	June 9	Y, R.
Pulmonaria Officinalis	Lungwort		
Lithospermum Officinale	Gromwell		
,, Arvense	Corn Gromwell	July 8	C.
Anchusa Semper-virens	Alkanet		
Symphytum Officinale	Comfrey	May 24	U.
Borago Officinalis	Borage	June 30	Ps.
Cynoglossum Officinale	Hound's-tongue	June 23	R.
Hyoscyamus Niger	Henbane		
Solanum Dulcamara	Bitter Sweet	May 22	Y.
,, Nigrum	Black Nightshade		
Atropa Belladonna	Deadly ,,	May 24	Y, Kr.
Lathraea Squamaria	Toothwort	May 27	*C.I.G.*
Orobanche Major	Great Broomrape		
Verbascum Thapsus	Common Mullein	June 27	R.
,, Nigrum	Black ,,	July 29	R.
Linaria Vulgaris	Yellow Toad Flax	July 7	Y.
,, Minor	Lesser ,,	July 1	Y, Cc, Ps.
,, Cymballaria	Ivy-leaved ,,	April 5	B.
,, Spuria	Round ,,		
Scrophularia Nodosa	Knotted Figwort	June 4	C, Cc.
,, Aquatica	Marsh ,,	June 18	Y.
Mimulus Luteus	Monkey Flower		
Digitalis Purpurea	Foxglove	July 18	Y, R, T.
Veronica Serpyllifolia	Thyme-leaved Speedwell	May 9	K.
,, Officinalis	Common ,,	June 25	G.
,, Anagallis	Water ,,	June 3	R.
,, Beccabunga	Brooklime ,,	May 26	Y.
,, Montana	Mountain ,,	May 26	R.
,, Chamaedrys	Germander ,,	May 1	R.
,, Hederaefolia	Ivy-leaved ,,	May 10	Y, T, W.
,, Agrestis	Procumbent ,,	Feb. 26	Y.
,, Buxbaumii	Buxbaum's ,,	July 18	Y, C, Cc.
,, Arvensis	Wall ,,	June 25	C, Cc.
Bartsia Odontites	Red Bartsia	July 1	Y.
Euphrasia Officinalis	Eye-bright	May 26	G.
Rhinanthus Cristi-galli	Yellow Rattle	June 1	R, T.
Pedicularis Palustris	Marsh Lousewort	May 6	K.
,, Sylvatica	Common ,,		
Melampyrum Pratense	Cow Wheat		
Mentha Aquatica	Water Mint		
,, Sativa	Whorled ,,	July 8	Y, R, C.
,, Arvensis	Corn ,,		

Latin Name.	*English Name.*	*Date.*	*Record.*
Mentha Rotundifolia ..	Round-leaved Mint		
,, Piperita ..	Pepper ,,	.. July 29..	R.
Thymus Serpyllum ..	Thyme	.. June 11..	R.
Origanum Vulgare ..	Marjoram	.. July 15..	Y, R.
Calamintha Acinos ..	Basil Thyme	.. June 25..	R.
,, Clinopodium ..	Wild Basil	.. July 18..	Y, R, T, C,
,, Officinalis ..	Common Calamint		[Cc.
Nepeta Glechoma ..	Ground Ivy	.. Mar. 12..	R.
Prunella Vulgaris ..	Self Heal	.. June 18..	T.
Scutellaria Galericulata ..	Scull Cap	.. July 8..	Y, R, C.
Marrubium Vulgare ..	White Horehound	.. July 1..	Y, C, Cc,
Stachys Betonica ..	Betony	.. June 25..	T. [Ps.
,, Sylvatica ..	Hedge Woundwort	.. June 11..	K.
,, Palustris ..	Marsh ,,	.. July 6..	R, C.
,, Arvensis ..	Corn ,,		
Galeopsis Ladanum ..	Red Hemp Nettle	.. July 9..	R.
,, Tetrahit ..	Common ,,		
Ballota Nigra ..	Black Horehound	.. June 25..	Y, C, Cc.
Lamium Purpureum ..	Red Dead Nettle	.. Mar. 11..	K, Y.
,, Album ..	White ,,	.. Feb. 14..	Y.
,, Maculatum ..	Spotted ,,	.. June 25..	W, T, G.
,, Galeobdolon ..	Yellow ,,	.. May 7..	Y.
,, Amplexicaule ..	Henbit ,,		
,, Incisum ..	Small ,,		
Teucrium Scorodonia ..	Wood Germander	.. July 2..	C, Cc.
Ajuga Reptans ..	Bugle	.. May 8..	K.
Armeria Plantaginea ..	Plantain Thrift		
Plantago Major ..	Great Plantain	.. June 25..	R.
,, Media ..	Hoary ,,	.. May 28..	K.
,, Lanceolata ..	Ribwort ,,	.. May 7..	Kr, C.
Chenopodium Bonus-Henricus ..	Good King Henry	.. July 18..	R, Y, C, Cc.
,, Urbicum ..	Upright Goosefoot	.. July 12..	R, C.
,, Murale ..	Nettle-leaved ,,		
,, Album ..	White ,,	.. June 25..	C, Cc.
,, Rubrum ..	Red ,,	.. July 18..	C.
Atriplex Patula ..	Orache	.. July 23..	R.
Rumex Acetosa ..	Common Sorrel	.. May 30..	C.
,, Acetosella ..	Sheep's ,,	.. May 12..	Y.
,, Obtusifolius ..	Common Dock	.. June 16..	R.
,, Crispus ..	Curled ,,	.. June 25..	Y.
,, Hydropathalium ..	Water ,,	.. July 8..	R, Y, C.
Polygonum Fagopyrum ..	Buckwheat	.. July 9..	Y.
,, Aviculare ..	Knot Grass	.. June 25..	C, Cc.
,, Convolvulus ..	Black Bindweed	.. June 25..	Y.
,, Amphibium ..	Amphibious Bistort	.. July 8..	R, Y, C.
,, Persicaria ..	Persicaria		
,, Lapathafolium ..	Pale Bistort		

Latin Name.	*English Name.*	*Date.*	*Record.*
Euphorbia Helioscopia ..	Sun Spurge	.. May 21..	C.
,, Peplus ..	Petty ,,	.. June 25..	R.
,, Exigua ..	Small ,,	.. July 1..	Y, C, Cc,
,, Amygdaloides .	Wood ,,	.. Mar. 18..	B. [Ps.
,, Platyphyllos ..	Broad ,,		
,, Lathyris ..	Caper ,.		
Mercurialis Perennis ..	Dog's Mercury	.. Feb. 15..	R.
Callitriche Aquatica ..	Water Starwort	.. July 1..	Y, C, Cc,
Urtica Urens ..	Small Nettle	.. June 1..	R. [Ps.
,, Dioica ..	Common ,,	.. June 4..	C, Cc.
Parietaria Officinalis ..	Pellitory-of-the-Wall	.. May 22..	R.
Humulus Lupulus ..	Hop	.. July 9..	T.
Ulmus Campestris ..	Common Elm	.. Mar. 8..	Y, C.
,, Montana ..	Wych ,,		
Alnus Glutinosa ..	Alder	.. Mar. 2..	Y, W. T.
Betula Alba ..	Birch		
Carpinus Betulus ..	Hornbeam		
Corylus Avellana ..	Hazel Nut	.. Feb. 14..	Y.
Fagus Sylvatica ..	Beech		
Quercus Robur ..	Oak	.. May 21..	Y, T.
Salix Capræa ..	Sallow Willow	.. Mar. 8..	Y, T.
,, Purpurea ..	Purple ,,		
,, Fragalis ..	Crack ,,	.. June 4..	C, Cc.
,, Alba ..	White ,,	.. May 20..	C.
Populus Nigra ..	Black Poplar	.. Mar. 20..	Y.
Pinus Sylvestris ..	Scotch Fir	.. June 3..	C.
Taxus Baccata ..	Yew	.. Feb. 26..	C. [Ps.
Typha Latifolia ..	Bulrush	.. July 1..	Y, C, Cc,
Sparganum Ramosum ..	Branched Bur-reed	.. July 1..	Y, C, Cc.
Acorus Calamus ..	Sweet Flag		
Arum Maculatum ..	Lords and Ladies	.. May 7..	C.
Potamogeton Natans ..	Pondweed	.. July 1..	Y, C, Cc.
Triglochin Palustre ..	Arrowgrass	.. July 18..	*J. R. W-E.*
Butomus Umbellatus ..	Flowering Rush	.. July 7..	Y,C,R,Cc.
Sagittaria Sagittifolia ..	Arrowhead	.. June 29..	Y, C, R.
Alisma Plantago ..	Water Plantain	.. July 1..	Y,C,Cc,Ps.
Hydrocharis Morsus-ranae..	Frogbit	.. July 8..	Y, C, R.
Epipactis Latifolia ..	Broad Helleborine		
,, Palustris ..	Marsh ,,	.. July 18..	Y,T,C,R,
Cephalanthera Grandiflora..	Large ,,	.. June 3..	R. [Cc, Rf.
Listera Ovata ..	Twayblade	.. May 27..	C.
Neottia Nidusavis ..	Bird's-nest Orchid	.. May 24..	C.
Orchis Morio ..	Green-winged ,,	.. May 20..	R.
,, Maculata ..	Spotted ,,	.. May 27..	Kr, P, U.
,, Mascula ..	Early Purple ,,	.. May 7..	Y.
,, Latifolia ..	Marsh ,,	.. June 25..	R.
,, Pyramidalis ..	Pyramidal ,,	.. June 25..	Y,T, C, R,
,, Conopsea ..	Fragrant ,,	.. June 25..	T,R. [Cc,Ps.

Latin Name.	*English Name.*	*Date.*	*Record.*
Habenaria Bifolia ..	Butterfly ,, ..	June 8..	Y, K.
Herminium Monorchis ..	Musk ,,		
Ophrys Apifera ..	Bee ,, ..	June 25..	T,C,Cc,R.
,, Muscifera ..	Fly ,, ..	May 27..	R.
Iris Pseudacorus ..	Yellow Flag ..	June 29..	R.
Narcissus Pseudonarcissus..	Lent Lily ..	Mar. 17..	B.
Galanthus Nivalis ..	Snowdrop		
Tamus Communis ..	Black Bryony ..	June 4..	C, Cc.
Paris Quadrifolia ..	Herb Paris ..	May 6..	K.
Polygonatum Officinale ..	Angular Solomon's Seal..	June 9..	Y.
,, Multiflorum ..	Common ..	June 9..	*C.I.G.*
Convallaria Majalis ..	Lily-of-the-Valley ..	June 9..	Y, P, R,T.
Scilla Nutans ..	Wild Hyacinth ..	May 1..	K.
Ornithogalum Umbellatum..	Star of Bethlehem		
Allium Ursinum ..	Common Garlic ..	May 7..	Y.
,, Vineale ..	Crow ,, ..	July 1..	P.
Juncus Communis ..	Common Rush ..	June 27..	Y, R, Ps.
,, Articulatus ..	Jointed ,,		
,, Glaucus ..	Hard ,, ..	June 18..	T.
,, Obtusiflorus ..	Obtuse ,, ..	July 8 .	Y, C.
,, Bufonius ..	Toad ,, ..	July 12..	C.
Luzula Pilosa ..	Hairy Wood Rush ..	May 27..	Y.
,, Campestris ..	Field ,, ..	May 7..	C.
Eriophorum Polystachyum..	Cotton Grass ..	June 25..	R.
Scirpus Sylvaticus ..	Wood Scirpus ..	July 7..	Cc.
,, Palustris ..	Marsh ,, ..	May 30..	C, Cc.
Carex Praecox ..	Early Sedge ..	May 2..	*C.I.G.*
,, Pendula ..	Pendulous ,,		
,, Glauca ..	Glaucous ,,		
Blysmus Compressus ..	Broad Blismus ..	May 28..	Y, C.
Anthoxanthum Odoratum ..	Vernal Grass ..	May 21..	C.
Phalaris Canaricus ..	Canary ,,		
Phleum Pratense ..	Timothy ,, ..	July 7..	R.
Alopecurus Pratensis ..	Meadow Foxtail Grass ..	May 14..	Y.
,, Geniculatus ..	Marsh ,, ,, ..	May 26..	R.
,, Agrestis ..	Slender ,, ,, ..	June 18..	Ps.
Calamagrostis Epigeios ..	Smallreed ..	July 8..	R, C, Y.
Avena Fatua ..	Wild Oat ..	June 20..	T, Ps.
Arrhenatherum Avenaceum..	False ,,		
Holcus Lanatus ..	Common Holcus ..	June 18..	Y.
,, Mollis ..	Soft ,, ..	..	Ps.
Hordeum Pratense ..	Meadow Barley ..	June 20..	G.
,, Murinum ..	Wall ,, ..	June 28..	C.
Lolium Perenne ..	Darnel ..	June 4..	C, Cc.
Bromus Sterilis ..	Barren Brome ..	June 9..	R.
Dactylis Glomerata ..	Cock's-foot Grass ..	June 5..	C.
Cynosurus Cristatus ..	Dog's-tail ,, ..	June 25..	Y, R.
Briza Media ..	Quaking ,, ..	June 11..	R.

Latin Name.	*English Name.*	*Date.*	*Record.*
Poa Annua ..	Common Meadow Grass ..	Mar. 31 ..	C.
,, Pratensis ..	Smooth ,, ,, ..	June 20 ..	Y.
,, Nemoralis ..	Wood ,, ,, ..	July 7 ..	R.
,, Fluitans ..	Floating ,, ,, ..	June 21 ..	Y.
Melica Uniflora ..	Wood Melick		
,, Nutans ..	Mountain ,, ..	June 4 ..	Y.
Equisetum Palustre ..	Marsh Horse-tail ..	May 24 ..	R.
,, Arvense ..	Field ,, ..	May 13 ..	C.
,, Telmateia ..	Great ,, ..	May 28 ..	R.
Ophioglossum Vulgatum ..	Adder's Tongue ..	May 18 ..	*J. R. W-E.*
Polypodium Vulgare ..	Common Polypody ..	July 1 ..	Y, C, Cc.
,, Phegopteris ..	Beech		
Aspidium Filix-mas .	Male Fern .	May 26 ..	Y.
,, Aculeatum ..	Prickly Shield Fern		
,, Angulare ..	,, ,, ,,		
Asplenium Ruta-muraria ..	Wall Rue Spleenwort ..	April 8 ..	B.
,, Trichomanes ..	Black ,, ..	April ..	B.
,, Felix-fœmina ..	Lady Fern ..	May 26 ..	*J. R. W-E.*
Scolopendrium Vulgare ..	Hart's Tongue . ..	April 6 ..	B.
Ceterach Officinarum ..	Scaly Fern ..	April 14 ..	B.
Pteris Aquilina ..	Bracken ..	June 25 ..	R, G, W.

ENTOMOLOGICAL SECTION.

President: J. C. SALTER, ESQ.

THE following gave in their names as intending collectors. Samuelson, Jenkins, Martin, H. Moore, R. Bignell, Gatacre, H. C. Dickenson and E. G. Studd. Only two, Moore and Bignell, sent in prize collections: the former's were nicely set, but the number of varieties were small; while Bignell's collection was perhaps the best in some ways that was ever sent in, containing about twenty varieties of Butterflies (including a large Tortoise-shell), and no less than eighty-eight different moths. The feature of the year was the large number of Red Admirals and Humming Bird Hawk moths: also, in places, of Clouded Yellows (*Colias Edusa*).

Amongst the Prize collection will be noted—*Aphomia Sociella* (or *Colonella*); this is the only British species. Forewings reddish, white or grey: costa greenish, marked with dark zigzag transverse lines, and dark dots near the middle; hind wings grey: the caterpillar lives in wasps' or humble bees' nests, and remains there in the larval state. This specimen was caught at a lamp-post towards the end of August.

THE PRIZE COLLECTION OF MOTHS & BUTTERFLIES,

COLLECTED BY BIGNELL.

(*Means that the specimen was caught near Cheltenham.)

SPHINGES.

*Privet Hawk	.. .. ..	Sphinx Ligustri.
*Poplar Hawk	.. .. ..	Smerinthus populi.

Humming-bird Hawk	Macroglossa stellatarum.
*Narrow bordered five-spotted Burnet..	Zygœna lonicerœ.

BOMBYCES.

*Cinnabar	Euchelia Jacobææ.
*Common Swift	Hepialus lupulinus.
Wood Swift	Hepialus sylvinus.
*Buff Ermine	Spilosoma lubricipeda.
*White Ermine	Spilosoma menthrasti.
Vapourer	Orgygia antiqua (bred).
*Ghost Swift	Hepialus humuli.
Lackey	Clisiocampa neustria (bred).
*Ground Lackey	Clisiocampa castrensis
*Pale Prominent	Pterostoma palpina.
Oak Eggar	Lasiocampa quercus (bred).
Drinker	Odonestris potatoria (bred).
Buff Tip	Phalera bucephala (bred).

NOCTUAE.

*Marbled Beauty	Bryophila perla.
Grey Dagger	Acronycta Psi.
*Poplar Clay	Acronycta megacephala (bred).
The Clay..	Leucania lithargyna.
*Common Wainscot ..	Leucania Pallens.
Smoky Wainscot	Leucania Impura.
Ear Moth	Hydraecia Nictitans.
Light Arches	Xylophasia Lithoxylea.
*Dark Arches	Xylophasia Monoglypha.
*Cabbage Moths	Mamestra Brassica.
The Dot	Mamestra Persicariæ.
*Double-lobed	Apamea Ophiogramma.
*Common Rustic	Apamea Didyma var-oculea.
*Turnip Moth	Agrotis Segetum.
Heart and Dart	Agrotis Exclamationis.
Lettered Gothic	Noctua C-nigrum.
Square-spot Rustic ..	Noctua Xanthographa.
Broad-B. Yellow Underwing ..	Triphaena Fimbria.
*Yellow Underwing ..	Triphaena Pronuba.
Mouse	Amphipyra Tragopogonis.
Old Lady	Mormo Maura.
*Small Quaker	Tæniocampa Pulverulenta.
Brown-spot Pinion.. ..	Orthosia litura.
Dunbar	Calymnia Trapezina.
White-spotted Pinion ..	Calymnia Diffinis.
Lesser-spotted Pinion ..	Calymnia Affinis.
*Deep Brown Dart.. ..	Epunda Lutulenta.
*Angleshades	Phlogophora Meticulosa.
*Small Angleshades ..	Euplexia Lucipara.
*Bright-line-brown Eye ..	Hadena Oleracea.

Shark	Cucullia Umbratica.
Herald	Scoliopteryx Libatrix.
Silver Y	Plusia Gamma.
Black Rustic	Epunda Nigra.
Red Underwing	Catocala Nupta.

GEOMETRAE.

*Swallow-tailed Moth	Urapteryx Sambucata.
Dark-bordered Beauty	Epione Apiciaria.
*Brimstone Moth	Rumia Luteolata.
Dusky Thorn	Ennomos Fuscantaria.
*Feathered Thorn	Himera Pennaria.
*Pale Brindled Beauty	Biston Pilosaria.
*Oak Beauty	Biston Strataria.
*Waved Umber	Hemerophila Abruptaria.
*Willow Beauty	Boarmia Rhomboidaria.
*Common Emerald	Nemoria Strigata.
Blood Vein	Timandra Amataria.
Tawny-barred Angle	Macaria Liturata.
V Moth	Halia Wavaria.
Common Heath	Ematurga Atomaria.
Bordered White	Bupalus Piniaria.
*Magpie Currant Moth	Abraxas Grossulariata.
*Silver-ground Carpet	Melanippe Montanata.
*Garden Carpet	Melanippe Fluctuata.
*Yellow Shell	Camptogramma Bilineata.
*The Tissue	Triphosa Dubitata.
Small-waved Umber	Phibalapteryx Vitalbata.
Autumnal Green Carpet	Cidaria Miata.
Broken Barred Carpet	Cidaria Corylata.
*Barred Straw	Cidaria Dotata.
Treble Bar	Anaitis Plagiata.
*Small Mallow	Eubolia Limitata.
*Chalk Carpet	Melanippa Procellata.

PYRALES.

*Large Snout	Hypena Proboscidalis.
Small Snout	
Meal Moth	Pyralis Farinalis.
*Tabby	Aglossa Pinguinalis.
*Mother of Pearl	

PHYCITAE.

	Aphomia Sociella.

BUTTERFLIES.

*Large White	Pieris Brassicae.
*Small White	Pieris Rapae.
*Green-veined White	Pieris Napi.

Brimstone	Gonepteryx Rhamni.
*Orange Tip	Euchloe Cardamines.
Painted Lady	Vanessa (Cynthia) Cardin.
Red Admiral	Vanessa Atalanta.
Peacock	Vanessa Io.
Small Tortoiseshell	Vanessa Urticae.
Large Tortoiseshell	Vanessa Polychloros.
*Small Heath	Caenonympha Pamphilus.
Wall Brown	Satyrus Megaera.
*Meadow Brown	Epinephele Janira.
Grayling	Hipparchia Semele.
*Common Blue	Lycaena Icarus.
Holly Azure Blue	Lycaena Argiolus.
Chalk-hill Blue	Lycaena Corydon.
*Large Skipper	Hesperia Sylvanus.
*Small Skipper	Hesperia Linea.
*Dingy Skipper	Thanaos Tages.

GEOLOGICAL SECTION.

President: C. I. GARDINER, ESQ.

THE excursions of the Society proved fairly successful to the fossil collectors this year. During the Andoversford excursion a visit was paid to the Sevenhampton pit in the Stonefield slates, the highest beds in the Oolite exposed near Cheltenham. There many specimens of *Ostræa acuminata* were found and several other fossils. At Wainlode Cliff the thin bed of a sandy nature, in which many small fish teeth and fish scales were found, was sought for with great care and successfully discovered. Every year we go there this bed seems more difficult to get at, as it is getting more and more covered up, and it will not be easily found till a great slip from the cliff face occurs. The limestone band above it, containing Pecten and Euomphalus is now not to be seen, and we seem to have cleared off all the specimens which were to be found in loose blocks lying about half way up the cliff.

The Colesbourne excursion, as usual, turned out quite blank to the fossil collector, though on the way one sees an interesting example of an old river valley cut down steeply into the hill side. This valley is now quite dry at its upper end, but as one follows the depression one comes to the stream at Pegglesworth which is continuing the cutting as it runs down near Colesbourne.

A certain amount of fossils have been collected from the Leckhampton quarries, and the brick-pits at Leckhampton, Battledown and Hewlett's Hill have been searched, Long having been particularly energetic. We still want more fossils from these brickpits in the Museum.

The arrangement of the fossils in the Museum has been continued, and the Lower Greensand, Gault, Upper Greensand and Chalk fossils are now nearly arranged, while the arrangement of the Tertiary fossils

has been begun as well. Mr. Buckman, who arranged our Jurassic fossils for us, has been kind enough to give us several more Jurassic specimens, and has also assisted us in naming the Gault Ammonites. A large number of Cretaceous fossils were in the Falkener collection, and these have been incorporated in the general collections, each specimen having been labelled with a distinctive label to denote the collection it came from.

MICROSCOPICAL SECTION.

President: S. D. Scott, Esq.

MEMBERS:

J. G. Herbert. A. A. L. Roberts.
A. N. Lawford. J. G. Russell.
P. Wheeler.

THE Section of the N.H.S. for studying objects with the microscope was started towards the end of last term, a sufficient number having given in their names.

Regular meetings will be held this term on Saturdays at 12 o'clock in the new Physics Laboratory, when material collected can be examined and microscopic preparations made. The requisite stains and reagents are supplied by the Society, and members are only required to provide themselves with notebooks and a small number of inexpensive tools necessary for the preparation of objects.

Mr. Gardiner, Mr. Hedley and Mr. Wynne-Edwards have very kindly offered to lend their microscopes, and this will enable a certain number of members to be admitted who do not as yet possess them.

The ponds in the neighbourhood should offer a good stock of material for those who are interested in the lower forms of life, whilst the opportunity for making a microscopical examination may prove useful to members of other sections.

Permission will be given to any members of the N.H.S. to make occasional use of the microscopes, as far as the number of these at disposal will allow.

ORNITHOLOGICAL SECTION.

President: M. TANNER, ESQ.

WORKING MEMBERS:

J. H. CARDEW denoted by	*C.*	W. M. CONGREVE denoted by	*Co.*
H. N. LEE ,,	*L.*	G. P. TURNER ,,	*T.*
L. FORT ,,	*F.*	J. H. BLUNDELL ,,	*B.*
D. D. H. CAMPBELL	*Ca.*	B. STEEL ,,	*S.*

WE have first to apologise for not correcting a printer's error in last year's report, wherein Great Tit is printed "Crest Tit," which has naturally caused some surprise among Ornithologists who have read the report.

Our Curator (J. C. White) has received the eggs as they have been brought, and also additional nests which members have kindly given. We hope that some one will this season find and present to the Museum Collection the eggs of the Stonechat.

This year's list of eggs is within one of last year's list, and we believe there has been no wanton destruction of birds' nests, but that the eggs have been acquired from scientific motives. The best work has been done by J. H. Cardew and H. N. Lee, and to Cardew the sectional prize has been awarded.

We wish more would keep and give in note books: Cardew's note-book was excellent. It is a pleasure to read such a note-book and the information recorded is most useful; we may add that it is the sign of a true naturalist to accurately describe a rare bird, its nest and eggs, but to add that the eggs were left to be hatched.

The following do not appear in this year's list:— Magpie, Corncrake, Siskin, Barn Owl, Fire-crested Wren; but as a compensation we have the Cuckoo in a Meadow Pipit's nest, Whinchat, Rock Dove and Reed Warbler.

Cardew's note book contained notes on sixty-five different birds, and was illustrated by photographs of nests with eggs: the photographs being taken, where the nests were found, by Dr. Wilson. Particularly worthy of mention are the finding of the eggs of the Cuckoo in three kinds of nests and the eggs of a Robin in an old Swallow's nest. The manner in which the notes were jotted down shew that Cardew is a keen observer of the habits of birds.

The following have been presented to the Museum:

Nests of Carrion Crow, Marsh Tit and Missel Thrush, by J. H. Cardew.

Nest of Lesser Redpole, by C. W. Chard.

Nest of Willow Wren, by Mr. W. Wilson.

Nest of Nightingale, by Miss M. Edmeades.

Nest of Long-tailed Tit, by Miss M. Cox.

Eggs of Siskin, by R. V. D. Holwell.

Eggs of Merlin, by C. W. Passingham.

Stuffed Jay, by J. Flack.

Stuffed Redstart, by F. M. B. Dixon.

Name of Egg.	*Date.*	*Locality.*	*Finder.*
Robin	Mar. 11	Cheltenham	*A.A.B.*
Blackbird	,, 19	,,	L.
Hedge Sparrow	,, 20	,,	L.
Song Thrush	,, 21	,,	L.
Tawny Owl	,, 24	Leckhampton	F.
Rook	,, 27	Tewkesbury Road	C.
Carrion Crow	,, 31	Deerhurst Park	L.
Rock-Dove	April 3	Leckhampton	L.
Lapwing	May 2	,,	C.
Jackdaw	,, 2	,,	C.
Wren	,, 2	,,	C.
Marsh Tit	,, 2	,,	C.
Starling	,, 2	Crippets	C.
Moorhen	,, 2	Coombe Hill	C.
House Sparrow	,, 2	,,	C.
Tree Creeper	,, 2	Prestbury	C.
Chaffinch	,, 2	Cheltenham	L.
Missel Thrush	,, 3	,,	L.
Black Cap	,, 3	,,	Ca.
Pied Wagtail	,, 4	Leckhampton	L.
Long-tailed Tit	,, 4	,,	L.
Bullfinch	,, 8	Cheltenham	C.
Dipper	,, 8	Crippets	L.

Name of Egg.	*Date.*	*Locality.*	*Finder.*
Willow Wren	May 8	Leckhampton	L.
Redstart	,, 8	Hatherley	L.
Cole Tit	,, 8	Crippets	L.
Greenfinch	,, 8	Leckhampton	C.
Skylark	,, 8	Hatherley	C.
Great Tit	,, 9	Charlton	C.
Blue Tit	,, 9	,,	C.
Wood Pigeon	,, 10	Crippets	C.
Green Linnet	,, 11	Coombe Hill	C.
Yellow Hammer	,, 11	Charlton Kings	T.
Sand Martin	,, 12	Sandy Lane	B.
House Martin	,, 12	Leckhampton	C.
Greater Whitethroat	,, 13	Cheltenham	L.
Lesser ,,	,, 13	Hatherley	C.
Nuthatch (not taken)	,, 13	Leckhampton	L.
Kestrel ,,	,, 14	,,	C.
Golden Crested Wren	,, 15	Hilcot	C.
Garden Warbler	,, 15	Charlton Kings	Co.
Tree Pipit	,, 15	Leckhampton	L.
Whinchat	,, 15	Charlton	L.
Pheasant	,, 15	Charlton Kings	C.
Cuckoo	,, 15	,, ,,	C.
Meadow Pipit	,, 15	,, ,,	C.
Lesser Redpole	,, 15	Gloucester Road	L.
Swallow	,, 16	Charlton Kings	C.
Red-backed Shrike	,, 22	Crippets	S.
Chiff-Chaff	,, 24	Charlton Kings	Co.
Turtle Dove	,, 24	,, ,,	Co.
Sedge Warbler	,, 24	Coombe Hill	C.
Reed Bunting	,, 24	,, ,,	C.
Partridge	,, 24	Withington	L.
Spotted Flycatcher	June 3	Hatherley	L.
Green Woodpecker (not taken)	,, 9	Colesbourne	C.
Reed Warbler	,, 30	Tewkesbury	C.
Tree Sparrow	July 6	Wainlode	C.

JUNIOR DEPARTMENT.

In consequence of a misfortune to the President of the Junior N.H.S., who lost his luggage and the records of the Society in the holidays, no detailed account can be given of the Junior Department.

The Ornithological Prize was gained by T. I. G. Thomas.

The Botanical prize by H. V. Hodson and R. V. Hodson.

The ornithological records of the year were good, but the botanical fell very far short of those of 1898.

PHOTOGRAPHIC SECTION.

President: C. E. YOUNGMAN, ESQ.

MEMBERS:

Three Terms.
Clarke, T. H.
Dunsterville, K. F.
Johnston, A. A.
Kay, C. W.
Kershaw, S. R.
Mackintosh, W. A. O. C.
Mortimore, F. R.

Two Terms.
Allen, W. T.
Clarke, G. A. E.
Clerk, R. V.
Cottrill, H. L.
Crailsheim, H. R.
de Perigny, N. F. R. G. S.
Howlden, R. C.
Ker, C. H.
Mitchell-Dawson, H. C.
Mitchell-Dawson, D.
Morton, C. A. G.
Moutray, A. G.
Oppenheim, G. P.
Payne, J. O.
Paxton, A. N.
Redfern, J.
Sanders, H. R.
Steel, B.
Stevenson, F. H.
Thrupp, F. E.
Trewheler, A.
Wells, F. W. A.
Wilson, W. A.
Wolff, M. A.
Young, J. A. R.

One Term.
Begbie, R. P. G.
Brinton, C. C.
Chapman, W. L. B.
Chard, W. W.
Davids, W. da F. B.
Davis, E. B.
Flack, J.
Garratt, T. A.
Guthrie, S. C. B.
Harries, H. M.
Howell, C. J.
King, H. K.
Lamotte, L.
Locke, H. W.
Macpherson, C. F.
Maitland-King, F. J.
Milton, T. St. M.
Morrison, H.
Nixon, E. J.
Ponsonby, H. E.
Pottinger, J. A.
Quill, B. C.
Sharp, L. W.
Shaw, G. H.
Shaw, G. M.
Sherwill, D. L.
Stewart, N. D.
Symonds, F. H.
Trench, J. A. B.
Watson-Smyth, E.
Weddell, J. M.
Wheeler, P.

THE foregoing is the list of those who have joined the dark room during the year, and is not as good an indication as might be of the number of real workers in the section: for they are certainly fewer. The list includes many who use photography for their own private pleasure, and with coy modesty deny their efforts to a willingly-admiring public; and some also, even among the serious seven at the top, whose work goes hardly farther than paying the dark room toll. Others are left out, who, having

special opportunities of their own, have done their work independently. For the coming year these, as well as the regular dark room members, are invited to give in their names to the President of the section as working members, and to show their work to him as they go along, so that the sectional prize (next term) may be determined, as in other sections, with some reference to the quantity of work done.

At the exhibition of prints last Summer, R. C. Howlden and H. S. Saunders took prizes for the best three, and G. P. Oppenheim for a series illustrating events on and off the water at Tewkesbury. This was a particularly interesting exhibit, well worth its prize, although it was the only series shown; its thirty or forty pictures, not by any means all good if taken separately, gathered interest and worth from their number and neat arrangement, and gave evidence of some taste and skill. It is to be hoped that more members will try the same sort of thing this year; they will certainly find it better worth while to persevere systematically like this than to be simply beautiful and aimless; and before they have tried it long something of the collector's fury will hold them.

The December show of lantern slides, confined to the productions of N.H.S. members, proved that several have a proper enthusiasm for this fascinating branch of photography; seven sent in for competition and more exhibited, but the average results were hardly so good as the year before. General F. Dawson, C.B., to whom the slides were submitted beforehand for judgment, found none deserving of very high praise, but explained that in his opinion the order in which photography should be learnt was, first, to make a good negative (an essential not always acquired!); next, enlargements; and after that, as more difficult, slide-making. The prizes went to J. D. Campbell and G. P. Oppenheim; both P.B.H., by the way. A large number of slides were exhibited by F. W. A. Wells, made from negatives by H. T. H. Butt; and there were other cases of partnership work, indicating a deplorable lack of diligence somewhere. A score of slides contributed by Mr. Borchardt added much to the interest and to the quality of the show, of which the total was about 150.

Rumours of alterations and of new buildings contemplated by the Council include no definite promise of a better and more dignified dark room; but we have, as always, leave to hope.

A few cycling expeditions in pursuit of photography will be arranged, if possible, next term.

SWALLOWS AND MARTINS.

By L. Mott, Esq.

The following observation were made from a house in Chepstow, which is a town situated on the North side of the Bristol Channel, close to the junction of the Wye with the Severn.

My bed room window, from which I took most of my observations looks due East, over the rivers Wye and Severn, and gets the full blaze of the morning sun in consequence. I am just out of the town, the house being one of a row of small houses, and being also *above* the town, gets a clear uninterrupted view, over some fields to the rivers in front, over the town to the North, and to the East to a wooded estate. Beyond the rivers, in front, the view extends, on a clear day, to the Cotteswold hills. My sitting room window has the same outlook and view.

On the morning of September 15th I was lying awake about a quarter-to-seven, admiring the sun rise, when I noticed a great twittering of swallows outside the window. I got up and went to the window, and saw a small congregation of swallows and martins sitting on the roof and flying about in front of the window. That first morning I did not observe them very closely, and thought they were all swallows. The next morning, however, there was a much larger flock, and I noticed that the great majority of them were martins, while the swallows were very much in a minority.

These gatherings continued every morning till the 25th. That morning there were very few birds, and those that came simply flew about high up in the air, and did not alight, as far as I could see.

The next day, September 26th, there was a very large gathering indeed, and there seemed to be a greater proportion of swallows. On this day too, according to my notes, there were a great many birds flying over the fields in front, and especially round and over two great beech trees in the fields, in the evening, about five o'clock.

Possibly they roosted there for the night, or else flew off after dark. I never saw any flocks fly off, so they most probably went after dark. From now to the 9th of October, there was a gathering nearly every morning. On some mornings, however, there were no birds, or very few, and on others a very great number. On the morning of October 9th there was a large gathering, apparently all that had been left behind, for I saw none after that date.

The time of these gatherings was almost always from 6.30 to 7.30. The last week, however, it was rather later, from 7 to 8, or even from 7.30 to 8.30. Where they went to after that, and what they did during the day, I never could make out.

Now I noticed a good many facts during these gatherings which have interested me, as not being according to the descriptions of martins in books.

First, in the case of young martins. On the morning of September 30th there was one of the large gatherings, and as soon as I was dressed, I went up into the room above mine, as, being directly under the roof, I thought I could get a better view of them from there, and a curious sight met my view. On the window sill outside was a row of young martins, tightly packed. The sills of the windows of the rooms on each side were covered with martins in the same way. The gutters were full of young swallows, with a few martins amongst them. The roofs were covered with old birds, both swallows and martins. Wherever there was a ledge handy it was full, either of old or young. Whether there were birds on other houses near I could not see, very probably there were.

What struck me at once, however, was the colour of the young martins. They were brown and white, with hardly any blue-black on them, and yet they had the white rump most distinctly. There was much white on them, in patches. Unfortunately I did not take a detailed description of them, as I meant to have done. I should like to know whether any of the members of the College N.H.S. have carefully observed the colours of young martins and of young sand martins in the nest, and if so, what they have noticed. I have not seen a martin's nest, or been able to get to it for a long time now, and have no personal observations on young martins except those now made. If these were sand martins, then young sand martins have white rumps.

There was another thing that struck me, and that was the shape of the martin's tail when flying. The distinctions commonly given between martins and swallows, are,

(1) The swallow has a *reddish throat* and *dark rump*,
The martin has *no red on throat* and a *white rump*.

(2) The swallow has the tail feathers the same length except the two outer ones, which are very much longer than any of the others, giving the appearance of a very long fork.

The martin's tail is a simple forked tail.

Look, however, carefully at a martin's tail when the bird is flying, —where is the fork then? It is gone entirely. The tail is spread out and becomes fan-shaped; in fact exactly the same shape as a swallow's, only without the long outer feathers. Now these outer feathers, even at close quarters, when a swallow is darting about are often very difficult to see, and I found that the best thing by which I could distinguish a swallow's tail is the broad white tips to the feathers, which are very plain, even in young swallows. Of course I am speaking of swallows seen close. The white could not be seen unless the bird was fairly near. There is, I have no doubt, a difference in the flight of the swallow, martin, and sand martin, but it would require very many close observations to be able to tell them apart by that alone. The martin's flight is more hovering and less sweeping than that of the swallow.

There is still much work to be done in the observations of young birds, a part of the study of ornithology which is rather neglected, and which would well repay any one who devoted a year or so to it.

NOTES ON BIRDS.

By J. H. Cardew.

THE SONG THRUSH.

The Song Thrush is not only one of the prettiest birds we have in our neighbourhood, but it is also one of the best songsters. It can frequently be seen in the early morning perched on the branch of a tree singing away merrily. The bird is of a grey-brown colour, with a white breast marked with brown spots, reminding one of an ermine's skin. A thrush's eggs are rarely found before April; they are bright blue, usually speckled with black spots, though sometimes the spots are of a red-brown colour. The markings vary very much, and I have seen a thrush's egg as clear of spots as a starling's. The nest is of dry grass with a few straws and sticks, and the inside is thickly lined with clay, with which I have found chips of wood mixed on one occasion. This clay must be quite watertight as I have found pools of water in thrushs' nests long after any rain has fallen. On April 1st I found a thrush's nest on Battledown. It was made of dry grass and lined with clay, and had four small, badly marked eggs in it. The nest was in a hawthorn bush, about four feet from the ground. I have also found nests of this bird in an apple tree where two branches met, and in ivy which was climbing up a tree; but they are generally found in hedges.

THE MISSEL THRUSH.

The Missel Thrush is a fairly large bird having a peculiarly wild harsh cry. It is very shy except during the breeding season when it nests close to a house. Though sometimes ragged its nest is usually very neat, being made of sticks, moss and straw, cemented together with a little mud and lined with dry grass, it is generally placed in the fork of two or more branches in various kinds of trees, at a height of ten to twenty feet from the ground. The eggs, which usually number five or six, are very pale green with reddish brown spots all over them.

The bird is a strong fighter, and it is as well that it is, for both the crow and the jackdaw are very fond of sucking its eggs and taking its young. I found a nest at the junction of three branches of a lime tree in the middle of Cheltenham, and there were three small but well marked eggs in it on April 12th. The name Missel Thrush is given to the bird because it feeds largely on mistletoe berries.

THE ROBIN.

THE ROBIN is one of the tamest of our English wild birds. Its favourite place for building is in a hollow under a shaded bank, though it is often found nesting in old pots or water-cans. On April 11th I found my first robin's nest this year. It was built among some ivy which was growing on a bank at Leckhampton, and was made of dead leaves and moss and lined with roots and hair. There were three eggs in it, fairly large and well marked. On May 13th I found a robin had taken possession of a swallow's nest, having put in some dead leaves and then a layer of moss, and finally laid three eggs inside when I found it.

THE CARRION CROW.

THE CARRION CROW, a large bird, black in colour, is very like the Rook, its chief point of difference is the want of the fleshy stuff over the beak which a rook has. In outward appearance the nests of the two birds are alike, but the lining of the two is very different. The rook uses dry grass generally for a lining, but the crow uses a a mixture of moss, sheep's wool, feathers and thin dry bark. The crow does not live in colonies like the rook, but is found singly, I have never found more than one crow's nest in one tree. Like a rook it builds high up in a tree, but does not seem to make such a point of building in the topmost branches, the lowest I have found being about thirty feet from the ground. On April 1st I found a crow's nest in an oak tree, partly built. The outside was made of sticks, then some mud had been put in, and the inside was being lined with the substances mentioned above. I noticed that the bird began lining the nest at the top round the rim and worked downwards. On April 12th there was one egg in the nest.

THE WREN.

THE WREN is one of our smallest English birds. The jenny-wren is one of the largest of its family, very hardy and very tame. Its nest is usually built in crevices in trees and sometimes on banks.

I have noticed that, if it can, it will build its nest of the material obtained from the tree or bank on which it builds, and so the nest is well concealed from the passer by. On April 28th I found a wren's nest at Leckhampton made of dry grass, and lined with moss and feathers. It was on the side of a willow tree and had five eggs in it. Of the eight wren's nests I have found this year this was the only one with eggs, probably because I had disturbed the others too soon. Three were made of dead leaves, three of dry grass and two of moss. They were all on trees but one, which was in the thatched roof of a shed and made of dry grass.

THE STARLING.

THE STARLING is very common all over England. It usually builds in a tree, under the eaves of a house, or in a thatched roof. I once found one in a high bush about ten feet from the ground. My first starling's nest this year was found at Birdlip on April 26th. It was in a hole in an apple tree about six feet from the ground, was made of straw and a few feathers, and contained five eggs. One day at Hillcot, while walking through a field, I saw some starlings feeding in a field and on going up to them I found an egg lying on the bare ground.

THE KESTREL-HAWK.

THE KESTREL-HAWK is one of our commonest falcons. It is often to be seen hovering almost motionless in the air and then darting down so swiftly on its prey that it is difficult to follow its motion. I once saw a kestrel chasing a sparrow and, the latter would probably have escaped in its many twistings and turnings had it not completely lost its head and flown straight at the kestrel, which bore it off in triumph. The kestrel generally lays in a crow's nest, sometimes turning the original owner out, and I have also found one in a squirrel's nest. When it does build its own nest it does so in a very slovenly manner. Two years ago I found a crow's nest with eggs in it which were eventually hatched and this year a kestrel took possession of it without any attempt at repairs. The nest after having been blown and shaken about for two years was almost level on the top, and it was a marvel how the kestrel's eggs managed to stop on and not roll off in a storm. There were two eggs in this nest very well marked, being a dull blood red all over, strikingly different from the ones I found in the squirrels nest which had some white parts, and the red parts very bright and shining as if the eggs had been varnished.

THE PLOVER.

The Plover is a bird whose nest is very hard to find unless you go carefully to work. It is very quick to see and hear one's approach, and the best way to find its nest is not to go into a field and begin hunting about, but to creep up behind a wall or hedge and then show oneself. If there are any Plovers in the field, in a few seconds one will fly up with a warning note and then others will be seen springing up from all parts of the field. If a bird once begins wheeling round and crying out "pee-wit," it will not have any eggs, but if it flies straight off the field without a sound it is pretty sure to have some, and if you have marked the place it rose from you will find them.

THE BLUE TIT.

The Blue Tit is the smallest English Tit. It can be heard in most of our fields or woods in this neighbourhood uttering its shrill notes and running up and down the trees searching for its favourite insects. I once saw a Blue Tit on a fir tree running up and down so fast that it was extremely difficult to follow it. The number of insects these birds destroy must be enormous, and though they damage the buds and young shoots at times, yet it is only a case of a minor evil, which must be put up with, while a larger one in the shape of insects is destroyed. Of the nests of this bird which I have found this year, the best one was on May 19th. It was in a hole in an apple tree about five feet six inches from the ground and had seven eggs in it, and was made of hair and wool and a little moss and lined with feathers. Another nest found on May 13th had the bird sitting on the eggs and I managed to catch it, but it was so frightened and made such struggles to escape that I let it go in fear lest I should hurt it.

THE GREAT TIT.

The Great Tit is our largest English representative of its family, and, though not numerous, is usually well known from its harsh powerful voice. I watched, this year, a great struggle between a Great Tit and a Nut Hatch. I first found the Nut Hatch building in a hole in a tree and left it undisturbed. A week later I paid it another visit; the Nut Hatch was gone, but a pair of Great Tits were flying about the tree and had begun building on the top of the Nut Hatch's nest. A few days later I paid a third visit to the spot. The Nut Hatch had now come back and plastered up the hole so that the Great Tit could not get in, and I expect it soon enjoyed a comfortable nest itself.

THE GREENFINCH.

THE GREENFINCH is a bird which stays with us all the winter, and can be seen then in many a farmyard picking up seeds and grain. A Greenfinch built this year on the Shurdington Road in a hawthorn bush about six feet up. There was one egg in it on May 8th, and the bird was so tame that it scarcely left the bush when I drove it off the nest, and I had not left it half a minute before it was back on the nest again. The nest is of sticks, moss, and dry grass, with a few feathers.

THE CHAFFINCH.

THE CHAFFINCH is a very common English bird, being, in some parts of the country, as common as the Sparrow. Its nest is a model of neatness, as it never has any loose ends hanging out, the whole structure being firm and solid and bound together with cobwebs. It is made of moss and lichen, and thickly lined with feathers. I found my first Chaffinch's nest this year on May 6th in a yew tree in a garden, and though College boys were continually passing and playing within twenty yards of it, it was not disturbed. If the nest is built on a branch it is nearly always on the top of the branch, but I once found one built underneath the branch like a Golden-crested Wren's.

THE BLACKCAP.

THE BLACKCAP is one of the warblers. The cock bird has its head quite black, the hen bird having its head of a chocolate colour. I have never found this bird's nest higher than three feet from the ground, and the one I found this year, on May 8th, was only two feet up. The eggs of the Blackcap are very like those of the garden warbler, and I should never like to have to say to which of the two an egg belonged unless I saw the bird first.

THE CUCKOO.

THE CUCKOO arrives in April and stays till August or September. The bird has no nest of its own but usually lays in a Meadow Pipit's, Robin's, or Hedge-Sparrow's nest, frequently turning out some of the other birds' eggs to make room for its own, of which seldom more than one is found in a single nest. As it is much too big a bird to get into the nest and lay its egg, it lays it on the ground, and then picks it up in its beak and puts it into the nest. I am on the look out to see if Aristotle was right in saying that the young Cuckoo frequently eats up its foster-parents. This sounds an impossibility, but it may turn out the other young birds to get more room and food.

The colour of the Cuckoo's egg varies very much. The one I found in a Meadow Pipit's nest most closely resembled the eggs it was among. I found one in a Linnett's nest whose markings were not of the usual red-brown colour, but grey-brown, and very like the egg I found in a Hedge-Sparrow's nest last year.

THE SWALLOW.

The Swallow arrives in this country about the middle of April; the first I saw in this country was on April 28th. It builds a broad, cup-shaped nest of mud, held together with hay and lined with feathers, and generally places it where two beams cross under the roof of a barn; it is also at times placed on the perpendicular wall of a house, or under bridges. The first nest I found this year, on May 17th, had one egg in it, but after a few days I came again and some one had broken the nest down. The bird, however, at once started rebuilding operations, and on June 21st there were two eggs in the new nest. Like the Martin, this bird was later than usual in leaving this country. On October 2nd I saw a large flock flying to the South-West, and the last bird I saw was on October 7th.

THE SPOTTED FLYCATCHER.

The Spotted Flycatcher is another migratory bird, arriving about the middle of May. It lives chiefly on insects, and seems to find its favourite food in orchards, where it usually nests. It also, like the Robin, is found nesting in most curious places. I found my first nest of this bird on June 4th, at Leckhampton. It was made of sheep's wool, dry grass and moss, and lined with feathers. It was placed on the beam of a shed. Another I found on June 27th, in a hole in a tree, with four well-marked, unusually large eggs in it. About six yards from the first-mentioned nest, there was another one built about four feet down an old pump, and I was puzzled to think how the bird could get down to it or out again when once down, as there was no room for it to use its wings.

THE LONG-TAILED TIT.

The Long-tailed Tit. I found two nests of this bird, one at Whittington and the other at Colesbourne, but from neither did I get an egg. The one at Whittington was quite ready for eggs on April 20th, but was destroyed during the following week. I was still nearer finding eggs in the one at Colesbourne, for while I was getting up a tree to a Magpie's nest a farmer's boy passed me; about five minutes afterwards I went on in the same direction he had gone, and found a

Long-Tailed Tit's nest, about fifty yards from the Magpie's nest, pulled down from a fir tree and lying scattered about with broken eggs near it. I think the boy must have pulled it down, as the nest was quite warm and the bird was flying about. I was very much struck with the enormous number of feathers with which the nest had been lined, there were hundreds of them lying about. The nest of this bird is quite oval with a hole in the top or side, about six inches long and four broad. As the bird's tail is of an extraordinary length, as long or longer than its body, I do not quite see what the bird does with it when on the nest, unless it leaves it sticking out of the opening.

LECTURES.

METEOROLOGICAL OBSERVATIONS AND THEIR USES.

By M. Llewellyn Evans, O.C.

When we consider the vast—the universal influence that the weather and its changes and variations has upon all life, animal and vegetable, we cannot fail to see that it would be of the highest use to man to be able to know with some degree of accuracy the laws that govern the atmosphere, so that he might be forewarned of its changes and be prepared to ward off the attendant dangers or reap the benefit of the blessings bestowed thereby. For man often loses as much by failing to take advantage of a beneficient change of weather, through a want of preparation, as he does when some of his best work is destroyed through the visitation of Nature in one of her destructive moods. Until the present century, or perhaps the middle of the last, practically no efforts were made by mankind for systematic observation of the weather with scientific accuracy. Shepherds, sailors, and hunters, accustomed to live out of doors and read the face of the sky, from long practice in observing the changes in that face, have been able with some degree of accuracy to forecast, within a few hours, coming changes, and particularly storms. But this power of observation was not peculiar to these classes or exercised by them alone. Other animals and some vegetables, too, were equally able to read the signs of the times, and often with more accuracy and precision, and much of mankind's weather lore has been culled second-hand, not from his own personal observation of the atmosphere and

knowledge gained thereby, but from watching these, so called, lower animals, who can foresee the change coming, and know the meaning of the sign by some power now unknown to man, either undeveloped in him, or perhaps long since lost, when he ceased to roam as a wild beast, and became a man. But all these observations and the weather lore evolved by man therefrom, were, so to speak, mere rules of thumb. The why and the wherefore he knew not, neither was he at any trouble to seek it. What caused these strange changes in the sky, thereby bringing about such changes on the earth for man and beast and herb? What were the mighty laws that governed the atmosphere? Or, was there any law? Here and there a man of a more scientific mind than his fellows sought by painful and continued observation to evolve some order out of the apparent chaos, but though his labours were not in vain, yet they brought no result to himself. Observations in one place are useful, but it is dangerous to attempt to theorise from the results there obtained. The atmosphere is so vast, the forces at work therein are so mighty, that one might as well expect to see the ocean visibly increased in magnitude by emptying a tumbler of water into it, as to think that the observations of one single man in one place are sufficient to enable that man, or anyone else, to determine the laws and forces that govern the atmosphere. There must be long, patient observation, carried on through many years—aye, perhaps hundreds of years—by thousands of observers all over the globe, and all these observations must be worked out and compared, to enable mankind to fathom the laws that govern the changes of the air. Thus you see why meteorology is apparently at present so unsatisfactory in its results. In the first place it is a very young science. Scientific research respecting the atmosphere is at present only in its early infancy. Our forefathers had no uniformity in their observations, consequently these were of very little scientific value. For instance, there is an old saw which you have all probably heard,

> "If the oak comes out before the ash
> Then we shall only have a splash.
> If the ash comes out before the oak
> We are certain then to have a soak,"

thereby pretending to indicate the wetness or dryness of the coming Summer. But, unfortunately, our ancestors when they made their observations were not concerned to observe the same two trees year by year. They took any two trees and hardly ever the same. Neither did they take any account of soil or situation. Had they done all

these things which they did not do, and not done that which they ought not to have done, they would have found out that in nine years out of ten the oak always comes out before the ash, and we as often get a soak as a splash following. Since 1815 the ash has only come out before the oak some dozen times, and the last occasion was in 1859, I believe. Given the same conditions, the ash is always later than the oak in putting forth its leaves. Do not, however, let it be supposed for a moment that I wish to depreciate the efforts of the scanty band of observers who laboured in the cause of meteorology in the last century, and early in the present. Far be from me any such intention. On the contrary, the work they did was most valuable. Most of you are doubtless acquainted with Gilbert White of Selborne and his writings. The records of the weather which he left are most interesting and at the same time valuable, as giving us some idea of the weather in those times, more than 100 years ago. Over and over again you hear people talk of old-fashioned winters and summers and the like. But if you will look at White's records you will find that the weather then was not very different to what it is now. In fact changes in climate are so very gradual as to be nearly inappreciable in so short a space of time as a man's life, although to hear people talk, and especially old people, one would not think so, but their memories on the subject of the weather are very fallacious. I have perhaps said enough to shew that the science of meteorology is a very young science, and will proceed to consider it more in detail.

Broadly speaking, meteorology, or the study of the laws that govern the atmosphere, resolves itself under four heads. Wind—Rain—Temperature—Pressure. You may wonder why I do not also mention Sunshine. Undoubtedly the part played by sunshine is very considerable, not only in the growth of vegetables but in the development of the animal world. Without light and heat no life could continue, and both these essentials are supplied by the sun. But I would remind you that the sun is essentially a thing outside and apart from our atmosphere, and is practically a constant quantity so far as the earth as a whole is concerned, while the excesses and defects of heat and light are mainly due to the atmosphere between the sun and us, whose varying moods are the cause of our being deprived of so much of these necessaries, while on the other hand it mitigates and makes bearable the fierceness of the sun's rays. And it is the laws that govern these varying moods that meteorologists are seeking to ascertain.

Wind has been called the vehicle of climate, it is caused by the flow of air from a region of higher to a region of lower pressure. In this country there are two main currents of very different types. The first reaches us from the Atlantic and is laden with moisture. It is cool in Summer and warm in Winter. The other comes over the Continent and is therefore much drier, making Summer hotter and Winter colder when it occurs in these seasons. Fortunately these Easterly currents are comparatively infrequent, for, whereas, the average number of days in a year when the wind is S.W. is 106, that when the wind is N.E. is only 45, while East winds only occur on 27 days, West winds occurring on 46 days, so that we get many more winds from the Atlantic than we do from the Continent. Wind is very beneficial to the growth of trees, for the movement it engenders in them causes the sap to flow more freely, and it is also of course a great purifier of the atmosphere. That mysterious ingredient, ozone, is always more prevalent in windy weather, and it is generally held to have very purifying and health-giving qualities. Not only is the direction of the wind taken at all meteorological stations, but at many its force and velocity are measured. This is done by an instrument—an anemometer—consisting of four cups mounted on a pole attached to an index and dial below. By means of these instruments the daily and hourly velocity of the wind may be measured. It is unfortunate, however, that there is a lack of uniformity in the scales used with these instruments, and you consequently often get figures quoted in different places which it is exceedingly difficult to harmonise. Beaufort's scale, which puts the velocity of a calm at three miles per hour, and that of a hurricane at 105 is now generally considered too high. During the recent storm on the 12th of January, you doubtless observed, recorded in the newspapers, velocities of 70, 80, and 90 miles. But when we consider that the greatest velocity recorded in the great hurricane in the West Indies before the instruments were blown away was 62 miles an hour for 5 minutes and 75 for one minute, there would seem to be something wrong with the English records. It is estimated that the wind did attain 90 to 100 miles per hour in the West Indies during the hurricane and we know with what results. No such results occurred in England and yet the velocity is made to be the same. In considering the velocity of the wind during a storm this of course is not the velocity of the storm. While the velocity of the wind may be from 30 to 60 miles per hour the storm itself may not be moving at a greater pace than 8 or 10. The rates at which cyclonic storms travel

vary from 200 to 800 miles a day, and they are apparently borne along by the prevailing breezes.

The rainfall of any region depends on the prevailing winds considered in relation to regions from which they have come, and into which they come. The colder the region they enter the more the rain. General systematic observations of the rainfall of the country were commenced in 1860 by Mr. G. J. Symons, and he has now over 3,000 observers scattered over the British Isles. The whole of this work is carried out by voluntary contributions, and the Government neither recognize nor contribute towards the expense of this valuable work. But before 1860 there had been observations made for several years in isolated places, and some of these go back for about 200 years. The earliest known records in this country were taken at Bristol in 1774 to 1778. Length of time in observations is in nothing more essential than in rainfall records, and it seems probable that 40 or 50 years at least of continuous observation are requisite in order to obtain an accurate conception of the average yearly rainfall of any place. I may say at once that rainfall observations are taken daily at 9 a.m. and the amount measured is put down to the previous day. Any day on which one-hundredth part of an inch falls is technically known as a wet day. An inch of rain represents 100 tons of water spread over an acre of land. It is no uncommon thing for an inch of rain to fall in 24 hours in this country, and as much as 4 inches in one day has been registered, for instance at Seathwaite (the wettest place in England) last August 4·17 inches fell on the 5th, and 4·79 on the 26th, and the total rainfall for that one month exceeds by half an inch the whole of the rainfall for the first 10 months of 1898 at Cheltenham. But then Cheltenham is a dry place, its average annual rainfall is only 28 inches, while that of Seathwaite is 136 inches. But it does not follow that because a place has a heavy annual rainfall that it is necessarily what people call a very wet place, that is to say that it is always raining. Looked at from this point of view Cheltenham is actually wetter than Seathwaite, relatively speaking, for its percentage of wet days in a year works out at 50 while that of Seathwaite is only 59, although the latter has nearly five times the rain that Cheltenham has. A very interesting paper was recently read before the Meteorological Society by Mr. Scott, the head of the Government Department, in which he pointed out that the frequency of the rainfall shifted from one part of the British Isles to another as the year went on. In January the only places falling below 50 per cent. are South Shields and Cambridge, while the West of Ireland

has 70 per cent., Cornwall, Wales, West of Scotland and Norfolk shew 60 per cent., and Stornoway and Dunrossness 80 per cent. In February the figures are much the same, but less in the extreme North. In March hardly any station in England shews above 50. In April the only place reaching 60 is Valencia. Now in May, the real dry weather values begin to appear in Hampshire. At Southampton and Hurst Castle June is the driest month in the whole year, while July is the wettest Summer month bringing the well-known Lammas floods. August is as wet as July, but September is much drier. October is wet again, and in November and December we find the maximum, which in July and August was in West Ireland, has moved up to Stornoway and Dunrossness. Accordingly June and September are the two months with the greatest prospect of dry days. The characteristic of our climate is the frequency of the falls of rain. The individual falls are not often excessive. Of course we thereby escape the extraordinary deluges with which other countries are visited, and have nothing to compare with the tremendous falls on the Hills in India and in Burmah. I may mention that during the recent hurricane in the West Indies the violent rainfall did far more damage than the wind, and amounts varying from 10 to 20 inches fell continuously in 48 hours.

The temperature is, of course, an item in the meteorologist's list of things to be observed, to which much importance is attached from its effect on animal and vegetable life, and probably that which is most beneficial to the one equally suits the other, and that would be a gradual rise in temperature from the end of January to the end of July, and then a steady decline. If that were the case there would be practically little or no need to take observations of the temperature. But it is very far from being the case, and it becomes the duty of the observer to record all the variations of the temperature and then seek to find out, if possible, the causes of the changes. To do the first he is provided with self-recording thermometers to give the maximum and minimum temperatures carefully verified at Kew Observatory, which are placed in a screen 4 feet high, consisting of a box of double louvred sides through which air passes freely, but no direct sunlight or radiating rays, so that in this way the true shade temperature can be obtained. The screen should also contain wet and dry bulb thermometers from which can be deduced the temperature of the Dew Point, the Elastic Force of Aqueous Vapour and the relative Humidity or percentage of saturation of the air with aqueous vapour.

The atmosphere is twofold, dry air and aqueous vapour. The former remains constant, the latter is always changing, owing to evaporation and condensation always going on. Water, snow, and ice and plants are all of them constantly adding to the aqueous vapour in the air, and since evaporation increases as temperature increases, the capacity of the air is also increased. But this capacity is not unlimited. When, therefore, the air is fully saturated evaporation ceases. Therefore evaporation is greatest when the air is driest. Currents of air remove the moister and substitute drier air, consequently in windy weather evaporation is much more rapid. As air expands under a diminished pressure its temperature consequently falls, and it becomes moister, and as it contracts under an increased pressure its temperature rises and it becomes drier. Hence ascending currents of air become moister as they ascend, and descending currents become drier as they descend. Hence as winds ascend the slopes of hills they become moister, and when they cross the top and flow down the other side, they appear to become drier, although the amount of aqueous vapour in them has remained practically unchanged.

The elastic force of aqueous vapour is its pressure at the surface of the earth expressed in inches of mercury of the barometer, and is calculated from the temperature of the dew point. Thus the elastic force of vapour indicates the quantity of aqueous vapour in the air at the place of observation, and may be designated the absolute humidity of the air.

I may here mention that the sudden and violent appearance and action of thunderstorms is believed to be due to the meeting between warm moist currents of air ascending and cold dry descending currents, and where the atmosphere is continuously dry and rainless, or where the pressure is continuously high, thunder is unknown.

Hail is connected with whirlwinds. The vapour carried aloft is, below a certain height, condensed into rain, above that height, into snow. If, therefore, raindrops formed below are carried up into the wind region they are frozen and fall as hail. They may be drawn in again as they fall and be carried up again, gaining size in the process.

To ascertain the causes of the various and constant changes in the temperature we must look to another branch of meteorology, viz., the measurement of the pressure of the atmosphere by means of the barometer. Indeed, to changes of the atmospheric pressure are due all the variations in climate to which we are subject; heat and cold, rain and wind, all arise from these changes, and, could we but find out the laws that govern them, we might then hope to see weather forecasting perfected. It is extremely difficult to convey to

the mind a picture of the air as it is. Some have likened it to a sea, which is true to a certain extent, as the air like the water is constantly moving; but, on the other hand, no sea has the great mountains and plateaux and valleys which are to be found in the air. If you can imagine a continent as liquid as the sea, yet with massive mountain ranges, and these mountain ranges constantly shifting from one place to another, you will have some conception of the nature of the atmosphere. It is now regarded as certain by some observers both here and in America that there are certain areas of high pressure independent of one another which shift from place to place during certain seasons of the year, that is to say, in summer they leave the land, and in winter approach it. These high pressure systems occur in both hemispheres, but I shall confine my remarks to those of the Northern Hemisphere as the better known. There are five of these systems, one in the North Pacific off the coast of California, one over the United States, one over the Atlantic, one over Central Asia, and one over Greenland. During the Summer the American, Greenland, and Siberian systems disappear, moving away far north where there is prevailing high pressure, and indeed the progress of the Siberian system across Western Russia and Scandinavia to the N.W. in spring, returning S.E. in autumn, can be distinctly traced. When the accuracy of these discoveries shall have been firmly established it will remain to discover, if possible, the cyclonic systems, which there is every reason to suppose exist just as much as anticyclonic systems, and which presumably take their course along the lower levels between the high plateaux of the anticyclones, but seeing that neither are stationary, the one may have sufficient force to divert or thrust back the other. Hence arise our storms and other changes and varieties of weather, causing so much trouble and vexation of spirit to the short-sighted man, who, seeing the sun shining in the morning, concludes that it must shine all day, and starting away without any provision for the future is annoyed to find himself drenched or frozen before night.

My object in reading this paper was to justify the existence of the Meteorologist, at whom many, if not the majority of, people scoff as a kind of Uncle Toby astride his Hobby Horse, which he rides with whip and spur; but if I have made it clear to you that the apparently meaningless and useless actions and performances of the observer may and do have some practical effect, even though it be in the distant future, and advance the general sum of human knowledge of the atmosphere with which we are surrounded, then my object has been achieved.

HAILES ABBEY.

By The Rev. W. Bazeley.

It was in the reign of Henry III. that Hailes Abbey was first built. The times were troublous ones, in 1216 John had died, and there was no lover of England who was not thankful for his death. His son, Henry, was only nine years old, and for the next three years the royal authority passed into the hands of William Marshall, and after his death Hubert de Burg and Stephen Langton managed the country's affairs. But in 1227 Henry declared himself of age and soon quarrelled with his advisers. There was a certain refinement in Henry's temper which won him affection even in the worst days of his rule. He built the Abbey-church at Westminster and was a patron of artists and men of letters.

At this period the priesthood had very great power over Christendom, but its religious hold was weakening day by day. Within the English Church there was need of reform, preaching was becoming a thing of the past, the monks were passing into rich land owners, many of the parish priests did not reside in their parishes, and were ignorant, and so their spiritual hold was weakening. To win the world back to the Church was the aim of two new religious orders in the thirteenth century. The Dominicans and Franciscans strove to carry the Gospel to the poor, and wandered about to the town and the country folk as missionaries.

It was at such a time, when the land was worried by an ill-governing, though in a sense religious king, and burdened by an ignorant priesthood, that the Abbey of Hailes was built. The founder of the Abbey was Richard, brother of Henry III. This was the Richard—Earl of Cornwall—who first sided with the Barons against the king and then deserted to Henry's side. But later on the Barons, under Simon de Montfort, were too much for him, and captured him in a windmill at the battle of Lewes, in 1264. It was in 1251 that Richard had the Abbey consecrated, and the occasion was evidently a great

one. Henry III. and his Queen, Eleanor, were there, and with them three hundred nobles, innumerable ecclesiastics, and an enormous multitude of commoner folk. In the presence of this vast concourse of people, thirteen bishops said Mass at the thirteen altars of the Abbey Church. In 1256, Richard, Earl of Cornwall, was elected King of the Romans. In 1261, Sanchia, his Queen, sister of the Queen of England, was buried near the High Altar. Henry of Almaine, Richard's eldest son, who had been foully murdered in a Church in Italy, was also interred in the Church, in 1271. As was the custom then, they boiled the flesh off the body, and buried that in Italy, but the heart was interred in the shrine of Edward the Confessor at Westminster, and the bones buried at Hailes in front of the High Altar. Soon after, Richard himself died, and was also buried in Hailes Church by the side of Queen Sanchia. During the recent excavations, traces of a grave were found in front of the High Altar, and this was thought to be the one in which Henry had been buried, for although it had been desecrated, there was a piece of a leaden coffin in it of Italian thirteenth century workmanship. Richard's coffin, we are told, was of gold, but as he was buried in the Church "on high," his coffin was probably not beneath the floor, but in a raised tomb above the floor level. This was probably carried off either when the Monastry was dissolved, or during one of the times when the buildings were on fire.

In 1271 came the first fire, which was fatal to the Church, and Richard paid for the rebuilding of it, and in 1277 it was reconsecrated. Edmund, Earl of Cornwall, gave to the Abbey a vase containing some of the blood of Christ. This at once attracted pilgrims from all quarters and up to the dissolution of the Monastries in 1539, Hailes became the centre to which thousands of people came to worship, and to have miracles worked on them and their diseases cured. A large number of buildings must now have been built round the Abbey to accommodate the pilgrims. Edmund also gave a piece of the Cross to the Abbey. In 1300 he died, and Edward I., his executor, summoned all the neighbouring Abbots to his funeral.

The records of the Abbey cease from this time till the sixteenth century. In 1471, after the Battle of Tewkesbury, many of the refugees took sanctuary in the Church of Didbrook, near Hailes, but their pursuers came in after them and slew them inside. The desecrated Church was rebuilt by William Whitchurch, Abbot of Hailes, and he lies buried in the Nave. In the middle of the fifteenth century plague and fire had made a ruin of the Abbey and

the Church, and the Monks were so poor that they could not pay for the restoration. In their trouble and misery they besought the Pope for help, and he wrote to England and commanded collections to be made throughout the country, and then the buildings were restored and the Abbey went on being used for religious purposes up to the dissolution of the Monasteries in 1539.

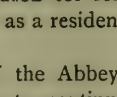
During the excavations last year some beautifully carved thirteenth century stone bosses were found in the Chapter House. They had evidently fallen from the roof and had remained undisturbed and wonderfully preserved. They were found some eight feet beneath the present surface of the ground. They were all ornamented with floral designs, with the exception of one which represents Christ on a lion rending the animal's jaws. This representation of Christ as the spiritual Samson overcoming the devil in the form of a lion is not uncommon in the thirteenth century. As the Abbey was a Cistercian one, no figure was allowed to be carved except that of Christ.

The Cloisters were a covered walk around a lawn or garth, in which the monks had a washing trough, and a stone ledge on which they could sit.

Opening into the Cloisters were the Chapter House, where the business of the Abbey was done, the Refectory, where the monks ate, the Dormitories, where they slept, and other rooms, No douht the original Cloisters were roofed with a wooden roof, but afterwards, in the fifteenth or sixteenth century, a stone vaulted roof was made for them.

Unfortunately, these later builders took little trouble to keep any of the old work as it was, and in order to get proper support for the stone cloister roof they hacked away much of the older work and spoilt it. Hailes Abbey was dissolved by Henry VIII. in 1539, and at that date ceased to be used for religious purposes, though the Abbot's lodgings were used as a residence till the beginning of the eighteenth century.

Only a small portion of the Abbey was excavated during last Autumn, and it is intended to continue the excavations this year. Already many things of interest have been brought to light, and a rich harvest of discoveries will no doubt be made when the spade and pickaxe get to work again in the Spring.



Cheltenham College Natural History Society Accounts for 1899.

Receipts.

	£	s.	d.
January—Balance in hand	24	7	8
April—Subscriptions (per Mr. Gardiner) ...	13	4	6
July „ „ ...	18	17	0
December „ „ ...	11	13	6
	£68	2	8

W. M. BAKER,
Hon. Treasurer.

Expenditure.

	£	s.	d.
April—Slides for Mr. Scott's Lecture ...	0	10	0
„ King—Dark Room for Lent Term...	3	11	6
July—Four Excursions per Mr. Gardiner ...	14	11	2
„ Printing Sectional Reports ...	0	17	6
„ Framing and Printing Notice on Montford Egg Collection ...	0	8	9
„ Photo Sec., Prizes per Mr. Youngman	1	10	0
„ Martyn—Dark Room, Summer Term	5	8	8
Nov.—"Cabinet," per Mr. Gardiner ...	2	0	0
Dec.—Lantern Slide Exhibition (Servants)	0	9	6
„ Photo Sec., Prizes per Mr. Youngman	1	10	0
„ Martyn—Dark Room, Xmas Term...	4	4	4
„ Subscription to Glos'ter Arch. Soc....	1	1	0
Balance in hand	32	0	3
	£62	2	8

Audited and found correct, January 20th, 1900,
A. A. BOURNE.

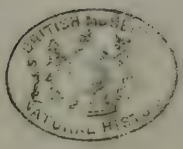
CHELTENHAM COLLEGE

Natural History Society.

REPORT FOR THE YEAR 1901.

SUMPTIBUS EDITORUM CHELTONIENSIUM.

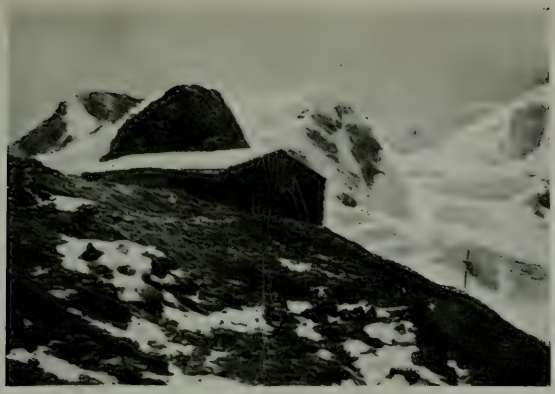
CHELTENHAM:
BARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.



Lifeboat Procession at Newquay.

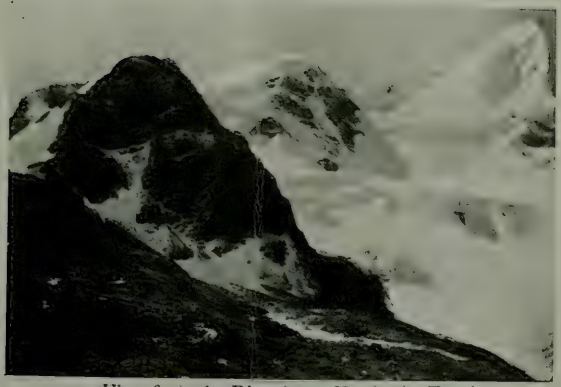
Beaching the Lifeboat at Newquay.

(Photographs by H. T. H. Butt.)



The Diavolezza Hut in the Tyrol.

View in the Tyrol.



View from the Diavolezza Hut in the Tyrol.

(Photographs by A. A. Johnston.)

CHELTENHAM COLLEGE

NATURAL HISTORY SOCIETY

REPORT

OF THE PROCEEDINGS OF THE SOCIETY FOR THE YEAR

1901

Sumptibus Editorum Cheltoniensium.

CHELTENHAM:
JOHN DARTER, COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE

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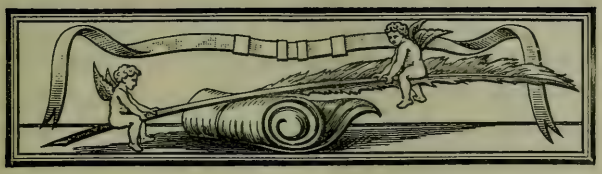


PREFACE.

During the past year the excursions have been as well attended as ever and probably more small excursions have been taken place than in previous years. There have been more who may with correctness be termed working members of the sections. The lectures during the winter terms have however not been so well attended as usual, and this is more to be deplored as they have been exceedingly interesting. We have to thank very heartily some friends in the town for having come and talked to us on subjects which they have made specially their own. Dr. Callaway's lecture on the Origin of Our Cheltenham Scenery cannot fail to have interested and impressed all who were present, and Mr. Witchell's lecture on the Habits of Animals must have been most fascinating to everyone who heard it. It is by hearing those who, like Dr. Callaway and Mr. Witchell, know so well how to observe and can tell in so interesting a way the results of their observations, that others become conscious of what a vast world the world of nature is and how much there is to observe in it. During the Winter term Dr. Carter was kind enough to come and tell us much that was interesting on the subject of Blood. All who heard him were keenly interested and we hope this is not the only time that he will lecture to us.

The great event of the year is the presentation to the College of the magnificent Courage Collection of Birds and Animals. This collection which was made by the late Mr. Harold Mitchell Courage who entered Boyne House in September, 1874, was bequeathed to us last year.

The Collection will be placed in the spot hitherto filled by the bicycles, modelling shed and dark room. This is now being roofed over by a handsome roof, and a doorway will be made in the end wall of the present Museum, so that there will be a direct communication between the two rooms. One consequence of this arrangement is that the dark room has emerged from its sequestered spot and come boldly into the light of the quadrangle, where all may see how very insufficient it is for a section which boasts so many members as does the Photographic Section.

The cases with Ethnological exhibits have been moved back into the Museum from the Library and in consequence the Museum is now very inconveniently crowded.

Part of one of the show cases is now filled with a small series of bird skulls and bird breast bones arranged very carefully and with beautiful hand-drawn and coloured explanatory diagrams by Mr. L. Mott, to whose kindness in doing this the Society is deeply indebted. This collection fills a very important gap in our exhibits, nothing in the Comparative Anatomy line having before been shown.

A list of the presentations to the Museum will be found in the Report. The Collection of Butterflies and Moths by C. H. Stockley, Esq., and presented by T. F. Cooke, C., is especially to be noticed. This has been incorporated in the main collection, and has filled many gaps and enabled many poor specimens to be replaced by good ones.

At the close of this year we have to look back with regret on the loss to the Society of many well-tried members, chief amongst these must be mentioned M. M. L. Currie, T. A.

Hodson and D. L. Solomon. Currie won the Botanical Section Prize in 1896, Hodson won the Botanical Section Prize in 1896, and the Ornithological Section Prize in 1901, while Solomon won the Geological Section Prize in 1901 and ran second for the Photographic Section Prize in 1900.

There are several members of the different Sections left, however, who have done excellent work or who have shown promise of turning out good naturalists and are capable of using their eyes, A. A. Roberts, H. N. Wright, and A. G. Cunningham amongst the Botanists, Lowther, Jenkins and Harker amongst the Entomologists, T. I. G. Thomas of the Ornithological and H. Williams of the Geological Section are still with us and many members of last year's Photographic Section remain.

Not only every member of the Section he has so long and so kindly looked after, but every member of the Society, will be intensely sorry to lose Mr. Wynne-Edwards. He has done so much for the Society as a whole, in lecturing to it and in assisting at its resuscitation in 1894, and has been such an energetic, indefatigable and encouraging President of the Botanical Section that his loss cannot fail to be felt a very serious one. He has given us unstintingly of his time and the Botanical Section's list of flowers is evidence of the energy which he has infused.

If where he is going he finds a Natural History Society in existence, or if he creates one there himself, we may be sure that if he has anything to do with its working it is certain to be a success.

Mr. Hedley, who has already done so much to assist the Botanical Section has very kindly consented to become its President, otherwise the Presidents of the Sections will be next year as they were during the one which is past.

THE COUNCIL, 1931.

President... ... ... THE PRINCIPAL.

Treasurer ... ... W. M. BAKER, ESQ.

Secretary... ... ... C. I. GARDINER, ESQ.

President of Archæological Section A. S. OWEN, ESQ.

President of Botanical Section ... REV. J. R. WYNNE-EDWARDS.

President of Entomological Section J. C. SALTER, ESQ.

President of Geological Section ... C. I. GARDINER, ESQ.

President of Ornithological Section E. A. MENNEER, ESQ.

President of Photographic Section C. E. YOUNGMAN, ESQ.

President of Junior School ... F. J. CADE, ESQ.

RULES.

1.—That this Society be called The Cheltenham College Natural History Society, and have for its object the promotion of the Study of Natural History.

2.—That ordinary Meetings of this Society be held on Fridays once in three weeks, at 5.30 p.m., or at any such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal subscriptions, be exempt from further payment.

6.—That any Member whose Subscription shall be a whole term in arrears, shall cease to be a Member of the Society.

7.—That Members be encouraged to join Sections for the more accurate study of the different branches of Natural History: that the formation of these be arranged, and the work settled at the first Meeting of each term: that each Section be under a President, who is responsible for its meetings and organisation, and that a Secretary be appointed by each Section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the

Presidents and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President shall preside, or, in his absence, a Member of the Council.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and of the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of two Auditors, to be appointed at the last meeting of each year, to be laid on the table at the first meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrange ments not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a special or Ordinary Meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these Rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.

Cheltenham College Natural History Society.

President ... The Rev. R. Waterfield.

Secretary ... C. I. Gardiner, Esq.

Treasurer ... W. M. Baker, Esq.

EASTER TERM, 1901.

LIFE MEMBERS.

Adamthwaite
Allan
Allen
Armitage
Aston
Balfour
Begbie
Bickerdike
Bignell
Bouch
Bourke
Brinton
Burke, H.
Capel-Davies
Chapman
Chard
Clark
Clarke, G. A. E.
Clarke, R. C.
Clerk
Collett
Congreve, C. R.
Corfield
Crailsheim
Currie
Davidson
Davis, A. H.
Dickinson
Dixon
Dobell
Edwards
Exham
Ezra, D.
Ezra, E.
Festing
Fowke
Fox
Fraser
Freeland
Fry
Furnell
Gall
Gard'ner, B.
Gatacre, E.
Griffiths
Guthrie
Higgon
Hodson
Holliday
Howlden
Jenkins, N. M.
Johnston, A. A.
Johnston, R.
Knowling
Laming
Lamotte
Leyton
Lemon
Lesser
Lewis
Locke
Lowther
Mackintosh
McCulloch
Meyer
Mitchell-Dawson
Milton, R.
Morris
Murray, G.
Nathan
Oppenheim, D.
Oppenheim, J.
Orr-Ewing
Perkins
Porteous
Pottinger
Quill
Rendle
Roberts, A. A.
Robertson-Shersby
Sanders
Saunderson
Sharp
Sherwill
Sidebottom
Simpson
Sington
Solomon, D.
Solomon, L.
Thrupp
Wilson
Wheeler
Whittall, H.
Whittuck

ORDINARY MEMBERS.

Adderley, R.
Adderley, R. W.
Appleby
Banks
Bingham
Biscoe
Brettell
Brinton
Buckley
Burke, E. P.
Campbell, A. L.
Campbell, W.
Chambers
Cohen, D.
Cohen, E.
Cohen, J. B.
Couran
Courtney
Cowan
Cummins
Cunningham
Dane
Davis, F.
Davis, W.
Daubeny
Dickinson, G. B.
Eggleston
Farmer
Fawkes
Fitzherbert
Forbes-Robertson
Francis, H. G.
Fryer
Gardiner, E. C.
Gill
Glendinning
Gordon
Gould
Grieve, J. R.
Grieve, W.
Harker
Harrington
Herbert
Hetherington
Hill
Jenkins, R. A.
Jopp
Kennedy
Kenworthy
Lawford
Lawson
Littleton
Lloyd, W. H.
Mackinnon, N.
Malder
Marklove
Maxwell, E. B.
Maxwell, G. A. P.
McSwiney
Megaw
Mills
Milne
Milton, F.
Milton, L.
Montague, S.
Morrison
Neame, G. T.
Nicolls
O'Donel
Osborne, E. A.
Pardoe
Pearce, H. G.
Pearce, E. O.
Peel
Radcliffe
Ramsbottom
Russell
Samuelson, E.
Samuelson, V.
Scovell
Stopford
Storr
Thomas
Thoyts
Tinson
Todrick
Tolson
Turner
Tyzack
Vicat
Wade
Walter
Waterhouse
West
Williams, H. F.
Woolatt, C. H.
Woolatt, R.
Wright, H. N.
Wright, R. A.
Wyatt

SUMMER TERM, 1901.

LIFE MEMBERS.

Adamthwaite
Allan
Allen
Armitage
Aston
Balfour
Begbie
Bickerdike
Bignell
Bourke
Brinton
Burke, E. P.
Burke, H.
Capel Davies
Chapman
Chard
Clark
Clarke, G. A. E.
Clarke, R. C.
Clerk
Cohen, E.

Cohen, D.
Collett
Congreve, C. R.
Conran
Corfield
Crailsheim
Currie
Davidson
Davis, F.
Davis, W.
Dickinson
Dixon
Edwards
Exham
Ezra, D.
Ezra, E.
Festing
Fowke
Fox
Freeland
Fry
Furnell
Gall
Gard'ner, B.
Gatacre, E.
Grieve
Griffiths
Guthrie
Hetherington
Higgon
Hill
Hodson
Holliday
Howlden
Jenkins, N. M.
Johnston, A. A.
Johnston, R.
Knowling
Laming
Lamotte
Lawford
Lawson
Layton
Lesser
Lewis
Locke
Lowther
Mackintosh
Maxwell
McCulloch
Meyer
Mitchell-Dawson
Milton, R.
Montague, V.
Morris
Murray, G.
Nathan
O'Donel
Oppenheim, D.
Oppenheim, G.
Orr-Ewing
Perkins
Pottinger
Quill
Radcliffe
Rendle
Roberts, A. A.
Russell
Sanders
Samuelson, E.
Samuelson, V.
Saunderson
Sharp
Sherwill
Sidebottom
Simpson
Sington
Solomon, D.
Solomon, L.
Thrupp
Vicat
Wheeler
Whittall, H.
Whittuck

ORDINARY MEMBERS.

Adderley, R.
Adderley, R. W.
Ames
Appleby
Banks
Bayldon
Beadon
Belfield
Bingham
Biscoe
Bishop
Brett
Brettell
Brierley
Brinton
Brodrip
Browne
Buckley
Campbell, A. L.
Campbell, W.
Capel-Davies
Chambers
Clark, R. O.
Cowan
Cummins
Cunningham
Dane
Daubeny
Davies
Dickinson
Eggleston
Farmer
Fasken
Fawkes
Fitzherbert
Forbes-Robertson
Francis, H. E.
Fryer
Gardiner, E. C.
Gardner, L.
Gill
Glendinning
Gordon
Gould
Grieve, W. P.
Harker
Jenkins, R. A.
Jopp
Kennedy
Kenworthy
Littleton
Lloyd, W. H.
Mackinnon, W.
alden

Marklove
Maxwell
McSwiney
Megaw
Mills
Milne
Milton, F.
Milton, L.
Morrison
Mortimer-Booth
Neame, G. T.
Neame. T.
Nicolls
Osborne, E. A.
Pardoe
Pearce, H. G.
Pearce, E. O.
Peel
Porter
Priday
Radcliffe
Ramsbottom
Rushbrooke
Scovell
Searle
Skipton
Smith, W. H.
Smythies
Spackman
Stephens, D. J.
Stokes
Stopford
Storr
Tate
Thomas
Thoyts
Tinson
Todrick
Tolson
Tulloch
Turpin
Turner
Tyzack
Wade
Wallace
Walter
Waterhouse
Webb
Wells
West
Williams, H. F.
Woolatt, C. H.
Woolatt, R.
Wright, H. N.
Wright, R. A.
Wyatt
Young, R. P.

MICHAELMAS TERM, 1902.

LIFE MEMBERS.

Allan
Appleby
Banks
Bazeley
Begbie
Bickerdike
Bignell
Bourke
Brettell
Burke, H.
Capel-Davis
Chard
Collett
Congreve
Cowan
Currie
Davidson
Dickinson
Edwards
Exham
Ezra, D
Ezra, E.
Festing
Fowke
Fox
Freeland
Gall
Gard'ner, B.
Gatacre, E.
Griffiths
Higgon
Howlden
Jenkins, R. A.
Johnston, A. A.
Johnston, R.
Jopp
Knowling
Laming
Lamotte
Layton
Lemon
Lesser
Locke
Lowther
Malden
Maxwell
McCulloch
Megaw
Meyer
Mitchell-Dawson
Milton
Morris
Murray, G.
Nathan
Oppenheim, D.
Oppenheim, G.
Orr-Ewing
Pottinger
Priday
Quill
Roberts, A. A.
Saunderson
Sidebottom
Simpson
Sington
Thomas
Tolson
Woolatt
Wheeler
Whittall, H.

ORDINARY MEMBERS.

Adderley, R. W.
Allen
Ames
Bayldon
Beadon
Belfield
Bingham
Birch
Biscoe
Bishop
Brett
Brierley
Brodrip
Browne
Butt
Campbell, A. L.
Campbell, W.
Capel-Davies, J.
Chambers
Clark, R. O.
Courtney
Cummins
Cunningham
Curtis
Darwin
Daubeny
Dickinson, G. B.
Edwards
Eggleston
Farmer
Fasken
Fawkes
Fitzherbert
Forbes-Robertson
Francis, H. E.
Fryer
Gardiner, E. C.
Gardner, L.
Glendinning
Gordon
Grieve, W. P.
Harford
Harker
Hill, E. V.
Kennedy
Kenworthy
Krauss
Lesser, A. C.
Littleton
Lloyd, W. H.
McSwiney
Mills
Milne
Milton, F.
Milton, L.
Morrison
Neame, G. T.
Neame, T.
Nicholls
Nicolls
Osborne, E. A.
Parcell
Pardoe
Pearce, H. G.
Pearce, E. O.
Peel
Porter
Radcliffe
Ramsbottom, R.
Rushbrooke
Searle
Skipton
Smith, W. H.
Smythies, B. E.
Spackman
Stephens, D. J.
Stephens, R. C.
Stokes
Stopford
Storr
Tate
Thomas
Thoyts
Tinson
Todrick
Tulloch
Turner
Turpin
Tyzack
Wade
Wallace
Waterhouse
Webb
Wells
Williams
Woolatt, C. H.
Wright, H. N.
Wright, R. A.
Young, R. P.

LECTURES AND EXCURSIONS.

Feb. 19...Lecture on Observations on Birds and other Animals by C. A. Witchell, Esq.

Feb. 25...Lecture on The Scenery of Cheltenham, by Dr. Callaway.

Mar. 7...Lecture on Explosives, by G. W. Hedley, Esq.

May 31...Excursion to Andoversford.

June 11...Excursion to Colesbourne.

June 29...Excursion to Birdlip.

July 18...Excursions to Cleeve Hill and Tewkesbury.

Nov. 8...Lecture on Fungi, by C. I. Gardiner, Esq.

Nov. 29...Lecture on Blood, by Dr. Carter.

Dec. 9...Lecture on Old Cheltenham, by A. S. Owen, Esq.

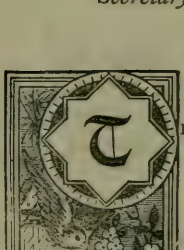
LIST OF ARTICLES PRESENTED TO THE MUSEUM, 1901.

DATE	ARTICLE	PRESENTED BY
Jan. 18	Model of East Indian Tea Clipper	...L. W. Elmslie, Esq.
Feb. 18	Skin of Indian Snake	...O. R. Thomas, C.
Feb. 22	Biltong made from Horse-flesh during siege of Ladysmith... ...	...Lieut. Mellor, O.C.
Feb. 26	Relics from the Old Town of Algerciras, Spain	...W. H. Smith, C.
Mar. 2	Indian Moth	...—. Abercrombie, C.
May 6	Three Boer Rifles, Bandoliers and Cartridges, etc.	...LENT by Lieut. P. E. Elgee, O.C.
May 13	Nest of Blue Tit ...	...R. A. Jenkins, C.
May 14	Nest of Hawfinch ...	...Tudor Thomas, C.
May 20	Chinese Uniform and 3 flags from Pekin ...	...Lieut. W. Bainbridge, O.C.
May 21	Seige Soup-Ticket, Beaconsfield, South Africa	...J. B. Radcliff, C.
June 4	Snowy Owl in Shade...	...E. Scot-Skirving, Esq. O.C.
Sept. 29	Nest of Indian Fly-Bird and Jet with Fossils ...	...D. E. Krauss, C.
Oct. 19	Collection of West African Butterflies	...Capt. C. C. W. Troughton, O.C.
Nov. 13	Collection of British Lepidoptera	...T. F. COOKE, C.
Dec. 10	Seals of Tewkesbury Abbey	...W. A. Sampson, Esq.
Dec. 12	Skin of Rattlesnake ...	...C. C. Hood, C.
Dec. 19	Stuffed Kingfisher ...	...C. H. Dickinson, C.

REPORTS FROM SECTIONS.

Archaeological Section.

President ... A. S. Owen, Esq.
Secretary (Jan.-July) ... H. R. C. Balfour.
(Sept.-Dec.) ... G. B. Allen.



The Section has had a year of exceptional activity, thanks especially to the keenness of the Secretary who took great trouble in getting members together for expeditions. None of the Excursions of the whole Society were to places of archaeological interest, but a great number of sectional excursions were arranged in the course of the three terms.

Cheltenham Parish Church itself was visited and its architectural details carefully considered, and in the neighbourhood we have visited the following churches :—Bishop's Cleeve, Elmstone Hardwicke, Elkstone, Withington, Witcomb, Badgeworth, Churchdown, Brockworth and Painswick ; at the last named place the Section devoted itself with scientific thoroughness to the task of counting the yew trees in the churchyard which are said to defy calculation; the result may have been inaccurate, but at least it was unanimous. In our visit to Elmstone Hardwicke we had the great advantage, of the guidance of Mr. H. A. Prothero, O.C., and with his help we found an old black-letter wall painting on one of the walls of the nave. At Churchdown we went round the church to the sombre accompaniment of a muffled peal.

Those who take an interest in archaeology and who would like to come on excursions this year are invited to give their names to the Secretary of the Section, G. B. Allen.

Botanical Section.

SENIOR :

President ... REV. J. R. WYNNE-EDWARDS.

JUNIOR :

President ... F. J. CADE, ESQ.

Vice-President ... G. W. HEDLEY, ESQ.

WORKING MEMBERS.

SENIOR.

BANKS, P. D'A. (5).
CUNNINGHAM, A. G. (4) (*C.*)
CURRIE, M. M. L. (1).
GARD'NER, B. L. (*G.*)
GILL, B. C. U. (*Gi.*)
HODSON, T. A. (1) (*H.*)
JENKINS, R. A. (*J.*)
PEEL, A. R. (*P.*)
ROBERTS, A. A. (3)
SANDERS, H. R. (2)
WRIGHT, H. N. (*W.*)
YOUNG, R. P. (*Y.*)

JUNIOR :

ABERCROMBIE, J. R. (*A.*)
BLOOD, C. N. (*B.*)
NOEL, G. B. E. (*N.*)
RITTER, E. S. (*Ri.*)
ROBERTS, E, S. (*R.*)
TORRIE, L. J. (*T.*)
WOODHOUSE, G. S. (*Wo.*)
WYNNE-EDWARDS, J. C. (6) (*E.*)

(1) Winner of Prize in 1896.
(2) ,, ,, 1898.
(3) ,, ,, 1899 and 1900.
(4) ,, ,, 1901.
(5) ,, Junior Prize in 1898.
(6) ,, ,, 1900 and 1901.

THERE were seven competitors this season. Unfortunately, Wright, who was some way ahead at the end of June, was absent for the last part of the term. A spell of cold and wet weather in July kept back the late summer and autumnal flowers, so that many which have always been found

during previous years during the term are absent from our list. The record of the different competitors is as follows :

A. G. CUNNINGHAM ...	285	R. P. YOUNG	167
H. N. WRIGHT	263	A. R. PEEL	135
B. L. GARD'NER	218	R. A. JENKINS	115
B. C. V. GILL	184		

Several new plants have been added to our list during the year. A few of these are accounted for by unusually long excursions to the Wye Valley and Forest of Dean, but several are additions to our local list. The most interesing of these are Utricularia Vulgaris (Bladderwort) which was found in abundance at Coombe Hill, Astralagus glycyphyllos (Milk Vetch) which has established itself on the railway banks near Tewkesbury, Helleborus foetidus (Stinking Hellebore), Trifolium medium (Zig-zag Trefoil), which is so common in the North of England, Lycopsis arvensis (Small Bugloss), Veronica spicata (Spiked Speedwell) which seems thoroughly established on the far side of the Severn, Polygonum Bistorta (Snakeweed) and Daphne Laureola (Spurge Laurel). We have also made some way in identifying the very difficult species of Salix and Carex. Pulmonaria officinalis (Lungwort) and Thalictrum flavum (Meadow Rue) have been found after an interval of some years.

We had our usual excursions to Andoversford and Puckham woods on May 31st, to Colesbourne on June 11th, to Whitcombe and Birdlip on June 29th, and to Tewkesbury on July 18th. They were thoroughly successful as usual, and the ground, though becoming familiar, is always interesting ; but it would be a great boon if two small expeditions could be arranged for this Section to one or two of the places, notably Puckham, where the rare flowers are either quite early ones like the Buckbean, or very late like the Grass of Parnassus and Cotton Thistle. A late expedition to Coombe Hill with time to get out and walk between Uckington and Piff's Elm is also needed.

I must conclude this, my tenth and last Report of this Section, by wishing it all success in the future, and congratulating it on securing so enthusiastic a president as Mr. Hedley.

JUNIOR DEPARTMENT.

THERE were not so many collectors as usual this year, and opportunities for getting specimens were less frequent than in previous years.

The prize was awarded to Wynne-Edwards who also obtained it in 1900. The result of the competition was as follows :—

WYNNE-EDWARDS	200	NOEL	44
BLOOD	178	WOODHOUSE	40
ROBERTS	155	ABERCROMBIE	37
RITTER AND TORRIE ...	102		

The following are among the most notable finds of the season : Antennaria margaritana in Birdlip woods, Ophrys apifera (Bee Orchid), Carpinus Betulus (Hornbeam), Polygonum bistorta (Snakeweed), Mysotis versicolor (Changing Forget-me-not), Pulmonaria officinalis (Lungwort), Lycopsis arvensis (Small Bugloss), Trifolium medium (Zig-zag Clover), Lepidium ruderale (Narrow-leaved Cress).

Latin Name.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba ...	Traveller's Joy ...	July 15 ...	W, B.
Anemone nemorosa ...	Wood Anemone ...	Mar. 26 ...	E.
Adonis autumnalis ...	Pheasant's Eye ...		
Ranunculus aquatilis ...	Water Crowfoot ...	April 28 ...	W.
,, Flammula...	Spearwort ...		
,, Ficaria ...	Celandine ...	Mar. 6 ...	C.
,, sceleratus...	Scelery-leaved Crowfoot	June 4 ...	C, W, G.
,, auricomus...	Goldilocks ...	April 25 ...	R, W, E.
,, acris	Common Buttercup ...	Jan. 4 ...	J.
,, repens		May 16 ...	R.
,, bulbosus		May 2 ...	J.
,, arvensis ...	Corn Buttercup ...	June 2 ...	E.
Thalictrum flavum ...	Meadow Rue ...	June 26 ...	*G. W.H.*
Helleborus viridis ...	Green Hellebore ...		
,, foetidus ...	Stinking ,, ...	Mar. 7 ...	*G. W.H.*
Caltha palustris ...	Marsh Marigold ...	Mar. 12 ...	R.
Aquilegia vulgaris ...	Columbine ...		
Berberis ,, ...	Common Barberry ...	June 6 ...	*G. W.H.*
Nuphar luteum ...	Yellow Water Lily ...	June 13 ...	E.
Nymphæa alba ...	White ,, ,, ...		
Papaver Rhoeas ...	Field Poppy ...	Jan. 4 ...	R.
,, dubium ...	Long-headed ,, ...	May 19 ...	G.
,, Argemone ...	Pale ,, ...	May 26 ...	*G. W.H.*

Latin Name.	*English Name.*	*Date.*	*Record.*
Chelidonium majus ...	Common Celandine ...	May 3 ...	G.
Fumaria officinalis ...	,, Fumitory ...	May 10 ...	G.
Corydalis lutea ...	Yellow ,, ...	April 27 ...	Ri, T.
Barbarea vulgaris ...	,, Rocket ...	May 5 ...	W.
Cheiranthus Cheiri ...	Wall Flower ...	May 12 ...	R.
Nasturtium officinale ...	Common Water Cress ...	May 31 ...	W.
,, palustre ...	Marsh ,, ...	June 5 ...	C, W.
,, amphibium	Great ,, ...	June 1 ...	C.
Arabis hirsuta ...	Hairy Rock Cress ...	May 23 ...	P.
,, Thaliana ...	Thale ,, ...	May 5 ...	*G. W.H.*
Cardamine amara ...	Large Bitter Cress ...	June 14 ...	*G. W.H.*
,, pratensis ...	Cuckoo Flower ...	April 25 ...	E.
,, hirsuta ...	Hairy Bitter Cress ...	April 3 ...	E.
,, impatiens ...	Narrow-leaved Bitter Cress...	June 15 ...	W.
Hesperis matronalis ...	Dame's Violet ...	May 12 ...	*G. W.H.*
Sisymbrium officinale ...	Yellow Hedge Mustard...	Jan. 4 ...	R.
Alliaria ,, ...	Garlic ,, ...	Jan. 4 ...	R, W, E.
Erysimum cheiranthoides	Treacle ,, ...	June 17 ...	E. B.
Brassica teninfolia ...	Rocket ...	May 1 ...	E.
,, muralis ...	Sand Brassica ...	May 5 ...	W.
,, oleracea ...	Cabbage ...	May 13 ...	R.
,, campestris ...	Field Brassica ...	May 1 ...	Gi.
,, alba ...	Cultivated Mustard ...	May 23 ...	E.
,, sinapistrum ...	Charlock ...	May 23 ...	A, Ri, T.
,, nigra ...	Black Mustard ...	June 15 ...	Ri, T.
,, adpressa ...	Hoary Brassica ...	July 18 ...	C.
Cochlearia armoracia ...	Horse Radish ...	May 24 ...	Gi.
Alyssum calycinum ...	Small Alyssum ...		
Draba verna ...	Common Whitlow Grass	Jan. 23 ...	R.
,, muralis ...	Wall ,, ,,		
Thlaspi arvense ...	Penny Cress ...	May 31 ...	W, C, G, J, P, Gi, Y.
Iberis Amara ...	Candytuft ...	June 21 ...	*G. W.H.*
Capsella Bursa-pastoris	Shepherd's Purse ...	Jan. 4 ...	C.
Lepidium campestre ...	Common Pepperwort ...	April 3 ...	*G. W.H.*
,, Draba ...	Hoary Cress ...	May 19 ...	E.
,, Smithii ...	Smith's ,, ...	May 12 ...	E.
,, ruderale ...	Narrow-leaved ,, ...	June 2 ...	E.
Senebiera Coronopus ...	Common Wart ,, ...	June 4 ..	E.
,, didyma ...	Lesser ,, ...	May 25 ...	B.
Isatis Tinctoria ...	Woad ...	May 4 ...	C, G, Y.
Reseda luteola ...	Dyer's Weed ...	Jan. 4 ...	P.
,, lutea ...	Cut Leaved Mignonette...	June 6 ...	P.
Helianthemum vulgare	Rock Rose ...	May 23 ...	W.
Viola odorata ...	Sweet Violet ...	Mar. 27 ...	Wo.
,, hirta ...	Hairy ,, ...	May 8 ...	E.
,, canina ...	Dog ,, ...	April 25 ...	W.

Latin Name.	*English Name.*	*Date*	*Record.*
Viola tricolor ..	Pansy ...	April 29 ...	W.
Polygala vulgaris ...	Milkwort ...	May 18 ...	C, G.
Silene inflata ...	Bladder Campion ...	June 8 ...	P.
Lychnis vespertina ...	White ,, ...	May 18 ...	C.
,, diurna ...	Red ,, ...	May 5 ...	R.
,, Githago ...	Corn Cockle ...	June 9 ...	R.
,, Flos-cuculi ...	Ragged Robin ...	May 26 ...	G.
Sagina procumbens ...	Procumbent Pearlwort ...	May 17 ...	B, Wo.
,, nodosa ...	Knotted ,, ...		
Arenaria serpyllifolia ...	Thyme-leaved Sandwort	Jan. 4 ...	Wo.
,, trinervis ...	Three-nerved ,, ...	May 1 ...	R, J.
Cerastium vulgatum ...	Mouse-ear Chickweed ...	Jan. 4 ...	E.
,, arvense	Field-ear ,, ...	May 19 ...	H.
Stellaria aquatica ...	Water Starwort ...	July 2 ...	C, Y.
,, media ...	Chickweed ...	Jan. 4 ...	R, E, W.
,, uliginosa ...	Bog Starwort ...		
,, graminea ...	Lesser ,, ...	June 8 ...	P.
,, holostea ...	Common ,, ...	April 26 ...	E.
Spergula arvensis ...	Corn Spurry ...		
Hypericum perforatum	Common St. John's Wort	June 16 ...	W, C.
,, dubium ...	Imperforate ,, ,,	July 6 ...	Y.
,, quadrangulum	Square-stalked ,, ,,	July 3 ...	*G. W.H.*
,, humifusum ...	Trailing ,, ,,	July 22 ...	*C.I.G.*
,, pulchrum ...	Slender ,, ,,		
,, hirsutum ...	Hairy ,, ,,	June 20 ...	R.
Linum catharticum ...	Purging Flax ...	May 31 ...	C, W, G, J,
Malva rotundifolia ...	Dwarf Mallow ...	June 20 ...	C. [P, Gi, Y.
,, sylvestris ..	Common ,, ...	June 10 ...	W.
,, moschata ...	Musk ,, ...	June 20 ...	C.
Tilia Europea	Lime ,, ...	June 30 ...	Gi.
Geranium pratense ...	Meadow Cranesbill ...	June 11 ...	B, Ri, T.
,, Robertianum	Herb-Robert ...	Jan. 4 ...	W.
,, molle ...	Dove's-foot Cranesbill ...	May 6 ...	W.
,, dissectum	Jagged ,, ...	May 28 ...	R, E, B.
,, lucidum ...	Shining ,, ...	May 12 ...	*G. W.H.*
,, pussilum ...	Small-flower ,, ...	May 12 ...	*G. W.H.*
,, columbinum	Long-stalked ,, ...	June 11 ...	Gi.
,, pyrenaicum...	Mountain ,, ...	May 23 ...	*G. W.H.*
Erodium cicutarium ...	Common Storksbill ...		
Oxalis Acetosella ...	Wood Sorrel ...	April 25 ...	E.
Impatiens Noli-me-tangere...	Yellow Balsam ...		
Acer campestre ...	Maple ...	May 11 ...	W.
,, Pseudo-platanus...	Sycamore ...	May 3 ...	B.
Ilex Aquifolium ...	Holly ...	May 18 ...	B, W.
Euonymus europaeus	Spindle Tree ...	May 26 ...	B.
Rhamnus catharticus	Buckthorn ...	June 19 ...	G, Y.
Ulex europaeus	Gorse ...	Jan. 4 ...	R.

Latin Name.	*English Name.*	*Date.*	*Record.*
Genista tinctoria	... Dyer's Greenweed	... June 12	... E, B.
Cytisus scoparius	... Broom	... May 31	... W, C, G, J, P,
Ononis arvensis	... Rest Harrow	... June 21	... E. [Gi, Y.
,, campestris	... Spiny ,,	... July 1	... Gi.
Medicago sativo	... Lucern	... July 20	... *G. W.H.*
,, Lupulina	... Nonsuch	... June 4	... *G. W.H.*
Melilotus officinalis	... Melilot	... June 13	... W.
Trifolium arvense	... Hare's Foot Trefoil	...	
,, incarnatum	... Crimson Clover	... May 23	... B, N.
,, hybridum	... Alsike ,,	... June 1	... *J.R. W-E.*
,, pratense	... Purple ,,	... May 10	... W, G, B.
,, repens	... Dutch ,,	... May 18	... W.
,, procumbens	... Hop Trefoil	... May 31	... W.
,, medium	... Zig-zag ,,	... July 7	... E, B.
,, minus	... Lesser Trefoil	... April 27	... W, E.
Lotus corniculatus	... Bird's Foot Trefoil	... May 7	... W.
Anthyllis Vulneraria	... Kidney Vetch	... May 31	... W, C, G, Gi,
Astragalus glycyphyllos	Milk ,,	... July 18	... C. [P, J, Y.
Hippocrepis comosa	... Horse-shoe ,,	... May 23	... W.
Onobrychis sativa	... Sainfoin	... May 31	... W, C, G, P, J, Gi, Y.
Vicia tetrasperma	... Slender Vetch	... June 25	... *J.R. W-E.*
,, hirsuta	... Hairy ,,	... June 16	... W.
,, Cracca	... Tufted ,,	... June 15	... W, C.
,, sylvatica	... Wood ,,	... June 20	... *C.I.G.*
,, sepium	... Bush ,,	... May 5	... W.
,, sativa	... Common ,,	... April 28	... R.
,, lathyroides	... Spring ,,	...	
Lathyrus pratensis	... Yellow ,,	... May 31	... W.
,, sylvestris	... Everlasting Vetch	... July 3	... C.
,, macrorrhizus	Tuberous Bitter ,,	... June 16	... W.
,, Nissolia	... Grass Vetchling	...	
,, palustris	... Marsh Pea	...	
Prunus communis	... Blackthorn	... April 25	... R, E.
,, Cerasus	... Cherry	... May 23	... *G. W.H.*
,, Padus	... Bird Cherry	...	
Spiraea Ulmaria	... Meadow Sweet	... June 7	... W, C, G.
,, Filipendula	... Dropwort	...	
Geum urbanum	... Wood Avens	... Jan. 4	... G.
Rubus Idaeus	... Raspberry	... June 9	... R.
,, fruticosus	... Common Blackberry	... May 28	... E, B.
,, caesius	... Dewberry	... June 4	... C.
,, corylifolius	... Hazel-leaved Blackberry	May 31	... W, C, G, J, P,
Fragaria vesca	... True Strawberry	... Mar. 17	... R. [Gi, Y.
PotentillaFragariastrum	Barren ,,	... April 5	... E.
,, reptans	Creeping Cinquefoil	... Jan. 4	... P.
,, Tormentilla	... Tormentil	... May 5	... C, G.
,, anserina	... Silverweed	... May 23	... W.

Latin Name.	*English Name.*	*Date.*	*Record.*
Alchemilla vulgaris ...	Lady's Mantle ...	May 7 ...	W.
Sanguisorba officinalis...	Great Burnet ...	June 18 ...	W, C, G.
Poterium Sanguisorba...	Salad ,, ...	May 7 ...	W.
Agrimonia Eupatoria ...	Agrimony ...	June 15 ...	W.
Rosa canina ...	Dog Rose ...	May 31 ...	B.
,, arvensis ...	Trailing Rose ...	June 22 ...	W.
Pyrus communis ...	Pear ...	April 27 ...	R.
,, Malus ...	Apple ...	May 3 ...	W.
,, Aucuparia ...	Mountain Ash ...	May 24 ...	*G. W.H.*
,, Aria ...	Beam Tree ...	May 31 ...	*G. W.H.*
,, torminalis ...	Wild Service-tree ...		
Crataegus Oxyacantha	Hawthorn ...	May 11 ...	C, G.
Epilobium angustifolium	Rose-bay Willow Herb	June 16 ...	W.
,, hirsutum ...	Hairy ,, ,,	July 2 ...	Gi.
,, parviflorum...	Small-flower'd ,, ,,	July 4 ...	*G. W.H.*
,, montanum ...	Common ,, ,,	June 9 ...	B, W, C.
,, tetragonum...	Square Willow Herb ...	June 19 ...	W.
,, palustre ...	Marsh ,, ,, ...	July 20 ...	*G. W.H.*
Circaea lutetiana ...	Enchanter's Nightshade	July 15 ...	*G. W.H.*
Oenothera biennis ...	Evening Primrose ...		
Lythrum Salicaria ...	Purple Loosestrife ...	June 18 ...	W.
Bryonia dioica ...	Bryony ...	May 25 ...	W, C.
Cotyledon Umbilicus ...	Pennywort ...	June 25 ...	W.
Sedum rhodiola . .	Rose-root Stonecrop ...		
,, album ...	White ,, ...	June 19 ...	W, C.
,, acre ...	Biting ,, ...	June 8 ...	P.
,, rupestre ...	Rock ,, ...	July 23 ...	*G. W.H.*
,, Telephium ...	Orpine ,, ...		
Semper-virens tectorum	Houseleek ...		
Ribes Grossularia ...	Gooseberry ...	April 3 ...	*G. W.H.*
,, rubrum ...	Red Currant ...	May 16 ...	*G. W.H.*
Saxifraga granulata ...	Meadow Saxifrage ...	May 12 ...	*G. W.H.*
,, tridactylites	Rue-leaved ,, ...	May 3 ...	*G. W.H.*
,, umbrosa ...	London Pride ...		
Chrysosplenium oppo-sitifolium...	Golden Saxifrage ...	Mar. 9 ...	W.
,, alternifolium ...	,, ,, ...	Mar. 9 ...	*G. W.H.*
Parnassia palustris ...	Grass of Parnassus ...		
Sanicula europea ...	Wood Sanicle ...	April 28 ...	E.
Apium graveolens ...	Celery ...	July 23 ...	*G. W.H.*
,, nodiflorum ...	Procumbent Celery ...	July 6 ...	Y.
Sison Amomum ..	Hedge Sison ...		
Aegopodium Podagraria	Goutweed ...	June 9 ...	W.
Carum Carvi ...	Caraway ...		
,, segetum ...	,, ...		
Petroselinum Sativa ...	Parsley ...		
Pimpinella Saxifraga ...	Burnet Saxifrage ...	July 7 ...	*G. W.H.*
,, magna ...	Greater Burnet Saxifrage	July 15 ...	*G. W.H.*

Latin Name.	*English Name.*	*Date*	*Record.*
Oenanthe fistulosa ...	Water Dropwort ...	June 18 ...	W, C.
,, Phellandrium	Fine-leaved ,, ...	June 18 ...	W, C, G.
,, pimpinelloides	Parsley ,, ...	June 4 ...	*G. W. H.*
Aethusa Cynapium ...	Fool's Parsley ...	June 4 ...	W.
Silaus pratensis ...	Pepper Saxifrage ...	July 7 ...	B.
Angelica sylvestris ...	Wild Angelica ...	July 23 ...	*G. W. H.*
Pastinaca sativa ...	Parsnip ...	Jan. 4 ...	C.
Heracleum Sphondylium	Cow Parsnip ...	April 27 ...	C, G.
Scandix Pecten-Veneris	Shepherd's Needle ...	May 5 ...	W.
Conopodium denudatum	Earth Nut ...	May 19 ...	G.
Chaerophyllum sylvestre	Wild Chervil ...	Mar. 23 ...	W, R, E.
,, temulum	Rough ,, ...	June 17 ...	C, Y.
,, Anthricus	Burr ,, ...	May 28 ...	*G. W. H.*
Caucalis nodosa ...	Knotted Hedge Parsley	July 7 ...	*G. W. H.*
,, Anthriscus ...	Upright ,, ,, ...	July 4 ...	*G. W. H.*
Daucus Carota ...	Carrot ...	June 17 ...	E.
Conium maculatum ...	Hemlock ...	June 4 ...	*G. W. H.*
Hedera Helix ...	Ivy ...	Sept. 21 ...	*G. W. H.*
Smyrnium Olusatrum ...	Alexanders ...	April 27 ..	*G. W. H.*
Viscum album ...	Mistletoe ...	Mar. 7 ...	*G. W. H.*
Cornus sanguinea ...	Dogwood ...	June 2 ...	B.
Adoxa Moschatellina ...	Moschatel ...	April 25 ...	R.
Sambuscus nigra ...	Elder ..	May 26 ...	C, W.
Viburnum Lantana ...	Wayfaring Tree ...	May 7 ...	E.
,, Opulus ...	Guelder Rose ...	May 26 ..	B.
Lonicera Periclymenum	Honeysuckle ...	June 4 ...	C.
Galium Cruciata ...	Crosswort ...	May 5 ...	W.
,, verum ...	Yellow Bedstraw ...	June 15 ...	B.
,, palustre ...	Marsh ,, ...	June 18 ...	*G. W. H.*
,, uliginosum ...	Bog ,, ...	June 18 ...	W, C, G.
,, saxatile ...	Rock ,, ...	July 16 ...	W.
,, Mollugo	Great Hedge Bedstraw...	June 15 ...	W, G.
,, Aparine ...	Cleavers ...	Jan. 4 ..	W, C, R, B.
Asperula odorata ...	Woodruff ...	May 7 ...	W.
,, cynanchica ...	Squinancywort ...	June 28 ...	Ri, B, T, C.
Sherardia arvensis ...	Field Madder ...	May 7 ...	W.
Centranthus ruber ...	Red Valerian ...	June 15 ...	W.
Valeriana officinalis ...	Great ,, ...	June 11 ...	T, Ri.
,, dioica ...	Marsh ,, ...	May 7 ...	R.
Valerianella olitoria ...	Lamb's Lettuce ...	July 14 ...	R.
,, Auricula ...	,, ,, ...	June 9 ...	*G. W. H.*
Dipsacus pilosus ...	Small Teasel ...		
,, sylvestris ...	Common ,, ...	July 23 ...	*G. W. H.*
Scabiosa succisa ...	Devil's-bit Scabious ...	July 6 ...	*C. I. G.*
,, Columbaria ...	Small ,, ...	July 4 ...	*J. R. W-E.*
,, arvensis ...	Field ,, ...	May 31 ...	W.
Eupatorium cannabinum	Hemp Agrimony ...	July 15 ...	E.
Aster Linosyris ...	Goldilocks ...		

Latin Name.	*English Name.*	*Date.*	*Record.*
Solidago Virga-aurea ...	Goldenrod	...	
Bellis perennis ...	Daisy	... Jan. 4 ...	W.
Filago Germanica ...	Cudweed	... June 11 ...	*G.W.H.*
,, Gallica ...	Narrow Cudweed	... July 23 ...	*G.W.H.*
Gnaphalium Sylvaticum	Wood ,,	...	
Antennaria margaritacea...	Pearl Antennaria	... June 20 ...	E.
Inula dysenterica ...	Fleabane	. . July 22 ...	*G.W.H.*
,, Coniza ...	Ploughman's Spikenard	July 23 ...	*G.W.H.*
,, Pulicaria ...	Small Fleabane	...	
,, Helenium ...	Elecampane	...	
Chrysanthemum Leucanthemum...	Dog Daisy	... May 23 ...	W.
,, segetum ..	Corn Marigold	... July 7 ...	E.
,, Parthenium...	FeverfewChrysanthemum	June 11 ...	W.
Matricaria Chamomilla	Camomile	... June 2 ...	B.
Matricaria inodora ...	Feverfew	... June 18 ...	*C.I.G.*
Anthemis Cotula ...	Stinking Mayweed	... June 18 ...	W, C.
,, arvensis ...	Corn Camomile	...	
Achillea Millefolium ...	Yarrow	... Jan. 4 ...	W.
,, Ptarmica ...	Sneezewort	...	
Tanacetum vulgare ...	Tansy	... July 18 ...	C, G, Y.
Artemesia vulgaris ...	Mugwort	... July 18 ...	C, G.
Tussilago Farfara ...	Coltsfoot	.. Feb. 17 ...	W.
,, Petasites ...	Butterbur	... Mar. 12 ...	W.
Senecio vulgaris ...	Groundsel	... Jan. 4 ...	R.
,, sylvaticus ...	Wood Groundsel	...	
,, erucifolius ...	Narrow-leaved Ragwort	June 28 ...	C, G, P, Y.
,, aquaticus ...	Marsh ,,	... June 29 ...	*G.W.H.*
,, Jacobaea ...	Common ,,	... June 24 ...	*J.R.W-E.*
Arctium Lappa ...	Burdock	... July 15 ...	E.
Serratula tinctoria ...	Sawort	... June 23 ...	W.
Carduus Marianus ...	Milk Thistle	... June 29 ...	W.
,, nutans ...	Musk ,,	... June 23 ...	R.
,, acanthoides ...	Welted ,,	... June 11 ...	W, Gi.
,, lanceolatus ...	Spear ,,	... June 30 ...	B.
,, palustris ...	Marsh ,,	... May 31 ...	W.
,, arvensis ...	Creeping ,,	... June 23 ...	R.
,, pratensis ...	Meadow ,,	...	
,, acaulis ...	Dwarf ,,	... June 30 ...	Gi.
,, pycnocephalus	Slender ,,	... June 20 ...	*G.W.H.*
,, eriophorus ...	Woolly ,,	... July 18 ...	*C.I.G.*
Carlina vulgaris ...	Carline ,,	...	
Centaurea nigra ...	Black Knapweed	... June 15 ...	E.
,, Scabiosa ...	Scabious ,,	... Jan. 4 ...	Y.
,, Cyanus ...	Cornflower	...	
Tragopogon pratensis...	Goat's Beard	... May 31 ...	J, Gi, Y.
Helminthia echioides ...	Ox-tongue	... July 7 ...	E, B.

Latin Name.	*English Name.*	*Date.*	*Record.*
Picris hieracioides	Hawkweed Picris	May 28	*G. W. H.*
Leontodon hispidus	Common Hawkbit	May 31	W.
,, autumnalis	Autumnal ,,	June 5	*G. W. H.*
Hypochaeris radicata	Cat's Ear	May 28	W, C.
Lactuca muralis	Wall Lettuce	June 16	W.
Sonchus arvensis	Corn Sow Thistle	May 29	B, E.
,, oleraceus	Common ,,	Jan. 4	R
Taraxacum Dens-leonis	Dandelion	Jan. 4	W, E.
Crepis virens	Common Crepis	May 31	W.
,, biennis	Rough ,,	May 28	E.
,, taraxacifolia	Beaked ,,	May 23	W.
Hieracium Pilosella	Mouse-ear Hawkweed	May 26	W, A, B,
,, murorum	Wall ,,	June 2	B.
,, aurantiacum	Orange ,,		
Cichorium Intybus	Succory ,,	July 23	*G. W. H.*
Lapsana communis	Nipplewort	Jan. 4	W, C.
Campanula glomerata	Clustered Bell Flower	July 14	C, G.
,, Trachelium	Nettle-leaved ,,	July 11	R.
,, Rapunculoides	Creeping		
,, rotundifolia	Harebell	June 20	E.
,, hybrida	Corn Bell Flower	June 9	R.
Calluna vulgaris	Ling		
Monotropa Hypopithys	Bird's Nest		
Primula veris	Cowslip	April 5	E, W.
,, vulgaris	Primrose	Mar. 7	W.
,, Elatior	Oxlip		
Lysimachia vulgaris	Yellow Loosestrife	July 23	*G. W. H.*
,, nemorum	Moneywort	May 23	B.
,, Nummularia	Creeping Jenny	June 18	W.
Anagallis arvensis	Scarlet Pimpernel	June 6	E.
,, tenella	Bog ,,		
Pinguicula vulgaris	Butterwort	May 31	W, C, G, Gi, [P, Y.
Utricularia vulgaris	Bladderwort	July 23	*G. W. H.*
Fraxinus excelsior	Ash	April 29	E.
Ligustrum vulgare	Privet	June 7	B.
Vinca major	Greater Periwinkle	May 23	*G. W. H.*
,, minor	Lesser ,,	May 24	W.
Erythraea Centaurium	Centaury	June 29	C, G, B, E.
Gentiana campestris	Common Gentian		
Menyanthes trifoliata	Buckbean	May 31	P, W, C, G, Gi, J, Y.
Limnanthemum nymphaeoides	Water Gentian	July 2	C, G, Y.
Chlora perfoliata	Yellowwort	Jan. 4	C, Gi, Ri, B,
Convolvulus arvensis	Small Bind Weed	June 1	E, G. [T.
,, sepium	Great ,,	June 13	W.
Cuscuta europæa	Greater Dodder	July 23	*G. W. H.*
Echium vulgare	Viper's Bugloss	June 21	C, P.

Latin Name.	*English Name.*	*Date.*	*Record.*
Myosotis palustris ...	True Forget-me-not ...	June 18 ...	*G.W.H.*
,, arvensis ...	Field ,, ...	April 28 ...	W.
,, collina ...	Early ,, ...	July 3 ...	*G.W.H.*
,, versicolor ...	Changing ,, ...	June 11 ...	W.
,, sylvatica ..	Wood ,, ...	April 29 ...	C.
,, repens ...	Creeping ,, ...	June 18 ...	C, W, G,
Pulmonaria officinalis ...	Lungwort ,, ...	June 14 ...	E.
Lycopsis arvensis ...	Small Bugloss ...	June 29 ...	W.
Lithospermum officinale	Gromwell ...		
,, arvense...	Corn Gromwell ...		
Anchusa semper-virens	Alkanet ...	May 5 ...	R.
Symphytum officinale ...	Comfrey ...	May 2 ...	J.
Borago officinalis ...	Borage ...	May 5 ...	R.
Cynoglossum officinale	Hound's-tongue ...	June 11 ..	W, C, G, Gi,
Hyoscyamus niger ...	Henbane ...	June 11 ...	W. [Y.
Solanum Dulcamara ...	Bitter Sweet ...	May 23 ...	W.
Solanum nigrum ...	Black Nightshade ...	July 14 ...	*G.W.H.*
Atropa Belladonna ...	Deadly ,, ...	June 26 ...	C, G, P, Y.
Orobanche major ...	Great Broomrape ...	July ...	*G.W.H.*
Lathraea squamsria ...	Toothwort ..	May 6 ...	W.
Verbascum Thapsus ...	Common Mullein ...	June 12 ...	W.
,, nigrum ...	Black ,, ...		
Linaria vulgaris ...	Yellow Toad Flax ...	July 2 ...	C, G, Y.
,, minor ...	Lesser ,, ...	June 9 ...	G.
,, Cymballaria ...	Ivy-leaved ,, ...	Jan. 4 ...	E.
,, spuria ...	Round ,, ...	July 23 ...	*G.W.H.*
Scropbuiaria nodosa ..	Knotted Figwort ...	May 28 ...	J.
,, aquatica ...	Marsh ,, ...	June 15 ...	C.
Mimulus luteus ...	Monkey Flower ...	June 11 ...	W.
Digitalis purpurea ...	Foxglove ...	June 15 ...	*C.I.G.*
Veronica spicata ...	Spiked Speedwell	July 23 ...	*G.W.H.*
,, Serpyllfolia ...	Thyme-leaved ,, ...	May 7 ...	W.
,, officinalis ...	Common ,, ...	June 11 ...	W, C, G, Gi,
,, Anagallis ...	Water ,, ...	June 15 ...	C, G. [Y.
,, Beccabunga ...	Brooklime ,, ...	May 26 ...	R, Ri, T, B,
,, montana ...	Mountain ,, ...	May 26 ...	B. [W, C,
,, Chamaedrys ...	Germander ,, ...	May 4 ...	G,R, Ri,T, B.
,, hederaefolia ...	Ivy-leaved ,, ...	Mar. 10 ...	E.
,, agrestis ...	Procumbent ,, ...	Jan. 4 ...	W.
,, Buxbaumii ...	Buxbaum's ,, ...	Mar. 10 ...	E.
,, arvensis ...	Wall ,, ...	May 31 ...	C, G, Gi.
Bartsia Odontites ...	Red Bartsia ...	July 7 ...	E.
Euphasia officinalis ...	Eye-bright ...	May 27 ...	W,C,G,Gi,Y,
Rhinanthus Crista-galli	Yellow Rattle ..	May 25 ...	W.
Pedicularis palustris ..	Marsh Lousewort ...		
,, sylvatica ...	Common ,, ...	May 5 ...	R.
Melampyrum pratense	Cow Wheat ...	June 15 ...	W.
Lycopus europaeus ...	Gipsywort ...	July 23 ...	*G.W.H.*

Latin Name.	*English Name.*	*Date.*	*Record.*
Mentha aquatica	... Water Mint	... July 23	... *G. W. H.*
,, sativa	... Whorled ,,	... July 20	... *G. W. H.*
,, arvensis	... Corn ,,	... July 23	... *G. W. H.*
,, rotundifolia	... Round-leaved ,,	...	
,, piperita	... Pepper ,,	...	
Thymus Serpyllum	... Thyme	... May 31	... G.
Origanum vulgare	... Marjoram	...	
Calamintha Acinos	.. Basil Thyme	... June 29	... Y.
,, Clinopodium	Wild Basil	... June 18	... W.
,, officinalis	... Common Calamint	...	
Nepeta Glechoma	... Ground Ivy	... Mar. 24	... W.
Prunella vulgaris	... Self Heal	... June 2	... B.
Scuttellaria galericulata	Common Scullcap	... June 18	... C, W, G.
,, minor	... Lesser ,,	...	
Marrubium vulgare	... White Horehound	... July 7	... B, E.
Stachys Betonica	... Betony	... June 15	... E, B.
,, sylvatica	... Hedge Woundwort	... June 9	... P.
,, palustris	... Marsh ,,	... June 23	... W.
,, arvensis	... Corn ,,	...	
Galeopsis Ladanum	... Red Hemp Nettle	... June 24	... C, G, Y.
Galeopsis Tetrahit	... Common Hemp Nettle	... July 23	... *G. W. H.*
Ballota nigra	... Black Horehound	... June 15	... E.
Lamium purpureum	... Red Dead Nettle	... Jan. 4	... W, E, R.
,, album	... White ,,	... Jan. 4	... R.
,, maculatum	... Spotted ,,	... May 1	... *G. W. H.*
,, Galeobdolon	... Yellow ,,	... May 5	... A.
,, amplexicaule	... Henbit ,,	... April 28	... W.
,, incisum	... Small ,,	... May 11	... B.
Teucrium Scorodonia	... Wood Germander	... Jan. 4	... B.
Ajuga reptans	... Bugle	... May 5	... W.
Verbena officinalis	... Common Vervain	... July 23	... *G. W. H.*
Armeria plantaginea	... Plantain Thrift	...	
Plantago major	... Great Plantain	... June 9	... C.
,, media	... Hoary ,,	... May 26	... C, W.
,, lanceolata	... Ribwort ,,	... April 27	... W.
Chenopodium Bonus Henricus	... Good King Henry	... May 12	... P, W, C, G, J,
,, urbicum	... Upright Goosefoot	... June 20	... R. [Gi, Y.
,, murale	... Nettle-leaved ,,	...	
,, album	... White ,,	... June 22	... *G. W. H.*
,, rubrum	... Red ,,	...	
Atriplex patula	... Orache	... July 8	... *G. W. H.*
Rumex Acetosa	... Common Sorrel	... April 27	... N, B, Wo.
,, Acetosella	... Sheep's ,,	... May 18	... C, G, J.
,, obtusifolius	... Common Dock	... May 31	... W.
,, crispus	... Curled ,,	... June 9	... W.
,, Hydrolapathum	Water ,,	... July 9	... C, Y.
,, maritimus	... Golden ,,	...	

Latin Name.	*English Name.*	*Date.*	*Record.*
Polygonum Fagopyrum	Buckwheat	... July 7	... R.
,, aviculare	... Knot Grass	.. June 18	... E.
,, Convolvulus	Black Bindweed	... July 15	... *G.W.H.*
,, Bistorta	... Snakeweed	... June 15	... N.
,, amphibium	... Amphibious Bistort	... June 15	... W, C, G, Gi.
,, Persicaria	... Persicaria	... July 18	... C, Y.
,, lapathafolium	Pale Bistort	...	
Daphne Laureola	... Spurge Laurel	... Feb. 27	... *G.W.H.*
Euphorbia Helioscopia	Sun Spurge	... Jan. 4	... C.
,, Peplus	... Petty ,,	... Jan. 4	... C.
,, exigua	... Small ,,	... June 15	... E.
,, Amygdaloides	Wood ,,	.. May 4	... R.
,, platyphyllos	... Broad ,,	...	
,, Lathyris	... Caper ,,	...	
,, Esula	... Leafy Spurge	... June 15	... W.
Mercurialis perennis	... Dog's Mercury	... Jan. 4	... W.
Callitriche aquatica	... Water Starwort	...	
Urtica urens	... Small Nettle	... May 27	... P.
,, dioica	... Common,,	... May 19	... W.
Parietaria officinalis	... Pellitory-of-the-wall	... June 5	... E.
Humulus Lupulus	... Hop	...	
Ulmus campestris	Common Elm	... April 5	... *G.W.H.*
,, montana	... Wych	... Mar. 9	... C.
Alnus glutinosa	... Alder	... Mar. 28	... *G.W.H.*
Betula alba	... Birch	... April 25	... E.
Carpinus Betulus	... Hornbeam	... May 19	... B.
Corylus Avellana (Fem.)	Hazel Nut	... Feb. 13	... W, E.
Fagus sylvatica	... Beech	... did not flower	
Quercus Robur	... Oak	... May 11	... B.
Salix fragilis	... Crack Willow	... May 2	... W, J.
,, alba	... White ,,	... May 12	... *G.W.H.*
,, amygdalina	... Almond ,,	... May 11	... *G.W.H.*
,, purpurea	... Purple ,,	... May 31	... W.
,, viminalis	... Osier	... April 3	... Ri, T.
,, Capræa	... Sallow ,,	... Mar. 14	... R, E.
,, aurita	... Round-eared Willow	... April 29	... *G.W.H.*
Populus alba	... White Poplar	... Mar. 28	... *G.W.H.*
,, nigra	... Black ,,	... Mar. 9	... *G.W.H.*
Pinus sylvestris	... Scotch Fir	... May 7	... B.
Juniperus communis	... Juniper	... June 11	... *G.W.H.*
Taxus baccata	... Yew	... Mar. 1	... *C.I.G.*
Typha latifolia	... Bulrush	... July 7	... *G.W.H.*
Sparganum ramosum	... Branched Bur-reed	... July 23	... *G.W.H.*
,, simplex	... Simple ,,	... July 23	... *G.W.H.*
Arum maculatum	... Lords and Ladies	... April 25	... W.
Acorus Calamus	... Sweet Flag	...	
Lemna minor	... Lesser Duckweed	.. May 28	... *G.W.H.*
,, triscula	... Ivy-leaved ,,	... June 4	... *G.W.H.*

Latin Name.	*English Name.*	*Date.*	*Record.*
Potamogeton natans	Pondweed	June 18	C, Y.
Triglochin palustre	Arrowgrass		
Butomus umbellatus	Flowering Rush	June 18	W, G.
Sagittaria sagittifolia	Arrowhead	June 18	W, C, G.
Alisma Plantago	Water Plantain	June 15	W, C.
Hydrocharis Morsus-ranae	Frogbit	July 23	G, W, H.
Epipactis latifolia	Broad Helleborine		
,, palustris	Marsh ,,		
Cephalanthera grandiflora	Large ,,	June 8	W.
Listera ovata	Twayblade	May 26	W, C.
Neottia Nidusavis	Bird's-nest Orchid	May 26	G.
Orchis Morio	Green-winged ,,	May 12	W, G.
,, maculata	Spotted ,,	May 31	H.
,, mascula	Early Purple ,,	April 26	W.
,, latifolia	Marsh Orchid	May 31	P, W, C, G, J, Gi, Y.
,, pyramidalis	Pyramidal ,,	June 30	Ri, T, B, Gi.
Habenaria conopsea	Fragrant ,,	June 14	R.
,, bifolia	Butterfly ,,	June 8	P.
,, viridis	Frog ,,	June 6	W, C.
Herminium Monorchis	Musk ,,		
Ophrys apifera	Bee ,,	June 26	B.
,, muscifera	Fly ,,		
Iris Pseudacorus	Yellow Flag	June 7	W.
Crocus Vernus	Purple Crocus		
Narcissus Pseudonarcissus	Lent Lily	Mar. 23	*G. W. H.*
Galanthus nivalis	Snowdrop	Mar. 7	*G. W. H.*
Tamus communis	Black Bryony	May 26	W, C.
Paris quadrifolia	Herb Paris	April 27	R, A, J.
Polygonatum officinale	Angular Solomon's Seal	May 8	E.
,, multiflorum	Common ,, ,,	May 17	*G. W. H.*
Convallaria majalis	Lily-of-the-Valley	May 14	C, G.
Ornithogalum umbellatum	Star of Bethlehem		
Scilla nutans	Wild Hyacinth	April 25	R, E, W.
Allium ursinum	Common Garlic	April 28	W.
,, vineale	Crow ,,	July 7	R, E, B.
Colchicum autumnale	Meadow Saffron	Sept. 26	*G. W. H.*
Juncus communis	Common Rush	June 11	Gi.
,, articulatus	Jointed ,,	June 18	*G. W. H.*
,, glaucus	Hard ,,	June 8	W.
,, obtusiflorus	Obtuse ,,		
,, bufonius	Toad ,,		
,, tenuis	Slender ,,	June 18	*G. W. H.*

Latin Name.	*English Name.*	*Date.*	*Record.*
Luzula pilosa	Hairy Wood Rush	May 8	*G.W.H.*
,, campestris	Field ,,	April 28	W.
Scirpus sylvaticus	Wood Scirpus	June 7	W, C, G.
,, palustris	Marsh ,,	June 4	*G.W.H.*
Eriophorum polystachion	Cotton Grass	May 31	*G.W.H.*
Carex leporina	Oval Sedge	June 4	*G.W.H.*
,, remota	Remote ,,	June 21	*G.W.H.*
,, paniculata	Panicled ,,	May 31	*G.W.H.*
,, vulpina	Fox ,,	May 31	W, C.
,, caespitosa	Tufted ,,	May 31	*G.W.H.*
,, acuta	Acute ,,	May 31	*G.W,H.*
,, praecox	Early ,,	May 5	*G.W.H.*
,, tomentosa	Downy ,,	May 31	*G.W.H.*
,, hirta	Hairy ,,	May 28	W, C.
,, flava	Yellow ,,	May 31	*G.W.H.*
,, distans	Distant ,,	May 31	C.
,, panacea	Carnation ,,	May 31	*G.W.H.*
,, sylvatica	Wood ,,	May 10	*G.W.H.*
,, strigosa	Thin-spiked ,,	May 10	*G.W.H.*
,, Pseudocyperus	Cyperus ,,	May 26	*G.W.H.*
,, pendula	Pendulous ,,	May 10	*G.W.H.*
,, ampullacea	Bottled ,,	June 4	*G.W.H.*
,, paludosa	Marsh ,,	May 7	*G.W.H.*
Blysmus compressus	Broad Blismus	...	
Milium Effusum	Wood Millet Grass	May 23	*G.W.H.*
Anthoxanthum odoratum	Vernal ,,	May 5	W.
Phalaris canarensis	Canary ,,	...	
Digraphis arundinacea	Reed ,,	July 23	*G.W.H.*
Phleum pratenss	Timothy ,,	July 8	C, G, Y.
Alopecurus pratensis	Meadow Foxtail Grass	May 1	J.
,, geniculatus	Marsh ,, ,,	June 10	C, G.
,, agrestis	Slender ,, ,,	June 17	E.
Avena fatua	Wild Oat	...	
,, pratensis	Perennial ,,	July 8	*G.W.H.*
,, flavescens	Yellow ,,	July 8	*G.W.H.*
Arrhenatherum avenaceum	False ,,	Jan. 4	W.
Holcus lanatus	Common Holcus	June 11	W, C, Gi.
,, mollis	Soft ,,	June 18	*G.W.H.*
Hordeum sylvaticum	Wood Barley	July 3	*G.W.H.*
,, pratense	Meadow ,,	June 18	*G.W.H.*
,, murinum	Wall ,,	June 6	C.
Agropyrum repens	Couch Grass	July 8	*G.W.H.*
Lolium perenne.	Rye ,,	June 3	W.
,, temulentum	Darnel	...	

Latin Name.	*English Name.*	*Date.*	*Record.*
Brachypodium sylvaticum	Slender False Brome	July 8	*G. W. H.*
,, pinnatum	Heath ,, ,,	Jan. 4	*J. R. W-E.*
Bromus erectus	Upright Brome	June 15	*G. W. H.*
,, asper	Hairy ,,		
,, sterilis	Barren ,,	May 28	*G. W. H.*
,, mollis	Soft ,,	May 25	*G. W. H.*
Festuca ovina	Sheep's Fescue	June 11	W, C.
,, elatior	Meadow ,,	July 8	*G. W. H.*
Dactylis Glomerata	Cock's-foot	Jan. 4	G.
Cynosurus cristatus	Dog's-tail	June 20	*G. W. H.*
Briza media	Quaking	June 6	C, P.
Poa annua	Common Meadow Grass	Jan. 4	W.
,, pratensis	Smooth ,,		
,, nemoralis	Wood ,,	May 28	*G. W. H.*
,, fluitans	Floating ,,	May 31	W.
,, trivialis	Roughish ,,	June 9	*G. W. H.*
Poa aquatica	Reed ,,	June 18	C.
Catabrosa ,,	Water Catabrosa		
Melica uniflora	Wood Melick	June 8	W.
,, nutans	Mountain ,,		
Equisetum palustre	Marsh Horse-tail	May 31	C, W.
,, arvense	Field ,,	April 27	C.
,, Telmateia	Great ,,	April 28	C.
Ophioglossum vulgatum	Adder's Tongue	June 17	*J. R. W-E.*
Polypodium vulgare	Common Polypody	June 11	W, C, J, Y.
,, Phegopteris	Beech Fern		
,, calcareum	Mountain Polypody	May 20	*G. W. H.*
Aspidium Filix-mas	Male ,,	May 23	W, C, Gi.
,, aculeatum	Prickly Shield Fern		
,, angulare	,, ,, ,,		
,, spinulosum	Broad ,, ,,	June 15	W.
Asplenium filix-fœmina	Lady Fern		
,, Trichomanes	Common Spleenwort		
,, Adiantum -nigrum	Black ,,	April 3	*G. W. H.*
,, Ruta -muraria	Wall Rue ,,	July 18	C, Y.
Scolopendrium vulgare	Hart's Tongue	Mar. 7	*G. W. H.*
Ceterach officinarum	Scaly Fern	May 4	*G. W. H.*
Pteris aquilina	Bracken	June 11	G, J, Gi.

Entomological Section.

President ... J. C. Salter, Esq.

Helfield, E. Samuelson, R. A. Jenkins and Harker gave in their names as wishing to join this Section, and Jenkins and Harker sent in collections for the prize. Harker's collection was adjudged the best, and was certainly superior to any collection sent in for the competition for many years past. His specimens were very fine ones and were excellently set up, showing that he had taken great pains over his collection. We are particularly glad at being able to publish his list, as it gives for the first time the names of the specimens captured either in Cheltenham or in its immediate neighbourhood. The number of nets brought out on excursions seemed rather more numerous this year than before.

Collection made by O. A. Harker during 1901.

BUTTERFLIES.

Large White	...	Pieris Brassicae	... Cheltenham
Small White	...	,, Rapae	... ,,
Green-veined White	...	,, Napi	... ,,
Brimstone Butterfly	...	Gonepterix Rhamni	... ,,
Orange Tip	...	Euchloe Cardamines	... Birdlip
Marble White	...	Melanargia Galatea	... Leckhampton
Speckled Wood	...	Pararge Aegeria	... Paignton, S. Devon
Wall Butterfly	...	,, Megaera	... Cheltenham
Large Heath	...	Epinephele Tithonus	... Chepstow
Ringlet	...	,, Hyperanthus	Leckhampton
Meadow Brown	...	,, Janira	... Cheltenham
Small Heath	...	Coenonympha Pamphilus	... ,,
Red Admiral	...	Vanessa Atalanta	... Leckhampton
Peacock	...	,, Io	... Cheltenham

Small Tortoise-shell ...	Vanessa Urticae ...	Cheltenham
Comma ...	,, C. Album ...	Chepstow
Silver-washed Frittillary...	Argynnis Paphia ...	Paignton, S, Devon
Dark Green ,, ...	,, Aglaia ...	Cheltenham
High Brown ,, ...	,, Adippe ...	Leckhampton
Small Pearl Bor'd ,, ...	,, Selene ...	Cheltenham
Greasy ,, ...	Melitaea Artemis ...	Paignton, S. Devon
White-letter Hairstreak ...	Thecla W. Album ...	Chepstow
Green ,, ...	,, Rubi ...	Andoversford
Small Copper ...	Polyommatus Phlaeas...	Cheltenham
Chalk Hill Blue ...	Lycaena Corydon ...	Leckhampton
Azure ,, ...	,, Argiolus ...	Cheltenham
Clifden ,, ...	,, Adonis ...	Paignton, S. Devon
Common ,, ...	Lycaena Alexis ...	Cheltenham
Brown Argus ...	,, Agrestis ...	,,
Grizzled Skipper ...	Syrichthus Alveolus ...	,,
Dingy ,, ...	Thanaos Tages ...	,,
Large ,, ...	Hesperia Sylvanus ...	,,
Small ,, ...	,, Linea ...	Leckhampton

MOTHS.

SPHINGES.

Humming Bird Hawk ...	Macroglossa Stellatarum...	Leckhampton
Green Forester ...	Ino Statices ...	Colesbourne
Six-spotted Burnet ...	Zygaena Filipendulae...	Leckhampton
Currant Clearwing ...	Sesia Tipuliformis ...	,,

BOMBYCES.

Ghost Swift ...	Hepialus Humuli ...	Cheltenham
Common Swift ...	,, Lupulinus ...	,,
Buff Tip ...	Phalera Bucephala ...	,,
Puss Moth ...	Dicranura Vinula ...	,,
Fox ,, ..	Bombyx Rubi ...	Colesbourne
Lackey ...	,, Neustria ...	Cheltenham
Drinker ...	Odonestis Potatoria ...	,,
Common Vapourer ...	Orgyia Antiqua ...	,,
Gold Tail ...	Liparis Auriflua ...	,,
Wood Tiger ...	Nemeophila Plantaginis...	Leckhampton
Buff Ermine ...	Spilosoma Lubricipeda...	Cheltenham
Cinnabar ...	Euchelia Jacobaeae ...	,,
Common Footman ...	Lithosia Complanula ...	,,

NOCTUAE.

Large Yellow Underwing	Triphaena Pronuba ...	Cheltenham
Lesser Broad-border ...	,, Ianthina ...	,,
Early Grey ...	Xylocampa Lithoriza ...	,,

Striped Wainscot	...	Leucania Impudens ...	,,
Common ,,	...	,, Pallens ...	,,
Smoky ,,	...	,, Impura ...	,,
Shoulder-striped ,,	...	,, Comma ...	,,
Brown-line Bright-eye	...	,, Conigera ...	,,
Buff Arches	...	Thyatira Derasa ...	,,
Feathered Gothic	...	Neuronia Popularis ...	Cirencester
Bright-line Brown-eye	...	Hadena Oleracea ...	Cheltenham
Cabbage Moth	...	Mamestra Brassicae ...	,,
Grey Dagger	...	Acronycta Psi ...	,,
Burnished Brass	...	Plusia Chrysitis ...	,,
Silver Y	...	,, Gamma ...	,,
The Herald	...	Gonoptera Libatrix ...	,,
Turnip Moth or Common Dart	...	Agrotis Segetum ..	,,
Light Arches	...	Xylophasia Lithoxylea...	,
Angle Shades	...	Phlogophora Meticulosa...	,,
Marbled Beauty	...	Bryophila Perla ...	,,
Burnet Noctua	...	Euclidia Glyphica ...	Colesbourne
Mother Shipton	...	,, Mi ...	,,
Straw Underwing	...	Cerigo Matura ...	Cheltenham

GEOMETRAE.

Swallow-tail Moth	...	UropteryxSambucaria...	Cheltenham
Light Emerald	...	Metrocampa Margaritaria...	,,
Brimstone Moth	...	Rumia Luteolata ...	,,
August Thorn	...	Ennomos Angularia ...	,,
Little Thorn	...	Epione Advenaria ..	,,
Scalloped Oak	...	Crocallis Elingularia ...	Chepstow
Common Wave	...	Cabera Exanthemata ...	Cheltenham
Common White Wave	...	,, Plusaria ...	,,
Slender Treble Bar	...	Anaitis Plagiata ...	Paignton, S. Devon
Mottled Grey	...	Scoparia Basistrigalis...	Cheltenham
Green Carpet	...	Laurentia Viridaria ...	Chepstow
Garden ,,	...	Melanippe Fluctuata ...	Cheltenham
Silver-Ground Carpet	...	,, Montanata ...	,,
Galium ,,	...	,, Galiata ...	,,
Flame ,,	...	Coremia Propugnata .	,,
Beautiful ,,	...	Melanthia Albicillata ...	,,
Argent and Sable	...	Melanippe Hastata ...	Paignton, S. Devon
Chalk Carpet		,, Procellata ...	Leckhampton
Currant Moth	...	AbraxasGrossulariata...	Cheltenham
Latticed Heath	...	Strenia Clathrata ...	,,
Common Heath	...	Ematurga Atomaria ...	,,
Clouded Border	..	Lomaspilis Marginata...	Andoversford
The Tissue	...	Triphosa Dubitata ...	Cheltenham

Yellow Shell	...	Gamptogramma Bilineata...	,,
Willow Beauty	...	Boarmia Gemaria ...	,,
Blood Vein	..	Timandra Amataria ...	,,
Chimney Sweeper	...	Tanagra Chaerophyllata..	,,
Small White Wave	...	Asthena Candidata ...	,,

PYRALIDES.

Small Magpie	...	Botys Urticalis ...	Cheltenham
Mother of Pearl	...	,, Ruralis ...	,,
The Garden Pearl	...	Pionea Forficalis ...	,,
Beautiful China Moth	...	Hydrocampa ...	,,
Purple-bordered Gold	...	Hyria Muricata ...	,,

Geological Section.

President ... C. I. GARDINER, ESQ.

ORE interest has been shown in the doings of this Section this year than in former years. More fossil hunters have come out both on the excursions of the whole Society and on the small sectional excursions.

A prize of a geological hammer was given to A. A. Roberts for the best collection of fossils made during the Easter holidays, and another to D. L. Solomon for the best collection made during the Summer term.

On the Andoversford excursion we first visited the quarry just behind Whittington village and a little to the North-East of it. Here some 10 feet of a pink Oolite Limestone is seen and contains numerous *Terebratula fimbria.* Some 50 feet higher up the hill side there is a larger quarry showing about 18 feet of Notgrove Freestone at the top and Gryphite Grit below. The latter's presence being inferred from the abundant occurrence of blocks with *Gryphæa* in them, but the beds below the Notgrove Freestone are now entirely obscured by detritus. *Pholadomya fidicula* and *Pholadomya Heraultii* were abundant.

We then went on to the quarry in the Stonesfield Slate where we obtained *Ostræa acuminata*, *Nerinea*, several *Terebratulæ* and *Rhynconellæ*, an Ammonite, five specimens of one species of coral, and a *Trigonia.*

The excursion to Cleeve Hill turned out the best for the Geological Section. We visited a quarry in the *T. fimbria* zone and also Rolling Bank Quarry, where fossils are specially abundant. H. Williams, Brierley, Stokes, Solomon and Mills proved very energetic in spite of a roasting sun.

One of the best finds of the year was made by D. Solomon, who found a fine specimen of *Ammonites margaritatus* in the Pilley Brick Pit at the base of Leckhampton Hill. This specimen was 5·7 inches across and very well preserved, it has been placed in the Collection in the Museum.

There was one excursion to a distance in June, when some half dozen or so trained to Ledbury, but rain spoilt the afternoon. Still we saw the Old Red Sandstone with its high angle of dip and the underlying Silurian beds. Several typical fossils were obtained from the latter beds such as *Atrypa reticularis* and *Strophomena rhomboidalis*. Howe and G. T. Neame proved very vigorous hammerers.

It is proposed to start this year a collection in the Museum of the derived fossils to be obtained in the sands and gravels in the neighbourhood of Cheltenham. Exposures of these yellow quartzose sands are to be seen in several pits in the outskirts of the town and there are to be found in them many fossils which have been washed out of the Lias or Oolite and rolled along under water till they were buried up in the sand in which they are now to be found.

The new cuttings along the Cheltenham and Andoversford line have not proved very prolific. But some good specimens were found from the Middle Lias above the Reservoir and a few other fossils were got near Charlton King's Station.

Members of the Section who intend to collect fossils this year should remember to bring back a small geological hammer with them after the Easter holidays.

Ornithological Section.

President .. E. A. Menneer, Esq.

WORKING MEMBERS.

T. I. G. Thomas.
T. A. Hodson.
H. N. Wright.
H. P. M. Egleston.
B. W. C. A. Rendle.
L. C. Tate.
A. G. N. Belfield.
W. G. Searle.

Two good note-books were sent in, and the sectional prize was awarded to T. A. Hodson. The prize-winner shewed a minute knowledge of the bird life of the locality, and in many cases followed up his observations with successful inferences about the habits of birds. It is hoped that in 1902 still more note-books will be kept, if only as a permanent record of the season's work.

The magnificent bequest soon to be added to the College Museum is spoken of elsewhere. Its presence in our midst should prove an invaluable stimulus to the industry and enthusiasm of the Ornithological Section.

The Museum is indebted to T. I. G. Thomas for a hawfinch's nest found on the Crippets, and especially noteworthy is the appearance of a swift flying overhead on September 16. One member tells the story, unfortunately only at second hand, of a brood of 12 or 13 ducklings starting to cross a pond, and falling victims without exception to the voracity of pike before they were able to reach the opposite bank about 25 yards off. The same member puts it on record of chaffinches that "these birds are omnivorous, for they will take corn in Winter."!

Mr. White reports the annual visit of the greater spotted woodpecker to his garden, and the discovery of a starling's nest with young in the second week of January.

We print below some of the more interesting observations made during the season.

April 20...Nests of coot, redshank, peewit, shoveller and herring-gull found in Yorkshire.

April 23...Four herons flying over Cheltenham ; first appearance of redstart.

April 25...Long-tailed tit's nest nearly built : nine eggs on May 5.

April 28...Young robins observed to have mottled brown plumage with a blackish mark on the breast where the red will appear later.

May 1...Nightingale heard near Dowdeswell reservoir.

May 2...Stonechats on Charlton Common.

May 7...Redstart's eggs, of a deeper blue than hedge-sparrow's.

May 12...Golden-crested wren's nest with 12 eggs : also a gold-finch's nearly built, and a robins lined with feathers.

May 13...Barn owl's nest with 5 eggs, containing a freshly killed mouse and a mole : 2 eggs obviously laid some time before the others.

May 13...Meadow pipit's : the cup of the nest noticeably less deep than that of the tree pipit's.

May 14...Kingfisher's nest, birds just flown.

May 25...Nuthatch's hole, plastered up as usual : also a bullfinch's with 3 and a greater whitethroat's with 6 eggs.

Juue 1...Nests of flycatcher and red-backed shrike ; it was noticed that blackbirds sometimes sing on the ground, and sometimes too on the wing.

Photographic Section.

President ... C. E. YOUNGMAN, Esq.

DARK ROOM MEMBERS.

Adderley, R. W. F.	Dickinson, H. C.	Russell, E. N.
Brett, V. W.	Dickinson, D. P.	Samuelson, V. F.
Broderip, J. Y. M.	Fitz-Herbert, E. C. W.	Simpson, A. F.
Browne, W. H.	Harford, H. H.	Smythies, B. E.
Campbell, W. U. M.	Harington, W. G.	Spackman, P. G.
Clark, R. O.	Johnston, A. A.	Stephens, D. J. M.
Cohen, B. J. B.	Jopp, C. H. K.	Stephens, R. C.
Collett, S.	Laming, C. H. R.	Tinson, G. G. N.
Crosbie, R. E. H.	Lawford, A. N.	Turpin, T. K.
Curtis, J. O.	Miller, G. S.	Webb, S. N. C.
Darwin. T. W.	Pearce, H. G.	Williams, R. B.
Davies, G. Capel	Perkins, H. B.	Woollatt, C. H.
Davies, J. R. Capel	Radclifle, J. E. B.	Woollatt, R.
Davis, E. B.		

AN unfruitful year; photography seems now so pleasant and easy a pastime that few—too few—make regular work of it.

In the Summer term three or four showed up prints; M. M. L. Currie's were decidedly the best, being the beginning of a series of flower and plant records; a good line to pursue, with promise of interest and beauty increasing with time and the skill that comes of practice.

Our show of lantern slides in December brought out good work from Butt and A. A. Johnston, between whom it was hard to decide; the final judgement had to wait till the slides were shewn in the lantern, and then Johnston had it. Both sets were clean, careful work: some of it is printed in this Report. Other exhibitors

were Smythies, E. A. Samuelson, and Dickinson ; but they were plainly not so experienced as the other two. The show would have been but a small one without contributions from Mr. Borchardt and Mr. Towers, and some few people who lent negatives for slides to be made from,—which is better than nothing, but not entirely satisfactory.

The Dark Room is not a new one yet, but it is now so newly conspicuous that we shall look for many to be attracted by it. And we are promised an electric lamp for it, with the aid of which bromide printing ought to become fashionable.

FUNGI.

UNGI are a class of the most lowly organised plants. There is no differentiation amongst them into root, stem and leaf, such as we are accustomed to see in our common garden plants, while a character which marks them off from other plants, of almost equally low organisation, is the absence of Chlorophyll. This green colouring matter is used by the plants which possess it to enable them to extract food material from the air. A Fungus, not possessing it, cannot take its food from the same source, and so it lives on material from which it can extract the food that it requires for its existence. Some of the Fungi grow on decomposing vegetable and animal matter, and take in chemical compounds formed during the decomposition through numberless little threads, which occupy, to a certain extent, the position of the roots of higher plants. These threads spread in all directions through the decomposing material and can be seen round the base of such a Fungus as the Mushroom, if one carefully cuts into the earth beneath it.

But though many Fungi grow on dead matter, others are found on living organisms, the moulds which grow on ripe fruits being cases of such a kind of Fungus. Taking a Mushroom as a good example of a certain class of Fungus, we can easily distinguish a *stalk* with a *collar* round it and a *cap* which consists of a white upper part and bears on its under side a number of plates or *gills,* which are pink or black in colour according to their age. If you cut off the cap and leave it for a few hours on a piece of paper, and then remove it, you will find the paper covered with a fine brown dust. This, if magnified, is seen to be a mass of small oval bodies, each of which is called a *spore,* and from which new Mushrooms spring. If a young Mushroom is noticed, the outer covering of the cap is seen to join the stem and afterwards to break, leaving part attached to the stem as the collar.

There are a large number of Fungi round Cheltenham which resemble the Mushroom, though they may differ in having no collar, or in their colour, or in the appearance of the cap, and so on, but the possession of gills on which the spores grow is characteristic of a very large number indeed. Another and quite a different class of Fungi look at a distance just like a Mushroom, but on being turned upside down are found to have no gills, but in their place a honeycomb-looking mass of tissue in which the spores grow. Such a Fungus is *Boletus laricinus,* which grows in profusion on the larch woods on the hills above The Crippets. Another example of such a Fungus with pores, but no gills in which the spores grow, is quite unlike a Mushroom, it grows out from the trunks of trees like a bracket, and is sometimes yellow, sometimes brown or black, and often a foot in breadth.

Still another class of Fungi is formed by the Puff Balls. The interior of these contains a material on which the spores grow, which dries up into a dusty mass. The covering skin often ruptures at the top and the spores are expelled through the opening and blown away.

Examples of these and of other classes of Fungi have been very common near Cheltenham during the autumn of this year, and a study of this somewhat neglected class of plant cannot fail to be interesting to any keen botanist.

C.C.N.H.S. Accounts for 1901.

Receipts.

		£	s.	d.
Balance in hand		24	9	6
Lent Term Subs., Ordinary Members ...		4	16	0
Dark Room „ ...		2	0	0
Summer „ „ Ordinary „ ...		4	7	0
Dark Room „ ...		8	15	0
Christmas „ Ordinary „ ...		4	4	0
Dark Room „ ...		2	15	0
	£51	6	6	

W. M. Baker,
Hon. Treasurer.

Expenses.

	£	s.	d.
Lent Term :			
Darter (for Prize)	0	8	6
Postage of Reports, per Mr. Gardiner ...	0	2	6
Printing Photos in Reports	1	5	0
Martyn, Dark Room Superintendence ...	3	2	8
Shirer, Towels, etc.	0	5	4
Summer Term :			
Martyn, Dark Room Superintendence ...	4	19	0
Expenses of 4 Excursions	4	8	9
Darter and Postage per Mr. Gardiner ...	1	3	3
Christmas Term :			
Prize, Photo Section, per Mr. Youngman ...	1	0	0
Martyn, Dark Room Superintendence ...	4	11	2
Prize, Entomological Sec., per Mr. Gardiner	0	10	0
Balance in hands of Treasurer ...	29	10	4
£51	6	6	

Audited and found correct, February 4th, 1902,
A. A. Bourne.

BRITISH MUSEUM (NATURAL HISTORY)
27 MAR 1902
PRINTED

CHELTENHAM COLLEGE

Natural History Society.

REPORT FOR THE YEAR 1902.

SUMPTIBUS EDITORUM CHELTONIENSIUM

CHELTENHAM:
DARTER'S COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

BRITISH MUSEUM
NATURAL HISTORY

THE COURAGE COLLECTION,
BY
C. E. YOUNGMAN, ESQ.

THE COURAGE COLLECTION,
BY
C. E. YOUNGMAN, ESQ.

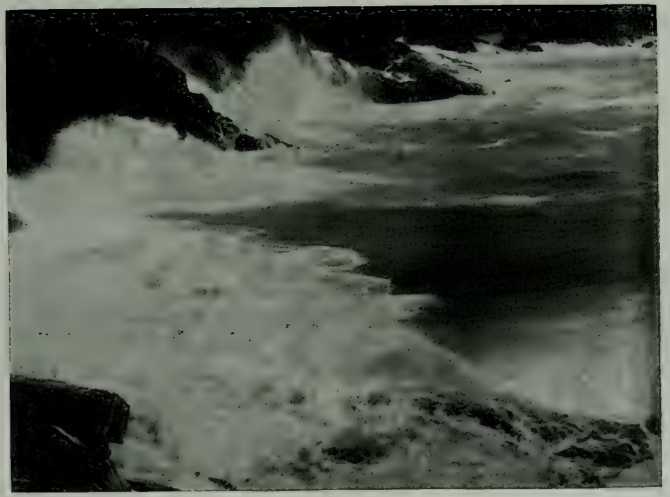
BEARS PRESENTED BY E. GIBSON, ESQ.,
BY
C. E. YOUNGMAN, ESQ.

BRITISH MUSEUM
NATURAL

BRITISH MUSEUM
NATURAL HISTORY

Bisham Abbey,
by
F. G. Davies.

Geneva,
by
J. B. Cohen.



Sea Waves,
by
B. E. Smythies.

BRITISH MUSEUM
NATURAL HISTORY

CHELTENHAM COLLEGE

NATURAL HISTORY SOCIETY

REPORT

Of the Proceedings of the Society for the Year

1902

Sumptibus Editorum Cheltoniensium.

CHELTENHAM:
JOHN DARTER, COLLEGE BOOK AND STATIONERY DEPOT,
NORTHWICK TERRACE.

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PREFACE.

During the year the excursions have proved as popular as ever and the standard of work was well maintained. The attendance at the lectures has improved and our thanks are due to those who have been so kind as to lecture to the Society. Mr. Witts has once more told us something from that fund of knowledge which he possesses about the archæology of our district and Dr. Pruen has spoken to us about the workings of our brains, while Mr. Borchardt has lectured on a subject of much local interest, for the Severn Bore is the best one to be seen round our islands and it was a discussion of this which formed no inconsiderable part of his lecture.

During the year the Courage Collection of Birds has been housed in the new part of the Museum and forms a magnificent addition to our collection. Mr. White has been busy naming and, to a certain extent, arranging the birds, but we want more cases to display the specimens to the best advantage.

The Highett microscope, brought by Dean Pigou to the College, has proved of great use, and has led to the resuscitation of the Microscopical Section, which up till very recently existed with Mr. Scott as its President. Mr. Perrott has kindly consented to look after the Section, and so the microscope will be still further used than it is at present. It is a magnificent gift, and the only drawback is that several people cannot look down it at the same time.

The Botanical Section has continued and even increased its activity under the fostering care of its new President, but has lost a remarkably keen and energetic member in H. N. Wright. In losing Jenkins and Hooker the Entomological Section lose promising naturalists.

THE COUNCIL, 1902.

President	The Principal.
Treasurer	W. M. Baker, Esq.
Secretary	C. I. Gardiner, Esq.
President of Archæological Section ...	A. S. Owen, Esq.
President of Botanical Section ...	G. W. Hedley, Esq.
President of Entomological Section ...	J. C. Salter, Esq.
President of Geological Section ...	C. I. Gardiner, Esq.
President of Ornithological Section ...	E. A. Menneer, Esq.
President of Photographic Section ...	C. E. Youngman, Esq.
President of Junior School ...	F. J. Cade, Esq.

RULES.

1.—That this Society be called The Cheltenham College Natural History Society, and have for its object the promotion of the Study of Natural History.

2—That ordinary Meetings of this Society be held on Fridays once in three weeks, at 5.30 p.m., or at any such other times as the Council of the said Society may appoint, when papers and notes on observations shall be read and discussed, specimens exhibited, and the ordinary business of the Society transacted.

3.—That each Member of the Society is entitled to introduce two friends at any Meeting. Visitors may speak and read papers with the leave of the President or Chairman of the Meeting.

4.—That field days be appointed for the purpose of making excursions to places of interest in the neighbourhood.

5.—That a terminal Subscription of 1/- be payable in advance by all Members, except Honorary Members, who shall subscribe 5/-, and that all Members who have paid five consecutive terminal subscriptions, be exempt from further payment.

6.—That any Member whose Subscription shall be a whole term in arrears, shall cease to be a Member of the Society.

7.—That Members be encouraged to join Sections for the more accurate study of the different branches of Natural History: that the formation of these be arranged, and the work settled at the first Meeting of each term: that each Section be under a President, who is responsible for its meetings and organisation, and that a Secretary be appointed by each Section to keep minutes of its proceedings, of which a summary shall appear in the Report.

8.—That the Society issue a Report as often as the Council think fit.

9.—That the Officers of this Society consist of a President, Vice-President, a Secretary, and Treasurer, who, with the Presidents and Secretaries of the branches, shall constitute the Council of the Society, besides the Natural Science Masters, who shall be ex-officio Members of the Council.

10.—That the duties of the President shall be to preside at Meetings, and act as general referee on all questions of order.

11.—That in the absence of the President, the Vice-President shall preside, or, in his absence, a Member of the Council.

12.—That the duties of the Secretary shall be to give notice of Meetings of the Society and of the Council, and to enter the minutes of Meetings in a book kept for that purpose, to collect subscriptions, and to give account of the same.

13.—That the Treasurer's accounts, after the approval and signature of two Auditors, to be appointed at the last meeting of each year, to be laid on the table at the first meeting of the succeeding year.

14.—That the Officers constitute for the time being the Council of the Society, in which shall be vested all arrangements not provided for in these Rules.

15.—That the Secretary have power by a vote of the majority of Members present, at a special or Ordinary Meeting, to erase from the list of the Society any Member whose conduct should be adverse to the interests and objects of the Society. Fees and Subscriptions are in no case to be returned, but re-election of an ex-member to be permitted during the next term.

16.—That the Members of the Society on leaving the College become corresponding Members.

17.—That no alteration be made in these Rules except at a General Meeting at which 21 Members at least are present, and then only provided it is carried by a majority of two-thirds of those present.

Cheltenham College Natural History Society.

President ... THE REV. R. WATERFIELD.

Secretary ... C. I. GARDINER, ESQ.

Treasurer ... W. M. BAKER, ESQ.

FIRST TERM, 1902.

Life Members.

Adderley
Allan
Appleby
Banks
Bazeley
Begbie
Bickerdike
Bignell
Biscoe
Bourke
Brettell
Buckley
Burke, E. P.
Burke, H.
Capel Davies, G.
Chard
Cohen, E.
Collett
Congreve
Conran
Courtney
Cowan
Cummins, A.
Cunningham
Davidson
Davis, F.
Davis, W.
Edwards, C. W.
Exham
Farmer
Fawkes
Festing
Fitzherbert, E. C. W.
Freeland
Glendinning
Griffiths, G.
Grose
Harriugton, W. G.
Herbert
Hill
Howlden
Jenkins
Johnstone, A. G.
Johnstone, R.
Jopp
Kenworthy
Knowling
Laming
Lamotte
Lawford
Lawson
Layton
Lemon
Littleton
Locke
Lowther
Malden
Maxwell, G.
Maxwell, E.
McCulloch
McSwiney
Megaw
Meyer
Milton, L.
Mitchell Dawson
Morris
Morrison
Murray, G.
Nicolls
O'Donel
Oppenheim, D. V.
Pardoe
Peel, A. R.
Pottinger
Priday
Radcliffe, I. V.
Roberts, A. A.
Russell
Samuelson, E. A. G.
Sidebottom
Simpson
Stopford
Storr
Thomas, T. I. G.
Thoyts
Tinson
Tolson
Turner
Tyzack
Vicat
Williams
Woolatt
Wright, H. N.

Ordinary Members.

Ainlee
Allen
Ames
Beadon, B.
Belfield
Bingham
Birch
Blood
Bourke
Brierley
Broderip
Brown, E.
Burrard
Butt
Campbell, A. L.
Campbell, W. U. M.
Clark, R. O.
Cohen, J. B.
Cork
Cummins
Curtis
Darwin
Daubeny
Davies, F. W. K.
Edwards, J. F.
Egleston
Fasken
Francis, H. E.
Fryer
Gardiner, B. L.
Gard'ner, E. C.
Gordon, R. H.
Gordon, G.
Grieve, W.
Hall, E. V.
Harford
Harker
Harington, H. R.
Krauss
Lesser, A. C.
Lloyd-Jones, W.
Marsden, H.
Mayne
McSwiney
Milne
Milton, F.
Maine, G. T.
Maine, H.
Nicholls
Osborne, E. A.
Pearce
Porter
Radcliffe
Ritter
Roberts, A.
Rushbrooke
Russell, E. A.
Shepherd
Skipton
Smith, W. H.
Smythies, B. E.
Spackman
Sternberg
Stokes
Sutcliffe, A. L.
Tatam
Tate
Thomas
Todrick
Wallace
Waterhouse
Webb, S. N. C.
Woolatt, C. H.
Young, R. D.

SECOND TERM, 1902.

Life Members.

Adderley
Allan, K. D.
Appleby
Banks
Bazeley
Begbie
Bickerdike
Bignell
Biscoe
Bourke
Brettell
Buckley
Burke, E. P.
Burke, H.
Campbell, A. L.
Chard
Collett
Congreve
Conran
Courtney
Cowan
Cummins, A.
Cunningham
Daubeney
Davidson
Davis, F.
Davis, W.
Edwards, C. W.
Exham
Farmer
Festing
Fitzherbert, E. C. W.
Freeland
Fryer
Glendinning
Gordon
Griffiths
Grose
Harker
Harrington
Herbert
Hill
Howlden
Jenkins
Johnstone, A. A.
Johnstone, R.
Jopp
Kenworthy

Knowling
Laming
Lamotte
Lawford
Lawson
Layton
Lemon
Littleton
Locke
Lowther
Malden
Maxwell, E. B.
Maxwell, G.
McCulloch
MacSwiney
Megaw
Meyer
Milne
Milton, L.
Mitchell-Dawson
Morris
Morrison
Murray, G.
Neame, G. T.
Nicolls
Oppenheim, D. V.
Osborne, E. A.
Pardoe
Peel, E. R.
Pottinger
Priday
Radcliffe, F. V.
Roberts, A. A.
Russell
Samuelson, E. A. G.
Sidebottom
Simpson
Stopford
Storr
Thomas, T. I. G.
Thoyts
Tinson
Tolson
Turner
Tyzack
Vicat
Waterhouse
Williams
Woolatt, C. H.
Wright, H. N.

Ordinary Members.

Ainley
Allen
Ames
Attwood
Baker
Barrington
Beadon
Belfield
Bingham
Blood
Bourke
Brierley
Broderip
Brown, E.
Burrard
Butt
Campbell, W. V. M.
Capel Davies
Clark, R. O.
Cohen, E. C.
Cohen, J. B.
Corbett
Cork
Cummins
Curtis
Darwin
Dashwood
Davies, F. W. K.
Denham
Dickinson
Drysdale
Dyce
Edwards, A. G.
Edwards, J. F.
Egleston
Francis
Gard'ner, B. L.
Gardiner, E. C.
Gibson
Gordon, R. H.
Grieve, W.
Griffiths, N. O.
Hailes
Hall, E. V.
Harford
Harington. H. R.
Hind
Hogg
Homfray
Hooker
Kilner
Krauss
Lesser, A. C.
Littleton
Lloyd Jones, W.
Marsden
Mayne
Merce
Milton, F.
Mitchell
Montgomerie
Moore, C. A. G.
Murray, A. C.
Neame, H.
Nicholls
Parcell
Pearce
Peel
Perkins
Pitman, C. S.
Porter
Radcliffe
Reeves
Ritter
Roberts, F. L.
Rushbrooke
Russell, E. N.
Shepherd
Skipton
Smith, W. H.
Smythies, B. E.
Spackman
Spackman
Startin
Stephens, D. J. M.
Stephens, R. C.
Sternberg

Stokes
Strauss
Stuart, A. M.
Studdy
Summers
Sutcliffe, A. L.
Tatam
Tate, L.
Thomas, E. M.
Thornton, A. C.
Todrick
Tulloch
Webb, S. W. C.
Welch
Williams, M.
Wilson, W.
Young, R. A. E.
Young, R. P.

THIRD TERM, 1902.

Life Members.

Adderley
Allan
Appleby
Bazeley
Bingham
Biscoe
Brettell
Buckley
Burke, E. P.
Burke, H.
Campbell, A. L.
Cohen, J. B.
Conran
Cummins, A. A.
Cunningham
Daubeny
Davis, F.
Davis, W.
Egleston, H.
Farmer
Festing
Fitzherbert
Fryer
Glendinning
Gordon
Grieve
Harker
Harington, W. G.
Hill
Jenkins
Jopp
Kenworthy
Knowling
Lamotte
Laming
Lawford
Lemon
Littleton
Locke
Malden
Maxwell, E. B.
McSwiney
Megaw
Meyer
Milne
Milton, F.
Milton, L.
Morrison
Murray, G.
Neame, G. T.
Nicolls
Oppenheim
Pardoe
Pearce, E. O.
Peel, A. R.
Priday
Roberts, A. A.
Russell
Samuelson, E. A. G.
Simpson
Storr
Thomas, T. I. G.
Todrick
Tolson
Turner
Tyzack
Vicat
Waterhouse
Woolatt, C. H.

Ordinary Members.

Addington
Ainley
Allen
Ames
Attwood
Baker, P.
Barrington
Barrow
Beadon
Belfield
Birch
Blood
Bourke
Brierley
Broderip
Brown, E.
Burrard
Campbell, W. U. M.
Capel Davies
Clark, R. O.
Cohen, E. C.
Coker
Cork
Cummins, R. C.
Darwin
Dashwood
Denham
Dickinson
Drysdale
Dyce
Edwards, A. G.
Edwards, J. F.
Earleston, V.

Gard'ner, B. L.
Gibson
Griffiths, N. O.
Hailes
Hall, E. V.
Harford
Harington, H, R.
Hart
Hind
Hogg
Homfray
Kilner
Krauss
Lesser, A. C.
Lloyd Jones, W.
Marsden, H.
Martin, C.
Matthews
Mayne
McNeile
Mercer
Mitchell
Mongomerie
Moore, C. A. G.
Murray, A. C.
Maine, H.
Neame, H.
Nicholls
Parcell
Peel
Pelham-Burn
Pitman, C. S.
Porter, A. B.
Prendergast
Radcliffe
Reeves
Ritter
Roberts, F. L.
Rohde
Rushbrooke
Russell, E. N.
Shepherd
Skipton
Smith, W. H.
Smythies, B. E.
Spackman
Startin
Stephens, D. J. M.
Sternberg
Stokes
Strauss
Stuart, A. M.
Studdy
Summers
Sutcliffe, A. L.
Tatam
Tate, L.
Tate, W.
Thomas, E. M.
Tulloch
Webb, S. N. C.
Welch
Williams, M.
Wilson, W.
Young, R. A. E.
Young, R. P.

LECTURES AND EXCURSIONS.

Feb. 7 ... Lecture on Tides and Bores by W. G. Borchart, Esq.

Feb. 17 ... Lecture on Volcanoes by C. I. Gardiner, Esq.

May 22 ... Expedition to Cranham Woods.

June 21 ... Expedition to Andoversford.

July 5 ... Expedition to Colesbourne.

July 11 ... Expedition to Birdlip.

July 24 ... Expedition to Wainlode and Tewkesbury.

Nov. 6 ... Lecture on Glaciers living and dead, by C. I. Gardiner, Esq.,

Nov. 17 ... Lecture on British and Roman Remains near Cheltenham, by G. B. Witts, Esq.

Dec. 4 ... Lecture on the Brain and how it works, by Dr. Pruen.

LIST OF ARTICLES PRESENTED TO THE MUSEUM DURING THE YEAR 1902.

Article	*Presented by*
Model of Mine	H. Nestor Schnurmann, Esq. (O.C.)
Hornets' Nest	W. R. Storr (C.)
Nest of Humming Bird ...	A. Junior (C.)
Indian Helmet, Bolivian Ornaments, Purse made from the skin of Chinchilla, and Silver Ore	R. P. F. Prain, Esq. (O.C.)
Boer's Muzzle-loading Revolver taken from De Wet's Camp	Sergeant Wheeler, 2nd Glo'ster Regt. M.I.
Flint Implements	Rev. Gatty.
Mauser Carbine, Boer Flag, Bandolier, Native Walking Stick, and Boer Hat with Badges, etc.	Captain P. C. van E. Bam (O.C.) G.F.A.
Three Bears, Cases of Stuffed Birds, also Mounted Heads of Elk	E. Gibson, Esq. (O.C.)
Cases of Birds and Medallions with Birds	M. Tanner, Esq. (O.C.)
Elephant's Foot	Mrs. H. B. Grigg.
Human Skull and Bones ...	H. C. Stephens, Esq. (O.C.)

Grasshopper in Bottle ...	—. Fox, Esq. (O.C.)
Indian Coins	H. O. Smith (C.)
Specimen of Azurite	J. N. MacDonald (C.)
Model of Boat, Musical Instrument, Leg Irons, Native Locks and Shackles	Major C. H. Dickinson (O.C.)
Sword, Sabre-tache, 4 Coats, Busby. Cap, Pom-poms, Bandolier, Badges, Plume, Bullets, etc., relics of the South African War	Major H. Davis, A.S.C. (O.C.)
Chinese Coins	E. A. P. Wood (C.)
Edleweiss from Switzerland ...	B. J. Cohen (C.)
Coins of the late S.A. Republic £1, 1s., 6d., and 3d.	E. Bernard Wilson, Esq. (O.C.)
Coin (Kruger)	Lieutenant R. A. H. Orpen-Palmer (O.C.)
Collection of Fossils	H. M. Kemble (O.C.)

REPORTS FROM SECTIONS.

Archaeological Section.

President ... A. S. Owen, Esq.
Secretary ... G. B. Allen.

We had several interesting expeditions during the year 1902, principally to Churches in the neighbourhood. Among these we have visited Winchcombe, where we divided our attention between the fascinating ugly gurgoyles, one of whom wears the mediæval equivalent for a chimney pot hat, and the violent proceedings of a high-spirited mare which was fairly making things hum in the streets of the sleepy little town. Other churches visited were Woolston, Dowdeswell, Whittington, Badgworth, Shurdington, and most interesting of all, Deerhurst.

One great privilege fell to the lot of the members of our Section in the Summer, as we were taken by Mr. G. B. Witts, a first-rate authority on the subject of Roman and British remains, over the top of Leckhampton Hill and shown the extremely interesting camp and its surroundings; the curious and unexplained burnt earth was pointed out, and our indignation was excited against the wanton destruction of a remarkable barrow on the top of the hill. For his kindness in taking the members round and entertaining them at his house the Section owes Mr. Witts its most grateful thanks, as also for the extremely lucid lecture on the British and Roman remains in the neighbourhood which he gave in the Winter term. It may be mentioned that as a direct outcome of the last the President and Secretary of the Section made a personal investigation of a site where Roman remains have been found, and discovered—nothing! It is to be hoped that others will emulate their zeal, but be rewarded with greater success. Roman bricks and even coins are constantly being found in this neighbourhood and an observant eye may constantly be rewarded.

Botanical Section.

SENIOR DEPARTMENT:
President ... G. W. HEDLEY, ESQ.

JUNIOR DEPARTMENT:
President ... F. J. CADE, ESQ.

Working Members.

SENIOR.

BARRINGTON, A. H. M....(*Ba*)
BLOOD, C. N....(*Bl*)
BOURKE, U. L....(*Bo*)
CUNNINGHAM, A. G....(*C*) (1)
DAVIES, F. W. K... (*D*)
GARD'NER, B. L....(*G*)
HOMFRAY, S. G....(*H*)
LOWTHER, R. C....(*L*)
MACSWINEY, H. F. C....(*Ms*)
MARSDEN, H....(*M*)
MITCHELL, R. R....(*Mi*)
NICHOLLS, T. B. (*N*)
REEVE, P. L....(*R*)
ROBERTS, A. A. L....(*Ra*) (2)
SIDEBOTTOM, W,...(*Si*)
STARTIN, G....(*S*)
STUDDY, R. F. B....(*St*)
WRIGHT, H. N....(*W*) (3)

JUNIOR.

BOWEN, G. E. S....(*B*)
CONYBEARE, M. H. C....(*Co*)
NOEL, G. B. E....(*No*)
NOEL, J. A. V....(*Nv*)
NOEL, N. P. R. } ...(*Nw*)
WOOD, E. A. }
RITTER, J. A....(*Ri*)
ROBERTS, C. S....(*Ro*)
ROBERTS, J. R....(*Rb*)
CATTERSON-SMITH, T....(*Sm*)
WALKER, H. N....(*Wa*)
WILSON, C. G....(*Wi*)
WOODHOUSE, G. S....(*Wd*)

(1) Winner of Prize in 1901.
(2) ,, ,, 1899 and 1900.
(3) ,, ,, 1902.

SENIOR DEPARTMENT.

AT the beginning of the season this section had the misfortune to lose its President, The Rev. J. R. Wynne-Edwards, owing to his appointment to the Headmastership of Leeds Grammar School. It

is to his able management during the past ten years that the present flourishing state of the section is due, and the energy and keenness he infused into it will be felt for a long time to come.

There were eighteen working members this year, twelve of whom obtained over fifty specimens. Wright, who exhibited great enthusiasm, was unfortunately absent for the last month of the Summer Term, as was also the case last year, but he succeeded this time in gaining the prize, — two volumes of interesting experiments on plants. Lowther, who only joined the section for about six weeks, made very good use of his time, obtaining, on the average, forty specimens a week. Owing to the cold dull summer many plants which usually flower in July were not found at all this year ; this fact, together with the absences of Wright and Lowther, account for the numbers obtained by the leading competitors being somewhat smaller than usual. The following collected over fifty specimens:

H. N. Wright	287	F. W. K. Davies ...	148
R. C. Lowther	235	R. F. B. Studdy ...	143
A. G. Cunningham ..	216	H. F. C. MacSwiney ...	125
H. Marsden	184	R. R. Mitchell ...	112
B. L. Gard'ner	166	P. L. Reeve	80
A. H. M. Barrington...	149		

The total number of plants is now 630, an increase of 90 during the last three years.

The names of plants recorded for the first time are printed in italics in the list. They include *Teesdalia nudicaulis* (Common Teesdalia) found on the Malvern hills ; *Geranium phæum* (Dusky geranium) found at Whittington ; *Trifolium fragiferum* (Strawberry clover)—kindly pointed out to us by Mr. L. Mott at Wainlode, where it is fairly common—and which has probably been confused in former years with some other species of the large genus of clovers. *Lemna polyrrhiza* (Greater Duckweed)—a plant which does not flower in Britain and which is therefore easily overlooked, was found in the Coombe Hill canal. *Daphne Mezereum*, a shrub often cultivated in gardens, and *Ribes nigrum* (Black currant) were obtained by Wright in Birdlip Woods. A fine specimen of *Orchis ustulata* (Dwarf Orchid) was picked by T. A. Hodson (O.C.) near Crickley Camp. *Buxus sempervirens* (Common Box) is fairly frequent on Leckhampton

Hill as also *Gentiana amarella* (Autumn gentian) which has doubtless not hitherto been distinguished from the Common Gentian. *Astragalus hypoglottis* (Purple astragal) was found on Cleeve Hill; *Rumex conglomeratus* (Clustered Dock), *Scirpus lacustris* (Lake scirpus), *Carex pilulifera* and *Carex glauca* were found near Puckham.

The Grass Vetchling (*Lathyrus Nissolia*), a rare plant in this neighbourhood, was found after an interval of some years by A. A. L. Roberts, and the beautiful Dropwort (*Spiræa Filipendula*) was observed growing in profusion on Bredon Hill in July. Perhaps the most extraordinary 'find' was that of the Butterfly Orchid by Mr. Borchardt in Queenhill Wood near Tewkesbury as early as May 6th. This is eleven days earlier than it has ever been found in this country according to the 'Naturalist's Diary,' and no other specimens were seen till late in June. An excellent example of the ease of overlooking flowers near at hand is to be found in the fact that the Hornbeam (Catkin Family) which has frequently been omitted from the annual list, was found growing in the clump of trees at the east end of the Chapel. It has been passed and re-passed almost every day by most members of the section and has probably escaped notice owing to its being somewhat obscured by the poplars.

Some changes have been introduced in the list of plants on this occasion in the hope that they will be of use to beginners by enabling them to do a little more for themselves towards classifying the flowers they find. A brief account of the main principles of classification precedes the list proper, and in the list itself are inserted the names of the various Orders together with a short description of their leading characteristics.

It may interest some members to know that an excellent collection of the wild plants of Gloucestershire is to be seen at Pittville Gardens. They have been obtained and transplanted by W. L. Mellersh, Esq. (O.C.), a former member of this Society, and are labelled with their English and Latin names, thus affording an easy means of identifying specimens and of learning the names of the chief local flowers. It is well worth the attention of all members interested in Botany, and arrangements will be made for inspecting it on request to the President.

It is proposed to offer a second prize in 1903 for the best collection of plants dried in sand. This method of permanently

preserving flowers is much superior to the well known plan of pressing them, since both the natural shape and colour are retained, even in the most delicate flowers, to a very high degree of perfection. The means of working the method, which involves no more apparatus than a box and some sand, will be explained to a meeting of the section before the beginning of summer.

The competition for 1903 will begin at once and those wishing to join the section should give in their names to the President as soon as possible. It may be mentioned that about fifty plants are usually in flower before the end of the Lent Term, and that fellows who begin to collect then have a distinct advantage over those who leave it till the Summer Term. To make our annual list of real scientific value it is important that a sharp look-out should be kept early in the season, and after the mild winter it is probable that a larger number than that mentioned will be found before April. The President will be glad to give information as to the best localities at any time, and the attention of members is directed to the notice board in the Museum for other information in connection with the section.

JUNIOR DEPARTMENT.

Unfortunately opportunities of collecting were few during the past Summer. G. E. S. Bowen and G. S. Woodhouse had the best records.

COMMON BOTANICAL TERMS.

Complete flowers contain

(1) CALYX *i.e. sepals* (S) usually green.

(2) COROLLA *i.e. petals* (P) usually brightly coloured.

(3) STAMENS (St) bearing pollen—a yellow powder contained in the *anthers.*

(4) PISTIL consisting of *carpels.* Each carpel has an *ovary* at the base and a *style* arising from it.

When it is difficult to distinguish the calyx from the corolla the term *perianth* is used to include them both.

A Flower (Fl) is *regular* (reg) when all the petals (or other parts) are equal; otherwise it is irregular.

Flowers are *solitary*, in *heads,* in *spikes,* in *umbels,* in *racemes* (spikes with stalked flowers), etc.

A FRUIT (Fr) is a ripened ovary and may be a *berry, pod or capsule, nut, or stone fruit.*

LEAVES (L's) are *opposite* when two spring from the same point on stem on different sides; *alternate* when only one comes off at one point, the next springing from the other side of the stem; *whorled* when many leaves spring from same point on the stem; *radical* when they come from near the root and not from the stem.

CLASSIFICATION OF PLANTS.

There are two main Divisions, viz.:—

I.—**PHANEROGAMS**, or flowering plants.
II.—**CRYPTOGAMS**, or flowerless plants.

DIVISION I. is separated into two CLASSES, viz.:—

1.—DICOTYLEDONS, or plants with two seed-leaves.
2.—MONOCOTYLEDONS, or plants with one seed-leaf.

Each Class is divided into GROUPS which are sub-divided into FAMILIES or ORDERS. Each Order contains several GENERA, Each genus one or more SPECIES, each species one or more VARIETY.

THE GROUPS OF DICOTYLEDONS are:—

(i) POLYPETALOUS FLOWERS—separate petals.
(ii) MONOPETALOUS FLOWERS—one compound petal.
(iii) APETALOUS FLOWERS—no petals.

(i) POLYPETALS are:—(*a*) HYPOGYNOUS—petals and stamens arise from *under* the ovary (seed-vessel), *i.e.*, ovary is superior and free.
(*b*) PERIGYNOUS—stamens *round* the ovary, or EPIGYNOUS—stamens *upon* the ovary.
In (*b*) the ovary is sometimes superior sometimes inferior, according as the *petals* arise from below or above the ovary.

(ii) MONOPETALS have ovary (*a*) inferior—below base of petal.
or (*b*) superior—above base of petal.

(iii) APETALOUS FLOWERS are (*a*) without a corolla.
or (*b*) without both corolla and calyx.

THE GROUPS OF MONOCOTYLEDONS are:—

(i) PETALOID FLOWERS—with a perianth.
(ii) GLUME-BEARING FLOWERS — without a perianth, but with dry bracts called glumes instead, as in wheat or oats.

PETALOIDS have ovary (*a*) inferior, *i.e.*, below and joined to perianth.
or (*b*) superior, *i.e.*, above and free from perianth.

DIVISION II. includes (1) Ferns and Horse-tails, and also (2) Fungi, Mosses, etc. The latter group does not appear in our list.

PHANEROGAMS OR FLOWERING PLANTS.

I.—DICOTYLEDONS.

[Seeds with two primary leaves. All trees and shrubs are in this class and all herbs (except *Herb Paris*) with opposite or whorled or net-veined leaves, and nearly all which have the parts of the flower in fours, fives or eights.]

1. POLYPETALOUS FLOWERS.

A. STAMENS HYPOGYNOUS—*under* the seed vessel (ovary).

[Orders I. to XXII.]

I. RANUNCULACEÆ. BUTTERCUP FAMILY. [Herbs. S 3 to 6. P 5+, free. St 12+]*

Genus. Species.	*English Name.*	*Date.*	*Record.*
Clematis Vitalba	Traveller's Joy	Sept. 27	*G. W.H.*
Thalictrum flavum	Meadow Rue	July 1	*G. W.H.*
Anemone nemorosa	Wood Anemone	Mar. 19	W.
Adonis autumnalis	Pheasant's Eye		
Ranunculus aquatilis	Water Crowfoot	May 4	W, G.
,, Flammula	Spearwort	July 2	*G. W.H.*
,, Ficaria	Celandine	Mar. 3	W.
,, sceleratus	Scelery-leaved Crowfoot	May 6	W.
,, auricomus	Goldilocks	May 1	No.
,, acris	Common Buttercup	May 6	M.
,, repens		May 21	W.
,, bulbosus		April 25	Ro.
,, arvensis	Corn Buttercup	May 25	W, L, Ms.
Caltha palustris	Marsh Marigold	Mar. 17	W.
Helleborus viridis	Green Hellebore	Mar. 6	W.
,, fœtidus	Stinking ,,	Feb. 27	W.
Aquilegia vulgaris	Columbine	June 15	L, Mi.

II. BERBERIDEÆ. BARBERRY FAMILY. [Spiny Shrubs.]

Berberis vulgaris	Common Barberry	May 18	*G. W.H.*

III. NYMPHÆACEÆ. WATER LILY FAMILY. [Water plants. S 4 to 6. P ∞. St ∞. L's cordate or peltate, floating.]

Nymphæa alba	White Water Lily		
Nuphar luteum	Yellow ,, ,,	July 1	*G. W.H.*

IV. PAPAVERACEÆ. POPPY FAMILY. [Herbs, milky juice. S 2 to 3. P 4. St ∞ free. Fr. a capsule.]

Papaver Rhœas	Field Poppy	June 8	W, D.
,, dubium	Long-headed ,,	June 21	W, C, Ba, L.
,, Argemone	Pale ,,	June 8	L.
Chelidonium majus	Common Celandine	May 3	W.

* "St 12 +" means "12 Stamens or more."

V. FUMARIACEÆ.	FUMITORY FAMILY.	[Slender herbs. Fl. irreg. racemes. S 2. P 4. St 6.]	
Genus. Species.	*English Name.*	*Date.*	*Record.*
Fumaria officinalis	... Common Fumitory	... May 8	... W.
Corydalis lutea	... Yellow ,,	... May 10	... W.

VI. CRUCIFERÆ.	CRUCIFER FAMILY. [Herbs. Fl. reg. racemes. S 4. P 4, cruciform. St. 6 (2 short ones). Fr. pod or pouch.]		
Cheiranthus cheiri	... Wall Flower	... May 21	... W.
Barbarea vulgaris	... Yellow Rocket	... May 3	... W.
Nasturtium officinale	... Common Water Cress	... June 2	... W, C, M, G, Ba, L, St.
,, palustre	... Marsh ,,	... July 1	... C, St.
,, amphibium	Great ,,	... June 7	... W.
Arabis hirsuta	... Hairy Rock Cress	... May 18	... Nv.
,, Thaliana	... Thale ,,	... June 15	... L.
Cardamine amara	... Large Bitter Cress	...	
,, pratensis	... Cuckoo Flower	... Mar. 22	... W.
,, impatiens	... Narrow-leaved Bitter Cress	... July 1	.. *G. W. H.*
,, hirsuta	... Hairy Bitter Cress	... April 25	... Ro.
Hesperis matronalis	... Dame's Violet	... June 22	... W, L, Mi.
Sisymbrium officinale	... Yellow Hedge Mustard	... May 4	... Ro.
Alliaria ,,	... Garlic ,,	... April 20	... Ro.
Erysimum cheiranthoides	Treacle ,,	... June 1	... L.
Brassica tenuifolia	... Rocket	... May 1	... E.
,, muralis	... Sand Brassica	... May 3	... W.
,, oleracea	... Cabbage ,,	... May 6	... W.
,, campestris	... Field ,,	... May 23	... L, Ms.
,, alba	... Cultivated Mustard	... May 11	... No, Sm, Wa, B.
,, Sinapis	... Charlock	... June 21	... G, H, Ba.
,, nigra	... Black Mustard	... June 5	... Wd.
Cochlearia armoracia	... Horse-radish	.. May 30	... W.
Alyssum calycinum	... Small Alyssum	...	
Draba muralis	... Wall Whitlow Grass	...	
,, verna	... Common ,, ,,	... Jan. 21	... W.
Thlaspi arvense	... Penny Cress	... June 21	... W, C.
Teesdalia nudicaulis	... *Common Teesdalia*	... May 17	... *G. W. H.*
Iberis Amara	... Candytuft	...	
Capsella Bursa-pastoris	Shepherd's Purse	... Jan. 21	... W.
Lepidium campestre	... Common Pepperwort	... July 18	... C, St.
,, Smithii	... Smith's Cress	... May 4	... W.
,, Draba	... Hoary ,,	... May 4	... Ro.
,, ruderale	... Narrow-leaved ,,	... June 25	... W.
Senebiera Coronopus	... Common Wart ,,	... July 2	... G.
,, didyma	... Lesser ,,	...	
Isatis Tinctoria	... Woad	... May 24	... *G. W. H.*

VII. RESEDACEÆ. MIGNONETTE FAMILY. [Herbs. Fl. greenish. S 4 to 6. P 4 to 6. St 10 +.]

Genus. Species.	*English Name*	*Date.*	*Record.*
Reseda luteola	... Dyer's Weed	... June 22	... W, L.
,, lutea	... Cut Leaved Mignonette	... June 8	... L.

VIII. CISTACEÆ. CISTUS FAMILY. [Undershrub. Fl. reg. S 5. St ∞, free.]

Helianthemum vulgare	Rock Rose	... May 26	... W.

IX. VIOLACEÆ. VIOLET FAMILY. [Herbs. Fl. irreg. S 5. P 5 (lower one spurred). St 5. Fr. tripartite.]

Viola odorata	... Sweet Violet	... Mar. 16	... W, C.
,, hirta	... Hairy ,,	... May 10	... W.
,, canina	... Dog ,,	... Mar. 16	... W, G.
Viola tricolor	... Pansy	... May 3	... W.

X. POLYGALACEÆ. MILKWORT FAMILY. [Herbs. Fl. irreg. S 5 P 3 to 5. St. 8 in two bundles.]

Polygala vulgaris	... Milkwort	... May 23	... C, W, B, D, Ba, H, R, Bo.

XII. **CARYOPHYLLACEÆ. PINK FAMILY.** [Herbs, Fl. reg. S 4 to 5, free or tubular. P 4 to 5, clawed. St 4 to 5 or 8 to 10.]

Silene Cucubalus	... Bladder Campion	... June 15	... W.
Lychnis vespertina	... White ,,	... June 2	... W.
,, diurna	... Red ,,	... May 8	... D.
,, Githago	... Corn Cockle	.. July 5	... D.
,, Flos-cuculi	... Ragged Robin	... June 11	... W.
Sagina procumbens	... Procumbent Pearlwort	... May 16	... Nv.
,, nodosa	... Knotted ,,	... July 15	... *G. W.H.*
Arenaria serpyllifolia	... Thyme-leaved Sandwort	June 3	... W.
,, trinervis	... Three-nerved ,,	... May 4	... W, Ro.
Cerastium vulgatum	... Mouse-ear Chickweed	... May 1	... C.
,, arvense	... Field ,,	... May 20	... W.
Stellaria aquatica	... Water Starwort	... July 24	... C, M, St.
,, media	... Chickweed	... Jan. 21	... W.
,, uliginosa	... Bog Starwort	...	
,, graminea	... Lesser ,,	... June 10	... G.
,, holostea	... Common ,,	... May 3	... W.
Spergula arvensis	... Corn Spurry	...	

XVI. HYPERICINEÆ. ST. JOHN'S WORT FAMILY. [Herbs or Shrubs. L's dotted. Fl. yellow. S 4 to 5 (often dotted). P 4 to 5 (often dotted). St. ∞.]

Hypericum perforatum	Common St. John's Wort	July 1	... G, Ms.
,, dubium	... Imperforate ,, ,,	July 22	... *G. W.H.*
,, quadrangulum	Square-stalked ,, ,,	July 11	... L.
,, humifusum	... Trailing ,, ,,		
,, pulchrum	... Slender ,, ,,		
,, hirsutum	... Hairy ,, ,,	July 5	... R, M, G, H, L.

XVII. LINACEÆ. FLAX FAMILY. [Herbs. S 4 to 5. P 4 to 5, clawed. St. 4 to 5, alternate with P's.]

Genus. Species.	*English Name.*	*Date.*	*Record.*
Linum cartharticum ...	Purging Flax	... June 3 ...	L.

XVIII. MALVACEÆ. MALLOW FAMILY. [Herbs or Shrubs. L's. downy. Fl. reg. S 5. P 5. St ∞, united in a tube.]

Malva rotundifolia ...	Dwarf Mallow	... May 8 ...	W.
,, sylvestris ...	Common ,,	... June 25 ...	W.
,, moschata ...	Musk ,,	... July 7 ...	*C.I.G.*

XIX. TILIACEÆ. LIME FAMILY. [Trees.]

Tilia Europæa ...	Lime	... July 14 ...	M, St.

XX. **GERANIACEÆ. GERANIUM FAMILY.** [Herbs, swollen joints. S 5. P 5. St. 5 to 10. Styles 5.]

Geranium phæum ...	*Dusky Geranium*	... June 21 ...	W, L.
,, pratense ...	Meadow Cranesbill	... June 14 ...	M, L, Mi.
,, pyrenaicum ...	Mountain ,,	... May 3 ...	W.
,, Robertianum	Herb Robert	... May 4 ...	Ro, No, Wi, Nv, Nw, Ri, Wd.
,, lucidum ...	Shining ,,	... May 7 ...	W.
,, molle ...	Dove's-Foot ,,	... May 7 ...	W, C.
,, pusillum ...	Small-flower ,,	... May 30 ..	W.
,, dissectum ...	Jagged ,,	... May 28 ...	W.
,, columbinum ...	Long-stalked ,,	... June 21 ...	W, L.
Erodium cicutarium ...	Common Storksbill	... May 17 ...	*G. W.H.*
Oxalis Acetosella ...	Wood Sorrel	... Mar. 26 ...	W.
Impatiens Noli-me-tangere ...	Yellow Balsam	. .	

XXI. ACERACEÆ. MAPLE TRIBE. [Trees. Fl. green. S 4 to 9. P 4 to 9. St. 5 to 12 on disk.]

Acer campestre ...	Maple	... May 7 ...	W.
,, Pseudo-platanus ...	Sycamore	... May 2 ...	M.

XXII. AQUIFOLIACEÆ. HOLLY FAMILY. [Evergreen Trees.]

Ilex Aquifolium ...	Holly	... May 17 ...	B, R, Ba.

POLYPETALOUS FLOWERS.

B. STAMENS HYPOGYNOUS or EPIGYNOUS.

[Orders XXIII. to XXXVIII.]

XXIII. CELASTRACEÆ. SPINDLE TREE FAMILY. [Shrubs or Trees.]

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Evonymus	europæus	Spindle Tree	June 6	W, C, G, H, Ba, St.

XXIV. RHAMNACEÆ. BUCKTHORN FAMILY. [Shrubs.]

Rhamnus	catharticus	Buckthorn	June 21	W, L.

XXV. **PAPILIONACEÆ. PEA-FLOWER TRIBE.** [Herbs, Shrubs, or Trees. Calyx 5-lobed: corolla of 5 irreg. P's (1 *standard*, 2 *wings*, and 2 forming a *keel*). St 10, in two bundles. Fr. pods.]

Ulex	europæus	Gorse	Jan. 22	C.
Genista	tinctoria	Dyer's Greenweed	June 29	*C.I.G.*
Cytisus	scoparius	Broom	May 10	W.
Ononis	arvensis	Rest Harrow	July 11	C, D,
,,	campestris	Spiny ,,	July 13	*G. W.H.*
Medicago	sativa	Lucern		
,,	Lupulina	Nonsuch	July 18	*G. W.H.*
Melilotus	officinalis	Melilot	July 8	M.
Trifolium	incarnatum	Crimson Clover	May 26	M.
,,	arvense	Hare's Foot Trefoil		
,,	pratense	Purple Clover	May 9	H, G.
,,	medium	Zig-zag ,,		
,,	*fragiferum*	*Strawberry* ,,	July 24	C, D, St.
,,	repens	Dutch ,,	June 2	W.
,,	hybridum	Alsike ,,	June 3	W.
,,	procumbens	Hop Trefoil	June 21	W, C, M, L.
,,	minus	Lesser Trefoil	May 3	W.
Lotus	corniculatus	Bird's Foot Trefoil	May 23	Ba.
Anthyllis	Vulneraria	Kidney Vetch	June 21	W, C, G, H, Ba, L, Wo.
Astraalgus	*hypoglottis*	*Purple Astragal*	June 20	*G. W.H.*
,,	glycyphyllos	Milk Vetch		[Ba, St.
Hippocrepis	comosa	Horse-shoe ,,	June 21	W, C, G, H,
Onobrychis	sativa	Sainfoin	June 8	L, Nv, Wd.
Vicia	hirsuta	Hairy Vetch	June 28	*C.I.G.*
,,	tetrasperma	Slender ,,	May 24	M.
,,	Cracca	Tufted ,,	June 24	W.
,,	sylvatica	Wood ,,	July 7	*C.I.G.*
,,	sepium	Bush ,,	May 3	W, D.
,,	sativa	Common ,,	May 4	Ro.
,,	lathyroides	Spring ,,		
Lathyrus	Nissolia	Grass Vetchling	June 31	Ra.
,,	pratensis	Yellow Vetch	June 20	Ba, St.
,,	sylvestris	Everlasting Vetch	July 15	*G. W.H.*
,,	palustris	Marsh Pea		
,,	macrorrhizus	Tuberous Bitter ,,		

XXVI. **ROSACEÆ.** **ROSE FAMILY.** [Herbs, Shrubs or Trees. Ls with stipules. Calyx 4- or 5-lobed. P 4 to 8. St variable, perigyn.]

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Prunus	Communis	Blackthorn	Mar. 22	W.
,,	Cerasus	Cherry	May 17	*G. W. H.*
,,	Padus	Bird Cherry		
Spiræa	Ulmaria	Meadow Sweet	June 25	W, D, C.
,,	Filipendula	Dropwort	July 19	*C. I. G.*
Geum	urbanum	Wood Avens	May 25	Ms.
Rubus	Idæus	Raspberry	June 15	L, Mi.
,,	fruticosus	Common Blackberry	May 24	L.
,,	corylifolius	Hazel-leaved Blackberry	July 24	C.
,,	cæsius	Dewberry	June 10	L, Mi.
Fragaria	vesca	True Strawberry	May 3	W.
Potentilla	Fragariastrum	Barren ,,	Mar. 5	W.
,,	reptans	Creeping Cinquefoil	June 21	W, St.
,,	Tormentilla	Tormentil	May 11	G.
,,	anserina	Silverweed	May 13	Ri.
Alchemilla	vulgaris	Lady's mantle	May 10	W.
Sanguisorba	officinalis	Great Burnet	July 1	C, M, St.
Poterium	Sanguisorba	Salad ,,	May 18	G, Ba.
Agrimonia	Eupatoria	Agrimony	July 3	C, M, St.
Rosa	canina	Dog Rose	June 15	L, Mi.
,,	arvensis	Trailing Rose	July 1	G, L, Mi.
Pyrus	communis	Pear	May 2	W.
,,	Malus	Apple	May 4	W, No.
,,	Aria	Beam Tree	May 28	W.
,,	torminalis	Wild Service tree		
,,	Aucuparia	Mountain Ash	May 25	W, G, S, L, Ms
Cratægus	Oxyacantha	Hawthorn	May 4	No, Wi, B, Nv, Nw, Ri.

XXVII. ONAGRACEÆ. WILLOW HERB FAMILY. [Herbs or Shrubs. Fl. reg. Calyx in 2 or 4, tubular. P's 2 to 4. St 2, 4 or 8, perigyn. Ovary inferior.]

Epilobium	angustifolium	Rose-bay Willow Herb	July 7	M, G, H, R, L, Ms.
,,	hirsutum	Hairy ,, ,,	July 11	C, H, L,
,,	parviflorum	Small-flower'd ,, ,,	June 22	W.
,,	montanum	Common ,, ,,	June 21	L.
,,	tetragonum	Square ,, ,,	July 22	*G. W. H.*
,,	palustre	Marsh ,, ,,	July 14	C, D.
Œnothera	biennis	Evening Primrose		
Circæa	lutetiana	Enchanter's Nightshade	July 6	G, D, L, Ms.

XXVIII. LYTHRARIEÆ. LOOSESTRIFE FAMILY. [Herbs.]

Lythrum	Salicaria	Purple Loosestrife	July 18	C, M, St.

XXIX. CUCURBITACEÆ. GOURD FAMILY. [Climbers with tendrils.]

Bryonia	dioica	Bryony	June 3	M.

XXX. CRASSULACEÆ. STONECROP FAMILY. [Herbs. Ls thick and fleshy. S 3 to 20. P 3 to 20. St 3 to 20, perigyn.]

Genus. Species.	*English Name.*	*Date.*	*Record.*
Cotyledon Umbilicus ...	Pennywort ...		
Sedum Rhodiola ..	Rose-root Stonecrop ...		
,, Telephium ...	Orpine ,, ...	July 13 ...	*G.W.H.*
,, album ...	White ,, ...	July 11 ...	G, H, R, Ms.
,, acre ...	Biting ,, ...	June 29 ...	W, L, Mi.
,, rupestre ...	Rock ,, ...		
Semper-virens tectorum	Houseleek ...		

XXXI. RIBESIACEÆ. CURRANT FAMILY. [Shrubs.]

Ribes Grossularia ...	Gooseberry ...	Mar. 29 ...	W.
,, rubrum ...	Red Currant ...	May 21 ...	*G.W.H.*
,, *nigrum* ...	*Black Currant* ...	May 23 ...	W, M.

XXXII. SAXIFRAGACEÆ. SAXIFRAGE FAMILY. [Small Herbs. Calyx in 4 or 5 lobes. P 4 to 5. St 5 or 10, perigyn.]

Saxifraga granulata ...	Meadow Saxifrage ...		
,, tridactylites	Rue-leaved ,, ...	May 10 ...	W.
,, umbrosa ...	London Pride ...		
Chrysoplenium oppositifolium...	Golden Saxifrage ...	Feb. 27 ...	W.
,, alternifolium...	,, ,, ...	Mar. 8 ...	W.
Parnassia palustris ...	Grass of Parnassus ...		

XXXIII. **UMBELLIFERAE. UMBELLATE FAMILY.** [Herbs with hollow stems. Fl reg, in umbels, mostly white. Calyx 5-toothed. P 5, unequal. St 5, epigyn, springing from a thick fleshy disk.]

Sanicula europæa ...	Wood Sanicle ...	May 9 ...	D.
Apium graveolens ...	Celery ...		
,, nodiflorum ...	Procumbent Celery ...	July 8 ...	G, H, L, Ms.
Sison Amomum ...	Hedge Sison ...	July 24 ...	C, St.
Ægopodium Podagraria	Goutweed ...	June 8 ...	W, D, L.
,, Petroselinum	Common Parsley ...		
Carum segetum ...	Caraway ...	July 24 ...	*G.W.H.*
,, Carvi ...	,, ...	May 25 ...	G, S.
Pimpinella Saxifrage ...	Burnet Saxifrage ...	July 5 ...	G.
,, magna ...	Greater Burnet Saxifrage		
Œnanthe fistulosa ...	Water Dropwort ...	July 1 ...	C, M, St.
,, pimpinelloides	Parsley ,, ...	July 15 ...	*C.I.G.*
,, Phellandrium	Fine-leaved ,, ...	July 18 ...	M, St.
Æthusa Cynapium ...	Fool's Parsley ...	June 3 ...	Ba.
Silaus pratensis ...	Pepper Saxifrage ...	June 21 ..	W.

Genus. Species.	*English Name.*	*Date.*	*Record.*
Angelica sylvestris ...	Wild Angelica ...	Sept. 27 ...	*G. W. H.*
Pastinaca sativa ...	Parsnip ...	June 11 ...	Ba.
Heracleum Sphondylium	Cow Parsnip ...	May 4 ..	No.
Scandix Pecten ...	Shepherd's Needle ...	June 8 ...	W.
Conopodium denudatum	Earth Nut ...	May 29 ...	L.
Chærophyllum temulum	Rough Chervil ...	June 31 ...	G, R, Ms, Mi.
,, sylvestre...	Wild ,, ...	April 20 ...	Ro, No, Wi, &c.
,, Anthriscus...	Burr ,, ..	May 19 ...	W.
Caucalis nodosa ...	Knotted Hedge Parsley		
,, Anthriscus ...	Upright ,, ,, ...	July 14 ...	St.
Daucus Carota ...	Carrot ...	June 29 ...	L.
Conium maculatum ...	Hemlock ...	June 15 ...	W.
Smyrnium Olusatrum ...	Alexanders ...	May 8 ...	W.

XXXVI. ARALIACÆ. IVY FAMILY. [Climbing Shrubs.]

Hedera Helix ...	Ivy ...	Oct. 4 ...	*G. W. H.*

XXXVII. LORANTHACEÆ. MISTLETOE FAMILY. [Parasitic Shrubs.]

Viscum album ...	Mistletoe ...	Feb. 27 ...	W.

XXXVIII. CORNACEÆ. CORNEL FAMILY. [Trees or Shrubs.]

Cornus sanguinea ...	Dogwood ...	June 23 ...	W.

2. MONOPETALOUS FLOWERS.

A. Ovary Inferior.

(Orders XXXIX. to XLIV.)

XXXIX. CAPRIFOLIACEÆ. HONEYSUCKLE FAMILY. [Shrubs or Herbs. Calyx in 4 or 5. Corolla 4- or 5-cleft. St 4 to 5 on the corolla.]

Adoxa Moschatellina ...	Moschatel ...	Mar. 19 ...	W.
Sambucus nigra ...	Elder ...	June 12 ...	W.
Viburnum Lantana .	Wayfaring Tree ...	May 4 ...	Ro.
,, Opulus ...	Guelder Rose ...	June 3 ...	M.
Lonicera Periclymenum	Honeysuckle ...	June 25 ...	W.

XL. **STELLATÆ.** **BEDSTRAW TRIBE.** [Herbs with square stems. L's in whorls. Calyx and corolla in 4 or 5. St 4 or 5 on corolla.]

Galium Cruciata ...	Crosswort ...	May 3 ...	W.
,, verum ...	Yellow Bedstraw ...	June 24 ...	L.
,, palustre ...	Marsh ,, ...	June 25 ...	W.
,, uliginosum ...	Bog ,, ...	July 2 ...	G, L.
,, saxatile ...	Rock ,, ...		
,, Mollugo ...	Great Hedge Bedstraw...	June 29 ...	W, Mi.
,, Aparine ...	Cleavers ...	May 24 ...	M.
Asperula odorata ...	Woodruff ...	May 10 ...	W.
,, cynanchica ...	Squinancywort ...	June 20 ...	R, L, Ms.
Sherardia arvensis ...	Field Madder ...	May 3 ...	W.
Centranthus ruber ...	Red Valerian ...		

XLI. VALERIANEÆ. VALERIAN FAMILY. [Herbs. Calyx minute. Corolla, 5-lobed. St 3 on corolla.]

Genus. *Species.*	*English Name.*	*Date.*	*Record.*
Valeriana officinalis	... Great Valerian	... June 21	... W, C, Ba, L.
,, dioica	... Marsh ,,	... May 21	... W.
Valerianella olitoria	... Lamb's Lettuce	... July 13	... *C.I.G.*
,, Auricula	... ,, ,,	...	

XLII. DIPSACEÆ. TEASEL FAMILY. [Herbs. Fls in heads; Calyx 4-lobed, enclosed in an involucre; Corolla 4-lobed; St 4, on corolla.]

Dipsacus sylvestris	... Common Teasel	... July 24	... C, St.
,, pilosus	... Small ,,	... July 11	... G,H,R,L,Ms.
Scabiosa succisa	... Devil's-bit Scabious	...	
,, Columbaria	... Small ,,	...	
,, arvensis	... Field ,,	... June 29	... W, L, Mi.

XLIII. COMPOSITÆ. COMPOSITE FAMILY. [Herbs or Shrubs. Fls in a dense head on receptacle, surrounded by involucre. No Calyx; Corolla funnel-shaped; St 5, on corolla, united by the anthers.]

Eupatorium cannabinum	Hemp Agrimony	... July 24	... *A.S.O.*
Aster Linosyris ...	Goldilocks	...	
Solidago Virga-aurea ...	Goldenrod	...	
Bellis perennis ...	Daisy	... Jan. 22	... W.
Filago germanica ...	Cudweed	... July 5	... C, M, St.
,, gallica ...	Narrow Cudweed	..	
Gnaphalium sylvaticum	Wood ,,	...	
Antennaria margaritacea...	Pearl Antennaria	..	
Inula Helenium ...	Elecampane	...	
,, Conyza ..	Plowman's Spikenard	Sept. 27	... *G.W.H.*
,, dysenterica ...	Fleabane	.. July 23	... *C.I.G.*
,, Pulicaria ...	Small Fleabane	...	
Chrysanthemum Leucanthemum...	Dog Daisy	... May 17	... M.
,, segetum ...	Corn Marigold	...	
,, Parthenium ...	Feverfew Chrysanthemum	July 11	... R, L, Ms.
Matricaria inodora ...	Feverfew	... July 15	... G, H, W.
,, Chamomilla	Camomile	... June 29	.. L.
Anthemis Cotula ...	Stinking Mayweed	... July 15	... C, M, St.
,, arvensis ...	Corn Camomile	... June 25	... W.
Achillea Ptarmica ...	Sneezewort	...	
,, Millefolium ...	Yarrow	... June 24	... G, H, L.
Tanacetum vulgare ...	Tansy	... July 24	... M.
Artemesia vulgaris ...	Mugwort	... Sept. 27	... *G.W.H.*

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Tussilago	Farfara	Coltsfoot	Mar. 2	W.
,,	Petasites	Butterbur	Mar. 31	W.
Senecio	vulgaris	Groundsel	Jan. 21	W.
,,	sylvaticus	Wood Groundsel		
,,	aquaticus	Marsh Ragwort	Sept. 27	*G. W. H.*
,,	Jacobæa	Common ,,	July 5	M, L, Ms, Mi.
,,	erucifolius	Narrow-leaved ,,	July 11	R, L, Ms.
Arctium	Lappa	Burdock	Sept. 27	*G. W. H.*
Serratula	tinctoria	Sawwort	July 17	*G. W. H.*
Carduus	Marianus	Milk Thistle		
,,	nutans	Musk ,,	July 5	R, G, L, Ms.
,,	acanthoides	Welted ,,	July 1	L, Ms.
,,	pycnocephalus	Slender ,,	July 5	M, D.
,,	lanceolatus	Spear ,,	July 11	G.
,,	palustris	Marsh ,,	June 21	W, C, M.
,,	arvensis	Creeping ,,	July 5	M.
,,	eriophorus	Woolly ,,		
,,	pratensis	Meadow ,,		
,,	acaulis	Dwarf ,,	June 29	L.
Carlina	vulgaris	Carline ,,	July 1	M, G, H, R,
Centaurea	nigra	Black Knapweed	June 29	St. [L, Ms.
,,	Scabiosa	Scabious ,,	June 29	L, Mi.
,,	Cyanus	Cornflower		
Tragopogon	pratensis	Goat's Beard	May 25	W, L, Ms.
Helminthia	echioides	Ox-tongue	July 18	C, D.
Picris	hieracioides	Hawkweed Picris		
Leontodon	hispidus	Common Hawkbit	June 2	M, L.
,,	autumnalis	Autumnal ,,	June 8	L.
Hypochœris	radicata	Cat's Ear	June 3	W.
Lactuca	muralis	Wall Lettuce	July 22	*G. W. H.*
Sonchus	arvensis	Corn Sow Thistle	July 15	C, M, D, St.
,,	oleraceus	Common ,,	June 3	W.
Taraxacum	Dens-leonis	Dandelion	Jan. 22	W.
Crepis	taraxicifolia	Beaked Crepis	June 11	Ba.
,,	virens	Common ,,	June 8	W, D, L.
,,	biennis	Rough ,,	May 25	W, L, Ms.
Hieracium	Pilosella	Mouse-ear Hawkweed	June 2	L.
,,	murorum	Wall ,,	June 15	L, Mi.
,,	aurantiacum	Orange ,,		
Cichorium	Intybus	Succory		
Lapsana	communis	Nipplewort	June 30	Wd.

XLIV. CAMPANULACEÆ. BELL-FLOWER FAMILY. [Herbs. Calyx and Corolla 5-lobed. St 5, on ovary.]

Campanula	glomerata	Clustered Bell Flower	June 22	W.
,,	Trachelium	Nettle-leaved,, ,,	July 15	M, G, R, L,
,,	rapunculoides	Creeping ,, ,,		[Ms.
,,	rotundifolia	Harebell	July 18	*C. I. G.*
,,	hybrida	Corn Bell Flower	July 7	*C. I. G.*

MONOPETALOUS FLOWERS.

B. Ovary Superior.

(Orders XLV. to LX.)

XLV. ERICACEÆ. HEATH FAMILY. [Low Shrubs. L's rigid, evergreen. Calyx and Corolla in 4 or 5. St 8 to 10.]

Genus. Species.	*English Name.*	*Date.*	*Record.*
Calluna vulgaris	Ling		
Monotropa Hypopitys	Bird's Nest	May 23	D.

XLVI. PRIMULACEÆ. PRIMROSE FAMILY. [Herbs. Fl reg.; Calyx and Corolla 4 to 7 lobes. St 4 to 7, on corolla.]

Primula veris	Cowslip	April 25	Ro.
,, vulgaris	Primrose	Feb. 22	Bl.
,, elatior	Oxlip		
Lysimachia vulgaris	Yellow Loosestrife		
,, Nummularia	Creeping Jenny	July 8	C, M, St.
,, nemorum	Moneywort	May 25	S.
Anagallis arvensis	Scarlet Pimpernel	June 29	W.
,, tenella	Bog ,,		

XLVII. LENTIBULACEÆ. BUTTERWORT FAMILY. [Marsh Herbs.]

Pinguicula vulgaris	Butterwort	June 21	W, C, G, H, [Ba, L, St.
Utricularia vulgaris	Bladderwort	July 24	C, St.

XLVIII. OLEACEÆ. OLIVE FAMILY. [Trees.]

Fraxinus excelsior	Ash	May 2	Wi.
Ligustrum vulgare	Privet	June 29	L.

XLIX. APOCYNACEÆ. PERIWINKLE FAMILY. [Trailing Herbs.]

Vinca major	Greater Periwinkle	Feb. 27	W.
,, minor	Lesser ,,	Mar. 6	W.

L. GENTIANACEÆ. GENTIAN FAMILY. [Herbs. Calyx and corolla 4 to 10-lobed; St on corolla.]

Erythræa Centaurium	Centaury	July 22	C.
Gentiana Amarella	*Autumn Gentian*	Sept. 23	*G. W. H.*
,, campestris	Common Gentian	Sept. 23	*G. W. H.*
Chlora perfoliata	Yellowwort	July 1	C.
Menyanthes trifoliata	Buckbean	June 21	W, C, G, H, [Ba, L, St.
Limnanthemum nymphæoides	Water Gentian	July 15	*G. W. H.*

LII. CONVOLULACEÆ. CONVOLVULUS FAMILY. [Twining Herbs. S 5 in two rows. Corolla 4 or 5 lobes. St 4 or 5, on corolla.]

Convolvulus arvensis	Small Bind Weed	June 24	W, L, Mi.
,, sepium	Great ,,	July 7	C, M.
Cuscuta europæa	Greater Dodder	July 24	C, M, St.

LIII. **BORAGINEÆ.** **BORAGE FAMILY.** [Rough Herbs. Fl's in spikes.
Calyx and Corolla (reg) in 5. St 5, on corolla. Fr 4 nutlets].

Genus. Species.	*English Name.*	*Date.*	*Record.*
Echium vulgare ...	Viper's Bugloss ...	June 22 ...	W.
Pulmonaria officinalis ...	Lungwort		
Lithospermum arvense	Corn Gromwell ...	July 6 ...	D, R, L, Ms,
,, officinale	Gromwell ...	June 18 ...	*G.S.H.* [Mi.
Myosotis palustris ...	True Forget-me-not ...	May 25 ...	G, D, L, Ms.
,, repens ...	Creeping ,, ...		
,, sylvatica ...	Wood ,, ...	June 21 ...	W, M.
,, arvensis ...	Field ,, ...	May 10 ...	W.
,, collina ...	Early ,, ...	May 14 ...	C.
,, versicolor ...	Changing ,, ...		
Anchusa semper-virens	Green Alkanet ...	June 21 ...	Ri.
Lycopsis arvensis ..	Small Bugloss ...	July 24 ...	C.
Symphytum officinale ...	Comfrey ...	April 25 ...	Ro.
Borago officinalis ..	Borage ...		
Cynoglossum officinale	Hound's-tongue ...	June 15 ...	W.

LIV. SOLANACEÆ. NIGHTSHADE FAMILY. [Herbs. Calyx 4 or 5 lobes.
Corolla 5 lobes. St 5 on corolla. Fr a berry with several seeds.]

Hyoscyamus niger ...	Henbane ...	July 6 ...	G, D, L, Ms,
Solanum Dulcamara ...	Bitter Sweet ...	June 20 ...	Ba. [Mi.
,, nigrum ...	Black Nightshade ...		
Atropa Belladonna ...	Deadly ,, ...	May 28 ...	W.

LV. OROBANCHACEÆ. BROOMRAPE FAMILY. [Leafless root parasites.
Fls brownish.]

Orobanche major .	Great Broomrape ...		
Lathræa squamaria ...	Toothwort ...	Mar. 28 ...	W.

LVI. **SCROPHULARINEÆ. FIG-WORT FAMILY.** [Herbs. Fls irreg. Calyx and
Corolla in 4 or 5, irreg. St 2, 4 or 5. Fr 2-celled capsule.]

Verbascum Thapsus ...	Common Mullein ...	July 3 ...	*C.I.G.*
,, nigrum ...	Black ,, ...	July 6 ...	D, M.
Linaria vulgaris ...	Yellow Toad Flax ...	June 29 ...	W, L, Mi.
,, minor ...	Lesser ,, ...	July 7 ...	*C.I.G.*
,, Cymbalaria ...	Ivy-leaved ,, ...	May 3 ...	W.
,, spuria ...	Round ,, ,, ...		
Scrophularia nodosa ...	Knotted Figwort ...	May 31 ...	L.
,, aquatica ...	Marsh ,, ...	June 24 ...	W, Mi.
Mimulus luteus ...	Monkey Flower ...	July 1 ...	G, D, R, L,
Digitalis purpurea ...	Foxglove ...		[Ms, Mi.
Veronica spicata ...	Spiked Speedwell...		
,, serpyllifolia ...	Thyme-leaved ,, ...	May 6 ..	C, Bo.
,, officinalis ...	Common ,, ...	June 21 ...	W, C, G, Ba.
,, Anagallis ..	Water ,, ...	July 1 ...	C.
,, Beccabunga ...	Brooklime ,, .	June 1 ...	L.
,, montana ...	Mountain ,, ...	July 8 ...	*G.W.H.*
,, Chamædrys ...	Germander ,, ...	May 1 ...	No.
,, hederæfolia ...	Ivy-leaved ,, ...	Mar. 21 ...	M.

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
,,	agrestis ...	Procumbent ,, ...	Mar. 21 ...	W.
,,	Buxbaumii ...	Buxbaum's ,, ..	Jan. 28 ...	W.
,,	arvensis ...	Wall ,, ..	May 27 ...	Mi.
Bartsia	Odontites ...	Red Bartsia ...	July 8 ...	C, St.
Euphrasia	officinalis ...	Eye-bright ...	June 24 ...	L, G.
Rhinanthus	Crista-galli	Yellow Rattle ...	May 27 ...	W, D, L.
Pedicularis	palustris ...	Marsh Lousewort ...		
,,	sylvatica ...	Common ,, ...	May 11 ...	W.
Melampyrum	pratense...	Cow Wheat ...		

LVII. **LABIATÆ.** **LABIATE FAMILY.** [Herbs with square stems. Fls irreg in whorls. Calyx tubular, 2-lipped or in 5. Corolla hypog. 2-lipped. St 2 or 4 on corolla. Fr 4 one-seeded nuts.]

Lycopus	europæus ...	Gipsywort ...	July 24 ...	C, St.
Mentha	rotundifolia ...	Round-leaved Mint ...		
,,	piperita ...	Pepper ,, ...		
,,	aquatica ...	Water ,, ...	Sept. 27 ...	*G. W. H.*
,,	sativa ...	Whorled ,, ...	July 24 ...	C.
,,	arvensis ...	Field ,, ...	July 24 ...	M, St.
Thymus	Serpyllum ...	Thyme ...	May 17 ...	W, C, G, H,
Origanum	vulgare ...	Marjoram ...		[Ba, L, St.
Calamintha	Acinos ...	Basil Thyme ..	June 29 ...	W, L, Mi.
,,	officinalis ...	Common Calamint ...	Sept. 27 ...	*G. W. H.*
,,	Clinopodium	Wild Basil ...	July 21 ...	C, D.
Nepeta	Glechoma ...	Ground Ivy ..	Mar. 29 ...	W.
Prunella	vulgaris ..	Self Heal ...	June 20 ...	W.
Scutellaria	galericulata	Common Scullcap ...	June 25 ...	W.
,,	minor ...	Lesser ,, ...		
Marrubium	vulgare ...	White Horehound ...		
Stachys	Betonica ...	Betony ...		
,,	sylvatica ...	Hedge Woundwort ...	June 21 ...	Wo, Wd.
,,	palustris ...	Marsh ,, ...	July 18 ..	C, M, D, St.
,,	arvensis ...	Corn ,, ...		
Galeopsis	Ladanum ...	Red Hemp Nettle ...	June 29 ...	M, G, O, R,
,,	Tetrahit ...	Common ,, ...		[L, Mi.
Ballota	nigra ...	Black Horehound ...	June 30 ...	W, Mi.
Lamium	amplexicaule...	Henbit Dead Nettle ...	May 3 ...	*C. I. G.*
,,	purpureum ...	Red ,, ...	Feb. 6 ...	W.
,,	album ...	White ,, ...	Jan. 31 ...	M.
,,	maculatum ...	Spotted ,, ...	July 7 ...	*G. W. H.*
,,	Galeobdolon ...	Yellow ,, ...	May 3 ...	G.
Teucrium	Scorodonia ...	Wood Germander ...		
Ajuga	reptans ...	Bugle ...	May 4 ...	G.

LVIII. VERBENACEÆ. VERVEIN FAMILY. [Herbs.]

Verbena	officinalis ...	Common Vervein ...		

LIX. PLUMBAGINEÆ. THRIFT FAMILY. [Shrubby Herbs.]

Genus. Species.	*English Name.*	*Date.*	*Record.*
Armeria plantaginea ...	Plantain Thrift ...		

LX. PLANTAGINEÆ. PLANTAIN FAMILY. [Herbs. Ls without a stalk, tufted. Fls spikes.]

Plantago major ...	Great Plantain ...	June 15 ...	G, St.
,, media ...	Hoary ,, ...	May 28 ...	W.
,, lanceolata ...	Ribwort ,, ...	May 2 ...	C.

3. APETALOUS FLOWERS.

A. With Calyx, without Corolla.

(Orders LXII. to LXIV.)

LXII. CHENOPODIACEÆ. GOOSEFOOT FAMILY. [Weedy Herbs. Fls small, clustered in spikes. Perianth in 5. St 5.]

Chenopodium album ...	White Goosefoot ...	July 21 ...	*G. W. H.*
,, rubrum ...	Red ,, ...		
,, urbicum...	Upright ,, ...		
,, murale ...	Nettle-leaved ,, ...		
,, Bonus-Henricus...	Good King Henry ...	June 21 ...	W, C, G, H,
Atriplex patula ...	Common Orache ...		[L, St.

LXIII. POLYGONACEÆ. DOCK FAMILY. [Herbs with swollen joints. Fls small; panicles. Perianth in 5. St 5 to 8.]

Rumex crispus ...	Curled Dock ...	June 15 ...	W.
,, obtusifolius ...	Common ,, ...	July 24 ...	C.
,, Hydrolapathum	Water ,, ...	July 24 ..	M, St, C.
,, *conglomeratus* ...	*Clustered* ,, ...	June 11 ...	Ba.
,, maritimus ...	Golden ,, ...		
,, Acetosa ...	Common Sorrel ...	May 6 ...	W, M.
,, Acetosella ...	Sheep's ,, ...	May 21 ...	M.
Polygonum Fagopyrum	Buckwheat ...	July 8 ...	D.
,, aviculare ...	Knot Grass ...	June 29 ...	L.
,, Convolvulus...	Black Bindweed ...	July 8 ...	*C. I. G.*
,, Bistorta ...	Snakeweed ...		
,, amphibium ...	Amphibious Bistort ...		
,, Persicaria ...	Persicaria ...		
,, lapathifolium	Pale Bistort ...		

LXIV. THYMELEACEÆ. DAPHNE FAMILY. [Shrubs.]

Daphne Mezereum ...	*Mezereon Daphne* ...	Mar. 29 ...	W.
,, Laureola ...	Spurge Laurel ...	Feb. 19 ...	W.

APETALOUS FLOWERS.

B. With neither Corolla nor Calyx.

(Orders LXVIII. to LXXIV.)

LXVIII. EUPHORBIACEÆ. SPURGE FAMILY. [Shrubs or Herbs with milky juice. Fls in involucre, diœcious. Perianth 3- or 4-lobed or wanting. St variable.]

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Euphorbia	Helioscopia	Sun Spurge	... May 10	... W.
,,	platyphyllos	... Broad ,,	...	
,,	Peplus	... Petty ,,	... July 11	... M.
,,	exigua	... Small ,,	... June 29	... C, D.
,,	Lathyris	... Caper ,,	...	
,,	Esula	... Leafy ,,	...	
,,	Amygdaloides	Wood ,,	... May 6	... W, D.
Mercurialis	perennis	... Dog's Mercury	... Feb. 26	... W.
Buxus	*sempervirens*	... *Common Box*	... April	... *G. W. H.*

LXX. CALLITRICHINEÆ. WATER STARWORT FAMILY. [Aquatic Herbs. Minute fls.]

Callitriche aquatica	... Water Starwort	... June 2	... *G. W. H.*

LXXI. URTICACEÆ. NETTLE FAMILY. [Herbs. Ls rough or stinging.]

Urtica urens	... Small Nettle	... May 23	... W, C, D, Ba.
,, dioica	... Common ,,	... June 8	... Nv.
Parietaria officinalis	... Pellitory-of-the-wall	... July 1	... *G. W. H.*
Humulus Lupulus	... Hop	...	

LXXII. ULMACEÆ. ELM FAMILY. [Trees.]

Ulmus montana	... Wych Elm	... Mar. 8	... W.
,, campestris	... Common Elm	... Feb. 28	... W.

LXXIII. **AMENTACEÆ.** **CATKIN FAMILY.** [Trees or Shrubs. Fls in catkins, diœcious.]

Alnus glutinosa	... Alder	... Mar. 3	... C, Bl.
Betula alba	... Birch	... May 4	... W.
Carpinus Betulus	... Hornbeam	... May 3	... D.
Corylus Avellana (Fem.)	Hazel Nut	... Jan. 21	... W.
Fagus sylvatica	... Beech	... May 20	... Ba.
Quercus Robur	... Oak	... May 21	... W, C, G, &c.
Salix fragilis	... Crack Willow	... Mar. 29	... W.
,, alba	.. White ,,	... May 9	... *G. W. H.*
,, amygdalina	... Almond ,,	... May 28	... W.
,, purpurea	... Purple ,,	... July 2	... *G. W. H.*
,, viminalis	... Osier ,,	... May 10	... W.
,, Caprea	... Sallow ,,	... Mar. 29	... W, C.
,, aurita	... Round-eared Willow	.. May 3	... W.
Populus alba	... White Poplar	... Mar. 29	... *C. I. G.*
,, nigra	... Black ,,	... Mar. 3	... W, L.

LXXIV. CONIFERÆ. PINE FAMILY. [Trees with resinous juice.]

Pinus sylvestris	... Scotch Fir	... June 1	... W, L, Ms, Mi
Juniperus communis	... Juniper	... June 3	... W.
Taxus baccata	... Yew	... Feb. 11	... W.

II. MONOCOTYLEDONS.

[Plants with one seed-leaf. Leaves usually parallel-veined, radical and sheathed at base. Flowering parts in threes.]

1. PETALOID FLOWERS.

A. Ovary Superior.

[Orders LXXV. to LXXIX., LXXXV, LXXXVI.]

LXXV. TYPHACEÆ. BULRUSH FAMILY. [Reed-like Herbs.]

Genus. Species.	*English Name.*	*Date.*	*Record.*
Typha latifolia	Bulrush	July 15	C, D, St.
Sparganum ramosum	Branched Bur-reed	July 18	C, D, St.
,, simplex	Simple ,,	July 24	C, M, St.

LXXVI. AROIDEÆ. ARUM FAMILY. [Herbs.]

Arum maculatum	Lords and Ladies	May 3	W.
Acorus Calumus	Sweet Flag		

LXXVII. LEMNACEÆ. DUCKWEED FAMILY. [Floating plants]

Lemna trisulca	Ivy-leaved Duckweed	July 16	C.
,, minor	Lesser ,,	June 21	W. C, M, Ba,
,, *polyrrhiza*	*Greater Duckweed*	July 24	M. [St.

LXVIII. NAIADEÆ. PONDWEED FAMILY. [Floating plants.]

Potamogeton natans	Pondweed		

LXXIX. ALISMACEÆ. WATER-PLANTAIN FAMILY. [Water plants. Ls broad net-veined. Perianth in 6. St 6 to 7.]

Butomus umbellatus	Flowering Rush	July 15	C, M, D, St.
Sagittaria sagittifolia	Arrowhead	July 15	C, M, St.
Alisma Plantago	Water Plantain	July 1	C, M, D, St.
Triglochin palustre	Arrowgrass		

B. Ovary Inferior.

[Orders LXXX. to LXXXIV.]

LXXX. HYDROCHARIDEÆ. FROGBIT FAMILY. [Aquatic Herbs. Perianth 3 to 6 parts. Dicœcious.]

Hydrocharis Morsus-ranae	Frogbit	July 18	C, St.

LXXXI. ORCHIDACEÆ. ORCHID FAMILY. [Herbaceous plants, with knob-like roots. Fls spikes or racemes. Perianth in 6, irreg. St 1 or 2, imperfect.]

Epipactis latifolia	Broad Helleborine		
,, palustris	Marsh ,,		
Cephalanthera grandiflora	Large ,,	June 15	L, Mi.
Listera ovata	Twayblade	May 11	W.
Neottia Nidus-avis	Bird's-nest Orchid	June 28	*C.I.G.*
Orchis Morio	Green-winged ,,	May 18	W, D.
,, *ustulata*	*Dwarf* ,,	July 7	*T.A.H.*
,, mascula	Early Purple ,,	May 2	G.
,, maculata	Spotted ,,	June 15	W.

Genus. Species.	*English Name.*	*Date.*	*Record.*
Orchis latifolia ...	Marsh Orchid ...	June 21 ...	W, C, G, M, H, Ba, L.
,, pyramidalis ...	Pyramidal ,, ...	June 29 ...	W, L, Mi.
Habenaria bifolia ...	Butterfly ,, ...	May 6 ...	W, C, G, H, Ba, St.
,, conopsea ...	Fragrant ,, ...		
,, viridis ...	Frog ,, ...	June 24 ...	W.
Herminium Monorchis...	Musk ,, ...	June 30 ...	W, L, Mi.
Ophrys apifera ...	Bee ,, ...	June 22 ...	W, L, Mi.
,, muscifera ...	Fly ,, ...		

LXXXII. IRIDEÆ. IRIS FAMILY. [Herbs.]

Iris Pseudacorus ...	Yellow Flag ...	June 14 ...	W, M, Ba, L,

LXXXIII. AMARYLLIDEÆ. DAFFODIL FAMILY. [Bulbous Herbs.]

Crocus Vernus ...	Purple Crocus ...		
Narcissus Pseudonarcissus...	Lent Lily ...	Mar. 22 ...	W.
Galanthus vivalis ...	Snowdrop ...	Feb. 27 ...	*G. W. H.*

LXXXIV. DIOSCORIDEÆ. YAM FAMILY. [Climbing plants.]

Tamus communis ...	Black Bryony ...	June 12 ..	W, H, Ba, L, St.

LXXXV. LILACEÆ. LILY FAMILY. [Herbs. Fl large. Perianth 6 in two circles. St 6. Ovary superior.]

Paris quadrifolia ..	Herb Paris ...	May 6 ...	W, D.
Polygonatum multiflorum	Common Solomon's Seal	May 17 ...	W, D.
,, officinale	Angular ,, ,, ...	May 13 ...	W, D.
Convallaria majalis ...	Lily-of-the-Valley ...	May 11 ...	W.
Ornithogalum umbellatum ..	Star of Bethlehem ...		
Scilla nutans ...	Wild Hyacinth ...	April 6 ...	W.
Allium vineale ...	Crow Garlic ...		
,, ursinum ...	Common ,, ...	May 3 ...	W.
Colchicum autumnale ...	Meadow Saffron ...	Oct. 4 ...	*G. W. H.*

LXXXVI. JUNCACEÆ. RUSH FAMILY. [Stiff herbs L's cylindrical or grass-like. Fls small and dry. Perianth in 6. St 6. Ovary superior.]

Juncus communis ...	Common Rush ...	June 22 ...	W, L, Mi.
,, glaucus ...	Hard ,, ...	June 15 ...	W.
,, articulatus ...	Jointed ,, ...	July 8 ...	G, H.
,, obtusiflorus ...	Obtuse ,, ...		
,, tenuis ...	Slender ,, ...		
,, bufonius ...	Toad ,, ...	July 11 ...	*C. I. G.*
Luzula pilosa ...	Hairy Wood Rush ...	May 10 ...	W, M.
,, campestris ...	Field ,, ...	April 6 ...	W.

2. GLUME-BEARING FLOWERS.

LXXXVIII. CYPERACEÆ. SEDGE FAMILY.

[Stiff herbs. Solid stems. L's with entire sheaths. Fls in green or brown spikelets, with glumes,]

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Blysmus	compressus	Broad Blysmus	May 29	Ba.
Scirpus	palustris	Marsh Scirpus	July 15	W.
,,	*lacustris*	*Lake* ,,	July 15	*G.W.H.*
,,	sylvaticus	Wood ,,	June 25	W.
Eriophorum	polystachion	Cotton Grass	June 21	W, C, G, H, Ba, L, St.
Carex	leporina	Oval Sedge	July 2	*G.W. H.*
,,	remota	Remote ,,	June 30	W, Mi.
,,	paniculata	Panicled ,,	...	
,,	vulpina	Fox ,,	May 27	W.
,,	cæspitosa	Tufted ,,	May 4	C, D.
,,	acuta	Acute ,,	May 12	W.
,,	præcox	Early ,,	May 3	W.
,,	*pilulifera*	*Pill-headed* ,,	June 21	L.
,,	tomentosa	Downy ,,	...	
,,	hirta	Hairy ,,	June 6	L.
,,	flava	Yellow ,,	June 21	W.
,,	distans	Distant ,,	July 6	L.
,,	panacea	Carnation ,,	June 21	St.
,,	*glauca*	*Glaucous* ,,	June 21	L.
,,	sylvatica	Wood ,,	May 29	*G.W.H.*
,,	strigosa	Thin-spiked ,,	...	
,,	Pseudocyperus	Cyperus ,,	...	
,,	pendula	Pendulous ,,	June 15	W.
,,	ampullacea	Bottled ,,	July 6	L.
,,	paludosa	Marsh ,,	May 8	W.

LXXXIX. GRAMINEÆ. GRASS FAMILY.

[Herbs. Stems hollow except at nodes. L's with split sheaths. Fls with glumes. St 3 usually.]

Milium	effusum	Wood Millet Gras	May 29	*G.W.H.*
Anthoxanthum	odoratum	Vernal ,,	May 23	W.
Phalaris	canariensis	Canary ,,	July 23	*G.W.H.*
Digraphis	arundinacea	Reed ,,	July 1	*G.W.H.*
Phleum	pratense	Timothy ,,	July 24	M, St.
Alopecurus	agrestis	Slender Foxtail Grass	...	
,,	pratensis	Meadow ,, ,,	May 24	M.
,,	geniculatus	Marsh ,, ,,	July 8	*G.W.H.*
Avena	fatua	Wild Oat	...	
,,	pratensis	Perennial ,,	June 10	L.
,,	flavescens	Yellow ,,	June 29	W.
Arrhenatherum	avenaceum	False ,,	July 1	H.
Holcus	lanatus	Common Holcus	June 3	L, W.
,,	mollis	Soft ,,	July 20	*G.W.H.*

Genus.	*Species.*	*English Name.*	*Date.*	*Record.*
Hordeum	sylvaticum	Wood Barley	July 23	C, St.
,,	pratense	Meadow ,,	July 15	St.
,,	murinum	Wall ,,	July 7	*G. W. H.*
Agropyrum	repens	Couch Grass	July 24	*G. W. H.*
Lolium	perenne	Rye ,,	June 10	W.
,,	temulentum	Darnel		
Brachypodium	sylvaticum	Slender False Brome		
,,	pinnatum	Heath ,, ,,		
Bromus	erectus	Upright Brome	June 23	*G. W. H.*
,,	asper	Hairy ,,		
,,	sterilis	Barren ,,	May 29	W.
,,	mollis	Soft ,,		
Festuca	ovina	Sheep's Fescue	June 24	W, C.
,,	elatior	Meadow ,,		
Dactylis	Glomerata	Cock's-foot	June 24	M.
Cynosurus	cristatus	Dog's-tail	June 24	St.
Briza	media	Quaking	June 27	W.
Poa	aquatica	Reed ,,	July 24	St.
,,	fluitans	Floating ,,	June 21	W, M.
,,	annua	Common Meadow Grass	Jan. 21	W.
,,	pratensis	Smooth ,,	May 28	W.
,,	trivialis	Roughish ,,	June 25	W.
,,	nemoralis	Wood ,,	June 10	*G. W. H.*
Catabrosa	aquatica	Water Catabrosa		
Melica	nutans	Mountain Melick		
,,	uniflora	Wood ,,	June 2	W.

CRYPTOGAMS OR FLOWERLESS PLANTS.

[No stamens or pistils or true seeds. Fruit—spores contained in spore-cases in the substance of the plants.]

XCIII. EQUISETACEÆ. HORSE-TAIL FAMILY.

[Herbs, with jointed stems, whorls of scale-like leaves at joints.]

Equisetum	Telmateia	Great Horse-tail	April 3	W, M.
,,	arvense	Field ,,	Mar. 31	C.
,,	palustre	Marsh ,,	June 21	C, M, Ba, L.

XCIV. FILICES.	FERN FAMILY.	[Tufted herbs. Spore-cases usually under the fronds.]	
Genus. Species.	*English Name.*	*Date.*	*Record.*
Ophioglossum vulgatum	Adder's Tongue	...	
Polypodium vulgare ...	Common Polypody	... May 17 ...	D.
,, Phegopteris	Beech Fern	...	
,, calcareum	Mountain Polypody	... May 22 ...	*G. W. H.*
Aspidium aculeatum ...	Prickly Shield Fern	... July 6 ...	*G. W. H.*
,, angulare ...	,, ,, ,,	...	
,, Felix-mas ...	Male Polypody	... May 23 ...	W, C, G, Ba.
,, spinulosum ...	Broad ,, ,,	... July 6 ...	*G. W. H.*
Asplenium Filix-fœmina	Lady Fern	... July 6 ...	G.
,, Trichomanes	Common Spleenwort	... July 11 ...	G, R, Ms.
,, Adiantum-nigrum...	Black ,,	...	
,, Ruta-muraria...	Wall Rue	... July 15 ...	*G. W. H.*
Scolopendrium vulgare	Hart's Tongue	... May 24 ...	L.
Ceterach officinarum ...	Scaly Fern	... June ...	*G. W. H.*
Pteris aquilina ...	Bracken	... June 21 ...	W, L, St.

Entomological Section.

President ... J. C. SALTER, ESQ.

Members.

JENKINS, R. A. KRAUSS, D. E. LESSER, A. C.
SAMUELSON, E. A. STORR, W. R. (1).
(1) Prize winner, 1902.

ENERGY was shown by members of this Section on the various excursions of the Society and nets seemed fairly numerous, but only one member showed up a collection for the prize offered to the Section. It was a small one but was very nicely set and arranged.

Geological Section.

President ... C. I. Gardiner, Esq.

There were certainly more members who took an intelligent interest in this Section this year and the number of hammers brought out was larger than ever before. Hooker and Solomon are distinct losses to the Section, but Burrard, Nicholls, A. M. Stuart and F. L. Roberts all did good work.

A prize of a hammer was offered for the best collection of fossils made during the Easter term, the collections sent in by Burrard and Roberts were both equally good and both were awarded a hammer, which it is hoped both will use this year.

Ornithological Section.

President ... E. A. Menneer, Esq.

The sectional prize has been awarded to H. P. M. Egleston for a note-book containing observations on the eggs of and nests of no less than 50 species. It is to be regretted that the actual number of note-books sent in fell far short of those promised. Many members do good work in the Easter holidays without following it up in term time. Let us hope for more sustained efforts in 1903.

The Courage collection has recently undergon a complete rearrangement and classification by Mr. White, and its value is largely increased for purposes of scientific study. It still suffers from insufficient accommodation, and the want of a system of lighting which would facilitate evening lectures.

The expeditions in the Summer term were, as usual, much appreciated. Among other discoveries we may record—a haw-finch's nest on Leckhampton, two nightjars' near Andoversford, and at Colesbourne a nest of thrush's eggs with *pink* spots on the usual blue background.

BLACKBIRDS AT CHRISTOWE.

By T. W. Darwin.

A rather remarkable occurrence in the case of two blackbirds which built their nest in the overgrowth of the fence dividing Christowe yard from the entrance to the junior playground has taken place.

The nests were first discovered during the first few days of the Summer term, there being only a few fibres there then. In about a week the nests being completed three eggs were laid in each. Eventually they reared their brood in spite of the noise in the yard.

One brood has flown but the other is still under their mother's keeping. (June 1st, 1902.)

AN EVENING IN JANUARY.

By a Member.

It was not an ideal evening for duck shooting. The moon was late in rising, and the bitter East wind made the frost seem twice as severe as it really was. However there was no question of postponing the enterprise, so off I started about 3 o'clock in the afternoon, carrying double the ordinary weight of clothes and two thick pairs of stockings to protect the extremities. It was just on the verge of sunset when the meadows came into view, their rich velvet green slightly paled by a three days' north-easter, and the swollen flow of the stream through their midst appearing to a distant eye the only sign of life.

Presently the approach is made, and two No. 6's are slipped into the breech in the hope of a shot at plover. And sure enough there they are, hundreds upon hundreds of them, a mixed multitude of golden plover and lapwings, resting almost motionless on the watery meadow, as is their wont, and all turned towards the glow of the setting sun. But alas! they are some 150 yards the other side of the stream, and there is no cover between us, so I judge it best to take up my position at once in the well known hiding place, the middle of a thick hedge abutting on the floods.

Then begins the pleasure of the evening. Scarcely has the friendly pipe been lit, and the coat tightly buttoned up against the fitful blast, when I hear what can only be the whole flock of plover taken to wing for their evening constitutional. It is a once-heard-never-to-be-forgotten sound, that muffled lap of the plovers' flight like the congregating of sheep at the dog's approach. I am on the alert at once. In the course of their evolutions they are more than likely to pass my way. And presently I can see them coming, a dark trembling army of wings sending forth at intervals the timid "pee-wit" of the green plover or the low sad whistle of the golden. Ten seconds mere! Now they are nearly overhead! Ping! Ping! and the flock are once more scattered. Ping! a stray bird flies past in confusion. I pick

up four, not very many, but after all they were rather high. Back again to the lair, and another wait—this time for nobler quarry.

The duck rarely come in till an hour after sunset, so there is still time to fall under the fascination of the strange sounds that from time to time punctuate the low monotonous soughing of the wind. Now it is the swish of homeward starlings, flying rapidly in extended formation to the woods; now the lightning descent of snipe from the uplands, sounding for all the world like rockets; now the alarm cry of a blackbird only a few feet off, resenting the unwonted intrusion of a stranger to his roosting place; now the last deep caw of some late returning crow, first bird to rise and last to go to rest. And even when these are still, there are the busy wagtails walking along the edge of the water, seemingly lamenting the all too short January daylight.

But all this time it has been getting dark. The air seems keener, and my feet, more and more numbed with cold, suggest that the keen-scented mallard may arrive now at any moment, and drop into his well-known haunt under the willow about 70 yards to windward. . . . Hark! surely the sound of wings? I listen again! Yes, there is no mistaking the well known metallic ring of the duck's flight, similar only, so far as I know, to that of the pigeon tribe. At once every sense is on the alert. Nearer and nearer they come: then just one premonitory quack! and down swoop three heavy bodies with a startling splash right under the willlow. So far so good. Now begins the torture. Will they come up stream into shot or stay where they are? Five minutes anxious waiting. No, they are still under the willow, flapping and splashing with most tantalising vigour; and already two more have joined them from the opposite side. Clearly there is nothing for it but to stalk. Slowly and quietly I steal out of the hedge, then drop on hands and knees, and take a short detour so as to approach them straight up the wind. Twenty yards to the good! I begin to flatter myself that a light brown Norfolk suit renders me undistinguishable from the background. Now I am within 50 or 55 yards of the pool—as far as it is safe to go. Out come the binoculars, and the little group of black lumps is easily discerned from surrounding objects by their moving about. The spot is marked, but

alas! I cannot detect them with the naked eye. Two steps forward! But oh the pity of it! crash goes my knee into a puddle covered with thin ice! The enemy is alarmed! the gun raised! but I have forgotten to chalk over the sight, and my aim will be mere guess work. Still no rise! shall I go forward, or fire? Only another yard, and I might see them!

"Oh the little more and how much it is
And the little less, and what worlds away."

Flap! flap! Ping! ping! Off they go! three of them, clear against the glow of the rising moon! The suspense is over, and I watch them vanish into the distance. Sic transit! transiit! transibit!

Only one bird is retrieved—a fine duck, whose wonderfully thick plumage would seem proof against any velocity of steel. A moment's pity for the victim! a moment's shiver in the cold! then back again to the hedge to wait for more! And so the evening wears on till either the cold becomes too intense, or the duck cease to drop in.

Such evenings are not easily effaced from the memory. The darkness, the solitude, the absolute silence from all clattering discord of daytime and civilivation—in a populous country one can scarcely separate the two—more than atone for the occasional failure to secure a bag. As for the discomforts, the cold and cramp that are inseparable from the situation, these are only too slight a tribute for the privilege of communing for a few hours with Nature—*solus cum sola.*

Photographic Section.

President ... C. E. Youngman, Esq.

MEMBERS:

Adderley, R. W. F.
Birch, H.
Biscoe, V. F.
Broderip, J. Y. M.
Browne, W. H.
Clark, R. O.
Cohen, B. J. B.
Cohen, E. C.
Cork, W. N.
Curtis, J. O.
Davis, F. G.
Dickinson, D. P.
Dyce, A. G. H.
FitzHerbert, E. C. W.
Gordon, R. H.
Hailes, M. H.
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Stephens, D. J. M.
Stephens, R. C.
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Tinson, G. G. N.
Webb, S. N. C.
Williams, H. F. F.
Young, R. A. E.
Young, R. P.

A good year, in the way of opportunity; but the average member is very modest, and does not make much of his work public. Much of what is shown is sent up in the form of lantern-slides at the end of the year; a very good way of exhibiting results, but it leaves unrepresented the large majority who do not go to the trouble (well worth taking) of making slides. However, last year there was special encouragement for these in the prize given for prints by E. M. Joseph, Esq. (O.C.), who was himself, years ago, the first to win the sectional prize. Five entered for it, and the prize was divided between B E Smythies (1st) and FitzHerbert (2nd). There should be more entries this year; and some preference will be given to prints made on platinotype papers, bromides, Velox, etc.; as Mr. Joseph particularly wishes to encourage us to make

some advance upon the universal first-stage P.O.P. Many of these papers are quite easy to work—often easier and readier than P.O.P.; and there is the electric light in the dark room ready for the work, and special times arranged.

At the exhibition of lantern-slides last December seven sets were sent in by five competitors, the prize going to FitzHerbert for some simple unambitious bits of Irish scenery, very nicely done; a somewhat novel set, from its very simplicity, but effective. Swiss pictures by B. J. B. Cohen came second, and then waves (one very fine) by B. E. Smythies. The show this time was a good one, though it is a matter for regret that there was nothing shown by several people who had good negatives ready to hand, but unfortunately "had no time." Both Mr. Borchardt and Mr. Towers were in the vein, and let us have of their best; and there was the additional pleasure of welcoming first contributions from Mr. Clauss and Mr. Unwin, and looking forward to many others from them.

PREHISTORIC AND ROMAN ANTIQUITIES IN THE NEIGHBOURHOOD OF CHELTENHAM.

By G. B. Witts, Esq.

The prehistoric period in which man lived is divided for convenience into four ages called respectively, the Palæolithic, the Neolithic, the Bronze and the Iron age.

During the first two ages man used tools and weapons made of wood and stone, he was unable through lack of knowledge to extract any metal from the earth and so unable to manufacture metal tools or weapons. The first types of stone tools and weapons are very rough in their making, but the second type, the Neolithic, are easily distinguished by their delicate manufacture, possessing frequently a beautiful polish and evidencing a great deal more care in their making than do those of the earlier Palæolithic times.

Gradually the method of extraction of copper and iron from the ore containing them became known and the men with the the bronze weapons succeeded the men with stone ones, while later still man extracted iron and, in a sense, we still live in the Iron age.

What number of years is represented by the periods we speak of as the Palæolithic, Neolithic, Bronze or Iron ages we do not know, but the number must be in thousands.

No Palæolithic remains have been found round Cheltenham, but Neolithic remains are extraordinary plentiful. The high table land of the Cotteswold hills must have formed a capital place for these early men to live in, as it would give them a good view over the Severn valley and enable them to see and reply to signals from distant hills.

Accordingly in most freshly ploughed fields at the top of the hills one can pick up flint arrow heads and flint implements from the soil. As there is no flint in the rocks of Cheltenham these must have been made elsewhere and brought here ready made, or else blocks of flint must have been brought and the articles

manufactured near by. Such a manufactory has been found between Cheltenham and Birdlip. Flint itself is only found in chalk and the nearest chalk is some forty miles away.

Not only did early man leave his weapons and tools scattered about on the surface of the ground, but he buried his dead under heaps of ground, now called Barrows. Neolithic man made long barrows, more or less oval in shape, while the men of later ages made round barrows.

Instances of long barrows are to be seen at Belas Knapp, across Cleeve Hill, on the Crippets Hill, and at West Tump near Birdlip; while round barrows are to be found near the Air Balloon on the left side of the Birdlip Road, at Dowdeswell, on Cleeve and at many other spots, being very common indeed.

The West Tump barrow was opened in [187(?)]. It was not quite oval in form as its curve was indented at one end and so it is spoken of as a horned barrow. Every yard or two round the outside a skeleton was found, all of their skulls being of the long head or dolico-cephalic type. Inside the barrow was a pathway sloping down to a central chamber. Ten skeletons were found in the main entrance and on a stone at the end of the central chamber was seated the skeleton of a young woman, with most beautiful teeth and she held a small baby in her arms. This young woman was called by Mr. Witts the Cotteswold Princess. No metal implement of any description was found during the digging but some flint implements were discovered.

The Belas Knapp barrow was dug out in 18... and the skulls and other bones found in it are now in the College Museum and form a very valuable collection.

Passing to Roman times we find the chief Roman remains in our district are villas and camps. Of the villas only a few have been excavated, and many others are known but have not been dug into. The best one is at Chedworth, while remains of another in the wood below Birdlip have been visited before now by the Natural History Society.

The high ground of the Cotteswolds ending off abruptly along the escarpment offered a capital situation for military camps. This was of course known to the Pre-Roman settlers and they made camps along the edge. The Romans made use of the camps they found in existence when they came into this country, sometimes enlarging or altering them no doubt, and

sometimes they made new camps of their own. The rapid fall of the hill-land towards the West formed a natural defence which these masters of the military art were not slow to make use of.

We find camps on Leckhampton and Crickley Hills and at Birdlip, on Coopers Hill and beyond Birdlip at Kimsbury. While to the North of Leckhampton we find camps at Dowdeswell, Hewlett's Hill, Cleeve Hill and Nottingham Hill.

The Crickley Hill camp is a British Camp with a very ingenious Roman entrance. The Dowdeswell camp is an original Roman camp. Some of these Roman camps formed connective links in a very long chain. We have been made familiar lately with the system of blockhouses brought into operation for the purpose of keeping in check an agile enemy. Such a system was put into use in Britain in A.D. 50. Tacitus tells us that the Roman general made a string of forts from the Severn to the Wash. Mr. Witts has been over much of the line and has identified several score of such forts along a line from near Bristol through Cheltenham and away towards Lincolnshire. Some of our Cheltenham forts are therefore no mere isolated outposts, but form part of an immense line of fortification made for the purpose of protecting the Roman portion of Britain which lay in the South and South-East of our Island. The barbarians, pushed steadily to the West and North, were kept from raiding the colonised territory by the blockhouse system, which Lord Kitchener has copied with such success against an even more mobile enemy than the agile Celt.

Besides the villas and camps, the Romans also have left traces of their period of occupation in their roads. These were in some cases British trackways converted in later years by the new masters of the country into finer and more permanent lines of traffic. The Gloucester and Birdlip Road was such a British road improved and paved by the Romans. At the top of the Cotteswolds near Birdlip it is defended by a bank, its ultimate destination was possibly St. David's in Pembrokeshire.

Another British trackway ran from Gloucester to Tewkesbury via Deerhurst, while the Roman road ran near the present road to the West of it.

There are other ancient trackways connecting the hill forts with one another to be seen on the Cotteswolds.

C.E.N.H.S. Accounts for 1902.

Receipts.

			£	s.	d.
Balance brought forward		... ...	29	10	4
1st Term, Ordinary Members,		£3 6s.			
,, Dark Room	,,	£2 12s 6d.			
			5	18	6
2nd Term, Ordinary	,,	£4 1s.			
,, Dark Room	,,	£8 7s. 6d.			
			12	8	6
3rd Term, Ordinary	,,	£4 9s.			
,, Dark Room	,,	£2 10s.			
			6	19	0
			£54	16	4

Expenses.

		£	s.	d.
Heaven, Dark Room...	...	3	12	6
Williams & Norgate, per C.I.G.	...	1	18	2
Postage of Reports ,,	...	0	2	6
Darter £1 16s., 6s. ,,	...	2	2	0
Heaven, Dark Room ,,	...	4	9	0
Excursion Receipts £21 8s. 8d.				
Ex's, Teas, etc. £11 3s. 11d.				
Garner £15 8s. £26 11s. 11d.		5	3	3
Photo Section Prizes, per C.E.Y.	...	0	16	6
Heaven, Dark Room ...	...	4	6	0
Entomological Prize, per C.I.G.	...	0	10	2
Geological ,, ,,	...	0	6	8
Botany ,, G.W.H.	...	0	9	9
Balance in hand	...	30	19	10
		£54	16	4

W. M. BAKER,
Hon. Treas.

Audited and found correct,
A. A. BOURNE,
February 17th, 1903.

PRESENTED