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FOR THE YEAR

1934

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LONDON NATURAL HISTORY SOCIETY,
THE LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE,
KEPPEL STREET, GOWER STREET, LONDON, W.C.1.

DATE OF PUBLICATION, 11th JUNE 1935.

London Natural History Society.

Founded 1858.

Officers for 1934.

Offices in the Society and its Sections are Honorary.

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The Society is affiliated to the British Association for the Advancement of Science; the South-Eastern Union of Scientific Societies; the Commons, Open Spaces, and Footpaths Preservation Society; and the Federation of Rambling Clubs.


BRITISH MUSEUM
NATURAL HISTORY

The STONE CURLEW or NORFOLK PLOVER is found on desolate heaths and downs, notably the Norfolk "brecks" where this photograph was taken.

Photograph by A. E. Roberts.

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T. Buncle & Co., Arbroath.

1935.


BRITISH MUS
NATURAL HISTORY

CONTENTS.

Editorial Notes.

IN presenting our Journal for 1934 special reference must be made to a circumstance which, we hope, will affect materially the well-being of *The London Naturalist*. An alteration in the rate of subscription to embrace the Publications Fund has been introduced and it is hoped that as a result the Society's funds will be maintained in a state of solvency.

The contents of this issue constitute a guide to the many and diverse activities of our organisation. The contribution on the Brambles of Kent and Surrey is the concluding article of a series in which Mr W. Watson has surveyed the batological flora of those counties and describes some new species. They form an important addition to the literature on the subject and we are indebted to the author for according us the privilege of publication.

We must also express our sincere thanks to Mr H. Pettit, who has drawn the new design on the cover. He is to be congratulated on his work, carried out successfully despite the serious disability of ill-health.

In other respects it is hoped that this issue does not fall short of the standard of its predecessors.

The Society is fortunate in having Mr J. E. S. Dallas as President, for apart from our Natural History activities there is a great deal of business matter to be transacted, and in this his administrative ability and thoroughness have served us in good stead. Our thanks are also tendered to Miss O. F. Tassart, who acted as our delegate to the 39th Annual Congress of the South-Eastern Union of Scientific Societies held at Reading in July.

A successful exhibition was held on 20th February at which each Section was well represented. Under the skilful management of Mr C. L. Collenette this interesting and informative function proved to be a great attraction to members and their friends.

We note with interest the publication of another book by our Past-President, Mr W. E. Glegg. *The History of the Birds of Middlesex* marks another milestone in the ornithological literature of the Society's area. Illustrated by a number of photographs taken from the air, the volume is presented in a similar manner to that of Mr Glegg's *History of the Birds of Essex* and is a tribute to the author's methods of research and painstaking investigation. To another member—Mr F. W. Frohawk—we offer our congratulations on the production of his *British Butterflies*, in which the new generic nomenclature is used. In addition, we have noted with pleasure numerous articles in various scientific periodicals which have been contributed by members of our Society.

Reviews.

Sea Terns. George and Anne Marples. (Country Life, 15/-.)

This delightfully illustrated work gives a comprehensive account of the life and habits of the Sea Swallows. From the arrival of these summer-visitors in spring to their departure in autumn the authors' observations have been faithfully recorded. The procedure on arrival on our coasts has been dealt with, through all the stages of occupation of the ternery, courtship, nesting, eggs and young. In addition, valuable chapters on identification, distribution and experiments conducted by the authors show how thoroughly the subject has been studied.

In dealing with the vocabulary the difficulties of conveying bird notes and calls have been fully appreciated and the method adopted carefully explained. Nevertheless, praiseworthy as the attempt has been, it can only be said that the most satisfactory method of understanding this subject is for the observer to visit a ternery and hear for himself.

Although the conclusions drawn from their observations will undoubtedly be criticised and amended in the light of future work, the value of the book cannot be overestimated.

The Workers in the Wilds. Major A. R. Dugmore, F.R.G.S. (Herbert Jenkins, 5/-.)

This is, among other things, a love story. It tells how a beaver, having had his home destroyed by unfeeling men, set out to find a mate, and eventually met the beaver of his heart, founded a colony, and started to present the world with little beavers. If you desire to absorb, with as little effort as possible, some knowledge of the habits of this rodent, then this book will serve your purpose, but if you want a scientific knowledge of the genus *Castor* then a page or two of a good Natural History book would be more to the point.

This book is too full of descriptive passages, which neither make it sound imposing nor add to its value. Moreover, Major Dugmore is too fond of attributing to these animals the thoughts and reasoning powers of men. This habit is one to be strongly discouraged in serious works on Natural History.

The plates with which the book is illustrated, most of which have been drawn by the author himself, are useful and interesting, and when he digresses from his story, as he does in Chapter 7, to give an account of the uses of the beaver, the book rises to a more elevated plane of utility. Major Dugmore has made a sincere effort to present the story in a way that will appeal to the layman, and has succeeded in drawing romance of a sort from his subject.

BIOLOGY FOR SCHOOLS. E. R. and A. V. Spratt. (2nd Edition.) (University Tutorial Press, 4/6.)

This well-produced and abundantly illustrated handbook has in this second edition been enlarged to provide the necessary additions on Dentition and Artificial Vegetative Reproduction for various examination purposes. It provides at a reasonable price a clear exposition of the underlying principles of the study of biology, and although opinions may vary about inferences drawn from observations, the necessary training to observe exactly is carefully directed.

THE NATURALIST ON THE PROWL. Frances Pitt. (Country Life, 5/-.)

Through the medium of the popular press Miss Frances Pitt is well known to nature lovers generally, and they will welcome the light which this little book throws on her methods. The advice on the necessary equipment is very sound and should be very helpful to her readers.

In the preface she says:—"It has been written for the novice rather than the experienced worker," and she has achieved her object.

It is highly probable that the novice will find that bird-photography is not quite so easy as he may be inclined to think after reading this very interesting book.

Indiscriminate bird-photography should certainly not be encouraged. Although the photographer may do no harm, the result of leaving a trail to a nest may well prove disastrous should an egg-collector pass that way.

Flashlight photography should not be practised on nesting birds. It is difficult to see that the result can be anything but harmful to the sitting bird.

BIOLOGY. E. R. and A. V. Spratt. (University Tutorial Press, 1/9.)

This moderately priced and useful little book is worthy of the consideration of all who wish to acquire an elementary knowledge of the Science of Biology or who are engaged in teaching this particular subject to young folk. In the 140 pages the subject is treated in a pleasing style and liberally illustrated with text figures, many of which are very good. Most types of living creatures are dealt with, but a little more indication of general classification might have been useful. The writers are a trifle dogmatic about the differences between Butterfly and Moth, and the statement that a butterfly pupa "is never either inside a cocoon or buried in the soil" is rather misleading. These are small points, however, and we have no hesitation in recommending this book to all concerned.

Papers Read to the Society.

WE take this opportunity of tendering our grateful thanks to those visitors who, by coming to lecture to us, added so much to our enjoyment.

Jan. 2—"Sponges and Sponge Fisheries," M. Burton, M.Sc., F.Z.S.

Jan. 16—"Recent Light on Roman London," Q. Waddington, F.S.A.

Jan. 23—"A Season in the Arctic,"
E. A. Cockayne, M.A., D.M., F.R.C.P., F.R.E.S.

Feb. 6—"The South Haven Peninsula Survey," ... Capt. C. Diver.

Feb. 13—"Some Birds of the Norfolk Broads,"
Major Anthony Buxton, D.S.O.

Feb. 20—Annual Exhibition.
(1) "Flight Devices," ..... Miss G. Lister, F.L.S.
(2) "London Georgian Architecture,"
W. W. Begley, F.R.Hist.S., L.R.I.B.A.

Mar. 6—"Egypt in the Time of Tutankhamen," A. W. Shorter, M.A.

Mar. 20—"The Lure of Switzerland," ..... H. Victor Groves, B.A.

April 10—Bacot Memorial Evening.
"Entomology of Yesterday and To-day,"
L. B. Prout, F.R.E.S.

April 24—"Beneath the Surface of the English Lakes," W. H. Pearsall.

May 1—"Scenes in Indian Life," ..... W. Marriott.

June 5—"Random Notes on Butterflies," ..... R. W. Robbins.

June 19—"Bird Watching at Lossiemouth,"
Malcolm J. Macdonald, M.P.

Sept. 18—"Gilbert White—Selborne," ..... E. A. Martin, F.G.S.

Sept. 25—Films and Photographs:
(a) "The Story of the Gannet."
(b) "The Nightingale."
(c) "The Cuckoo."
(d) "The Badger."
Oliver G. Pike, F.Z.S., F.R.P.S., M.B.O.U.

Oct. 2—"An Entomological Excursion to the Gulf of Guinea,"
W. H. T. Tams.

Nov. 20—"The Footpaths and Byways of London's Countryside,"
A. L. Simpson.

Dec. 4—Annual General Meeting.
President's Address: "Plant Life in the Alps,"
J. E. S. Dallas.

Dec. 18—"The Kew Herbarium," ..... A. D. Cotton, O.B.E., F.L.S.

PAPERS READ AT SECTIONAL MEETINGS.

Jan. 9—Ornithology. Prize-Winning Essays in Public Schools Competition of R.S.P.B.:
(1) "Aquatic Birds of the East Coast of Aberdeenshire," J. Hope Johnston.
(2) "The Waterfowl of Barn Elms Reservoirs," P. Z. Mackenzie.

Feb. 27—Entomology. "The Insect Parasites of British Birds," G. B. Thompson.

Mar. 13—Botany. "Our Changing Flora." Discussion opened by H. J. Burkill, M.A., F.R.G.S.

Mar. 27—Plant Galls. "Some species of *Andricus*," ..... M. Niblett.

April 17—Archaeology. "Prehistoric Man in Britain," W. C. Cocksedge.

May 8—Ornithology. "A Brief Survey of the Anatomy of Birds," G. Carmichael Low, M.A., M.D., F.R.C.P., F.Z.S., M.B.O.U.

May 15—Plant Galls. "*Synergi*," ..... J. Ross.

June 12—Ramblers. "What is a Species?" Dr N. H. Joy, M.B.O.U., F.R.E.S.

June 26—Archaeology. "Canterbury Cathedral," F. H. Mansford, F.R.I.B.A.

Sept. 11—Botany. "A Botanical Holiday in Snowdonia," L. G. Payne.

Oct. 9—Ramblers. "The Old Inns of England," ... Beresford Webb.

Oct. 16—Ornithology. "Bird Photography," Eric J. Hosking, F.R.P.S.

Nov. 13—Archaeology. "The Flintworkers of Brandon," W. Johnson, F.G.S.

Nov. 27—Plant Galls. "The genus *Neuroterus*," ..... M. Niblett.

Dec. 11—Entomology. "In Search of the Spruce Sawfly in Central Europe," ..... K. R. S. Morris.

STATEMENT OF ACCOUNTS 1934: GENERAL ACCOUNT.

Balance, 1st November 1933			£59 17 2
Interest on Deposit Account			0 5 2
Interest on Post Office Account			1 1 6
Interest on £75 3½ per cent. Conversion Loan			2 12 6
Subscriptions and Entrance Fees			132 2 6
Sale of Duplicate Library Books			0 12 0
Donation towards Exhibition Expenses			0 12 6
			£197 3 4

Rent			£31 2 6
Syllabus Expenses (Printing and Postages)			8 18 8
General Printing and Stationery			12 16 2
Postages (Secretary)			5 5 3
Postages (Treasurer)			2 8 11
Secretarial Expenses			4 2 0
Insurance			1 0 0
Gratuities			2 0 0
Subscriptions—Federation of Rambling Clubs,	£0 7 6		
British Birds Marking Scheme	0 15 0		
South Eastern Union of Scientific Societies,	0 7 6		
Commons, Open Spaces and Footpaths Preservation Society	0 10 0		
British Trust for Ornithology	0 10 0		
Entomologists' Monthly Magazine, 1933 and 1934	1 10 0		
			4 0 0
Sectional Expenses—Ramblers	£2 10 0		
Entomology	1 5 0		
Plant Galls	1 0 0		
Ornithology	6 0 0		
Botany	2 10 0		
Archaeology	2 10 0		
			15 15 0
Expenses of Cinematograph Displays			4 17 10
Binding			4 4 0
Entomological Enquiry Forms			1 18 0
Chingford Branch Expenses			4 15 6
Expenses of Lecturers			3 13 0
Sundry Expenses			0 19 6
Transfer to *London Naturalist* Account			29 18 3
			£137 14 7
Balance at Bank, 31st October 1934			59 8 9
			£197 3 4

LONDON NATURALIST ACCOUNT.

Donations	£29	11	5	Printing	£67	16	6
Sales of *London Naturalist*	3	8	0	Blocks	6	7	4
Reprints and Maps	1	12	4	Postage	6	18	2
Transfer from General Account	29	18	3	Envelopes	0	8	0
Transfer from Reserve Account	17	0	0				
	£81	10	0		£81	10	0

LIFE COMPOSITION ACCOUNT.

Balance, 1st November 1933	£100	0	0	Balance, 31st October 1934			
				£75 3½ per cent. Conversion Loan	£75	0	0
				National Building Society	25	0	0
					£100	0	0
	£100	0	0		£100	0	0

RESERVE ACCOUNT.

Balance, 1st November 1933	£50	0	0	Transfer to *London Naturalist* Account	£17	0	0
				Balance, 31st October 1934			
				At Bank	£8	0	0
				Post Office	20	0	0
				National Building Society	5	0	0
					33	0	0
	£50	0	0		£50	0	0

Audited and found correct, 27th November 1934.

LEWIS EYNON,
C. L. COLLENETTE, *Auditors.*

F. G. DELL,
Treasurer.

Council's Report, 1934.

PROGRESS is the key-note of the Society's activities for 1934. All the Sections have again done well, their individual membership has increased, and their keenness has done much to further those branches of Natural Science on which they are engaged.

The total number belonging to the Society has now just passed the 450 mark, the new members totalling 48 and the wastage 26, leaving a nett gain of 22 members, while both classes of associates have shown an increase, the Branch ones of 3 nett, and the Country and School of 10 nett, thus giving a total nett increase in adherents of 35. The average indoor attendance has been well maintained, being 84, and the Field Meetings have also been strongly supported.

The Syllabus for the whole year was well up to its usual high level. The two lectures illustrated by cinematograph films attracted overflowing audiences in the large Lecture Theatre. They were by Major Anthony Buxton and Mr Oliver Pike, and were of outstanding merit, the films in each case having been taken by the lecturers themselves. It was pleasant also to have our Hon. Vice-President, Mr L. B. Prout, with us again, lecturing on the occasion of the Bacot Memorial Evening.

Messrs Pethen and Mann have once more given their self-sacrificing services to the Library, which continues to increase in importance and size. The finances have been satisfactory for the year, but owing to the rapid growth in the activities and scope of the Society steps have been taken to increase the subscriptions to both members and associates in 1935. This necessity is largely caused by the expenses of our periodical, *The London Naturalist*, which under the skilful guidance of Mr B. T. Ward has increased both in interest and bulk.

The various Recorders are still anxious to receive more records in their several spheres. They feel that all observations made by members and associates are not yet being sent to them for official inclusion, and that some valuable ones may be lost; the Council would urge each individual to send his or her records to the appointed officers, so that our history of Nature in the district may be rendered more complete, and to this end also each one should strive to secure additional recruits to our Society in order that observations made may cover our Area even more thoroughly.

A. B. HORNBLOWER, *Honorary General Secretary.*

Librarians' Report, 1934.

IT is pleasing to report that our members are still making good use of the Library, though not to such an extent as in 1933.

This year 56 members have borrowed 318 books, manuscripts, and other publications, and it may be of interest to members to know that Ornithology has again headed the list of subjects of the books issued, the numbers being:—Ornithology 89, General Natural History 80, Entomology 63, Reports and Transactions of Kindred Societies 47, Archaeology 12, Botany 12, Biography 7, Reptilia 4, Biology 3, and Ichthyology 1.

During the year 356 books, magazines, and other publications have been received. For many of these additions the Society is indebted to members and friends, and particular mention must be made of the 58 volumes generously given by Dr Helen M. M. Mackay, M.D., F.R.C.P.; the valuable gift of 103 quarterly parts and supplements of the *Ibis*, a consecutive run from 1908 to 1933 inclusive, presented by Mr Oliver G. Pike; and the useful collection of books presented by Mr and Mrs A. S. Hicks, from the library of their son, the late Mr J. B. Hicks, F.R.E.S.

With the annual grant made by the Council, we have bound the following journals:—*Antiquity* (2 vols.); *Entomologists' Monthly Magazine* (4 vols.); *Entomologist* (4 vols.); *Essex Naturalist*, General Index (1 vol.).

In the Library there is a typewritten catalogue, which is kept up to date as far as possible, and we again cordially invite enquiries from both old and new members as to the available books on any branch of Natural History in which they may be interested.

R. W. Pethen,
E. Mann,
Honorary Librarians.

Archaeological Section.

REPORT FOR 1934.

THIS Section has made ten excursions, during which several churches have been visited, also Horniman Museum, Canonbury Tower, Berkhampstead Castle, the London Roman Wall, and the British Museum.

We have this year received more than the usual amount of assistance from the Clergy of the churches we have visited. The Rev. St B. S.

Sladen, Rector of St Margaret Pattens, gave us a very full account of his church; the Rev. W. H. Davis, Vicar of Little Missenden, gave a very learned and complete description of the mediaeval wall paintings of his church, based largely on the information he had received from Prof. E. W. Tristram; Mr Davis also entertained us to tea at the Vicarage. The Rev. W. T. Wright, Rector of East Horsley, also described his church and explained the Saxon oven which Mr P. M. Johnston had recently discovered in the tower of the church. The Rev. P. E. Wilson, Rector of Wormley, kindly supplemented the information given by the leader, Mr Austin. The Rev. E. R. Hudson, Rector of Hayes, Middlesex, kindly added to the information on the church given by the Recorder and Secretary. Mr Hudson is compiling an account of his parish, and has made a very thorough study of his subject.

Dr Harrison, the Curator of Horniman Museum, showed us round the Museum, and explained how the additional space recently added was to be utilised. The visit to Canonbury Tower was a joint excursion with the London and Middlesex Archaeological Society, and was ably conducted by Mr E. G. Crowsley. Mr Whitbread, who had made a survey of the Tower, assisted.

The visit to Berkhampstead Castle was arranged in conjunction with the Ramblers' Section. Mr Q. Waddington, of the Guildhall Museum, took us over portions of the London Roman Wall, and Mr Cocksedge acted as guide when we visited the Mediaeval Art Section of the British Museum.

Three lectures arranged by the Section were:—"Recent Light on Roman London," by Q. Waddington; "Egypt in the Time of Tutankhamen," by A. W. Shorter; and "Gilbert White—Selborne," by E. A. Martin. Three papers at Sectional meetings were:—"Prehistoric Man in Britain," by W. C. Cocksedge; "Canterbury Cathedral," by F. H. Mansford; and "Flint Workers of Brandon," by W. Johnson.

The membership of the Section totals 81, an increase of 3 on last year's figures. The attendance at excursions has fallen slightly, from 20 to 18.

At the Annual Meeting Mr Forster announced his intention of resigning the Secretaryship as he felt that he could not continue the work any longer. The members received the resignation with regret and desired the Chairman to place on record their deep appreciation of the valuable services rendered to the Section by the retiring Secretary, and his unfailing attention to the many details which the office entailed. Mrs Cocksedge was unanimously elected to fill the vacancy, otherwise the Officers of the Section are as before.

W. C. Cocksedge, *Chairman.*
W. C. Forster, *Honorary Secretary.*

Botanical Section.

REPORT FOR 1934.

THREE general meetings of botanical interest have been arranged by the Section this year—the first by Capt. C. Diver, who dealt with the Survey of the South Haven Peninsula. The second was a most interesting talk by Mr W. H. Pearsall upon his experiences during a survey beneath the surface of the English lakes. The last meeting of the year was addressed by Mr A. D. Cotton, the Keeper of the Kew Herbarium.

Of the four ordinary meetings of the Section held during the year, one took the form of a discussion on " Our Changing Flora," this being opened by Mr H. J. Burkill. The second and third meetings were informal, the exhibits and communications submitted by members at these meetings proving of great interest. On September 11th, Mr L. G. Payne gave an interesting account of his holiday in Snowdonia; his remarks were illustrated with the aid of fresh specimens of ferns, etc.

The excursion syllabus included nine outdoor rambles, two of which were visits to recorded stations for special plants, namely, Herb Paris (*Paris quadrifolia* L.) and Villarsia (*Nymphoides peltatum* Rendle & Britten). Both of these latter excursions were successful, although the Villarsia hunt was only partially so, since this plant was found to have suffered from the immersion by the high water in the stream. In spite of the dry summer, the number and condition of the plants recorded were exceptionally good.

The average attendance at the excursions has been 14, and at indoor meetings 28. The Section now has a membership of 127, 20 new members having enrolled this year.

The Curator has continued his work on the Herbarium and in order that this should be arranged in the best manner possible, to render it readily accessible for reference purposes, it has been decided to amalgamate the collections and to furnish the sheets of plants collected in our area with a distinguishing mark, which will be in the form of a rubber stamped inscription, " L.N.H.S. District."

HERMAN SPOONER, *Chairman.*
G. R. A. SHORT, *Honorary Secretary.*

Entomological Section.

REPORT FOR 1934.

OF the six indoor meetings of the Section three were devoted to lectures on specialised entomological subjects: "The Insect Parasites of British Birds," by G. B. Thompson; "Entomology of Yesterday and To-day," by L. B. Prout; and "Random Notes on Butterflies," by R. W. Robbins. The other three were travel lectures of more general interest: "A Season in the Arctic," by Dr E. A. Cockayne; "An Entomological Excursion to the Gulf of Guinea," by W. H. T. Tams; and "In Search of the Spruce Sawfly (*Diprion polytomum* Hartig) in Central Europe,"—with a cinematograph film—by Dr K. R. S. Morris.

Five field meetings were held during the summer months. Three of these were nominally in search of Lepidoptera: Tring (May), when *Hamearis lucina* L. was fresh on the wing; Eynsford (June), when sixteen species of butterflies were observed on the wing, including *Lysandra bellargus* Rott. and *Callophrys rubi* L., and Effingham (August), when *Polygonia c-album* L. was seen. A successful innovation was a hunt for Dragonflies (*Odonata*) in Epping Forest (July), when those who attended were able to see eleven different species on the wing, besides a very fine show of the butterfly, *Limenitis camilla* L. The usual annual autumn larval hunt was held this year at Limpsfield (September), when larvae of *Anarta myrtilli* L. and one or two other species were found. In addition to the special objects of search on these rambles, interesting observations were made in other branches of Natural History. The Committee welcome the increased interest that is being taken by members in the lesser-known orders of insects; besides the Lepidoptera, the Hymenoptera, Diptera, Coleoptera, Hemiptera and Anoplura are beginning to receive attention at the field and indoor meetings.

The usual report on the Butterflies seen during the year has been compiled by H. J. Burkill (p. 84). E. A. Aris, the Curator for Lepidoptera, has supplied the following list of species specially needed to fill gaps in the collection:—*Apatura iris* L. (Purple Emperor), *Palimpsestis octogessima* Hübn. (Figure of Eighty), *Acronycta auricoma* Schiff. (Scarce Dagger), *Xylomyges conspicillaris* Schiff. (Kidney), *Eumichtis satura* Schiff. (Beautiful Arches), *Valeria oleagina* Schiff. (Green Brindled Dot), *Nonagria cannae* Ochs. (Reed Wainscot), *Tapinostola extrema* Guen. (Concolorous), *Plastenis retusa* L. (Double Kidney), *Plusia interrogationis* Hübn. (Scarce Silver γ), *Brephos notha* Hübn. (Light Orange Underwing), *Eupithecia irriguata* Hübn. (Marbled Pug), *E. indigata* Hübn. (Ochreous Pug), *E. distinctaria* Guen. (Thyme Pug), *E. innotata* Stt. (Angle-barred Pug), *Chloroclystis debiliata* Hübn. (Bilberry Pug).

R. W. Robbins, *Chairman.*

R. B. Benson, *Honorary Secretary.*

Ornithological Section.

REPORT FOR 1934.

GENERAL.

A pleasing feature in the programme of the past year was brought about in co-operation with the Royal Society for the Protection of Birds, by which it was arranged for two of the prize-winners in the Royal Society's Public School Essay Competition of 1932 to read their essays to the Society, and, accordingly, on 9th January, J. Hope Johnston read his essay entitled "Aquatic Birds of the East Coast of Aberdeenshire" and P. Z. Mackenzie "The Waterfowl of Barn Elms Reservoir." On 8th May "A Brief Survey of the Anatomy of Birds" was the lecture given by Dr G. Carmichael Low, and on 16th October "Bird Photography" was the subject of a paper by Eric J. Hosking, when some very beautiful slides were shown.

On 14th August a new departure was made by setting aside one of the Sectional Meetings for a "Discussion on the Work of the Section." From the attendance on that occasion it is apparent that a keen interest is taken by members of the Section in the work it is undertaking, and this feature of our programme might well be made a permanent one. The average attendance at the Indoor Meetings was 48.

As in previous years, the Section's membership continues to grow, and it now stands at the very satisfactory figure of 276, a net increase of 29 during the year, arising from 42 new members and 13 resignations.

The Society has become affiliated to the British Trust for Ornithology, which has recently been formed for the purpose of establishing an Institute of Ornithology as a directive centre for all kinds of ornithological field work in the United Kingdom.

The movement is one which the Committee recommend to the active support of members, and it is intended to endeavour to assist the Trust in its work by inviting the co-operation of our members to act as observers in the various schemes of study being undertaken.

Full details of the British Trust for Ornithology may be obtained from our representative for the Trust, R. C. Homes, 170 Manor Green Road, Epsom, Surrey.

The Committee are indebted to Miss C. E. Longfield for the excellent report submitted by her following the 8th International Ornithologiacl Congress which she attended at Oxford as the Society's official delegate.

FIELD MEETINGS.

Nineteen Field Meetings were held during the year, at which the average attendance was 20.

The districts visited included:—The Chalfonts and Coleshill in Buckinghamshire; Wheathampstead, Hatfield, Boxmoor, St Albans, and the

Tring Reservoirs in Hertfordshire; Epping Forest and the Walthamstow Reservoirs in Essex; Mickleham Downs, Effingham, and Bookham Commons, and Windsor Forest in Surrey; High Halstow, Downe, and Farnborough in Kent; and Staines, Stanwell, Northwood, and Bushy Park in Middlesex.

The total number of species identified on these excursions was 106, and included:—Brambling, Grasshopper Warbler, Scaup-Duck, Goosander, Smew, Green Sandpiper, and Water-Rail.

RECORDS COMMITTEE REPORT.

During the past year no less than 69 observers helped in compiling the report. A special Section was devoted to the status of the Corn Bunting, Yellow Wagtail, Reed Warbler, Whinchat, Stonechat, and Red-Legged Partridge, and a list of the latest dates on which migrants were identified was another new Section. The main report covered 82 species and was presented in a slightly different form.

During 1934 members were asked to pay particular attention to Hawfinch, Lesser Redpoll, Brambling, Tree Sparrow, Sedge Warbler and Little Grebe.

The recorders have been busier than ever entering the records in the Society's sheets, and wish to thank especially those members who have assisted by sending in notes during the year in addition to their usual lists at the end of the year, and by arranging their notes under species in the order of Witherby's Check List. The Committee desire to thank all members who have kindly supplied records.

CURATOR'S REPORT.

The collections have been increased by 17 skins this year, and these now total 161 skins of 96 species. The donors were Messrs S. Boardman, W. E. Glegg, R. B. Lodge, E. Mann, A. Richardson, B. T. Ward, and W. A. Wright. We are also indebted to Messrs P. J. Hanson and B. T. Ward for making the skins. We have received 35 photographs, bringing the number to 304, mounted on 253 sheets. The donors were Messrs H. Bentham, R. S. Fitter, R. C. Homes, G. Hopkins, R. M. Jones, H. A. Littlejohn, J. H. Owen, and Miss L. M. Frederick. The thanks of the Section are tendered to those members and friends who have kindly made gifts to the collections.

RINGING.

The Society's returns under the *British Birds* Marking Scheme for the year again show a considerable increase. An article on this subject, giving complete details, will be found on page 101.

READING CIRCLES.

Altogether 58 members avail themselves of the facilities offered by the Section in connexion with the Reading Circles, whereby *British Birds* is circulated to those annually subscribing. *The Scottish Naturalist* and *The Journal of Animal Ecology* are also circulated under a similar

scheme, and any member wishing to read these publications may obtain full particulars from the Reading Circles Secretary, Mrs D. H. Clanchy, Trebah, Cranbourne Drive, Pinner, Middlesex.

S. Austin, *Chairman.*
D. H. Clanchy, *Honorary Secretary.*

Plant Galls Section.

REPORT FOR 1934.

THE three dates allotted during the year for Sectional Meetings were utilised for critical papers on different classes of insects connected with galls. On 27th March Mr Niblett dealt with the genus *Andricus*. On 15th May Mr Ross discussed the *Synergi*, and on 27th November Mr Niblett read a paper on *Neuroterus*. The last meeting was rendered noteworthy by the lecturer's exhibits of *Andricus xanthopsis* Schl., *A. amenti* Gir., and other rare insects. The average attendance, including that at the Annual General Meeting of the Section, was 15.75, an improvement on former years.

The nine outings were carried through without any serious interference from the weather. We visited Limpsfield, 28th April; Epping Forest, 12th May; Wimbledon Common, 26th May; Kenley, 2nd June; Effingham, 21st July; Epsom Downs, 18th August; Claygate, 15th September; and Ashtead, 29th September. The attendance at these showed a slight advance over previous years, averaging 6 per outing.

Much material in the shape of specimens and notes was secured, from which the usual list has been compiled (p. 96).

Mr Niblett, the Curator, reports that the collection of pressed specimens has been maintained in good condition during the year.

J. Ross, *Chairman.*
H. J. Burkill, *Honorary Secretary.*

Ramblers' Section.

REPORT FOR 1934.

ELEVEN rambles have been held; attendance at these has varied between 6 and 23, the average being 11, which is an increase on that of last year.

These rambles, as usual, have been pleasantly varied, and the districts visited have included Epping Forest, Windsor Forest, Quarry Woods, the Thames valley near Maidenhead, Pitch Hill, Headley, Horsley, Gomshall, and Berkhampstead, the last being a joint excursion with the Archaeological Section.

Two meetings have been held at Headquarters. At one a paper was read by Dr N. H. Joy, M.B.O.U., F.R.E.S., entitled "What is a Species?;" at the other Mr Beresford Webb gave a talk on "The Old Inns of England." In addition the Section has been responsible for lectures at two general meetings of the Society. These were "The Lure of Switzerland," by Mr H. Victor Groves, and "Scenes of Indian Life," by Mr W. Marriott.

The Section continues to be affiliated to the Federation of Rambling Clubs.

E. L. King, *Chairman.*

Olive King, *Honorary Secretary.*

Chingford Branch.

REPORT FOR 1934.

During 1934 there were no events of outstanding interest in connexion with the work of the Chingford Branch, but at the same time nothing occurred to detract seriously from the interest of the meetings. The number of the Branch Associates at the end of the year was approximately the same as at the end of 1933, and the average attendance was good.

The following subjects were dealt with:—"The Romance of Avebury and Stonehenge," Rev. H. J. Gamble, M.A.; "Bees," A. B. Hornblower; "A Naturalist on the Amazon," E. A. Robins; "In and about Epping Forest," B. T. Ward; "Burma and the Burmese," Rev. P. H. Cooke, M.A.; "Notes on Pembrokeshire Birds," G. Hopkins; "Some Oak Galls," J. Ross; "Nature in the Woodland," E. B. Pinniger. Most of these lectures were illustrated with lantern pictures.

As usual, the monthly weather reports sent by Miss M. L. Mathieson were received with interest.

Four visits to Epping Forest were arranged.

John F. Hayward, *Local Secretary.*

Obituary.

JOHN BRINDLEY HICKS.

John Brindley Hicks was born on 16th August 1893, at Bromley, Kent. He was educated at Northdown Hill School, Cliftonville, and at Forest School, Essex.

During the war he served as Assistant Paymaster, R.N.R., and afterwards wrote a very popular book, entitled *With the R.N.R.*, which was followed by one or two novels.

He visited South Africa in 1921, and spent some six months in the district of Marico, Transvaal, where he made a considerable collection of Lepidoptera. Some of these insects are now in the British Museum (Natural History) and the remainder in the Oxford University Museum.

In 1924 he sailed with the " St George " Expedition to the Pacific, but was invalided home after visiting Panama, the Galapagos, Coiba and Cocos Islands.

He was a Fellow of the Royal Entomological Society, the Zoological Society of London, and the Cercle Zoologique Congolais, Tervueren. He was also a keen Mason, becoming Master of the Authors' Lodge.

In 1929 he joined the London Natural History Society and regularly attended the Entomological excursions and meetings. On 17th October 1933 he gave a most interesting lecture, entitled " Butterfly Hunting in South Africa," which will be remembered for the fund of anecdote and information which it contained.

He was the author of a long illustrated paper in Vol. 2 of the *Bulletin du Cercle Zoologique Congolais*, entitled " Notes sur les Papillons du Transvaal Occidental," and contributed a note concerning House Martins preying on butterflies to *The London Naturalist* of 1932.

He died on 11th April 1934 after a short illness. Among those who knew him he will always be remembered as a genial and kindly friend, and one whose place it will be very hard to fill.

GEORGE BELL ROUTLEDGE.

We regret to record the passing in December last of a member who joined the Society in 1890. He took a keen interest in all Entomological matters and regularly contributed notes of his observations to the Recorder of the Entomological Section.

List of Members.

(Corrected up to 7th May 1935).

It is particularly requested that Members will inform the Secretary as soon as possible of any change of address.

Honorary President:

PROF. SIR FREDERICK GOWLAND HOPKINS, M.A., M.D., F.R.C.P., P.R.S.

Honorary Vice-Presidents:

SIR LAWRENCE CHUBB. PROF. M. GREENWOOD, D.Sc., F.R.S., F.R.C.P. F. J. HANBURY, F.L.S., F.R.E.S. L. B. PROUT, F.R.E.S. J. ROSS.

Honorary Members:

1933 Bryce, E. J., Nelson Road, Killara, Sydney, N.S.W. (Zoo.)
1894 Burrows, Rev. C. R. N., F.R.E.S., 2 West Hill, Fairview Avenue, Stanford-le-Hope, Essex. (Lep.)
1927 Le Souef, A. S., C.M.Z.S., R.A.O.U., Taronga Zoological Park Trust, Sydney, Australia.
1899 Massey, Herbert, M.B.O.U., F.R.E.S., Ivy Lea, Burnage, Didsbury, Manchester. (Lep., Orn., Ool.)

Members:

1892 Adkin, R., F.R.E.S., Hodeslea, Meads, Eastbourne. (Lep.)
1925 Aldred, Miss B. A., 30 Parliament Hill, Hampstead, N.W.3.
1927 Aldred, Miss K. V., 5 Ladbroke Court, Ladbroke Gardens, Notting Hill, W.11. (Arch., Orn.)
1922 Aldred, Miss M., Flat 5, 21 Ladbroke Gardens, Notting Hill, W.11. (Orn.)
1928 Alexander, O. A., 35 Ellington Road, Hounslow, Middlesex. (Ent.)
1932 Angell, Miss K. W., at 104 Broxholm Road, West Norwood, S.E.27. (Orn., Ent., R.)
1932 Arbon, Mrs J. A., Brookside, Eversley Park Road, Winchmore Hill, N.21. (Arch.)
1925 Archbould, R. S., Forest Way, Loughton, Essex. (Orn.)
1934 Archer, Miss E. M., 95 Church Road, Wimbledon Common, S.W.19. (Orn.)
1915 Aris, E. A., F.Z.S., 9 Oak Avenue, Priory Road, Hornsey, N.8. (Lep.)
1931 Aris, Kenneth A., 9 Oak Avenue, Priory Road, Hornsey, N.8. (Ent., Orn.)
1932 Arnold, Miss W., 43 The Quadrant, Wimbledon, S.W.19. (Orn.)
1933 Asana, R. D., M.Sc., Plant Physiology Department, Imperial College of Science, S. Kensington, S.W.7. (Bot.)
1892 Austin, S., F.Z.S., 43 Darenth Road, Stamford Hill, N.16. (Orn., Arch., R.)

1931 Axford, W. G., Surgeon Rear Admiral, C.B., F.L.S., 27 St George's Mansions, Red Lion Square, W.C.1. (Bot.)

1931 Back, Dr Marjorie, 16 Daisy Lane, Fulham, S.W.6. (Bot., Orn.)

1934 Baggaley, W., 12 Ashridge Close, Kenton, Harrow, Middlesex. (Orn.)

1929 Baggallay, Miss J., 11 Ridgway Place, Wimbledon, S.W.19. (Orn.)

1929 *Bagnall, R. S., D.Sc., F.R.S.E., 9 York Place, Edinburgh. (Pl. G., Ent., Bot.)

1927 Baily, Miss A. R., F.Z.S., Cressex Lodge, Binfield, Berks. (Arch., Bot., Orn., Ent., Pl. G., R.)

1924 *Baker, E. C. Stuart, J.P., O.B.E., F.Z.S., F.L.S., M.B.O.U., H.F.A.O.U., 6 Harold Road, Upper Norwood, S.E.19. (Orn.)

1934 Banks, H., 172 Cromwell Road, Hounslow, Middlesex. (Bot., Orn.)

1927 Barclay-Smith, Miss P., F.Z.S., M.B.O.U., Park Lodge, Hervey Road, Blackheath, S.E.3. (Orn.)

1926 Barnes, Mrs E. C., M.B.O.U., 117 Sloane Street, S.W.1. (Orn., Bot.)

1933 Bastian, Miss S., 49 Tavistock Square, W.C.1.

1932 Bastick, Miss M. E. S., 81 Gunterstone Road, Baron's Court, W.14. (Bot.)

1903 *Battley, Mrs, 47 Gordon Road, Ealing, W.5.

1932 Bayliss, C. V., 14 Conan Mansions, West Kensington, W.14. (Arch.)

1915 Bayne, Charles S., Room 303, Salisbury House, Salisbury Square, E.C.4. (Orn.)

1934 Becker-Bingham, E., 141 Half Moon Lane, Herne Hill, S.E.24. (Ent., Orn.)

1931 Becker-Bingham, N. F., 141 Half-Moon Lane, Herne Hill, S.E.24. (Orn., Ent.)

1934 Benham, Miss E. K., 1a Queensberry Place, S. Kensington, S.W.7. (Bot., Orn.)

1926 Benn, Miss A., 68 South Esk Road, Forest Gate, E.7. (Orn., Ent., Pl. G.)

1932 Bennett, Miss H., 415 Addison House, Grove End Road, St John's Wood, N.W.8. (Bot., R.)

1931 Benson, Mrs R. B., Dellfield, Featherbed Lane, Felden, Boxmoor, Herts. (Orn., Bot.)

1929 *Benson, R. B., M.A., F.R.E.S., F.Z.S., British Museum (Natural History), South Kensington, S.W.7. (Bot., Orn., Ent., esp. Sawflies)

1932 Bentham, C. H., Eothen, Epsom Lane, Tadworth, Surrey. (Orn.)

1932 Binley, Miss E. M., 197 Camberwell Grove, Camberwell, S.E.5. (Orn.)

1932 Blackmore, A., 6 Doughty Street, W.C.1. (Bot.)

1930 Blair, K. G., D.Sc., F.R.E.S., 120 Sunningfields Road, Hendon, N.W.4. (Ent.)

1934 Blower, Miss D., 33 Cartwright Gardens, W.C.1. (Bot., R.)
1933 Bomford, Miss N., 13 Theobalds Road, W.C.1. (Orn., R.)
1933 Bonus, Miss A., 28a Nevern Place, Earl's Court, S.W.5. (Orn.)
1933 Booth, H. P., B.A., 5 Snow Hill, E.C.1. (Orn.)
1933 Bowtell, J. J., 238 York Road, Southend-on-Sea, Essex.
1934 Boys, M. V., Ridgeway House, 73 Friern Lane, Friern Barnet, N.20. (Orn.)
1935 Bradshaw, G. W., 11 Elm Park Gardens, Hendon, N.W.4. (Arch.)
1932 Braithwaite, Miss D. M., 18 Warren Road, Chingford, E.4. (Orn.)
1902 Braithwaite, J. O., 18 Warren Road, Chingford, E.4. (Micr., Bot., Ent.)
1910 Braithwaite, Miss N. A., 18 Warren Road, Chingford, E.4.
1934 Brandenberger, H., May Cottage, Bounds Green Road, Bowes Park, N.11. (Orn.)
1933 Brazil, Miss F., Penby, Marshalswick Lane, St Albans, Herts. (Orn.)
1930 Brend, Wm. A., M.A., M.D., B.Sc., 14 Bolingbroke Grove, Battersea, S.W.11. (Arch., Orn., R.)
1934 Brine, C. R. T., 16 Risingholme Road, Wealdstone, Harrow, Middlesex. (Orn.)
1933 Bromley, Miss B., 25a Hampstead Hill Gardens, N.W.3. (Orn., R.)
1916 Brown, A., F.Z.S., 44 Ravensdale Road, Stamford Hill, N.16. (Orn., Arch., Geol., R.)
1932 Brown, Miss E. P., 22 Harrington Road, S. Kensington, S.W.7. (Orn.)
1933 Brown, Miss M. M., 104 Edenbridge Road, Bush Hill Park, Enfield, Middlesex. (Orn., Ent., Bot.)
1926 Browne, Miss C. H., 219 Harlesden Road, N.W.10. (R., Arch., Bot.)
1930 Burgham, Miss J. E., 32 Queen's Court, Hampstead Way, N.W.11. (Orn.)
1915 Burkill, H. J., M.A., F.R.G.S., 3 Newman's Court, Cornhill, E.C.3. (Pl. G., Lep., Bot., Geol., Orn., R.)
1933 Burton, M., M.Sc., F.Z.S., 25 Wellesley Road, Twickenham, Middlesex. (Porifera, Orn.)
1932 Caiger-Smith, Miss J., 23 Hornton Street, Kensington, W.8. (Orn.)
1928 *Campbell, J. M. H., M.D., 47 Arkwright Road, Hampstead, N.W.3. (Orn., R.)
1912 Capleton, A., The Hawthorns, Monkham's Drive, Woodford Green, Essex. (Mam., Orn., R., Bot.)
1926 Carr, Miss A. N., 7 Cambridge Road, Watford, Herts. (Orn., R.)
1933 Carter, J. S., Ph.D., M.Sc., F.I.C., 26 St John's Road, Golders Green, N.W.11. (Orn.)
1932 Castell, C. P., 52 Graham Road, Wimbledon, S.W.19. (Bot., Geol.)
1930 Chandler, S. E., D.Sc., F.L.S., 59 Anerley Park, Penge, S.E.20. (Bot.)

1931 Chester, Geo., 71 Holmdene Avenue, Headstone Lane, Harrow, Middlesex. (Bot.)

1931 Chubb, Sir Lawrence, 71 Eccleston Square, S.W.1. (R.)

1927 Clanchy, Mrs B. L., Trebah, Cranbourne Drive, Pinner, Middlesex. (R., Orn.)

1927 Clanchy, D. H., Trebah, Cranbourne Drive, Pinner, Middlesex. (R., Orn.)

1934 Clark, J. T., Five Oaks, Ninham's Wood, Farnborough, Kent. (Orn.)

1934 Clarke, Mrs M. A., 49 King's Road, Chingford, E.4. (Orn.)

1935 Clarke, Miss M. I., 178 Hoppers Road, Winchmore Hill, N.21. (Orn., Bot., Arch., R.)

1935 Clerk-Rattray, Miss E., 54 Basildon Court, Devonshire Place, W.1. (Bot., Orn.)

1927 Coates, Mrs E. F. M., 5 King's Garth, London Road, Forest Hill, S.E.23. (Orn.)

1927 Coates, J. B., 5 King's Garth, London Road, Forest Hill, S.E.23. (Orn.)

1929 Coates, Miss N. H., Woodhouse, Beaumont Road, Wimbledon Park, S.W.19. (Orn., Bot.)

1904 Cockayne, E. A., M.A., D.M., F.R.C.P., F.R.E.S., 116 Westbourne Terrace, Paddington, W.2. (Lep., Biol.)

1925 Cocksedge, W. C., 6 Aldersmead Road, Beckenham, Kent. (Orn., Arch., Bot.)

1929 Cocksedge, Mrs, 6 Aldersmead Road, Beckenham, Kent. (Arch., Bot.)

1907 Collenette, C. L., F.R.G.S., F.R.E.S., 112 The Terrace, Richmond, Surrey. (Ent., Orn., Bot.)

1932 Collenette, Mrs C. L., 112 The Terrace, Richmond, Surrey. (Orn.)

1933 Collett, G. W., 84 Jermyn Street, S.W.1. (Orn.)

1934 Collings, Mrs M., 36 Alfriston Road, Battersea, S.W.11. (Ent., R.)

1914 Connoll, Miss E., 98a High Road, S. Woodford, E.18. (Orn.)

1904 Cooke, Rev. P. H., M.A., 19 Hainthorpe Road, West Norwood, S.E.27. (Bot., Arch.)

1934 Coon, F. A. H., 7 Grenville Mansions, Hunter Street, W.C.1. (Orn.)

1933 Cooper, D. S., St Amen's, Alberm Gardens, Golders Green, N.W.11. (Arch.)

1928 Cox, Miss L. E., 72 Corringham Road, Golders Green, N.W.11. (Bot.)

1929 Cranfield, Mrs V., M.B.O.U., Little Tompsetts, Forest Row, Sussex. (Orn.)

1932 Creighton, Miss M. B., Penshurst, Deans Lane, Edgware, Middlesex. (Bot., Biol., Pl. G.)

1931 Crook, W. M., F.R.G.S., F.Z.S., 6 St Andrew's Place, Regent's Park, N.W.1. (Orn.)

1927 Cross-Rose, F., Kenmore, 20 Woolstone Road, Forest Hill, S.E.23. (Orn.)

1892 Culpin, Millais, M.D., F.R.C.S., 12 Park Village East, N.W.1. (Biol.)

1930 Cunningham, J., M.B.O.U., 3 Donegall Square East, Belfast. (Orn.)

1892 Cyriax, R. C., 23 Aberdare Gardens, West Hampstead, N.W.6. (Arch., Aryan question, Indo-European languages.)

1934 Dale, Miss G. R., 33 Cartwright Gardens, W.C.1. (Orn., R.).

1920 *Dallas, J. E. S., 83 Belsize Lane, Hampstead, N.W.3. (Orn., Bot., Arch.)

1925 *Dallas, Mrs Rosa F., 83 Belsize Lane, Hampstead, N.W.3. (Arch., Bot., Geol., Orn.)

1933 Davies, Miss E. B., Graffham, Petworth, Sussex. (Orn., Ent.)

1932 Davis, Miss R., 118 College Road, Dulwich, S.E.21. (Orn.)

1926 Deane, Miss M. B. H., c/o Westminster Bank Ltd., Gerrards Cross, Bucks. (Orn.)

1910 Dell, F. G., 55 Russell Road, Buckhurst Hill, Essex. (P. L., Micr., Orn.)

1932 Denham, R., M.B.O.U., 12 Weymouth Court, 1 Weymouth Street, W.1. (Orn., Ent.)

1933 Doran, F. H., Toddsbrook, Gt. Parndon, Harlow, Essex. (P. L.)

1928 Douglas-Smith, Miss K., 19 Thurlow Road, Hampstead, N.W.3. (Arch., Orn., Bot.)

1927 Druce, F., M.A., F.L.S., 60 Burton Court, Chelsea, S.W.3. (Bot.)

1927 Dunkerley, Rev. C. L., M.A., M.C., Iver Heath Rectory, Iver, Bucks. (Arch., Orn.)

1934 Dunkin, W. H., 95 Park Road, West Dulwich, S.E.21. (Orn.)

1934 Eales-White, Major J. C., T.D., F.R.E.S., F.Z.S., 88 Mount Ararat Road, Richmond, Surrey. (Orn., Ent., Arch.)

1928 Emberson, L. M., 49 Adela Avenue, West Barnes, New Malden, Surrey. (Orn.)

1927 English, Miss F., 8 Dorville Road, Ravenscourt Park, Hammersmith, W.6. (Orn., Bot., Arch., R.)

1934 Erroll, Miss D., 6 Upper Bedford Place, W.C.1. (Arch.)

1934 Evans, Miss M., 5 Putney Heath Lane, Putney, S.W.15. (Orn.)

1907 Eynon, Lewis, B.Sc., F.I.C., Fernleigh, Hall Lane, Upminster, Essex. (Chem.)

1925 Farish, Mrs, Corner House, 42 London Lane, Bromley, Kent.

1929 Finch, F. R., 9 Cheyne Row, Chelsea, S.W.3. (Orn.)

1927 Fisher, Mrs G. L., 80 Richmond Avenue, Hillingdon, Middlesex. (Arch.)

1934 Fitter, R. S. R., F.Z.S., Springfield, Ewell, Surrey. (Orn.)

1922 Forster, W. C., 34 Nevern Square, Earls Court, S.W.5. (Arch., R.)

1924 Foster, John B., B.A., 12 Conway Road, Wimbledon, S.W.20. (Orn.)

1935 Foster, Mrs J. B., 12 Conway Road, Wimbledon, S.W.20.

1933 Fowler, Miss L. M., 29 Powis Square, Notting Hill, W.11. (Orn., R.)

1928 Fox, G. J. B., 45 Stanwick Mansions, West Kensington, W.14. (Arch.)
1932 Franklin, A. W. L., 16 Airlie Gardens, Campden Hill, W.8. (Orn.)
1931 Frederick, Miss L. M., Avery Hill Training College, Eltham, S.E.9. (Orn., P. L.)
1931 Frohawk, F. W., M.B.O.U., F.R.E.S., Essendene, Cavendish Road, Sutton, Surrey. (Orn., Ent.)
1920 Gamble, Rev. H. J., M.A., 14 Frederica Road, Chingford, E.4. (Arch., Conch.)
1932 Garrido, A. S., 102 Clonmell Road, Tottenham, N.17. (Bot.)
1933 Gaster, H., 26a Lunham Road, Upper Norwood, S.E.19. (Bot., (Orn.)
1934 Gawthorne, A. H., 29 Nicoll Road, Harlesden, N.W.10.
1910 Gaze, W. E., 10 The Avenue, Highams Park, Chingford, E.4. (Lep., Bot., Chem.)
1933 Gerrard, H. P., 72 Hurstwood Road, Golders Green, N.W.11. (Bot., Geol.)
1909 Gerrard, V. L. G., Dunster House, Mincing Lane, E.C.3. (Lep.)
1934 Gibson, Miss J., 7 Pembridge Square, W.2. (Orn.)
1931 Gillett, J. D., F.R.E.S., 1 Beulah Road, Walthamstow, E.17. (Ent., Rept.)
1933 Gillham, E. H., 11 Ashburton Avenue, Addiscombe, Croydon, Surrey. (Orn.)
1910 Glegg, W. E., F.Z.S., M.B.O.U., 2 Burlington House, King's Road, Richmond, Surrey. (Orn.)
1934 Godwin, C., 11 Compton Terrace, N.1. (Orn.)
1934 Godwin, Mrs M. L., 11 Compton Terrace, N.1. (Orn.)
1929 Goodfellow, Miss L., Flat 3, 28 John Street, Gray's Inn, W.C.1. (Orn.)
1930 Goodwin-Vanner, R. E., F.R.S.A., F.R.H.S., Essex Villa, Guildford, Surrey. (Arch.)
1934 Gray, Miss J. W., 10 Canford Road, Clapham Common, S.W.11. (R., Bot.)
1927 Green, Roland, F.Z.S., Ruskin Studio, 7 New Court, Lincoln's Inn, W.C.2. (Orn.)
1899 *Greenwood, Prof. M., D.Sc., F.R.S., F.R.C.P., Hillcrest, Church Hill, Loughton, Essex. (Arch., Biol.)
1928 Griffin, Miss M., 22 Addison Way, Golders Green, N.W.11. (Orn.)
1920 Grinling, C. H., B.A., 71 Rectory Place, Woolwich, S.E.18. (Bot.)
1931 Gross, Dr S., 53 Hanover Gate Mansions, N.W.1. (Orn.)
1929 Gulliver, Miss M. D., 84 Endsleigh Gardens, Ilford, Essex. (Orn.)
1933 Gunton, L., Lahlglyn, Cross Path, Radlett, Herts. (Orn.)
1932 Hadfield, J., Denecroft, Heath Way, Effingham, Surrey. (Orn.)
1926 Hadfield, Mrs M. H., Denecroft, Heath Way, Effingham, Surrey. (Orn., Bot., R.)
1927 Hale, R. W., 6 Grendon Gardens, Barn Hill, Wembley Park, Middlesex. (Orn.)
1903 Hanbury, F. Capel, Westfield, Hoddesdon, Herts. (Lep.)

1906 Hanbury, Frederick J., F.L.S., F.R.E.S., Brockhurst, East Grinstead, Sussex. (Bot., Lep.)

1897 *Hanson, P. J., Burcroft, Village Road, Bush Hill Park, Enfield, Middlesex. (Orn., Arch.)

1927 Hardiman, Miss A., Hyron's Cottage, Woodside Lane, Amersham, Bucks. (R.)

1921 Hardiman, J. P., C.B.E., B.A., Hyron's Cottage, Woodside Lane, Amersham, Bucks. (Orn., R.)

1933 Harrison, Miss E. E., 129 Adelaide Road, Hampstead, N.W.3. (Orn., R.)

1931 Hartley, P. H. T., 29 Christchurch Park, Sutton, Surrey. (Orn.)

1930 Haworth, Miss F. M., B.Sc., F.Z.S., 9 Carmalt Gardens, Putney. S.W.15. (Zoo., Bot.)

1931 Hay, Mrs M., 38 Nella Road, Hammersmith, W.6. (Bot., Orn.)

1927 Hayward, Jno. F., B.Sc., 17 Heathcote Grove, Chingford, E.4. (Geol., Zoo.)

1933 Hearn, Miss K. L., 56 Meadvale Road, Ealing, W.5. (Orn., R.)

1902 Heath, G. H., M.A., 3 Bolney Court, Portsmouth Road, Surbiton, Surrey. (Lep.)

1934 Henderson, G. A., 12 Chepstow Crescent, Notting Hill, W.11. (Orn.)

1930 Hick, A. E., 68 Brockswood Lane, Welwyn Garden City, Herts.

1932 Higgins, T. T., F.R.C.S., 34 Harley Street, W.1. (Orn., Ent.)

1932 Holden, H., 71 Ballance Road, Homerton, E.9. (Fish and Fish Life.)

1932 Homes, R. C., 170 Manor Green Road, Epsom, Surrey. (Orn.)

1930 Hopkins, Graham, Byron Studios, Ltd., 8 Farringdon Avenue, E.C.4. (Orn.)

1919 Horn, P. W., Stepney Borough Museum, 77 Whitechapel High Street, E.1. (Orn., Aqua.)

1905 Hornblower, A. B., 91 Queen's Road, Buckhurst Hill, Essex. (Api., Arch., Orn., R.)

1931 *Hose, Miss M. M., 22 The Avenue, Bickley, Kent. (Orn., Bot., Ent., Pl. G.)

1933 House, F. C., 3a Chalcot Gardens, England's Lane, N.W.3. (Orn., R.)

1910 Howard, D. Lloyd, J.P., F.I.C., F.C.S., Pettits Hall, Chigwell, Essex. (Chem.)

1927 Hussey, H. J., 416 High Road, Leyton, E.10. (Arch., Orn., R.)

1930 Hutton, Miss R. E., 34 Thorneyhedge Road, Gunnersbury, W.4. (Bot., Zoo.)

1935 Hyde, J. H., 52 Tangier Road, Richmond, Surrey. (Orn., Bot.)

1934 Jackson, Miss N., 43 Casselden Road, Harlesden, N.W.10. (Biol.)

1932 James, Mrs R. E., Brabazon House, Moreton Street, S.W.1. (Ent., Arch.)

1927 Jeffery, H. J., A.R.C.S., F.L.S., 14 Coppetts Road, Muswell Hill, N.10. (Bot.)

1926 Jehan, Kenneth C., King's Arms Hotel, Amersham, Bucks. (Bot., Arch.)

1929 Johns, Miss F. E., 40 The Ridgeway, Kenton, Harrow, Middlesex. (Orn., R., Bot.)
1933 Johns, Miss L. J., 87 Morley Hill, Enfield, Middlesex. (Arch., Bot., Orn., R.)
1931 Johnston, F. J., 19 Connaught Avenue, Chingford, E.4. (Orn.)
1932 Jones, Rodney R. M., Tros-yr-Afon, Penmon, Anglesey. (Orn.)
1932 Joy, N. H., M.R.C.S., L.R.C.P., M.B.O.U., F.R.E.S., 271 Kilburn Lane, North Kensington, W.10. (Orn., Col.)
1899 *Kaye, W. J., F.R.E.S., Chantrey Lodge, Longdown, Guildford, Surrey. (Lep.)
1934 Kerr, Mrs H. M. Rait-, c/o Lt.-Col. Rait-Kerr, D.S.O., M.C., R.E., R.E. Board, Regent's Park Barracks, N.W.1. (Orn., Arch.)
1930 King, Miss C. A., M.D., 152 Harley Street, W.1. (Orn., Arch.)
1929 King, E. L., Holkham, 11 Downs View, Isleworth, Middlesex. (Orn., Bot., R.)
1932 King, Mrs E. L., 11 Downs View, Isleworth, Middlesex. (Orn., Bot., R.)
1932 Kirkness, Miss D. S., F.Z.S., 6 Mill Lane, West Hampstead, N.W.6. (Zoo., Bot., Arch.)
1931 Lack, C., 31 Marlborough Place, St John's Wood, N.W.8. (Orn.)
1928 Lack, H. L., M.D., F.R.C.S., 31 Marlborough Place, St John's Wood, N.W.8. (Orn.)
1927 Lane, J. H., 571/3 Commercial Road, E.1. (Chem.)
1932 La Touche, J. N. Digues, M.Inst.C.E., Woodcroft, Baldwin's Hill, Loughton, Essex.
1932 Le Cocq, L., 17 Highbury Hill, N.5. (R., Orn.)
1930 Ledlie, R. C. B., M.B., B.Sc., F.R.C.S., 64 Harley Street, W.1. (Bot.)
1928 Lee, Miss M., 22 Addison Way, Golders Green, N.W.11. (Orn.)
1928 Leech, T., 33 First Avenue, Bush Hill Park, Enfield, Middlesex. (Bot., Orn.)
1933 Leith, R. F., Beaumont, Amersham, Bucks. (Orn., Arch.)
1922 Lemon, Mrs M. L., M.B.E., J.P., F.Z.S., M.B.O.U., Hillcrest, Redhill, Surrey. (Orn.)
1919 Leyton Public Libraries, per the Librarian (E. Sydney, F.L.A.), Central Library, Leyton, E.10.
1927 Lister, Miss G., F.L.S., 871 High Road, Leytonstone, E.11. (Orn., Bot.)
1926 *Littlejohn, H. A., 93 Carlyle Road, Manor Park, E.12. (Orn., Bot.)
1934 Locket, G. H., M.A., M.Sc., West Hill House, Harrow, Middlesex. (Ent., Eco.)
1933 Lockyer, T. Norman, LL.B. (Lond.), 12 Wimborne Gardens, West Ealing, W.13. (Arch., Orn., R.)
1926 *Longfield, Miss C. E., F.R.G.S., F.R.E.S., F.Z.S., M.B.O.U., 20 Pont Street, S.W.1. (Orn., Ent., Bot.)
1930 *Low, G. Carmichael, M.A., M.D., F.R.C.P., F.Z.S., M.B.O.U., 86 Brook Street, Grosvenor Square, W.1. (Orn., Zoo.)

1933 MacDonald, Malcolm, J., M.P., 10 Downing Street, Whitehall, S.W.1. (Orn.)

1932 McInnes, Miss J., 3 The Close, Carshalton Beeches, Surrey. (Orn., Bot.)

1911 MacIntosh, Miss I. S., 3 Mayfield Road, Chingford, E.4. (Bot.)

1911 MacIntosh, Miss J. D., 3 Mayfield Road, Chingford, E.4. (Bot.)

1929 Mackay, Helen M. M., M.D., F.R.C.P., 28 John Street, Bedford Row, W.C.1. (Orn.)

1931 McKittrick, Thos. H., Jun., M.B.O.U., Great Surries, Ashurst Wood, East Grinstead, Sussex. (Orn.)

1932 McKittrick, Mrs T. H., Jun., Great Surries, Ashurst Wood, East Grinstead, Sussex. (Orn.)

1932 Mackworth-Praed, C. W., F.R.G.S., F.Z.S., F.R.E.S., M.B.O.U., 51 Onslow Gardens, South Kensington, S.W.7. (Orn., Ent.)

1933 Maclaine, Miss E., Ardnagreana, Roundwood Park, Harpenden, Herts.

1923 *Macpherson, A. Holte, F.Z.S., 21 Campden Hill Square, W.8. (Orn.)

1932 Macqueen, Miss R. W. E., 252 Camden Road, N.W.1 (Arch., Orn., R.)

1929 Maltby, Miss J., Duncliffe, 157 Copers Cope Road, Beckenham, Kent. (Orn., Bot., P. L.)

1923 Mann, E., 10 Frankland Road, S. Chingford, E.4. (P. L., Orn.)

1934 Mann, F. R., M.C., Noreena, Ham Common, Surrey. (Orn.)

1934 Manser, G. E., 51 Barnmead Road, Beckenham, Kent. (Orn., Bot.)

1934 *Marchant, Miss R., 10 Taviton Street, Gordon Square, W.C.1. (Bot.)

1929 Marshall, John G., Rye House, Green Lane, New Eltham, S.E.9. (Orn.)

1932 Mason, C. T., 34 East Lane, Wembley, Middlesex. (Ent., Arch.)

1933 Maund, Miss A. N., 32 Chardmore Road, Stoke Newington, N.16.

1935 Melluish, W. D., 17 Muswell Hill, N.10. (Orn.)

1931 Millburn, Miss F. C., 62 Herne Hill, S.E.24. (Orn.)

1926 Mitchell, Miss E. A., 52 Parkfield Road, S. Harrow, Middlesex. (Bot.)

1932 Mitchell, Miss M. I., 26 Burlington Road, Osterley, Middlesex. (Bot., Orn.)

1934 Moore, F., 122 Sloane Street, S.W.1. (Arch.)

1934 Morgan, D. A. T., The Garden Cottage, Gorhambury, St Albans, Herts. (Orn., R.)

1934 Munro, Miss M., Furzedown Training College, Welham Road, Tooting, S.W.17. (Orn.)

1928 Murphy, Miss H., 43 Stafford Row, Bow, E.3. (Bot., Orn., Ent., Arch.)

1934 Newcombe, Miss P. M., 52 Northway, Golders Green, N.W.11. (Orn., Bot., R.)

1926 Niblett, Montague, 10 Greenway, Wallington, Surrey. (Ent., Pl. G.)
1893 *Nicholson, Miss B., Rotherwood, 49 Danecourt Road, Parkstone, Dorset. (Bot.)
1934 Nicholson, E. M., 61 Marsham Street, S.W.1. (Orn.)
1934 Nicholson, E. T., 32 Fairview Close, Higham Hill, Walthamstow, E.17. (Orn.)
1932 Nicholson, G., Homeland, Basildon Road, Laindon, Essex. (Orn.)
1928 Noel, Miss E. F., 37 Burnham Court, W.2. (Bot., Orn., R., Ent., Pl. G.)
1925 Norman, Cecil, F.L.S., 55 Eccleston Square, S.W.1. (Bot., Orn.)
1934 Norris, C. A., 15 Hazlewell Road, Putney, S.W.15. (Orn.)
1933 Oke, E. E., Tweenways, The Mount, Leatherhead, Surrey. (Orn., Ent.)
1926 *Oldham, Charles, F.L.S., F.Z.S., M.B.O.U., The Bollin, Shrublands Road, Berkhamsted, Herts. (Bot., Orn., Conch.)
1931 Overton, Mrs W., 44 Warren Road, Chingford, E.4. (Orn., Bot.)
1929 Page, Miss M. M., 19 Hainthorpe Road, West Norwood, S.E.27. (Orn.)
1924 Palmer, Miss Fanny, 8 Ulundi Road, Blackheath, S.E.3. (Arch.)
1925 *Parmenter, L., 94 Fairlands Avenue, Thornton Heath, Surrey. (Bot., Ent. (esp. Dipt.), Orn., Pl. G.)
1921 Parsons, S. T. T., 89 Holland Park, Notting Hill, W.11. (Orn.)
1933 Paulson, C. W. G., M.B.O.U., 3 Belsize Grove, Hampstead, N.W.3. (Orn.)
1922 Payne, C. H., 13 Kidderpore Gardens, Hampstead, N.W.3. (Orn., Arch.)
1930 Payne, E. D. B., 32 Friern Watch Avenue, North Finchley, N.12. (Orn.)
1923 Payne, E. M., Tilgate, Long Lane, Hillingdon, Middlesex. (Bot., Orn.)
1923 Payne, L. G., 22 Marksbury Avenue, Richmond, Surrey. (Bot.)
1935 Pearse, Miss E., 21 Ruskin Walk, Home Hill, S.E.24. (Bot., Orn.)
1934 Pearson, Miss D. M., St Gabriel's College, Cormont Road, Camberwell, S.E.5. (Orn., Pond-life, Bot., Pl. G.)
1932 Pedler, E. G., 76 Queen's Gate, S. Kensington, S.W.7. (Orn.)
1922 Pethen, R. W., 108 Northwold Road, Upper Clapton, E.5. (Orn., Ent.)
1931 Pethen, Miss Rita W., 108 Northwold Road, Upper Clapton, E.5. (Orn., Rept.)
1929 Phelan, T. C. E., Sarum, St Andrews Road, Coulsdon, Surrey. (Orn., Bot.)
1932 Phillips, Mrs F. M., 9 Sylvan Hill, Upper Norwood, S.E.19. (Orn.)
1932 Phillips, H. H., M.R.C.S., L.R.C.P., 9 Sylvan Hill, Upper Norwood, S.E.19. (Orn.)
1933 Ping, Miss M. L., 47 Willifield Way, Hampstead Garden Suburb, N.W.11. (Orn., Bot.)

1931 Pinniger, E. B., 19 Endlebury Road, Chingford, E.4. (Ent., Orn.)
1927 Piper, Miss G. E. M., 12 Elms Road, Clapham, S.W.4. (Orn.)
1925 Poock, Sydney G., 17 Green Moor Link, Winchmore Hill, N.21. (Orn.)
1928 Poole, A. C., 42 The Mall, Ealing, W.5. (Orn., Bot.)
1933 Popple, Miss W. N., 11 Pemberton Gardens, Upper Holloway, N.19. (Orn., R., P. L.)
1910 Pratt, W. B., 10 Lion Gate Gardens, Richmond, Surrey. (Lep.)
1892 Prout, L. B., F.R.E.S., 84 Albert Road, Dalston, E.8. (Lep., Biol.)
1929 Pugh, Miss E. C., The Hill Farm, Stockbury, Kent. (Orn.)
1929 Purey-Cust, Miss Peggy, 49 West Hill, Highgate, N.6.
1927 Raikes, Miss D., 24 Launceston Place, Kensington, W.8. (Arch., Bot., Orn.)
1926 Rankin, The Hon. Lady, Royal Court Hotel, Sloane Square, S.W.1. (Orn.)
1934 Ratcliff, P. W., 12 Barnmead Road, Beckenham, Kent. (Orn., Bot.)
1934 *Ray, Miss T., 10 Taviton Street, Gordon Square, W.C.1. (Bot.)
1929 Reed, Miss J. B., 29 Thornton Hill, Wimbledon, S.W.19. (Orn.)
1930 Reeve, Miss E. A., The Penn Club, 9 Tavistock Square, W.C.1. (Bot., Orn., Ent., R.)
1929 Rew, Miss M., 23 Chester Terrace, Regents Park, N.W.1. (Orn.)
1925 Richardson, Arthur, Iona, London Colney, Herts. (Orn., Ent.)
1928 Richardson, G., 74 Tulse Hill, Brixton, S.W.2. (Bot.)
1892 Robbins, R. W., Bullens Lee, Pains Hill, Limpsfield, Surrey. (Bot., Lep., Orn., Arch., Pl. G.)
1934 Roberts, J. E., B.Sc., Fairhaven, Bond Road, Surbiton, Surrey. (Orn.)
1933 Robinson, G. F. B., Shenley, Manor Green Road, Epsom, Surrey. (Orn.)
1933 Robinson, Mrs M. L., Shenley, Manor Green Road, Epsom, Surrey. (Bot., R.)
1932 Rosevear, D. R., Conservator of Forests, Benin City, Nigeria. (Ent., Bot.)
1910 *Ross, J., 23 College Gardens, Chingford, E.4. (Bot., Pl. G., Orn.)
1932 Rotter, Miss G. H., Penmon, 2 Park Hill Road, Sidcup, Kent. (Bot., Arch.)
1935 Rowan, J. D., 65 Haydn Avenue, Purley, Surrey. (Orn.)
1931 Rowberry, E. C., 7 Burlington Road, Osterley, Middlesex. (Orn.)
1933 Rush, Miss M. M., 22 Hill Rise, Hampstead Garden Suburb, N.W.11. (Orn., Bot., R.)
1932 Ryan, A. P., 19 Barnsall Street, Chelsea, S.W.3.
1929 Sampson, E. S., 60 Alexandra Road, Epsom, Surrey. (Orn.)
1933 Saunders, Miss A. M., St Ann's, Wray Park Road, Reigate, Surrey. (Bot.)
1930 Scudamore, Miss M., 23 Marchmont Road, Richmond Hill, Surrey.

1932 Seton, Sir Malcolm C. C., K.C.B., M.B.O.U., 26 Upper Park Road, Hampstead, N.W.3. (Orn.)
1935 Shill, W. A., 199 Lower Clapton Road, Clapton, E.5. (Bot.)
1929 Short, G. R. A., 36 Parkside Drive, Edgware, Middlesex. (Bot., Micr., Pharmacognosy.)
1892 Simes, J. A., O.B.E., F.R.E.S., Kingsley Cottage, Queen's Road, Loughton, Essex. (Ent.)
1911 Simpson, W., M.B., B.S., D.P.H., The Ivies, 3 Adelaide Road, Andover, Hants. (Arch., Bot., Lep., Pl. G., R.)
1934 Skilton, H. W., 9 Stillness Road, Forest Hill, S.E.23. (Orn.)
1933 Skrimshire, Miss E. F., 4 High Street, Highgate Village, N.6. (Arch., R.)
1933 Skrimshire, E. H. N., F.R.A.I., F.Z.S., 4 High Street, Highgate Village, N. 6. (Orn., Arch., R.)
1892 Smith, A. C., 18 Mornington Road, Woodford Green, Essex. (Ent.)
1935 Smith, Miss A. J., 26 Newman Street, W.1. (Orn.)
1892 Smith, C. B., F.R.E.S., 103 Wood Vale, Highgate, N.10. (Lep.)
1929 Smith, Mrs H. K., 103 Wood Vale, Highgate, N.10.
1933 Smith, Miss L., 17 Highcliffe Gardens, Ilford, Essex. (Arch.)
1934 Smith, R. McKenzie, 124 King's Avenue, Woodford Green, Essex. (Orn.)
1927 Solly, Miss B. N., 12 Moreton Gardens, Old Brompton Road, Earl's Court, S.W.5. (Orn.)
1927 Southern, H. N., 67 Holden Road, North Finchley, N.12. (Orn.)
1934 Sparger, Miss C., Flat No. 5, 31 Nottingham Place, W.1. (Arch., Bot., Ent., Orn., Pl. G., R.)
1928 Sparkes, Mrs T., 23 Drayton Road, West Ealing, W.13. (Arch., Bot., R.)
1922 Spooner, Herman, 21 Musgrave Crescent, Walham Green, S.W.6. (Orn., Bot., Arch., R.)
1933 Stacy, W. L., 126 Fairway, Southgate, N.14. (Orn.)
1934 Statham, Miss M. R., The Willesden General Hospital, N.W.1. (Arch., R.)
1934 Steel, W. O., 16 Upsdell Avenue, Palmers Green, N.13. (Ent., Pl. G.)
1931 Story, P., 8 Alvanley Gardens, Kilburn, N.W.6. (Orn.)
1920 *Stowell, H. S., L.R.I.B.A., Pirbright, Torland Road, Hartley, Plymouth. (Arch.)
1927 Swain, A. M., Ledburn, Crescent Drive, Petts Wood, Orpington, Kent. (Orn.)
1930 Swayne, F. G., M.A. (Cantab.), M.B., M.B.O.U., Beulah Spa Hotel, Norwood, S.E.19. (Orn.)
1935 Tams, W. H. T., F.R.E.S., British Museum (Natural History), Cromwell Road, S.W.7. (Ent.)
1930 Tassart, Miss O. F., 36 Alfriston Road, Clapham Common, S.W.11. (Arch., Orn.)
1920 Thomas, Mrs G. E., 9 Talbot Road, Isleworth, Middlesex. (Orn., R.)

1935 Thompson, Miss F., Ludbrook, Green Lanes, Winchmore Hill, N.21. (Arch., R.)
1927 Thresher, Miss G. A., 34 Henrietta Street, W.C.2. (Arch., Bot., Ent., Pl. G., R.)
1932 Todd, Miss G. E., 17 Queensborough Terrace, W.2. (Bot., Orn.)
1932 Tomlinson, A. E., 13 Danecroft Road, Herne Hill, S.E.24. (Orn.)
1934 Tours, H., 7 Briar Road, Kenton, Middlesex.
1931 Tours, H. J., 8 Harvard Road, Gunnersbury, W.4.
1892 Tremayne, L. J., F.Z.S., Grand Buildings, Trafalgar Square, W.C.2. (Bot., Lep., Arch., Pl. G., Orn., R.)
1908 Tremayne, Mrs, Grand Buildings, Trafalgar Square, W.C.2. (Orn., Arch., Bot., R.)
1923 Trench, R. H., Hall Barn Cottage, Beaconsfield, Bucks. (Orn., R.)
1925 Tucker, Leslie F., Danebury, The Chine, Grange Park, Winchmore Hill, N.21. (Lep.)
1935 Turnham, R., 10 Salisbury Road, Dalston, E.8. (Orn.)
1933 Underhill, D. G., Broadway, Landscape Road, Warlingham, Surrey. (Ent.)
1931 Underwood, R. A., Avila, Eskdale Avenue, Chesham, Bucks. (Orn.)
1927 Veitch, Miss A., 79 Shirley Gardens, Faircross, Barking, Essex. (Arch.)
1929 Venour, Miss D., 20 Burdenshott Avenue, Richmond, Surrey. (Orn.)
1933 Vincent, W. G., 154 Winchester Road, Hale End, E.4. (Orn.)
1927 Waller, G., 88 Beckenham Road, Beckenham, Kent. (Orn.)
1931 Wallis, Miss P. I., 59 East Sheen Avenue, East Sheen, S.W.14. (Orn.)
1925 Ward, Bernard T., 24 Long Deacon Road, Chingford, E.4. (Arch., Bot., Ent., Orn., Pl. G., R.)
1933 Ward, Miss I. W., 11 The Close, Old Southgate, N.14. (Orn., Icht.)
1933 Ward, Margaret, M.B., Ch.B., Threeways, Jordans, Beaconsfield, Bucks. (Arch., Orn.)
1920 Watkins, Miss H., 12 Connaught Avenue, East Sheen, S.W.14. Orn., R., Bot.)
1933 Watson, C. L., British Overseas Bank, Ltd., 33 Gracechurch Street, E.C.3. (Ent., Orn.)
1926 Watt, Hugh Boyd, 90 Parliament Hill Mansions, Lissenden Gardens, N.W.5. (Orn., Eco., Zoo., Bot.)
1925 *Watt, Mrs Winifred Boyd, 90 Parliament Hill Mansions, Lissenden Gardens, N.W.5. (Orn.)
1932 Wattson, Miss C. M., Fairholt, Oakleigh Avenue, Whetstone, N.20. (Orn., Ent.)
1893 Wattson, R. Marshman, 33 Gerard Road, Harrow, Middlesex. (Arch., Ent.)
1928 Weeks, Claude, 3 Stanhope Gardens, Highgate, N.6. (Orn.)
1931 Wheeler, Miss E. M., 28 Hardy Road, Blackheath, S.E.3. (Orn., Bot.)

1929 Wheeler, E. P., F.R.I.B.A., Park Lodge, Park Road, Sutton, Surrey. (Orn., Arch.)
1935 Whitaker, F. O., 51 Grosvenor Avenue, Carshalton, Surrey. (Bot., Pl. G., R.)
1930 Whitbread, R., 6 Meadow Way, Weald Village, Harrow, Middlesex. (Arch.)
1932 Whitbread, Miss W. H. E., 6 Meadow Way, Weald Village, Harrow, Middlesex.
1933 White, E. I., Ph.D., F.G.S., Dept. of Geology, British Museum (Natural History), S. Kensington, S.W.7. (Palaeontology, Orn.)
1935 Whitehouse, F. W., Wayside East, Oak Road, Harold Wood, Essex. (Bot.)
1934 Wightman, J. S., 170 Manor Green Road, Epsom, Surrey. (Orn.)
1931 Wilkinson, Miss M. O., Cartref, 157 Hale Drive, Mill Hill, N.W.7.
1931 Williams, Miss J. G., 25 Paget Road, Ilford, Essex. (R.)
1933 Williams, T. Lloyd, M.A., 6 Howden Road, South Norwood Hill, S.E. 25.
1931 Wills, Miss A. M., 294 Footscray Road, New Eltham, S.E.9. (R., Arch.)
1931 Wing, J. S., 21 Cheyne Gardens, Chelsea, S.W.3. (Orn.)
1929 Witherby, H. F., M.B.E., H.F.A.O.U., F.Z.S., M.B.O.U., 12 Chesterford Gardens, Hampstead, N.W.3. (Orn.)
1922 Wright, W. A., 31 Beresford Road, Chingford, E.4. (Orn.)

Branch Associates:

1925 Boardman, Stuart, 109 Monkham's Avenue, Woodford Green, Essex. (Orn., Ent.)
1930 Brightman, Miss A., St Osyth, Hampstead Road, Upper Walthamstow, E.17.
1928 Culpin, Miss N., 39 Pretoria Road, Chingford, E.4.
1922 Dupère, Miss Frances, 87 Station Road, Chingford, E.4.
1926 Gamble, Mrs H. M. A., 9 Park Hill Road, Chingford, E.4.
1927 Gamble, Miss E., 9 Park Hill Road, Chingford, E.4.
1933 Haines, Miss C. R., 21 Gordon Road, Chingford, E.4.
1920 Hart, Miss H., The Green Farm, Chingford, E.4.
1933 Hayward, P. D., Forest Villa, Staples Road, Loughton, Essex. (Orn.)
1927 Holland, H., 27 Victoria Road, Chingford, E.4.
1933 Jeffery, Miss P., 64 Larkswood Road, Chingford, E.4.
1925 Mancell, W. A., 6 Oak Hill Parade, Woodford Green, Essex. (Orn.)
1911 Mathieson, Miss M. L., 7 Crescent Road, Chingford, E.4. (Meteorology.)
1931 Overton, G. H., 44 Warren Road, Chingford, E.4. (Orn.)
1930 Penwarden, Miss C., 39 The Avenue, Chingford, E.4.
1935 Pettit, H. A., 197 Billet Road, Walthamstow, E.17.
1927 Pettit, Mrs S., Colham, 2 Victoria Road, Chingford, E.4.
1927 Pettit, S., Colham, 2 Victoria Road, Chingford, E.4.

1932 Pinniger, Mrs, 19 Endlebury Road, Chingford, E.4.
1934 Prout, H. L., 17 Horsley Road, Chingford, E.4.
1934 Prout, Mrs H. L., 17 Horsley Road, Chingford, E.4.
1932 Robson, Miss M., 27 Victoria Road, Chingford, E.4.
1925 Saul, H., 68 Mornington Road, Chingford, E.4.
1931 Saunders, M. E., 57 Beresford Road, Chingford, E.4. (Bot.)
1930 Shadforth, Miss G. H., 35 Victoria Road, Chingford, E.4.
1930 Shadforth, W. R., 35 Victoria Road, Chingford, E.4.
1903 Stevenson, H. E., F.C.S., 24 Wilton Grove, Wimbledon, S.W.19. (Chem.)
1927 Stopps, W. E., 50 Gordon Road, Chingford, E.4.
1927 Unwin, Mrs E., 7 Mount View Road, Chingford, E.4.
1927 Wilkes, Miss L., 28 Woodland Road, Chingford, E.4.
1932 Youé, Miss D., 46 Station Road, Chingford, E.4.
1929 Youé, Miss E., 46 Station Road, Chingford, E.4. (Bot.)

Country and School Associates:

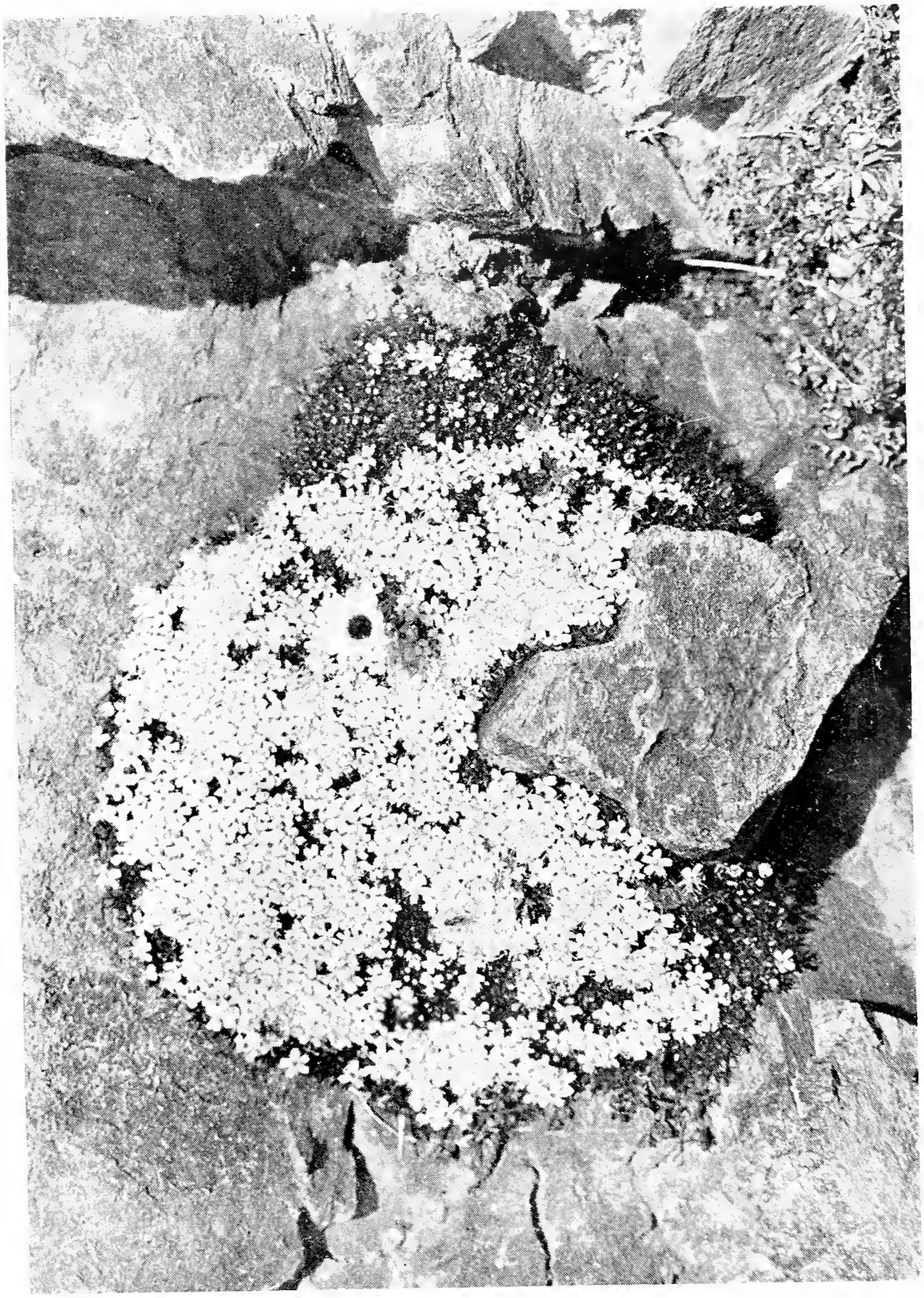
1929 Acland, Miss C. M., M.B.O.U., Walwood, Banstead, Surrey. (Orn.)
1933 Ashdown, F. S., M.I.H., The Senior School, De La Warr Road, East Grinstead, Sussex. (Pl. G.)
1931 Basden, E. B., Budleigh, Farnham Royal, nr. Slough, Bucks. (Dipt., Bot.)
1935 Bell, Fairfax, M.A., B.M.B.Ch., M.R.C.S., L.R.C.P., Africa. (Ent., Orn.)
1920 Biddiscombe, W., 3 Broadway, Woking, Surrey. (Bot.)
1934 Biddlecombe, P. E., Sunnyside, Hill View Road, Orpington, Kent. (Arch.)
1896 Bishop, E. B., Lindfield, Marshall Road, Godalming, Surrey. (Bot., Arch., Pl. G., Orn.)
1933 Bonnett, Mrs E. G., The Leper Hospital, Perulia, Behar, India. (Arch., Bot., R.)
1908 Bostock, E. D., Oulton Cross, Stone, Staffordshire. (Lep.)
1932 Charles, Capt. R., Riplingham, The Circle, Clarendon Road, Southsea, Hants. (Marine Biol.)
1924 Collins, Miss Florence, School of Gardening, Clapham, near Worthing, Sussex. (Orn.)
1929 Correspondent, The, Natural History Society, St John's School, Leatherhead, Surrey.
1928 Cuningham, Miss D. W. M., c/o Major Estell, St Anthony, Praa Sands, Marazion, Cornwall. (Bot., Ent., Orn., Pl. G.)
1934 Elton, Rt. Hon. Lord, M.P., Greenways, Manor Road, Old Headington, Oxford. (Orn., Arch., Bot.)
1934 Elton, Lady, Greenways, Manor Road, Old Headington, Oxford. (Orn., Arch., Bot.)
1933 Ferrier, Miss J. M., F.Z.S., M.B.O.U., A.A.O.U., Hemsby Hall, Hemsby, Norfolk. (Orn.)
1930 Foster, Mrs S., 12 Victoria Road, Bridgnorth, Shropshire. (Orn.)
1932 Frazer, A. D., M.B., Ch.B., 74 St James Street, Nottingham. (Pl. G.)

1933 Gibson, Miss E. M., Shirley, Station Road, Petersfield, Hants. (Lep., Orn.)
1928 Harrisson, T. H., M.B.O.U., The Chase, Weeke, Winchester, Hants. (Orn.)
1927 Harvey, F. B., The Nook, Rhodes Minnis, Elham, nr. Canterbury, Kent.
1927 Harvey, J. H., Suisse Pension Almasie, P.O.B. 662, Jerusalem, Palestine. (Bot.)
1926 Hibbert-Ware, Miss A., F.L.S., M.B.O.U., Hilary, Girton, Cambridge. (Orn.)
1931 Hine, Mrs S. McDougall, Mayfield, Meopham, Kent. (Orn.)
1915 Hopkins, Prof. Sir F. Gowland, M.A., M.D., P.R.S., F.R.C.P., 71 Grange Road, Cambridge. (Biochemistry.)
1934 Johnston, J. Hope, Sidney Sussex College, Cambridge. (Orn., Ent.)
1931 Kent, Mrs J. Barton, Sea Spray, Selsey on Sea, Sussex. (Arch.)
1935 Leatherdale, D., Fash, Hawks Hill, Leatherhead, Surrey. (Geol., Bot., Ent., Pl. G., R.)
1934 Mackenzie, P. Z., 8 The Grove, Highgate, N.6. (Orn.)
1931 Maud, F. H., St Catherine's, Wind Hill, Bishop's Stortford, Herts. (Arch.)
1931 Maud, Mrs F. H., St Catherine's, Wind Hill, Bishop's Stortford, Herts. (Arch.)
1927 Mellows, C., M.A., F.R.E.S., Alliott House, Bishop's Stortford College, Bishop's Stortford, Herts. (Bot., Ent.)
1902 Miller, Miss E., The Croft, Rainsford Lane, Chelmsford, Essex. (Lep.)
1905 Moore, J. W., F.R.E.S., Middleton Dene, 151 Middleton Hall Road, King's Norton, Birmingham. (Exotic Lep.)
1930 Nicholson, C., Nansgwithick, Tresillian, Truro, Cornwall. (Ent., Bot., Orn., Ast.)
1932 Offen, Miss E., Ulva, Scott's Hill, Southminster, Essex. (Orn.)
1932 Oldfield, Miss A. R. Dresden, 259 Lea Bridge Road, Leyton, E.10. (Arch., Bot.)
1918 Pike, Oliver G., F.Z.S., M.B.O.U., F.R.P.S., The Bungalow, Leighton Buzzard, Beds. (Orn.)
1932 Raisin, Miss A. M., Marlings, Crowborough Road, Nutley, Sussex. (Orn., Bot.)
1933 Riddell, Mrs H. E., Codnor, Derby.
1924 Ridyard, Mrs M. E., Codnor, Derby.
1933 Short, H. G., c/o Mrs Dodd, Berrie Mound, Maryhill Road, Runcorn, Cheshire. (Ent., Api.)
1931 Spittle, R. J., Alaska, Farnham Road, Farnham Royal, Slough, Bucks. (Col., Orn.)
1914 Studd, E. F., M.A., B.C.L., F.R.E.S., Exeleigh, Starcross, Devon. (Lep.)
1933 Sulman, J. E., 38 Leaside Avenue, Muswell Hill, N.10. (Orn.)
1928 Talbot, G., F.R.E.S., Mon Plaisir, Wormley, Surrey. (Lep.)
1934 Thomson, W. W., 2 View Road, Highgate, N.6. (Orn.)

1924 Welch, R. J., M.Sc., M.R.I.A., 49 Lonsdale Street, Belfast.
1913 Wilde, Mrs C. L., Lindfield, Marshall Road, Godalming, Surrey. (Arch., Bot., Pl. G.)
1929 Willcox, P. H., Emmanuel College, Cambridge. (Ent., Bot.)
1932 Williams, A. R., Barclay's Bank (D.C. & O), Jerusalem, Palestine. (Orn.)

NOTE.—The following abbreviations are used in the above lists:—Api., Apiculture; Aqua., Aquaria; Arch., Archaeology; Ast., Astronomy; Biol., Biology; Bot., Botany; Chem., Chemistry; Col., Coleoptera; Conch., Conchology; Dipt., Diptera; Eco., Ecology; Ent., Entomology; Ethn., Ethnology; Geol., Geology; Hem., Hemiptera; Hym., Hymenoptera; Icht., Ichthyology; Lep., Lepidoptera; Mam., Mammalogy; Micr., Microscopy; Neur., Neuroptera; Orn., Ornithology; Orth., Orthoptera; Ool., Oology; Pl. G., Plant Galls; P. L., Pond Life; R., Ramblers' Section; Rep., Reptilia; Zoo., Zoology.

*Signifies a Life Member.



MOSS CAMPION (*Silene acaulis* L.).

Photograph by John E. S. Dallas.

Plant Life in the Alps.

By John E. S. Dallas.

Presidential Address delivered 4th December 1934.

MUCH has been written on the subject of Alpine plants, in text books and floras, and I cannot claim any originality for the remarks in my paper. In various visits to the Alps of Central Europe, I have been able to observe for myself something of what has been written, and must express my indebtedness both to the books and to friends for assistance willingly given.

When we consider that a plant of the Glacial Buttercup has been found in the Alps as high as 14,000 feet above sea-level, we at once realize that the life of Alpine flowers is carried on under conditions differing widely from those of the low-lying country with which we are more familiar. Let us first of all examine the various changes which take place in atmospheric and weather conditions as we go from the lowlands to the tops of the mountains.

The rainfall, generally speaking, increases as we rise, but beyond a certain altitude, viz., 8000 feet, it begins to decrease again. The average temperature becomes lower as we ascend, but, more important, the extremes of heat and cold are much greater. Barometric pressure also gets less as we go up, and at 10,000 feet the air exerts only two-thirds of the pressure at sea-level. Then again, the wind is a considerable factor, and speaking generally its effects are greater on the exposed higher slopes of the mountains than in the valleys and plains. Intensity of sunlight is another important item. As we go up a mountain, the amount of water vapour in the air decreases, and since this vapour absorbs the sun's rays, the intensity of the light becomes greater as we get higher; and, as we know, sunlight plays an essential part in the life of flowering plants.

Perhaps most important of all the changes is the shortness of the flowering season in the high mountains. We know that in the Alps at 4000 feet upwards the whole country is under deep snow for nearly six months of the year and during that time plant life has to take a long enforced rest. I shall draw attention as we proceed, to some of the effects produced in Alpine plants by the differences I have just mentioned.

Passing over the lowlands and foothills we come at about 4000 feet to the Alpine meadows occupying the trough-like valleys between high mountains, down whose sides moisture in one form or another is continually pouring. These meadows act as catch-pans for moisture and the soil below them is often a very thick deposit of peat formed by the decay of plant remains over a long period. The plants of these situations, therefore, form a " damp meadow " association of extraordinary richness, but whereas in our English meadows grasses form a most important part of the crop, in the Alps the hay is rank and consists largely

of plants with conspicuous flowers. In June, when the meadows are in their full glory, scenes of surpassing beauty are presented, the fields become a riot of colour—Campanulas, Campions and Columbines, Geraniums and Globe Flowers, Orchids and Ox-eye Daisies, Buttercups and Martagon Lilies, a natural kaleidoscope as one walks along.

The shortness of the flowering season applies in the Alpine meadows just as it does on the upper slopes. Directly the snow melts the plants push forward with the business of crowding a season's work into a very short period. The growth is rapid and with the richness of the soil the plants are very vigorous, reaching a good height and very quickly opening their bright flowers. Among the plants of these meadows we find that a large proportion are perennials and have a well-developed root stock for the storage of reserves to give the plant a good start after the long winter rest. The fact that the meadows are cropped twice or even three times during the year is evidence of the rapidity of plant growth in them.

On the mountain sides above this zone we usually find the forests, but here the deciduous trees of the sub-alpine regions give way to Coniferous trees. Of these there is a great variety in the Alps—Spruce, Larch and Pines—and as we may expect, the shade they throw does not allow of great floral wealth; large areas in the dense pinewoods of the French Alps have no flowering plants. Where the trees are not so close together we meet with most attractive plants, and often by the side of paths or in clearings many species spring up which would normally be associated with the zones below or above that of the Coniferous forests. The Pyrolas or Winter-greens are typical plants of these woods; other types are the Bearded Campanula, the Aconite-leaved Buttercup, the blue Hepatica (one of the Anemones) and the delightful little *Linnaea borealis* L., with its hair-like stems creeping over the mossy rocks and sending up its tiny bells at intervals. Then there is the Clematis with large blue flowers (*Atragene alpina* L.) which I have seen trailing over the rocky floor of the woods or forming the most lovely blue festoons over the bushes. All these species are well adapted for life in shade or semi-shade conditions.

It is when we pass to the third zone of flowering plants in the mountains, the zone of the Alpine pastures as distinct from the meadows, that we begin to find much greater specialization to meet the more exacting conditions in that region. These pastures lie from about 6500 to 7500 feet above sea-level and are known in the Central European Mountains as "Alps." We thus see that when we speak of the group of mountains as The Alps, we give them a name strictly applicable to a particular zone on the slopes of those mountains.

The most striking feature about the vegetation of the upland pastures is that it is low growing, a great contrast with that of the meadows; but there is still a wealth of flowers, and they are as a rule brightly coloured, blues and reds showing up conspicuously.

That all-important factor in shaping the destiny of Alpine plants, viz., the shortness of the growing season, operates in the high pastures even more rigorously than it does in the meadows below. The need for

plants to adopt the perennial habit is greater and so we find a higher proportion of perennials than in the Alpine meadows. So pressing is this need that experiments carried out by Prof. Kerner of Vienna showed that some species which are normally annuals in the valley did not die in autumn in his Alpine garden at 7000 feet, but remained alive throughout the winter, and in the following year developed new shoots. Conversely, certain species which are perennials in the Alpine zone have been found to become annuals or biennials when grown at lower elevations.

That it is necessary for the plants to begin their short working life at the earliest possible moment is dramatically shown in this zone. In the Alpine pastures of the Dolomites and of the French Alps I have seen patches of unmelted snow literally dotted with Vernal Crocuses which have pushed through and expanded their flowers. Attention has been drawn by John Ruskin to similar behaviour on the part of the Soldanellas, and any visitor to the Alps in early summer who will examine the patches of unmelted snow on the pastures is sure to be rewarded with the perfectly delightful sight of the little purple bells which have pushed their way through to the light.

The Crocus is specially fitted for this habit of early flowering. In the large corm a reserve of food material is stored up for this purpose, and the flower is well formed underground ready to push through the snow directly the latter has melted sufficiently. When the buds have expanded and fertilization taken place, the flowers fade and the green leaves appear; it is, of course, these leaves which manufacture the food to supply the maturing seeds, and, perhaps more important, to store up in the corm for the use of the flowering shoot in the following spring. A similar process takes place in the Soldanellas, but here the reserve food material is stored in the underground stem and in the thick round leaves which remain throughout the winter.

In drawing attention to certain types of growth and structure which assist in the object of getting through the life cycle quickly I must first mention certain experiments carried out by Prof. Kerner and also by Prof. Bonnier of Paris in growing lowland plants of different types at much greater altitudes than those to which they were accustomed. It was found that the plants had a tendency to become dwarfed and of a squat spreading habit; the flowers grew closer to the ground, not only because the stems were shorter but because the flowers sprang from the axils of the lower stem leaves. The colour of the leaves was deeper, with more chlorophyll, and that of the flowers more intense than the normal. We shall see, as we proceed, that these differences between lowland grown and Alpine grown plants of the same species correspond with the general differences between actual lowland and actual Alpine species.

Now squatness of habit or dwarfing is a very characteristic modification of the plants of the Alpine pastures, and it becomes even more pronounced in those of the high Alpine zone. I have, in walking from an Alpine village to the summit of one of the mountains nearby, taken particular notice of one or two common flowers to be seen on the way up, and observed a striking contrast between the heights of the plants

at the extreme limits of their range in altitude. One example I remember was the Alpine Ox-eye Daisy on the Col de Balme near the Franco-Swiss border.

A variant of the dwarf habit is the formation of what are known as Carpet plants. Examples are *Dryas octopetala* L., a white flowered species of the Rose order, the two kinds of Globularia, and the Dwarf Willow, *Salix reticulata* L. In each case the plant has a short woody stem sending out branches which trail over the ground and form an interlacing mass over a considerable area. The leaves are close together and form so dense a carpet that other species have no chance of intruding themselves. The flowers are numerous, and large in comparison with the size of the plants, and at the height of the flowering season the *Dryas* produces lovely patches of white and the Globularias carpets of deep blue flowers.

Another structural variation leading to dwarfing is seen in the so-called Rosette plants, which are well represented in the Alpine pastures. In this type the intervals between the leaves along the stem are reduced to a minimum and the plant presents a large root system, a stem partly buried in the soil and the leaves radiating all round and entirely covering the ground where the plant is growing. Some of the Gentians, the Saxifrages, Primulas and their relatives the Androsaces, and the Carline Thistle show this form in varying degrees, but perhaps the most striking rosette plants in this region are the Sempervivums or Houseleeks, of which there are a great number of species. In these, the thick fleshy leaves do not spread out horizontally as is the case in the other groups mentioned, but stand more or less erect. The Houseleeks, by their method of spreading, capture the surrounding territory and prevent other plants from encroaching; they send out runners from the axils of the leaves of the rosettes and from these runners fresh rosettes are formed which in time grow to consolidate with the original ones into a large compact colony. The Houseleeks may be said in some ways to combine the characters of the rosette and the carpet plants.

We now come to what is perhaps the most striking plant architecture to be found in the Alps, I refer to the Cushion habit of growth. This habit, although found in plants of the Alpine pastures, reaches its greatest development in those of the very highest zone. The name is a very good indication of the appearance of these plants; they look like more or less compact tufts of vegetation, the leaves all close together, while the extreme forms appear as solid green excrescences on the rocks or screes. When they spring into flower, each tuft takes on an almost complete covering of white, yellow, pink, red or even blue.

When these cushions are examined closely, they are seen to consist of a simple underground stem with a well-developed root system. Where the stem emerges at the surface of the soil, it divides into a number of short branches radiating in all directions. These again divide into shorter branches which together fill a more or less hemispherical space with the original stem as centre. We must now visualize all these branches and sub-branches bearing leaves and we can picture a plant growing like a miniature tuft or cushion.

Among the better-known examples of this habit may be mentioned the Moss Campion, some of the Androsaces (tiny plants of the Primrose order), *Eritrichium tergloviense* (Hacq.) Kern., allied to the Forget-me-nots, and some of the Saxifrages, but it is to be noted that a species which grows as a cushion plant at high altitudes may form a much less compact mass when growing lower down the mountain. Sometimes these cushions of high Alpine plants cover quite large areas, which they occupy to the exclusion of all other plants. This is particularly the case with the Moss Campion. I have seen a solid mass of this species about 18 inches by 12 inches across covering a rock on the Gornergrat near Zermatt, and at the time I saw it, it was almost entirely covered with delicate little pink blossoms, with only a few square inches of green leaf visible.

I next wish to draw attention to certain features in the structure of many Alpine plants, and especially high Alpines, which have the effect of preventing excessive transpiration.

As is well known, water is brought from the soil through the roots of a plant to its various parts, stem, leaves and flowers, and this water contains in solution the salts necessary for its nourishment. The salts remain to help in building up the materials of the plant, while much of the water is disposed of by evaporation.

Transpiration is most rapid in a warm and dry atmosphere and in brilliant light. As these conditions often obtain in the high Alps in summer, there is a tendency for the process to become too rapid, whereby the water necessary to the life of the plant becomes exhausted. Perhaps the most characteristic method of checking this is by the growth of a covering of matted or felted hairs on the leaves and other parts where transpiration takes place. Air becomes entangled among these hairs and the effect is very much like that of a wrapping of cotton wool or flannel, preventing the water from evaporating too quickly.

The most notable example of a high Alpine plant which adopts the hairy covering over all parts is the national flower of Switzerland, the Edelweiss. This is a species found growing as a rule on very dry screes and exposed sunny places, where it can maintain itself even in lengthy periods of dryness and hot sun. It must not be thought that it cannot exist in moister situations, for I have seen it flourishing in what might be called a boggy locality. The point is that it can grow in the most arid places, where it flourishes without competition, and it is thus somewhat local. It is a striking fact that when Edelweiss is grown in the lowlands it tends to lose much of that woolliness which is so characteristic in the high Alpine examples.

The Mountain Everlastings—relatives of the Edelweiss—are also covered with silky hairs serving the same purpose as in that species, and they, too, favour dry localities.

A small kind of Rhododendron, known as the Alpenrose, has on the undersides of its leaves a rough rusty appearance, and on close examination this is seen to be a layer of tiny brown scales. These cover the pores on the lower sides of the leaves and prevent too great transpiration through them. The Alpenrose is less completely protected than the Edel-

weiss, but its habitats are, generally speaking, much moister than those of that plant.

The Spring Anemone has long silky hairs on the stem, leaves, and the outside of the flower, which probably prevent excessive transpiration, while in some of the Alpine Pinks and in the Pyrenaean Buttercup the long grass-like leaves stand upright and so receive the rays of the sun during the hot midday hours at an angle and not direct, so that the effect at the pores of the leaves is lessened.

Two more arrangements must be mentioned before we leave the subject. In one of the groups of the Saxifrages the plants have their pores at the edges of the leaves, and connected with them are glands which deposit chalk over these pores, thus preventing too great evaporation in hot and dry weather. In damp weather, part of the chalk deposit is dissolved and transpiration takes place more freely. Again, in many of the Houseleek tribe the leaves are thick and fleshy, acting as reservoirs for storing water for use during very dry periods. These leaves grow erect and thus avoid the perpendicular rays of the sun, with the result mentioned above in the case of the Pyrenaean Buttercup. Some species like the Spider-web Houseleek have their leaves bound together by a network of secretory hairs which help to keep them erect, and may also assist in preventing excessive transpiration.

So far I have confined my remarks to the subject of the specialized habits and structures adopted by flowering plants to enable them to maintain existence in the conditions prevailing in the Alps. I now wish to say a little about their means of propagation and distribution.

The proportion of insect-fertilized flowers in the Alps is slightly greater than in the lowlands, and this seems to be accompanied by a heavier production of nectar. As evidence of this, it has been stated that the higher beehives are placed on the mountain side the greater the amount of honey obtained. It has also been affirmed that, on the whole, plants of the mountain have more scent to attract insects than those of the plains. This statement would, I imagine, be very difficult to prove, but it is certainly a fact that flowers of the high Alps are brilliantly coloured, and those of a particular species become more intensely so the greater the altitude at which they grow.

In the case of reds and blues the colouring is due to anthocyanins, which are some of the by-products of metabolism in the plants, i.e., they are secretions made during the conversion of food material into the substance of the plants themselves. Now, owing to the shortness of the season for plant life in the Alps, the vital processes are accelerated, and it is also a fact that the production of anthocyanins increases with greater intensity of sunlight. In the high Alps, therefore, we have conditions favouring the production of intensely coloured flowers. The experiments of Prof. Kerner, it will be remembered, showed that many lowland species when grown in his garden high up in the mountains tended to produce flowers of brighter colours.

Lord Avebury records that he observed insects in the Alps usually visited the more brightly coloured flowers of a species. He therefore

suggested that over a long period the less deeply coloured flowers would be neglected and would not be fertilized and produce seeds. Intense colours would thus tend to become fixed in the Alpine species where the comparatively few insects would have a wide choice of flowers. This would apply likewise in both white and yellow flowered species.

As examples of this brilliant colouring, one thinks at once of the wonderful blue of the Gentians, of *Eritrichium tergloviense*, and of the Alpine Forget-me-not; among the reds, of the dark Vanilla Orchis and of *Primula minima* L., a tiny plant with large deep crimson flowers; while of the intensely white flowered species, *Anemone alpina* L. and *Dryas octopetala* L. may be mentioned. That the yellows also tend in the high Alps to depth and intensity may be seen in the flowers of some of the Ragworts and Hawkweeds of that region.

From the subject of flower pollination and the formation of seeds it is but a short step to that of the distribution of those seeds. I have mentioned that a very large proportion of species in the high Alpine zone are perennials. This enables them to be well forward with their annual life cycle directly the snows melt and warmer conditions obtain. But the perennial habit alone does not enable them to increase their range and distribution, nor to colonize new ground. We have seen that a great feature of the plants of this zone is the profuse production of flowers, and this postulates that part of the scheme of their life is the formation of great quantities of seed. We can only conclude, therefore, that this excessive production of seed has some connexion with the inhospitable conditions which handicap those seeds and the tiny plants to which they give rise. It is astonishing, however, in what bare and unpromising places we find these high Alpine plants. Ledges of rocks and tiny crevices have their tufts of flowering plants, and where the rocks are broken to form screes we often have a veritable carpet of low-growing flowers.

A small amount of soil of a kind is probably necessary for the germination of most if not all seeds. In the mountains this may be formed by the splitting of the rocks by frost. Dust is also blown about and may rest in the irregularities of the rock surface or collect in some little crevice or pocket. Lichens will grow on the rocks and their remains may help by the addition of a little organic matter to the primitive soil. If now, seeds fall in such places and the season does not suffer too great heat by day and intense cold by night, if sufficient moisture is provided by melting snow, by mists or other means, and if dozens of other obstacles are overcome, a few of the many thousand seeds may and do create new plants which survive to carry on their species and found a new colony.

In the Alpine zone a high proportion of plants distribute their seed either by simply throwing them out to be scattered by the wind, where the seeds are minute in size, or have special devices for enabling the wind to carry them. Of the former type we may mention various species of Saxifrages and Primulas, and of the latter some of the Anemones, *Dryas*, and the Dwarf Willow, all of whose seeds have feathery attachments which the winds carry considerable distances.

There are few depending for the distribution of their seeds on hooks and burrs which may catch in the fur of passing animals, for the good reason that in the high Alps the vertebrate animals are comparatively scarce. Lower down, in the forest zone and just above it, we get a number of berry-bearing shrubs which no doubt rely largely on the birds to assist in spreading their seeds.

Many Alpine plants, and particularly those of the genus *Sempervivum* adopt quite a different method of increasing their range, though no doubt they often do fertilize their flowers and set seed. The alternative method is a purely vegetative one. From the axils of the leaves a thin stem or runner grows out and this elongates rapidly. If no soil is available close at hand this runner will creep along over the hard rock until it finds some cranny or irregularity where a tiny bit of soil has accumulated. Here it will come to rest and will take root and form a rosette of leaves. In this way some species of *Sempervivum* travel considerable distances over the rocks and crags of a mountain perhaps more effectively than by seeds.

Some of the Saxifrages, in addition to or instead of flowers, produce bulbils. These are little compact clusters of leaves which in due course drop to the ground, when roots form and a new plant is established. The Alpine grass, *Poa alpina* L., also produces these bulbils, which often commence to sprout before they leave the plant. The parent plant then has a shaggy appearance, becomes top heavy and finally bends over to the ground. Sometimes the sprouting bulbils become fixed in the ground before they are detached from the parent, and thus are much further forward with their life cycle than in the case of plants arising from seeds.

And now to summarize; we have seen the various methods adopted by Alpine plants to overcome the disadvantages of a short season of activity, their early flowering, the predominance of the perennial habit and the different types of dwarfing. We have noticed the many adaptations to prevent excessive transpiration under very dry conditions, the conspicuous colouring of Alpine flowers and their attractiveness to insects, and we have also observed certain special methods of propagation particularly adapted to high mountain conditions. I think it will be agreed that in the Alps we have a flora of great beauty and interest growing in scenery which is of itself most attractive. Such a flora offers a most fascinating field for study, especially as there are a number of problems connected with it on which more light is still needed.

British Trust for Ornithology.

THE formation of the British Trust in 1933 constituted a long-awaited and welcome advance in the history of the Ornithology of this country. By collating the results of observations throughout the country, the Trust should be able to attain more comprehensive results than it has yet been possible to achieve. It is obviously impossible for individuals to give as much time and care to national enquiries as an institute having as director one who is specially engaged in such studies. In becoming affiliated to the Trust, our Society is therefore taking part in a movement which, if well supported, should do for England what has long been done in some other countries by Institutes assisted by State subsidies.

Among the enquiries conducted by the Trust in 1934 were a repetition of the heronry census of 1928 and an investigation into the status of the Woodcock in the British Isles. Mr R. W. Pethen was able to make a detailed study of the Walthamstow heronry, but the response of members to the Woodcock enquiry was rather disappointing. It is hoped that they will take a more active interest in future enquiries, as even the little information which has been obtained has disclosed two records of the breeding of Woodcocks within the Society's area.

With regard to Mr Pethen's report it is interesting to compare the progress of the Walthamstow heronry with that of others in the Thames Valley, and especially with the heronry at Wanstead. The Walthamstow heronry, which was founded in 1914, reached a total of 11 nests in 1922, when Wanstead had 61. After rising to 14 in 1924, it declined to 5 in 1928, Wanstead then having 60. There are unfortunately no intermediate figures for Walthamstow between 1928 and 1934, but during these years Wanstead steadily decreased to 20 in 1934, by which time Walthamstow had increased to 47. There is thus a strong presumption that birds from Wanstead have moved to Walthamstow, since the total number of nests for the two heronries has been fairly steady for many years. The original colony at Walthamstow is now probably becoming overcrowded, as in 1933 one pair of herons nested on another of the islands for the first time.

	Wanstead.	Walthamstow.	Total.
1914	56	1	57
1916	72	?	72+
1922	61	11	72
1924	?	14	?
1927	56	9	65
1928	60	5	65
1930	36	?	?
1934	20	47	67

The above years have been selected as showing an interesting change in both colonies, the total population, however, varying little from year to year.

A count of heronries throughout the Thames Valley and of representative heronries elsewhere showed an increase of breeding population between 1928 and 1934 of 2 per cent.

RICHARD C. HOMES.

A VISIT TO WALTHAMSTOW HERONRY.

By R. W. PETHEN.

On the evening of June 4th, 1934, through the courtesy of the Metropolitan Water Board, I had the pleasure and privilege of visiting the island on "No. 5" Reservoir, where the Herons have nested since 1914. The visit was for the purpose of counting, if possible, the number of Herons' nests occupied this season.

It was about 7 p.m. when we put off in a boat, and as we approached the island I carefully counted the Herons that rose from the trees and flew away; 76 of these birds left the island before we landed. All we saw flew off in a westerly direction, but a few birds may have also gone off from the opposite side of the island without being seen by us. Of the Herons that left the island, at least a dozen were young birds of the year.

We passed round about two-thirds of the island before actually landing, and then I found that the colony is separated into two parts by an open space devoid of trees, but covered by a thick tangle of rose-briers, brambles, and other wild plants. The tallest trees on the island are a black poplar, two or three limes, and a cherry tree; the remainder are principally hawthorn, with a few small oaks and also lilac, elder and gorse bushes. I made a note of the nests on each tree as we came to them, and on completing the tour of the island I was surprised to find that the total amounted to 47 nests. These nests, judging by their whitened appearance, had all been occupied this season, but there were also other old nests, including several that had become tilted side-ways and yet remained attached to the branches, that had obviously not been used this year. We also found two old nests that had fallen to the ground.

Amongst the "white-washed" debris below the used nests we saw a number of the Herons' egg-shells still lying about, and also discovered the dried remains of two fledgling Herons of different nests that had fallen and become entangled in the branches below.

Every one of the Herons' nests is built on hawthorns, and the 47 nests are distributed in 32 of these trees or tall bushes as follows:— 21 trees had each one Heron's nest, nine of them contained two nests each, and two of the trees each supported a load of four nests.

I refer to the four nests on two different trees as being a load, and I do so purposely, for the greatest surprise I experienced on landing on the island was the finding of so many large nests on such small and

apparently frail trees. None of the nests was more than about twenty feet from the ground and many were considerably less, and by pushing against the trunks or stems of the trees one could make the nests sway about.

On three different nests we saw one young Heron crouching low, fully fledged but apparently unable to fly, whilst on one other nest there were two young Herons sitting side by side and head to tail. Several other young birds were seen clambering about the branches, retaining their balance by flapping their wings, but apparently unable to fly. In comparing the number of Herons seen with the nests counted, it should be borne in mind that at the time of our visit, 7 to 8 p.m., quite a number of the birds, perhaps twenty or thirty, or even more, would probably be scattered around the other reservoirs of the district, including King George V. Reservoir and even farther afield, where they would be hunting for their evening meal.

WOODCOCK ENQUIRY.

By Richard C. Homes.

It would seem from past records that at no time within the present century has the Woodcock been found regularly in any great numbers within 20 miles of London. If allowance is made, however, for the fact that few people, apart from gamekeepers and sportsmen, are likely to see the bird, the number of records is sufficient to show that it is at least a regular winter visitor in small numbers. There are notes of its occurrence in most years in Epping Forest, chiefly around High Beach, while Richmond Park is another regular locality. It is probable, however, that the species was once much commoner in the park than it is now. Although notes from other localities are few and far between, the presence of many suitable woods around London, from which there is a complete absence of information, suggests that many birds go unnoticed. The occurrence in several recent years of one or more Woodcocks in Inner London is noteworthy in this connexion.

BREEDING.

The Woodcock has bred within the area on rare occasions. In Epping Forest it was first found nesting in 1844 and last in 1887 (1). There is proof of breeding about the beginning of this century in the Bromley district, while in 1929 there was a probability of breeding at Ruislip (2), though this was not satisfactorily proved. At the most, it can only have been a very irregular breeding species in the past.

In 1934 there was one case of breeding reported in Surrey, where a pair has bred in one wood for the last three or four years, and probably once before within the last 30 years. Two Woodcocks were seen in another wood in May, but breeding was not proved. A pair also bred in 1932 and 1933 in a certain locality in Kent. The nest in Surrey was in a wood consisting of oak and chestnut with an undergrowth of bracken, whereas the Kent nest was in a beech coppice.

WINTER POPULATION.

Extreme dates in Epping Forest are October 21st and March 14th, both in 1922. There are April records from Paddington (3) and from Black Park in 1931, but most birds appear to leave in February. Arrivals are usually in November, though one was seen in 1934 in Surrey on October 20th.

Numbers in winter fluctuate considerably and any estimate of total numbers in the area is impossible. One correspondent says that they were plentiful in the winter of 1933/4 and considers that up to fifteen or sixteen may be seen in a good year in one wood. Woodcocks are evidently fairly regular visitors in the heath district adjoining the North Downs, but are thought to be absent from the chalk formation. In Richmond Park an average number for winter is estimated at nine, the favourite haunts being birch-woods with bracken undergrowth. Other figures are:—Epsom Common, about ten are said to be shot in most years; Bushy Park, probably two during winter of 1933/4; Kent, five pairs were shot in one wood in 1933, while twelve to fifteen have been flushed in one day in certain woods to the south-east of the area; Buckinghamshire, the "bag" in the Denham and Fulmer districts is probably about twelve per season.

Information on other points is unfortunately too scanty for separate classification, and in attempting to draw any conclusions from these figures great difficulty is encountered owing to the presence of large and apparently suitable districts from which no information has been received. It is significant, however, that wherever suitable woods have been watched, Woodcock have been found to be fairly regular winter visitors in small numbers and in some cases to be occasional breeders, such a condition so near London being very encouraging. It has been found that most information has been obtained through the help of gamekeepers, and as the enquiry is being continued in 1935, it would be helpful if members would question local gamekeepers with the object of obtaining information from other woods around London.

In conclusion I wish to thank Mr W. B. Alexander for his help in placing at my disposal all the schedules which he received from our area, and also the following members who contributed information through the Society:—Messrs C. L. Collenette, F. J. Johnston, J. E. Roberts, E. C. Rowberry and A. E. Tomlinson.

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The Story of our Commons, and a Chapter on the Essex Forests.

By A. L. Simpson,
Assistant Secretary, Commons, Open Spaces and Footpaths Preservation Society.

THE Society originally called the Commons Preservation Society is the oldest body dealing with the preservation of open spaces and public rights. It was founded in 1865 in consequence of an attempt by the Lord of the Manor of Wimbledon to deal with a large part of the famous Common there as his private property. It was successful in this opposition and its activities soon spread to combat similar attempts to enclose Hampstead Heath, Tooting Bec, Berkhamsted, Plumstead, the Coulsdon Commons and Banstead Heath, Epping and the New Forests, and many other commons all over the country.

Its success in these struggles was due to the persistence and ability of those who contended that the ownership of a common did not carry with it the right to enclose the land.

The normal type of common is a remnant of the original wilderness which our ancestors colonised, and of the wastes surrounding their settlements, from which they obtained wood for fuel, for house building, for their agricultural implements, or for fencing; bracken or heather for bedding and litter; peat for household fires; pasture for their cattle; and anything else that was useful. These wastes under the Norman law became "commons" in the legal sense; not public land, but land in private ownership on to which the "commoners" must be able to go to exercise the rights described above, and which consequently always had to be left unfenced.

Gradually, large parts of the original commons were enclosed, and the commoners' rights over those parts extinguished, either to make fresh holdings for the growing population, or under the authority of Parliament to increase the production of food, or by lords of manors, to enlarge their own private domains. Thus it came about that while at the time of "Domesday" some two-thirds of England and Wales was common or waste land, by the middle of last century only about one-twentieth remained. This remnant was beginning to be even more valuable as open space for public enjoyment than as grazing or other "utility" ground, especially near to large towns. Indeed, the history of our commons since 1865 is bound up with the efforts of the Commons, Open Spaces, and Footpaths Preservation Society to get an interest of the public in them as open spaces recognised by law and to make further enclosure illegal, so that they might be preserved for all time for the public enjoyment.

By using the Law Courts, in order to assert the validity of ancient Common rights, the Society was able to prevent enclosure; by continued action in Parliament a public interest in commons was gradu-

ally recognised, and in consequence the rights to enclose claimed by the owners were modified or limited. So that at the present time the Society is able to say that, owing to its exertions, the bulk of our commons are safe from enclosure.

In the opening paragraph it was mentioned that the saving of Epping Forest from enclosure was one of the great struggles of the Society in its early years.

The story of this great fight has been told in full in Lord Eversley's classic book, *Commons, Forests and Footpaths*, a volume which should be in every library. The story of its sister Forest, "Hainault," is also there given, and it is now my pleasant duty to add a chapter to it.

The reason for this is that, in 1934, 304 acres of open and wooded land were added to this great open space, now comprising 1109 acres.

Hainault was originally part of the great Royal Forest of Essex. It lies on the high ground between the valley of the River Roding and the Thames Estuary, in a line almost parallel with Epping Forest. Between the two forests is typical rolling Essex farming country, still pleasantly rural in appearance. Both Epping and Hainault Forests are invaluable lungs for the crowded inhabitants of East and North London and the adjacent suburbs.

As late in our history as 1851 an Act was passed "disafforesting" Hainault, although one of its old woods was considered to be the finest in England. This did not weigh with Parliament and, in accordance with the Act, the trees in it were uprooted and sold and the area was apportioned and turned into indifferent farming land.

Only one partly wooded area in Hainault, Lambourne Common, 314 acres, was preserved and left open. This disafforestation was effected in 1851-4, when West Ham had only 18,817 inhabitants. Fifty years after, in 1901, it had 267,308, and neighbouring districts such as East Ham, Ilford and Romford had increased proportionately, but by this time Hainault Forest had practically disappeared. However, in 1903, an opportunity to recover part of it presented itself to the Society and, mainly by the unwearied efforts of the late Mr Edward North Buxton, Lambourne Common and one of the farms carved from the former forest were acquired for the public, and, by virtue of the Hainault Forest Act, they were reconstituted an open space of 805 acres, now maintained by the London County Council though outside its administrative area.

In 1934, as has already been mentioned, the Society secured an option on a further 304 acres of Hainault. Neighbouring Local Authorities, Mrs Courtauld, and others contributed towards the purchase fund, and the result is that Hainault Forest now comprises 1109 acres. Some of this is ancient pollarded woodlands, some young plantations, but the greater part is open grassland affording on a clear day a magnificent prospect from the ridge over the Thames estuary to the North Downs in Kent.

With this recent addition the present position of these remnants of the once great Forest of Essex is—Epping Forest, 5600 acres, administered by the City Corporation as a public open space; Hainault Forest, 1109 acres, held by the London County Council; Hatfield Forest, 920

acres, in the custody of the National Trust, a total of 7629 acres in the county of Essex.

This may seem a large area of open space for one county, but it must be remembered that the most densely populated part of London lies within a few miles of these "forests," and that London itself, with its millions of inhabitants, uses the Essex Forests freely for its bodily and spiritual recreation and the latest addition to them lies nearest to the rapidly extending boroughs of Ilford and Romford.

Its acquisition fittingly crowns the work of the late Mr E. N. Buxton, an Essex man and a former Treasurer of the Commons Society, who as a young man worked nobly to save Epping Forest, in his middle years was the driving force behind the acquisition of the 805 acres of Hainault, and in his last moments made Hatfield Forest, also in Essex, secure for all time.

It is needless to add in the pages of *The London Naturalist* how invaluable the preservation of these great wooded and open areas has been to ramblers, artists, naturalists, and all lovers of the natural wild life and picturesque aspects of our countryside.

The Hundred of Brixton.

By W. C. Cocksedge.

PROBABLY few of those who frequent the busy shopping centre of Brixton are aware that the name has a romantic history. In the early days of the Saxon Conquest, probably before the conversion of the Saxons to Christianity, a man named Brihtsige raised a stone to mark the meeting-place of the Hundred, a territorial division of land originally containing one hundred families. It became known as Brixges Stane and thus gave rise to its present name. In those days, a stone of any size in the neighbourhood of Brixton would be an exceptional object and it is possible that it was a Roman milestone. The name of the neighbouring village of Streatham indicates the presence of a Roman road but its route has not been definitely worked out and so this explanation must remain conjectural.

It is quite in keeping with the nomenclature of the original hundreds that Brixton did not become a parish or even a hamlet of any importance. Many hundreds, scattered up and down the country, bear strange names which can only be doubtfully identified with the original meeting-places, and in some cases they seem to indicate a kind of totem pole surmounted by an animal's head, under which, possibly, heathen rites were celebrated. We can picture, therefore, Brixges Stane standing in a clearing amidst an unenclosed waste of woodland, heath and fen and the tribesmen congregated there for the primitive transaction of political and domestic business. Where the stone stood no one knows but the name was later more particularly connected with the hamlet at the foot of Brixton Hill, by the end of Water Lane. The present-day

centre of Brixton was, until the opening of the nineteenth century, a marshy locality called Rush Common.

The Hundred of Brixton had certain natural boundaries. On the north, it was bounded by the Thames. On the east, it marched with the boundary of Kent, following roughly the high ground which runs through Brockley and Honor Oak to the Norwood hills. On the south, it was bordered also by the Norwood hills, which were densely wooded, and on the west, it may have been bounded by the river Wandle. The present Hundred of Brixton, however, includes some parishes west of the Wandle and is, in part, bounded by the Beverley Brook, although Mortlake, still further west, is also included.

Briefly, the present Hundred includes the ancient parishes of Southwark, Bermondsey, Rotherhithe, Newington, Hatcham, Camberwell, Lambeth, Clapham, Battersea, Streatham, Tooting, Wandsworth, Putney, Barnes, Mortlake, Wimbledon, and Merton. On the south, it is bordered by the Hundred of Wallington, of which the chief town is Croydon, and on the west by the Hundred of Kingston. It thus includes nearly the whole of the Surrey suburbs of the metropolis and has been largely incorporated in the modern County of London. In the above parishes I have not included the "wood that is called Paenge," which, from very early times, was an appanage of the parish of Battersea. This formed a projecting piece of the Hundred of Brixton and was lopped off in quite recent years and given to Kent. I do not mean to imply that all these ancient parishes were formed at one time or that their boundaries were very well defined at the outset. Their origin is hidden in impenetrable obscurity. There is little doubt, however, that the hundred in this case is older than the parishes.

The boundaries of some of the parishes are defined in certain Saxon cartularies and it is fascinating but scarcely profitable work to try and trace them. In the case of Battersea, we have a point named *baelgenham* which is undoubtedly Balham, we have the *hlidaburna* which was the Wandle, and we have *beferithe* and *baencesbyri*. The latter names seem to indicate the Beverley Brook and Bensbury, an old name for Caesar's Camp, in which case the bounds of Battersea were far wider than at present. In the case of Lambeth, the only point which can be recognized is *brixes stan*, which gave its name to the Hundred. It should be noted that the bounds mentioned are often of the most trivial description; trees, ditches, pools and so forth, which have naturally disappeared long ago. The name *beferithe*, the beavers' stream, is an interesting testimony to the presence of that animal near London in Saxon times. The present spelling gives a false impression of its etymology.

The Solid Geology of the Hundred of Brixton comprises a practically unbroken sheet of London Clay with outcrops of the Woolwich Beds about Dulwich and Peckham. Overlying the London Clay, in certain districts, are extensive areas of gravel. Near the Thames, in Battersea, Lambeth and Southwark, Flood Plain gravels cover the London Clay, whilst Clapham and Wandsworth Commons present areas of Boyn Hill gravels divided by the deep trench of Falcon Brook. On Wimbledon Common, Glacial gravels are mapped.

A great part of the region was and is very little above the level of the Thames and in pre-Roman times, it must have been a pathless wilderness of forest and fen. It is not surprising therefore that, apart from river finds, practically no discoveries of Bronze Age or Iron Age relics have been made. Roman remains are confined almost exclusively to the Borough of Southwark, where the Romans had an important settlement, although, somewhat surprisingly, a Roman leaden coffin with Scallop Shell decoration was found in Battersea Park in 1794. Trifling Roman relics have also come to light in Camberwell, Clapham and Wandsworth. Nor did the Saxons leave any material trace of their existence here. This is entirely opposed to the position a little further southward, where along the edge of the chalk uplands through Croydon, Wallington and Mitcham, very extensive remains, both of Roman and Saxon occupation, have been found. At Mitcham, a large Saxon cemetery has been excavated and it is significant that most of the relics pointed to the early Invasion Period. There is a good deal to be said for the suggestion that these desirable lands were reached by way of the navigable Wandle.

One important road did, however, traverse the Hundred. The Stane Street, on its way from Chichester to London, entered the district at Merton and followed the present highway through Tooting, Clapham, Kennington and Southwark. It is not mentioned in the Antonine Itinerary but there is little doubt that it was of Roman construction. The fact that no Roman remains have been found in connexion with it, within the Hundred of Brixton, is a further proof of the uninviting nature of the terrain. Streatham, where a Roman road would appear to have existed, is some distance east of Stane Street and the road was probably a subsidiary one. The extreme north-eastern corner of the Hundred was also traversed by the Watling Street, on its route from Westminster into Kent.

Thus we are back to our starting point. The Romans had come and gone, leaving little trace of their presence beyond the road afterwards called Stane Street and their extensive settlement in Southwark, which, however, pertained more to Watling Street and Londinium. The Saxon invaders had ascended the Wandle and seized the cultivated lands to the southward or, perhaps more doubtfully, had come across the border from Kent, and still, the region of which we are speaking was chiefly a waste of wood and morass. But the Saxon settlers were not deterred by such a country, they were used to it in their Continental homeland, and gradually they overspread it. The region was not entirely uninhabited, of course, and curiously enough, there is one scrap of evidence from place-names pointing to this fact. In the ancient parish of Newington is a place named Walworth, the " farm of the serfs or Britons or where such worked " (P.N.Sy). Families settled and in due course were summoned to a common meeting place, Brixges Stane, and so the hundred came into being.

These scattered Saxon families, thus loosely confederated, have left a very permanent memento of their presence. The whole of the ancient place-names in the Hundred, with the sole exception of Penge, are of Anglo-Saxon origin and in most cases incorporate the name of a family

or individual. A further step, as the Saxons became Christianized, was the formation of the parishes. This is usually ascribed to Theodore of Tarsus, Archbishop of Canterbury towards the close of the 7th Century, but the process was not completed until a much later date.

Apart from a few riverside parishes, the parishes of the Hundred of Brixton were of considerable size but no larger than the generality of such in thinly settled regions. Lambeth and Camberwell in particular were of large extent, Lambeth, indeed, stretching from the Thames to the southern boundary of the Hundred against Croydon. The churches of these parishes were by no means always centrally situated, those of Lambeth, Battersea, Wandsworth and Putney, being close to the River. It is probable that in the first instance most of these churches were built of wood, similarly to the dwellings of the Saxon thanes. One often speaks loosely of Saxon manors but the manorial system was introduced by the Norman-French. It had its origin more in the ordered political structure of the Roman Empire than in the loose tribal organization of the Teutonic peoples. It is true that the Saxon estates become the Norman manors, and, in the vast majority of cases, the latter bore Saxon names. Thus we find in the Hundred of Brixton the usual varied assortment of manors, many of which disappeared in course of time, even their names vanishing with them. In some cases they bore subsidiary names of Norman origin as in Tooting Bec and Tooting Graveney. It is important to remember that manors were feudal estates and not political divisions and they were grouped together, separated, alienated or extinguished like any other form of property.

Few manors in the Brixton Hundred were of much importance and we do not meet with castellated manor houses, except Lambeth, not to mention castles. Nor was there in this large area a single town with the exception of the ancient settlement of Southwark.

It is true that there was one other very important settlement—Lambeth. The Manor was given by Goda, sister of Edward the Confessor, to the See of Rochester in the eleventh century. It was seized by William the Conqueror but ultimately restored to its former owners. At the close of the twelfth century a residence was erected here for the use of the bishops when they visited London, and, afterwards, having been exchanged for other lands with the Archbishop of Canterbury, it became in due course the archiepiscopal residence which it ever since has remained.

In Bermondsey was the great Abbey of the Cluniacs, founded as early as 1082 A.D. and enriched by William II with the presentation of the Manor. Its buildings and possessions were, of course, seized at the Dissolution and practically no trace of the Abbey now remains. Monasteries were usually established upon streams and the Abbey of Bermondsey was abundantly watered by streamlets which descended from the neighbourhood of Peckham Rye. The united streams bore the strange name of Neckinger, still commemorated in the Neckinger Road. The name is said to have been derived from the Devil's Neckercher, a canting allusion to the hangman's noose. One branch of this stream, where

it passed under the Old Kent Road, was called St Thomas a Watering and it is so named in the Canterbury Tales. The connexion with the Canterbury pilgrimages is obvious. These streams, where they joined the Thames, encircled a pestilential district called Jacob's Island, well known by name to readers of Oliver Twist.

At the other end of the Hundred, in Merton, rose another great monastery, a convent of Augustinian Canons founded in the twelfth century. It was presented with the manor by Henry I and became a centre of learning and the training ground of many great Englishmen. Situated on both sides of the river Wandle, its appurtenances were unusually spacious and beautiful, but it met the fate of all such religious establishments at the Dissolution and only a few desecrated remains now exist. It was here that the famous Statutes of Merton were formulated in the reign of Henry III.

Apart from Lambeth and the religious houses of Bermondsey and Merton, little early history attaches to the Hundred. It is said that the Saxon Kings had a palace at Kennington where the infamous Harthacnut died at the wedding feast of the daughter of Osgod Clappa. Place-name philologists, however, will not recognise the element "king" in Kennington, nor will they admit that Clappa has anything to do with Clapham. The connexion of Kennington with the Crown is actually of later date, the manor coming into the hands of Edward II. From the time of Edward III, it was the occasional residence of our kings, and the Black Prince is said to have resided here. James I settled the manor on the Prince of Wales and it has ever since formed a part of the princely possessions.

Kennington was in the parish of Lambeth and the southern parts of that parish where we now find the crowded suburbs of Brixton, Herne Hill and Norwood, were particularly sequestered until a late date. They were drained by a little river called the Effra, which, rising in the Norwood hills, flowed by Croxted Lane and the eastern side of the road from Brixton to Kennington, passing under the road at Kennington Gate and debouching in the Thames near the present Vauxhall Bridge. Few rivers of its size have so completely disappeared from view, but even at the end of the last century it still lingered in the public memory. In Rocque's map it is contemptuously called the Shore (sewer) and the name Effra first appears about 1840. Its origin is a complete mystery but it is curious that a spot near its mouth was called *heah yfre* in the Saxon boundaries of Battersea. It is possible, therefore, that it is an antiquarian revival.

The southern portions of Camberwell parish were equally sequestered until, in 1606, Edward Alleyn the actor bought the manor of Dulwich and erected the College of God's Gift. In has remained in the hands of the College Governors ever since and their conservative administration has done much to retain the rural atmosphere of the district. Evelyn visited Dulwich College in 1675 and adds, " 'Tis in a melancholy part of Camerwell parish."

And so we come down to the seventeenth century and the Hundred of Brixton is still an entirely rural area, a region of woodland, rough

common and moist meadows with ancient isolated townships and a few scattered hamlets reached by miry lanes, such lanes as were still to be found in Norwood, Streatham and Dulwich until quite recent years. The proximity of the metropolis had had surprisingly little influence upon it but now the growing industry of the country began to invade this rustic region. The riverside, since Elizabethan times, had had a variety of manufactures, mostly of the description which rendered them unpleasant within the walls of the City. The tidal ditches round Bermondsey were given over to tanning and the waterside in Lambeth, Battersea and Wandsworth supported various mills. The valley of the Wandle was also a favourite place for factories which required water power—snuff mills, corn mills, copper mills and the like. And in spite of its geographical drawbacks, the Hundred began to attract wealthy Londoners who wanted country homes. In the reign of George III, Lord Thurlow purchased the Manor of Leigham in Streatham parish and built himself a house on the edge of Knights Hill, an isolated summit between Herne Hill and Norwood whose unstable clayey soil has always defied the builder.

As early as the end of the seventeenth century, Pepys' friend and clerk, W. Hewer, had a house at Clapham to which the diarist retired in his old age. St John, Lord Bolingbroke, resided in the manor house of Battersea. Putney Hill, Clapham Common, Brixton Hill and Denmark Hill, in fact all the higher spots, came into some favour with well-to-do citizens who preferred room and retirement to the cramped quarters of the City, and the popularity of the mineral springs which were discovered at Dulwich, Norwood and Streatham, drew many visitors. The roads gradually improved and the heavy traffic to the Epsom Wells and, somewhat later, to Brighthelmstone through Croydon, tended to urbanize this corner of Surrey. Early in the nineteenth century various enclosure acts were passed and many of the commons and woodlands finally disappeared and the scattered townships began to be joined together by lines of roadside villas.

In spite of these developments, however, the flat and ill-drained northern portions of the Hundred were by no means salubrious until far on in the nineteenth century. Bermondsey, St George's Fields and Lambeth Marsh were intersected by stagnant tidal ditches; Kennington Common, on which the Chartists held their great meeting in 1848, was a repellant piece of bare earth. Battersea Fields were the scene of every description of rough and degraded life. Slums rose in all directions and it has taken the better part of a century to bring matters to their present fairly satisfactory state. Fortunately, several of the great commons within the Hundred escaped enclosure and remain, today, much prized places of recreation for its teeming population. It is a far cry from the hundred families to the present boroughs of Southwark, Lambeth, Battersea, Camberwell, Wandsworth and Wimbledon, but few links are missing in the chain of evidence. All these changes have taken place in the past fifteen hundred years and the greater part of them within a century.

Brambles of Kent and Surrey (6).

By William Watson.

Rubus Lejeunei W. & N. Eltham, v.-c. 16; Coombe Wood, and around Milford and Witley, v.-c. 17. This is the plant mainly intended by *R. Lejeunei*, var. *ericetorum* in the *Handbook*, but Rogers also included *R. tardus* under that name. The Godalming and Mortimer Common localities given for *R. tardus* in the London Naturalist for 1932 relate to *R. Lejeunei*, not to *R. tardus*. *R. gracilior* Sud. and *R. Moylei* Bart. & Ridd. are mere synonyms of *R. Lejeunei*.

R. hystrix W. & N. Around Milford, v.-c. 17. The *R. anglosaxonicus*, var. *setulosus* Rog., recorded for Milford Heath in *Fl. Surrey* (1931) is *R. hystrix*.

Fl. Kent records *R. hystrix* for St Paul's Cray Common, Keston and Darenth Wood, v.-c. 16. *R. rufescens* L. & M. which used to be mistaken for *R. hystrix* is there, but *R. hystrix* is not. A specimen from Darenth Wood in Hb. Mus. Brit. is *R. rufescens*.

R. rufescens L. & M. Chislehurst, Hayes, Keston, Bromley, Shooters Hill, Row Hill and Darenth Wood, v.-c. 16; Wimbledon, Barnes, Oxshott, Box Hill, Netley Heath and Witley, v.-c. 17. The *Handbook* name is *R. rosaceus*, var. *infecundus* Rog., but Sudre identified our plant as *R. rufescens*, and I see nothing against this determination.

This bramble is rather common in the woods on the Tertiaries south of London, and must often have attracted attention by reason of its pale yellowish green foliage, its showy candelabras of rosy flowers, which are followed by small blood red fruits (ultimately black) nearly enclosed in the long-pointed sepals. All axes of the plant turn yellow in exposed situations and become suffused with crimson.

R. Murrayi Sud. Chartham Hatch, v.-c. 15; Hayes, Keston, Eltham Common, Warwick Park (Tunbridge Wells), v.-c. 16; Streatham, Tooting, Wimbledon and Hurt Wood (near Shere), v.-c. 17.

Fl. Kent records *R. adornatus* for Bitchet Common, v.-c. 16, and for Sandling Park, v.-c. 15 (with white flowers). Both plants (Hb. Mus. Brit.) are however *R. hyposericeus*.

This bramble is wrongly called *R. adornatus* in the *Handbook*. The true *R. adornatus* is a much more hairy plant, a member of the *R. obscurus* group; whilst *R. Murrayi* is an ally of *R. hystrix*.

R. Murrayi is usually small and bears small flowers of oval white petals somewhat narrowed to each end and often with a greenish base. The stamens are slightly longer than the styles and conceal them after the petals drop. The styles are a deep red, even before the flower uncloses. Sepals loosely clasping. The stem is clothed with short hair of about the same length as the stalked glands. The panicle rachis bears some strongly curved prickles. The terminal leaflets are ovate gradually acuminate, green beneath. All axes become deep purple in the sun.

R. coronatus, var. *cinerascens* W. Wats. Putney Heath, v.-c. 17. Stems elongate climbing, green and glaucous. Petals ovate pink, stamens pink, styles red. Sepals reflexed. Upper leaves greyish white beneath. More densely hairy and more prickly than the foregoing, and with short strong deflexed prickles, but with similar shaped leaflets.

R. hostilis M. & W. Tooting Graveney Common (one bush), v.-c. 17. I know no other example south of the Thames, but on the north side it is frequent about Stanmore, Ruislip, Harefield and Northwood, v.-c. 21; and at Denham, v.-c. 24.

Specimens collected by E. F. Linton in 1892 near Corfe Castle, v.-c. 9, and distributed as No. 39 in the Set of British Rubi to represent *R. radula*, are *R. hostilis*. On sheets in Hb. Mus. Brit. the determination is amended to "*Rubus hystrix* f. fide W.M.R. Focke consentiente, but unsatisfactory (not typical) a little towards *anglicanus*."

Fl. Kent gives *R. hostilis* for Ryarsh, v.-c. 16, but the plant (Hb. Mus. Brit.) is *R. apricus*, var. *sparsipilus* W. Wats.; for Offham, v.-c. 16, but the plant (Hb. Mus. Brit.) is I think a form of the *R. foliosus* group; and for Tunbridge Wells, v.-c. 16, but the plants are (a) (Hb. Mus. Brit.) *R. longifolius* W. Wats. and (b) (Hb. S. Ldn. Bot. Inst.) *R. hylonomus* M. & L.

I have seen specimens of Wirtgen's Hb. Rub. II.68 on which he described the species, and also good descriptions of II.68 and I.139 by Krause and Foerster, and I do not doubt that the plants referred to in the first two paragraphs above are *R. hostilis*.

Wirtgen himself thought his I.178 and II.98 were a distinct plant, which he named *R. hostilis*, var. *fol. quinatis, subtus canescens*. Wirtgen's II.98 in Hb. Mus. Brit. has a panicle of *R. rudis*: Mueller gives on the name-label the distinguishing characters and these point to *R. rudis*. Further Dr E. H. L. Krause in *Verh. nat. Ver. preuss. Rheinl.*, etc. (1900) describes I.178 and II.98, both collected on the Montabauer Hill by Wirtgen in 1861, and his description strongly points to *R. rudis*. Krause thought the specimens belonged to a species distinct from *R. hostilis* and even says that the clothing of the panicle is as in *R. rudis*.

Focke in 1877 quotes I.139, 178, and II.68, 98, and seems not to have observed that Wirtgen was publishing these as two distinct plants, *R. hostilis* and *R. hostilis* var., although he remarks that the Wirtgen specimens do not agree well enough with one another to show clearly what are the specific characters.

To understand *R. hostilis* correctly it is essential to confine oneself to the specimens that Wirtgen obtained between Bertrich and Hontheim in 1860 and named simply *R. hostilis*. Dr Krause describes one of these, II.68; and Foerster in *Fl. Aachen* describes another, I.139.

In 1901 Focke quotes only I.139, and must then have realized that the English specimens that Rogers had submitted to him were wrongly identified as *R. hostilis*, as he states that *R. hostilis* is confined to Central Europe.

There is a rather considerable difference in armature, hairiness, branching of panicle, greyness of leaves, etc., between early and late

stems and panicles produced on the same root. The phenomenon is not uncommon; it occurs in other species, e.g., *R. villicaulis*; but it increases the difficulty of matching specimens satisfactorily with Wirtgen's imperfect and mixed material.

R. fusco-ater Whe. Addington Hills, v.-c. 17; Chartham Hatch, v.-c. 15.

Fl. Surrey records *R. fusco-ater* as growing on barren slopes between Addington and Chelsham, with white flowers and somewhat jagged leaves, the white flowers being attributed to the action of the soil. The specimens are *R. pygmaeopsis* Focke.

R. Koehleri Whe. Bostall Woods, v.-c. 16; Ditton Common, v.-c. 17 (C. Avery).

Fl. Kent says de Crespigny found this at Chislehurst. It is not there now; probably he found *R. apricus*, var. *sparsipilus*, which is there and has often been mistaken for *R. Koehleri*.

R. adenolobus n. sp. Syn. *R. Koehleri* Whe., var. *cognatus*, in Rogers's *Handbook of British Rubi* (1900), p. 83. Set of British Rubi, No. 41. Palewell Common, Barnes, Tooting, Milford, Peperharrow, Witley, etc., v.-c. 17.

The following remarks will supplement the description in the *Handbook*. Type in Hb. W. Watson, collected at Palewell Common.

Stem blunt-angled with flat sides, considerably hairy. Prickles with slender points, patent falcate or slightly curved upwards. Upper leaves grey beneath, terminal leaflet long-pointed; principal teeth often very salient. Some of the petiolar prickles geniculate. Stipules subulate.

Panicle rachis dusky brown. Uppermost panicle leaves grey beneath, glandular on the upper surface, glandular and aciculate on the basal margin. Panicle prickles long and slender, from patent to geniculate. Bracteoles green. Petals white, lilac or pink. Carpels pilose. Sepals ovate-lanceolate, leafy-pointed.

I have also seen the plant in several localities in Berkshire and in N.W. Middlesex, and on Ludgate Plain in Epping Forest (S. Essex).

R. apricus, var. *sparsipilus* n. var. Syn. *R. rosaceus*, var. *bercheriensis* Druce in Fl. Berks. (*nomen*). Ryarsh (Rogers as *R. hostilis*), Chislehurst, Bostall Heath, v.-c.16; Wimbledon Common and Coombe Wood, Witley Common and Highdown Heath, v.-c. 17.

I have also seen the plant at S. Mimms, v.-c. 21; Stedham Heath, Pound Common, near Graffham (Marshall as *R. ros.*, var. *hystrix*, in Hb. Mus. Brit.), v.-c. 13; Heath, v.-c. 24; Boars Hill, etc., v.-c. 22.

The stems of this plant are glaucescent and sparingly pilose; the flowering branches are moderately pilose. All axes turn yellow and crimson in the sun. Only in these respects does it differ from Wimmer's type, of which I have seen several specimens from Wimmer's localities. In both the English and the Silesian plants the terminal leaflet of the lower leaves is roundish ovate, and of the middle and upper leaves elliptical. Wimmer describes only the lower leaves, having advised that the leaf should be taken from the thicker part of the stem.

It has been suggested (*Rep. B.E.C.*, 1933, p. 756) that the English plant does not agree with Wimmer's description in "rachis clothing and armature." Wimmer, however, nowhere describes the panicle rachis, but only the pedicels (*die Stiele*).

Several varieties of *R. apricus* Wimm. are given by Sudre for Western Europe, all of them having the stem glabrous, and most of them the rachis either glabrous or glabrescent. Our plant agrees with none of these varieties, but following Sudre's example it may be distinguished as a slight variation of the type.

Friderichsen's f. *subcalvatus* in spite of its name seems as hairy as the Silesian plant, with which Friderichsen once informed me it was considered by Gelert to be identical. So Sudre regards it.

Rubus apricus Wimmer, var. *sparsipilus* n. var., a typo differt turionibus ramisque florentibus pallidis rufescentibus sparsius pilosis glaucescentibus.

Type specimen of var. *sparsipilus* in Hb. W. Watson, collected on Chislehurst Common, August 1934.

R. spinulifer M. & L. Bostall Heath and Bexley Wood, v.-c. 16. Also at Brabsden Green, v.-c. 21.

R. pygmaeopsis Focke. Barren slopes between Addington and Chelsham (Britton); Court Wood, Selsdon; Stoke Wood, Oxshott (Wallace); Haslemere; all in v.-c. 17. Hosey Common, v.-c. 16.

Our plant agrees perfectly with Wirtgen's specimens and with descriptions by Focke (author of the species, founded on Wirtgen's specimens) and by Braeucker and Foerster of the typical plant of the Rhine Province.

Sudre gives this for Belgium.

R. dasyphyllus Rogers. Bigberry, near Canterbury, v.-c. 15; Hayes and Chislehurst, v.-c. 16; Tooting, Barnes, Putney Heath, Netley Heath, Milford Heath, Epsom Common, v.-c. 17.

Rubus longifolius n. sp. Near Tunbridge Wells in several stations, v.-c. 16 and 14.

Approaches the Vendean *R. plinthostylus* Genev.—Genevier's specimens of "*R. plinthostylus*" collected in the Forest of Yzernay (Maine and Loire) are *R. hystrix*. The panicle lacks however the strong yellow patent prickles of that species, and has narrower, longer, rhomboid leaflets, which are glabrous above and greyish-white felted and pubescent beneath, with the principal teeth large, angular, salient and somewhat compound. The stem is thinly shortly hairy.

The panicle is ovoid, leafy nearly to the top, the uppermost leaves linear-lanceolate, greyish-white felted beneath, eglandular; the lower branches sharply ascending. Rachis subglabrous below, felted-pubescent above, bearing many slender patent declining or falcate prickles, long acicles (some glandtipped) and shorter acicles and stalked glands, graded on the rachis and petioles but mostly short on the branches. The lower leaves on the flowering branch are furnished with long petioles. Flowers white, the petals obovate; stamens slightly longer than the styles. Carpels shortly pilose.

The axes and prickles are yellowish-green, passing to reddish brown. The buds, flowers and fruit are small.

Type specimen in Hb. W. Watson, collected at Warwick Park, Tunbridge Wells, West Kent, in shade in a hedge.

Examples of the plant were collected by Gilbert in this neighbourhood as "*R. Questierii.*" Other examples collected by Gilbert and Rogers are labelled "*R. hostilis.*"

Rubus longifolius n. sp. Turio procumbens angulatus glabriusculus aculeis inaequalibus e basi dilatata reclinatis vel falcatis aciculis glandulisque plerumque parvis nunc crebris nunc sparsis instructus. Folia quinata, stipulae lineares. Foliola longa supra glabrescentia subtus pubescenti-tomentosa superiorum foliorum cinerea dentibus majoribus angulosis saepe patentibus.

Paniculae interruptae parum angustatae foliosae ramuli intra-axillares erectiusculi longe pedunculati foliiferi multiflori superiores magis magisque obliqui 3-1-flori. Rachis acutangulus flexuosus inferne glabrescens longi-aciculosus vix glandulosus superne tomentosus brevius glandulosus fere exaciculatus totus aculeis inaequalissimis tenuibus declinatis curvatisve (solum ad summum patentibus) crebris munitus. Foliola terminalia valde cuneata. Foliorum inferiorum petioli elongati.

Flores mediocres, petala obovata alba, stamina stylos parum superantia, sepala post anthesin laxe reflexa tandem ascendentia neque erecta, germina pubescentia.

R. Marshalli Focke & Rogers. Tunbridge Wells Common, Warwick Park (Tunbridge Wells), Hosey Common, v.-c. 16; Witley, Hurt Wood (Shere), Hungry Hill (Farnham), v.-c. 17.

R. viridis Kalt. Bigberry (Canterbury), v.-c. 15; Mitcham Common (C. Avery) and near Royal Farm, Elstead (C. Avery), v.-c. 17.

R. Schleicheri Whe. Here and there in hedges between Tunbridge Wells and Hawkenbury, v.-c. 16.

R. Bellardii Wh. & N. I know no station for this in Kent or Surrey. *Fl. Surrey* records it for Frith Wood, Farley, but the specimen is *R. diversus.*

R. serpens Whe. The plant of Weihe being uncertain it is usual to take Focke's *R. serpens* as type. We have not this in Kent or Surrey, perhaps not in Britain. The following two forms occur:—

R. angustifrons Sud. Syn. *R. serpens* Rog. Harbledown, v.-c. 15; Wimbledon Common, near the Butts (C. Avery), v.-c. 17.

R. hylonomus Sud. Lane from Eltham to Crown Woods, Seal Chart, Rusthall Common, v.-c. 16. Frequent in the Weald of East Sussex and especially West Sussex.

R. rotundifolius Bloxam. Syn. *R. hirtus*, var. *rotundifolius* Bab. in the *Handbook.* Weybridge Common (C. Avery), the first record for Surrey.

This is not correctly placed as a Bellardian but is an ally of *R. Babingtonii*, *R. Lejeunei* and *R. rufescens.* Cymes in the panicle are rare.

R. diversus W. Wats. in *Rep. B.E.C.*, 1927, p. 508, where the carpels were given as pilose. Repeated observations since then show that the carpels are only slightly pilose, often a single hair each on the car-

pels. The long foliaceous points to the sepals are tightly pressed back to the pedicel during flowering, the long stamens much exceeding the reddish-based styles. Sometimes the upper leaves are not very markedly greyish felted beneath.

The affinities in flower and armature and coloration and the whole habit are again with *R. Lejeunei*, not with the *Bellardiani*.

Frequent on Shooters Hill and in Lesness Woods, v.-c. 16; Frith Wood, Farley, and Selsdon, v.-c. 17.

This is in the *Handbook* as *R. hirtus*, subsp. *Kaltenbachii* (Metsch). Kaltenbach in *Fl. Aach.* described a bramble of the Aix district under the name of *R. scaber*. Metsch in *Rubi Hennebergenses* noting that Kaltenbach's bramble was not *R. scaber* of Weihe and Nees described a Thuringian-Bavarian bramble, which he (mistakenly) believed to be the same as Kaltenbach's bramble, under the name of *R. Kaltenbachii*. Focke applied Metsch's name *R. Kaltenbachii* exclusively to Kaltenbach's Aix bramble. Our English bramble is neither the bramble of Weihe and Nees, nor of Kaltenbach, nor Metsch, nor Focke. It was accordingly renamed *R. diversus*.

R. microdontus M. & L., Versuch No. 186. *R. tereticaulis* P.J.M., b. *microdontus* (M. & L.) N. Boulay. Dartford Heath and Row Hill (Puddledock, abundant), Hosey Common, v.-c. 16. No record for E. Kent or Surrey. It occurs at Stanmore, v.-c. 21; at Denham and Burnham Beeches (abundant), v.-c. 24; at Boars Hill, v.-c. 22, where it is abundant and has been known for 40 years as "*R. scaber*;" at Shotover Hill, v.-c. 23; and at Chailey, v.-c. 14.

R. dumetorum Whe. The brambles placed as varieties under *R. dumetorum* in the *Handbook* differ in armature to an extent which elsewhere in the genus would cause them to be regarded as species of different groups. Armature apart, however, there are certain characters that unite them all to *R. caesius*, and it may be presumed that they are derived from past crossings of *R. caesius* with various black-fruited brambles belonging to different groups.

R. Balfourianus and *R. latifolius*, which also show the influence of *R. caesius* ought, in pursuance of the *Handbook* practice, to have been reduced to varieties and to have followed on after var. *concinnus* in the *R. dumetorum* group. But as all these plants are in no sense varieties of a single type it seems more fitting that they should all stand as independent species. The specific names originally given to them have accordingly been re-established here. Only a few localities have been given for the commoner species.

R. ferus Focke. Dartford Heath, Chislehurst, Farnborough, v.-c. 16; Wimbledon Common, Burgh Heath, v.-c. 17. Frequent. Panicle prickles straight and nearly patent. Uppermost panicle leaves greyish felted beneath. Petals large, roundish, pinkish.

R. britannicus Rogers. Bimbury, and Winterbourne Wood (Selling), v.-c. 15; Eltham, Chislehurst, and Keston (between the ponds), v.-c. 16; Preston Haw (Burgh Heath), v.-c. 17. Local. Some panicle prickles falcate, all slender. All leaves green beneath. Petals broadly oval, white. Stipules filiform. Never makes good fruit.

R. diversifolius Lindl. Chartham Hatch, v.-c. 15; Merstham, v.-c. 17. Local. Prickles broad-based, mostly patent. Upper leaves greyish felted beneath. Terminal leaflets rather broadly oval oblong or obovate, both on the stem and on the panicles. Petals ovate, white or lilac. Panicle elongate narrow, with short remote erecto-patent axillary branches.

R. tuberculatus Bab. Chislehurst and Farnborough, v.-c. 16; Sheen Common and Palewell Common, v.-c. 17. With the next the commonest form. Terminal leaflets broadly ovate acuminate, somewhat triangular on the upper leaves, very soft beneath; greyish-white beneath in the case of the upper leaves on the panicle—at any rate the flowering panicles in late summer. Stalked glands mostly short but unequal, a few being longer than the diameter of the pedicels. Petals broadly ovate, abruptly clawed, pink bleaching nearly to white. Stamens white, or sometimes pink. Carpels always pilose (distinction from *R. raduliformis*). Fruit often large and very good.

R. raduliformis A. Ley. Abundant in the London district. Eltham, Fairchilds, etc., v.-c. 16; Colley Hill and Kingswood Warren, by the river at Elstead, v.-c. 17. The "*R. scaber*" given in *Fl. Kent* for Ightham Common, etc., v.-c. 16, is *R. raduliformis*.

R. raduliformis was for a long time confused by Babington and others with *R. tuberculatus*, but may be known from it at once by the glabrous carpels and the stalked glands all short and equal: it is sufficient to examine the pedicels and flower buds. The axes are reddish brown. The terminal leaflets are roundish or broadly ovate acuminate, often with rather lobate margin. Pedicels short. Flowers rather small for this group, reddish (Ley says they are white), the margins of the petals erose. Carpels glabrous. Fruit rather oblong, good.

R. adenoleucus Chab. Netley Heath, The Roughs (Newlands Corner), Ashtead Wood and Epsom Common, v.-c. 17. Seen also in Half Moon Coppice, Midhurst, v.-c. 13. Spread over some acres at The Roughs. There is some doubt whether this is quite the same as the slightly earlier published *R. fruticetorum* L. & M., as is stated to be the case by Lefevre himself: that it really is the same as *R. adenoleucus* Chab. there is no doubt. Authentic French specimens of *R. adenoleucus* have been consulted.

Easily recognized by its glossy epruinose red-tipped shoots, red curved prickles, all leaves green beneath, with red glands on both surfaces and on the margins, and points of the teeth bright red. The terminal leaflets oval or obovate. Flowering branch and rachis nearly glabrous but furnished with many white glands. Sepals soon clasping after flowering but ultimately reflexed.

In the slender stems and the attitude of the post-flowering sepals *R. adenoleucus* comes closer to *R. caesius* than does any other member of the *R. dumetorum* group.

R. Warrenii Sud. in Obs. sur Set of British Rubi (1904). Synonym *R. dumetorum*, var. *concinnus* Warren. Weybridge Common (C. Avery), specimen seen by me; the only record for Surrey.

R. Balfourianus Blox. Petts Wood, Chislehurst, and near Addington, v.-c. 16; Abrook Common and near Milford, v.-c. 17. Frequent in West Kent and Surrey in wet places.

The large pink flowers and some other superficial resemblances have sometimes caused this to be recorded as *R. gratus*. Its short stamens, flowers opening flat, and the imperfect fruit, however, will always distinguish it from that plant.

R. corylifolius Smith, comprising five forms in Britain, is distintinguished from *R. dumetorum* and also from *R. caesius* by its leaves being thickly greyish-white felted beneath, somewhat in the manner of *R. thyrsoideus*. Stem and panicle are subeglandular. Fruit imperfectly developed. Only the two following forms occur in our district; the first is much the more common.

R. sublustris Ed. Lees. Hayes Common, v.-c. 16; Wimbledon Common, v.-c. 17.

R. conjungens (Bab.). Synonym *R. corylifolius*, b. *conjungens* Bab. in the *British Rubi* (1869), p. 265. Dartford Heath and Puddledock, v.-c. 16; Epsom Common, and north of Charles Hill, Tilford, v.-c. 17. This form has sometimes been mistaken for *R. cardiophyllus*.

R. sublustris often has small purple black prickles on the stem, like those in *R. nessensis*; but *R. conjungens* never has them.

R. caesius L. Pure *R. caesius* has very slender and very glaucous stems, only ternate leaves, sharply ascending upper pedicels, glabrous white petals, conform pollen grains and glaucous fruit. In hedges at low altitudes through the district contaminated plants are the more common. They have stouter, less glaucous stems, some quinate leaves, more spreading panicle, and difform pollen grains.

Some genetic forms occur, and require to be distinguished purely by characters that are not affected by habitat. For instance, an elegant variety with evenly denticulate leaflets and hooked prickles on the stem and flowering branch occurs between Addington and Selsdon, v.-c. 17.

Sometimes met with in pure colonies, e.g., on shelly dunes, at the edge of rivers and streams (where it endures inundation), upland hedgerows (especially on limestone), neglected arable land, headlands of unhedged ploughlands on the Downs.

Leaf-fall takes place before winter. The glaucous fruit is peculiar to *R. caesius*. The *Handbook* at the top of page 85 by a slip of the pen ascribes glaucous fruit to *R. dumetorum* forms also. (The hedge plant there referred to is *R. rubriflorus* Purchas, a form of the *R. dumetorum* group, not *R. Marshalli*, var. *semiglaber* Rogers, as supposed.)

Entomology of Yesterday and To-day.

ABSTRACT OF A PAPER READ AT BACOT MEMORIAL MEETING, 10TH APRIL 1934.

By L. B. PROUT, F.R.E.S.

I WISH it to be understood that the "Yesterday" which I have in mind is primarily that of which I have some personal recollection; to have lived through two generations, in the ordinary acceptation of that term, is sufficient justification for an attempt—neither more nor less arbitrary than that "ordinary acceptation"—to separate them in thought. At the same time, it is impossible to forget that there are innumerable other and more remote "yesterdays"; an occasional backward glance may show us how far we have travelled.

Beginning with Entomology as the man in the street used to conceive it—and in some measure still conceives it to-day, namely, as the pastime of collecting insects and arranging them according to some system—we notice that even in this rudimentary concern there has been an advance. A very high percentage of the collectors of a generation or two ago valued their specimens chiefly for their beauty or rarity, or were far more solicitous to obtain a complete collection of the order, super-family, or family of their fancy than to learn anything significant about their variation, their inter-relationships, or their distribution, to say nothing of morphology, physiology, embryology, ecology, genetics, or any of the other lines of study which are open to the real entomologist. Well do I remember the scorn which the late J. W. Tutt poured upon those butterfly-collectors of his day who would decline the offer of an interesting specimen or an interesting local form, on the ground that their "series was full."

And yet this self-same Tutt—let us say it with bated breath—used and defended a method of labelling (or rather, of *not* labelling) his own captures which would be almost unthinkable at the hands of a serious collector to-day. Specimens taken on a single day at the same locality were left, not only in the temporary store-boxes but in the collection itself, with nothing more than a hand-written label at the foot of a series giving these data. How he managed if by any accident specimens were displaced, or if it was desirable to pick out two or three simultaneously, for comparison, or even to remove *one* from its place for any length of time, I am not able to say. I well remember the feeling of trepidation with which I brought home a number of *Geometridae* which he kindly gave me and my continued uneasiness until I had every specimen labelled.

I believe the comparative worthlessness of unlabelled Natural History specimens was emphasised in a Presidential address on "Data" delivered to our Society nearly twenty years ago. It is not out of place to repeat that it was a very general experience not many years

before that, and remained an occasional experience still more recently, for the entomologist who acquired material by exchange or purchase to have to add a special request: "Please supply data"; and to feel very excusable misgivings regarding the reliability or otherwise of such data when they did arrive, drawn perhaps from the recesses of the memory of the sender. Otherwise excellent insect collections which came under the hammer at that time were repeatedly found to suffer, wholly or in part, from the same neglect. It is probably well known to lepidopterists that one of the foremost of our nineteenth-century collections of British butterflies and moths—the Henry Doubleday collection, now housed at the Natural History Museum—is in this respect a permanent reproach to the entomology of yesterday, notwithstanding that Doubleday himself is said to have had an excellent memory and a deep interest in the origin of his specimens.

Entomology, however, has never been at so low an ebb as to throw up nothing better than the dilletantism of which the foregoing may serve as an example. Not unnaturally, the delightful elasticity of the generic term "Yesterday" has invited some comparisons which extend far back beyond the memory of the oldest living naturalist, and it must be confessed that they are not quite invariably to the advantage of the entomologist of to-day. The year 1934 has brought us to the bicentenary of the appearance of volume one of Réaumur's immortal Mémoires; can we say that for powers of observation and of painstaking and accurate description he has many rivals even to-day? If those are among the first requirements of entomological science and the very bases of every constructive advance, we owe him a debt of gratitude which it is difficult to over-estimate. As a matter of course, a changed outlook on Nature, due to the work of our 19th-century giants—Darwin, Wallace, Bates, Galton, Mendel, Weismann and others—has rendered the old ideas of classification obsolete; but this need not diminish our admiration for the men who not only observed and described but also did their best to make an intelligent use of the fruits of their studies by co-ordinations and systematized groupings.

Systematists pure and simple, on the other hand, have come in for almost as much abuse as collectors. I have already referred to the strictures of one of my early mentors in entomology, J. W. Tutt, as regards the latter class; equally severe was his condemnation of "closet naturalists;" including some who at that time occupied prominent positions in the British Museum of Natural History. Probably it is, at least in part, a result of the increasing value attached to Nature Study in modern education, of the growth of entomological and natural history societies and clubs, and still more of an increasing realization of the many-sidedness of entomological science and the interdependence of its parts, that we of this generation do not hear so many complaints on this score. Certain it is that most of those who are at present in control of the insect department at South Kensington are, or have been, keen field naturalists and by no means confine their interests to what has been sneeringly called a post-mortem examination of somebody else's victims.

One wonders, in passing, who was the archetype of the genus "closet entomologists." It would be uncharitable to suggest that perhaps it was Fabricius, for that protagonist of systematic entomology was a collector in his earlier years, although later tied down to professorial duties and museum studies, while the greater part of his published work is merely diagnostic and classificatory and of the dry-as-dust order. It is somewhat interesting to take a peep into his *Philosophia Entomologica*, published in 1778, wherein (as he says) he " endeavoured to determine the theoretical principles of entomology with greater accuracy." There is little in it which would warrant such a title in the 20th century. Commencing with a short bibliography, he proceeds to the elements of sound classification as he conceives it, definitions of terms, including those applicable to the immature stages of insects, very voluminous discussions of such subjects as the etymology and formation of names, the characteristics of good and bad descriptive and differential work, the value or otherwise of figures, and some brief notes on a few subjects of more general interest, such as sex in insects, their relation to plants and their uses to man.

It is not necessary to pretend that this book was in any sense a precursor of the modern text-books of entomology or that it had any similar purpose in view. But its table of contents does invite a comparison with them in the attempt to form some conception of the scope of entomology at two periods not extremely remote as world-history might view them; and we find ourselves wondering when and how such revolutionary advances in the science came about. I am not competent to give an orderly historical survey. It might add point to these somewhat vague generalisations if I were to quote the eighty or more principal headings which are found in the table of contents of the latest *Lehrbuch der Entomologie*—Weber's. It is more practicable to emphasize the changes that are going on round about us by a few further symptomatic illustrations and to enlarge somewhat on the considerations which bulk larger in one's own personal work to-day than was the case thirty or forty years ago.

Notwithstanding that the present generation of biologists is—speaking generally—somewhat enamoured of " per saltum " ideas of evolution, ideas which were anathema to a Bacot, it remains almost a truism that in the realm of ideas the " inevitability of gradualness " (to borrow a phrase from a prominent politician) is to be taken for granted. It has been shown to apply to the most revolutionary changes in our thinking, such as those bearing on the origin of species, and it certainly seems applicable to the great gulf which is seen between the " entomology " of Brünnich or Fabricius and that of Weber or, in our own country, Imms. If we compare the deservedly famous *Introduction to Entomology* of Kirby and Spence with these recent text-books, we find on both sides the same keen interest in every aspect of the life of an insect, so far as it had come under observation and investigation at the period in question. Knowledge increases by leaps and bounds, as the result of accurate recording of observed facts and their correlation and systematisation in the light of a comparatively few great master-con-

ceptions; but the germs are there from the beginning, awaiting development. An interest in structure, anatomy and microscopy? Yes. A volume devoted to " Histological and Illustrative Methods for Entomologists?" Not until 1930. An interest in the *patria* of insects and casual inquiries into the puzzle of their dispersal? Yes. A systematic and scientifically reasoned treatise on the " Migration of Butterflies?" Again not until 1930. The fascinating study of Insect Behaviour, under one name or another, probably fared much better in our " Yesterday." Even here, the lifetime of the present generation has witnessed a tremendous advance. It is less than twenty years since Fabre passed away from us, and for a concise volume with the title which I have just quoted we have waited till two years ago, while a similarly concise one on *The Psychic Life of Insects* preceded it by hardly more than a single decade.

It would be almost superfluous further to labour the point were it not that there is a real danger of our reversing the old Latin proverb, " Vetera extollimus, recentium incuriosi," and belittling the attainments of our entomological fathers and grandfathers. As a partial corrective to any such tendency I, as a lepidopterist, would suggest a perusal of the index, published in 1904, to the first four volumes of Tutt's *British Lepidoptera*, a compilation and digest so nearly exhaustive in its handling of the knowledge of that period that a member of our Society may be pardoned for having specified as its chief fault that it "left scarcely anything still to be discovered!" Exuberance of language, of course, but inviting a digression as to the relative advantages of being permitted the joy of re-discovery of already recorded facts on the one hand or, on the other hand, of having them all gathered together in one place as a solid jumping-off point for new explorations and discoveries. To-day, when every earnest student must surely have come to realise that, in the words of Romanes, " The more I know, the less my knowledge grows," we are probably wise in desiderating all the ordered summaries that can be placed within our reach and limiting, as far as possible, the re-exploration of previously traversed fields to those in which there is need for verification of some kind. To the conscientious specialist there are few occurrences more vexatious than to find that he has, through his ignorance, spent time over an investigation wherefrom a fellow-worker has already reliable results which should have been available to him.

The overworked phrase, " evolution, not revolution," so well expresses the progress that I have witnessed in the science and practice of entomology that I have been unable to keep it out of this paper. If Tutt's voluminous work is unknown to our non-Lepidopterists, and perhaps to some of our Lepidopterists, there is another and less specialised comparison possible between past and present. Look at the pages dealing with the general subject of the Insecta in the *Zoological Record* for 1892 and then at the corresponding section in that for 1932. The former date has been chosen as that of the foundation of the North London Natural History Society, one of the precursors of this society; but others of the period would serve equally well. What do we find? Perhaps a score of entries in 1892 referring to external anatomy and a similar

number referring to the nervous system, sense organs, and psychology. In 1932 several pages devoted to the morphology of the various separate organs, etc., several to physiology, including the effects of stimuli and of mutilations, chemical factors, etc., and again pages of aetiology (evolution, phylogeny, genetics, variation, mimicry, hybrids, teratology, factors influencing populations) and especially of ethology. But a closer analysis of the entries of the earlier date, reinforced by some recollection of other trends of thought at the period, very greatly reduces the discrepancy between it and the present. It can safely be stated that practically every one of the headings quoted from the 1932 *Record* was known as a department of entomology at the earlier date, although genetics had scarcely begun to be systematized. The difference is largely quantitative—due to the increased (though still quite inadequate) number of serious investigators and to an almost geometric progression in the accumulated knowledge and experience and the improved technique. I have already alluded to the stimulus afforded by a work like Tutt's; in slightly different directions, the special studies of Comstock and others in wing-venation, of Handlirsch on *Fossil Insects and the Phylogeny of Recent Forms* or the treatise by Davenport on *Statistical Methods, with special reference to Biological Variation*, must have set in motion currents which gathered force and volume as they went.

As a corollary of this quantitative advance, there has come a necessary increase in specialism, a constantly more detailed "division of labour." I am old enough to remember the death of John Obadiah Westwood, in whose person, as was said at the time, there passed away our last "entomologist," leaving only coleopterists, hymenopterists, dipterists and the like; or if there remained a few who—like his illustrious successor in the Hope professorship—retained a wider interest in entomology it was almost inevitably for the sake of specialising in some other way, as for instance mimicry or heredity or palaeontology or tropisms, or some restricted branch of comparative morphology.

If the death of Westwood forty-one years ago marked the end of a century and a quarter of "entomologists," we have surely another illustration of that accleration of *tempo* of which not only our particular science but all science gives such remarkable demonstration. Already the "lepidopterist" is becoming extinct, if he has not become so already. What we might call the "hyphenated" lepidopterist survives and will probably survive yet a long while. There are many students of the British Lepidoptera or even of the European Lepidoptera or the North American Lepidoptera, but these for the most part know little or nothing of those representatives of the order which are "exotic" from their standpoint. Moreover, there is generally a further limitation: a collector of Lepidoptera need not be—scarcely ever is—a "specialist" in more than some small section; in some cases his interest is too widely diffused to enable him to specialize at all. Clearly we have already descended from orders to families, and are in some instances finding the families far too much for a life task. I speak feelingly. I often wish that I had been able to abide by an early decision, registered in the archives of this very Society, and to remain a special-

ist in the geometrid sub-family *Larentiinae*. Even so, I am convinced that my cry would still have been "too large." I have never counted the known species in this sub-family, and if I did so I would need a recount every few days; but I have roughly estimated them at some 4800. Can one truly "specialize" on a tithe of that number?

There are at least manifest signs to-day of an advance (or retreat) into a still more restricted specialism. A living German entomologist, Karl Dietze, has made the Palaearctic species of the geometrid genus *Eupithecia* (some 240 species) his life study. The few monographic revisions of Geometrid genera or sections of genera which have seen the light of day have come from the pens of workers who have—excepting Dr Wehrli of Basle—never aspired to be specialists as regards the whole family. Without doubt, similar manifestations of specialization in increasingly small units are evident in other families of Lepidoptera and presumably in other orders of insects. It is not an entirely new phenomenon; Germar, for instance, made a special study of some of the "*Bombyx*" of the Fabrician system as early as 1811-12, while Herold in a sense "specialized" on the anatomy of the large cabbage white (*Pieris brassicae* L.) only a few years later. But these passing attachments to a special subject, besides being quite exceptional, bear little analogy to our modern tendencies.

Text-books and hand-books, especially the latter, have begun to travel in the same direction as the monographic treatises, but have not yet advanced far along the road. On the whole, it is to be hoped they will not do so. Their chief value lies in the wider field which they can traverse (we can scarcely say "cover") and specialists use them for the generalizations and correlations. As they become increasingly bulky, even the text-books need some kind of breaking up, e.g., into volumes, and it is but a step further to the dedication of an entire volume or an entire treatise to a single order of insects. There is plenty of material available for a text-book dealing exclusively with *Geometridae*, which generally receive very little attention in the more comprehensive works, but the time does not seem quite ripe for one at present.

Although the specialists to whom that status is probably oftenest accorded in entomology, and whose services are requisitioned for the necessary but often dreary work of determining specimens, are the specialists in systematic entomology, it must not be forgotten that more intensive studies in morphology are also a phase of specialization and very definitely a sign of the times. The systematist must needs know something of morphology, but he or any other entomologist who is, so to speak, a good general practitioner can devote himself to the morphology of some particular part of an insect's anatomy, and studies of this character occupy a very prominent position in the entomology of to-day. A beginning was made with mouth-parts, eyes, antennae, frenulum and other external organs many years ago, but most of the developments, at least in the Lepidoptera, belong to the present generation. Half-a-century ago it was a common reproach against lepidopterists that they were the most superficial of all entomologists. The explanation offered—and there was certainly some truth in it—was that

the facility with which the majority of our scaled friends could be described and recognized by their wing-patterns alone made us superficial and negligent, whereas an entomologist like Haliday was doing excellent structural work on the Diptera and other orders far back in the Nineteenth Century. Hübner's *Verzeichniss bekannter Schmettlinge*—though that has passed its centenary—did diagnose the genera almost exclusively by coloration and markings. The work of the French systematists between 1830 and 1860 was better, but not greatly better—perhaps it should rather be said, less bad. But their contemporaries in Germany (Herrich-Schaeffer, Lederer, Zeller and Speyer) were laying a foundation which has not even yet been altogether superseded. In England, Stainton and Wilkinson did good work on the morphology of the Micro-lepidoptera, but the Macros were allowed to remain fettered by the " pseudo-scientific " system of Guenée, as Meyrick has called it. These, however, are not personal reminiscences. The latter part of the century witnessed a great awakening in morphological study and the work of Poulton, Chapman, Tutt, Bacot and others, especially at the earlier stages, brought the Lepidoptera well to the fore in scientific entomology.

The movement was not confined to Britain, but was almost world-wide and, like the other parallel movements which we have been considering, it has been gaining impetus ever since. Well within my memory come Rothschild and Jordan's masterly revisions, notably that of the *Sphingidae*, which illustrates almost perfectly the combination of systematic specialism with advances in morphological method. Reuter's large volume on the Palpi of the Rhopalocera, Bodine's paper on the Antennae of the Lepidoptera, and of course the still more recent volumes by Pierce on the Genitalia of the British Noctuidae, Geometridae and Tortricidae, and the work of Eggers, Kennel and Forbes on the tympanum in the Lepidoptera. Every part of an insect, internal or external, would seem to have received some special attention, and yet we are still discovering structures which had been previously overlooked. There is room for scores—perhaps hundreds—of monographs on separate organs; for instance (thinking only of the Geometridae) on the palpi, the antennae, the fovea—quite a special structure in the family—the scent-organs, each of which presents an extremely wide range of modifications and a most inviting sphere for systematic research.

Without doubt, the structural characters which, before all others, have been added to the regular stock-in-trade of the systematic entomologist during the period which we have under review are those furnished by the genitalia. Since it came to be realized how endlessly diversified these structures were, and yet how constant within the limits of each single species, they have almost become a final " court of appeal " in cases of challenged claims to the rights of specified rank. There are obvious reasons for their stability and reliability; any deviation would tend to militate against the normal mating of the species and therefore against the most essential conditions of the propagation.

Seldom indeed do the results of this appeal fail us, at least in the *Geometridae*. Where they seem to do so, it may often be that our powers of observation are at fault or that a higher magnification might reveal something which, though unrecognisable by our normal methods, might yet be of vital importance to the insect. One word of warning is needful, nevertheless. There are evident signs that differentiation by genitalia is becoming an obsession and that attempts at classification by genitalia alone are not far off; a similar danger loomed a generation ago, when an inordinate value was attached to wing-venation, and it seems possible that history will repeat itself. No single structure is likely to prove a magic key to open all the doors of phylogeny and sound taxonomy.

For a perfectly balanced view of the value of these structures, I refer back to my memories of Bacot. He it was from whom I first heard the "patent lock and key" analogy, though I cannot say positively whether it originated with him or whether it was picked up in his reading and assimilated. It has been challenged, chiefly on grounds of numerous successes in hybridization, but they do not touch its core. It was he too, on the very last occasion when I met him, who emphasized that what he would expect to find with the genitalia—as with all other fundamental characters available for classification—would be that the results deducible from them would dovetail with a sound scheme (arrived at in other ways) in 90 per cent., or perhaps even 99 per cent., of the material but would on rare occasions cut right across our expectations.

Have we learned the lesson? Is intensive specialization helping us more than it is hindering, or vice versa? The cross-currents are operating not only between one small section of morphology and another, but between morphological research and physiological. On purely practical grounds it must be admitted that almost every branch of specialist entomological work sets up its own cross-currents against the rest. It is not implied that there is active opposition; quite the reverse. But there is a constant danger of independence where there should be recognised interdependence; among entomologists, "one half (or rather, one tiny fraction) does not know how the other half (or fraction) lives."

When one substitutes the conception of "naturalist" for that of entomologist, the problems of contact and coordination are seen to be still more stupendous. Having skipped the intermediate stage of "zoologist" we find ourselves face to face with the "Systema Naturae" from which botanist and zoologist alike date their system; yet called upon to handle not only the original capital which Linné bequeathed to us, but with it the enormous sum which has accrued from a high rate of interest over a period of two centuries.

I claim no originality for the view that the constant need of entomology, and of all the other associated sciences, is for a growing army of specialists in all directions, including a certain number of specialists in generalization and specialists in co-ordination. By these I mean well-read men with a big mental grasp and the power of seeing the wood without having their vision obstructed by the trees; such men as could

Lastrea montana T. Moore.

In Richmond Park.

The plantation in which it grows was established in 1823, and there is reason to think that the fern is undoubtedly in a wild state.

Photograph by C. L. Collenette.

summarize the recent advances, see the bearing of one discovery or observation upon another, and help to bring the whole into some new syntheses, or at least retail to us in an intelligible form such conclusions as may seem well established and thus smooth the path for the greater forward movements of the future. Such men need not be supermen; they have existed and we are glad to feel do exist. They will continue to have need of all the props which can be provided by the ordinary man; we are, it is to be feared, not sufficiently grateful for those which we have already—zoological records, biological abstracts, bibliographies and various other orderly summaries and indices; without them the position of entomology to-day might probably have had to be summed up in a single word: Chaos.

Noteworthy Plants in the London Area.

Botanical Recorder: R. W. Robbins.

THE following species, new to our records, have been reported in 1934:—

1. *Scrophularia alata* Gilib. Found on the banks of the River Mole near Mickleham by R. W. Robbins and Rev. P. H. Cooke.
2. *Orobanche major* L. This plant appeared in Mr Robbins' garden at Limpsfield, parasitic on a self-sown plant of White Broom (*Cytisus albus*).
3. *Cynodon Dactylon* Pers. A well-grown patch of this rare grass was found near the docks in S.W. Essex by the Rev. P. H. Cooke. This proves to be a new county record.
4. *Lappula echinata* Gilib. Mr Cooke discovered this coarse Forget-me-not-like alien on the banks of the Mole.

Other interesting records seen, with one exception, on excursions of the Botanical Section, were:—

Cuscuta europaea L., in several places along the banks of the Mole.

Alisma ranunculoides L., *Catabrosa aquatica* Beauv., *Lastrea montana* T. Moore. These three species were shown by C. L. Collenette in Richmond Park, in some quantity.

Myosurus minimus L. and *Paris quadrifolia* L. were discovered at Denham by H. J. Jeffery.

Lythrum Salicaria L. In a marshy hollow in Epping Forest, near the "Robin Hood," J. Ross. An unexpected locality for this streamside plant.

Polygonium laxiflorum Weihe (*mite* Hook.), was seen in plenty along the Thames-side between Kew and Richmond.

Notes on the Birds of Edmonton Sewage Farm, 1933-34.

By E. Mann.

THE Edmonton Sewage Farm is situated in the Lea Valley, about midway between King George Reservoir and Banbury Reservoir, the most northerly of the Walthamstow group. The whole of the farm is in the County of Middlesex. Its boundaries may be defined as the Lea Navigation River on the East, Angel Road and Picketts Lock Lane on the South and North respectively, and on the West the London and North Eastern Railway.

The part of the farm to which these notes refer covers approximately 62 acres, about one-half of which is marshy ground covered with a dense growth of reeds and rushes, the remainder consisting of rough grassland which is periodically flooded, percolating filters, and a large number of settling beds. Most of the ground is intersected by small streams and channels, and the depth of water in these channels continually varies. The amount of water on the marshy ground also varies but it is never more than a few inches deep and at times almost vanishes.

There is a large dump which is always burning, but as waste metal enters largely into its composition it cannot play a very important part in the food supply. A large number of birds, chiefly Black-headed Gulls and Starlings, frequents the dump during cold weather and I believe the attraction to be mainly warmth, as the birds are rarely seen to feed. Much squabbling occurs at times, but this always appears to be for the best positions. I have noticed a similar occurrence by King George Reservoir, where a number of Gulls spent some time circling above a building from which a stream of hot air and vapour was rising—the birds apparently enjoying this warmth.

A number of trees grows on the farm, chiefly Sallows; in places, especially on the boundaries, are bushes and a great deal of undisturbed undergrowth.

During 1933 and 1934 I paid regular visits to the farm, and in the accompanying list of 72 species I have detailed the results of my observations. The present status of each species has been mentioned as far as my limited records permit.

I have been unable to find any systematic records of past observers, but there are a number of notes which have appeared in various publications. These refer chiefly to birds that have been shot, for the most part rare or unusual species. Although interesting, I consider them to be of less importance than the residents and regular visitors.

The bird population of this sewage farm is continually changing; birds are coming and going throughout the day, their visits being made chiefly for food. Consequently, it is difficult for a single observer to estimate the number of any particular species, and only in a few in-

stances have I attempted to do so although I have often made counts at the filter beds.

The existence of this farm, with its almost unlimited supply of certain kinds of food, must have a great influence on the bird life of the surrounding country. Those species which have a restricted food supply in the immediate vicinity of their nesting sites, finding a good supply within a reasonable distance, would undoubtedly cling to the old sites as long as possible, although threatened by suburban developments.

The abundant food supply also attracts many birds to nest on the farm itself. Blackbirds, Thrushes and Finches nest in some numbers and, being undisturbed, have a fair amount of success in rearing their young. Probably the farm is the chief centre from which the population of these species is maintained in other open spaces in the locality, where nesting is less successful on account of depredators.

For such species as Reed Bunting, Yellow Wagtail, Sedge Warbler and Lapwing, the Sewage Farm, and to a lesser extent the Reservoirs, will soon be their last strongholds. The possibility of the Lapwing nesting successfully grows more remote each year.

Observations made in the migratory periods, lead me to think that the migrants using this area as a breeding ground reach here by travelling down the valley. The spring arrivals, such as Yellow Wagtails, Whinchats and Sedge Warblers, always appear to me to be travelling down the valley, and cannot, I think, arrive via the Thames. They would seem to travel overland from the East or North-East coast. The spring movements of Swallows, Sand Martins, and Martins are not so evident, but the movement of these species in large numbers up the valley in autumn is an annual feature. However, more work needs to be done before any definite conclusions on this point can be reached.

It will be noticed that the following list contains few of the less common waders usually seen on this type of farm. The fact that many species of waders are recorded from King George Reservoir when conditions are suitable proves that they pass over the district, but I doubt if their numbers are ever large. Uncommon waders may occur at the farm, but I have not been fortunate enough to see them. The type of ground would not encourage many, for although there is plenty of mud, only a few patches are open, most of it being covered with reeds.

It is pleasing to be able to record that the Local Authorities are anxious to preserve the wild bird life of the farm, and no shooting is allowed. They have granted me unrestricted facilities for observations, and I wish to tender my thanks to the responsible officials.

The following list can only be considered as preliminary, and will certainly need amendment later.

Carrion-Crow. *Corvus c. corone* L. Two pairs are regularly seen about the farm. In late autumn and winter numbers can be seen in the evenings making their way leisurely to the roost at Walthamstow Reservoirs.

Rook. *Corvus f. frugilegus* L. I have yet to see a Rook on or in the vicinity of the farm. They appear to be very shy of this part of the Lea valley. During eight years watching I have never seen one in

the valley, although they occasionally visit the higher ground around Chingford Mount. Employees on the farm tell me that many years ago Rooks passed over the farm daily in large numbers.

Jackdaw. *Coloeus monedula spermologus* (Vieill.). In spite of there being a large colony at North Chingford, barely two miles away, I have only one record for the farm, one bird being seen on 8/4/34. It is difficult to understand why Jackdaws are not seen more often, especially as the large dump is such an attraction to numbers of other birds in winter.

British Jay. *Garrulus glandarius rufitergum* Hart. One record only, one seen on 8/4/34.

Starling. *Sturnus v. vulgaris* L. Common at all times of the year. On the evening of the 16th September 1934 I watched a flock of many hundreds get up and fly off north-east, and at the same time many small parties were flying over in the opposite direction, going City-wards.

Greenfinch. *Chloris c. chloris* (L.). Resident, a few pairs nested both years. In the autumn the numbers increase, and, judging by the large flocks seen on evening visits at this time of the year, I think they must roost in the reed beds.

British Goldfinch. *Carduelis c. britannica* (Hart.). Uncommon visitor, usually in winter.

Linnet. *Carduelis c. cannabina* (L.). Resident, a few pairs nested both years, but no increase in numbers noticed in autumn.

Chaffinch. *Fringilla c. coelebs* L. A few pairs nest about the farm but it is never common. Small parties are occasionally seen in winter.

House-Sparrow. *Passer d. domesticus* (L.). Common at all times.

Tree-Sparrow. *Passer m. montanus* (L.). Occasionally seen, but so far as I know does not nest on the farm. The birds seen probably come from a colony on the far side of Chingford marsh. One 30/7/33, three 15/10/33, two 11/2/34, two 8/4/34.

Yellow Bunting. *Emberiza c. citrinella* L. Only record, one heard singing 8/4/34. There seems to be little reason why this species should not nest, as there are plenty of suitable nesting sites. I believe this species to be losing ground in the locality.

Reed Bunting. *Emberiza s. schoeniclus* (L.). Resident, numbers increase during the breeding season. During the winter of 1933-4 a few were present. A large influx occurred in the second week of March and on the 11th about 60 were present; a week later only 10 pairs were seen, and these I think stayed to nest.

Sky-Lark. *Alauda a. arvensis* L. Fairly common resident, with plenty of available nesting sites. Losing ground in the locality but safe for the time being on the farm.

Tree-Pipit. *Anthus t. trivialis* (L.). Heard singing during May and June of both years; may have nested but no positive evidence obtained.

Meadow-Pipit. *Anthus pratensis* (L.). Winter visitor, often in large numbers. On 24/12/33 the filter beds presented an extraordinary sight—700-750 Meadow-Pipits, about 150 Pied Wagtails, and numerous Finches and Starlings were busy feeding. The numbers of Meadow-

Pipits on subsequent visits were: 14th January, 350; 2nd February, 125; 11th March, 180; 18th March, 60. On this last date the spring song was heard. The numbers dwindled each week until April 15th, after which none were seen until October 13th, when a few observed; on October 28th about 40 were present.

This part of the valley appears to be on the border line of the Meadow-Pipits breeding range in this area. A few pairs nest around King George Reservoir, and I have met with a few in summer a little farther down the valley, but during eight years' watching none, so far as I have been able to discover, have nested in this area.

Yellow Wagtail. *Motacilla flava rayi* (Bp.). Fairly common summer visitor, but only a few pairs nest on the farm; most of the birds seen coming from outside. Most of the valley is a breeding ground for this species.

Grey Wagtail. *Motacilla c. cinerea* Tunst. Winter visitor, arriving early in September and leaving about the middle of April. Six were seen on 14/1/34, and again on 11/2/34, but usually only two were present.

Pied Wagtail. *Motacilla alba yarrellii* Gould. Very common at all times of the year, but I do not think that many pairs nest on the farm. On 30/7/34 about 200-250 were feeding on the settling beds, the majority being birds of the year, and as this date would appear to be too early for any big movement, one must suppose that all these birds were bred in the surrounding country. Other counts made were:—24/12/33, 130; 14/1/34, 110; 11/2/34, 100; 11/3/34, 80; 31/3/34, 20.

White Wagtail. *Motacilla a. alba* L. One seen on 8/4/34 by Mr R. W. Pethen and myself.

British Great Titmouse. *Parus major newtoni* Prazak. Not a common bird on the farm; may nest, but the scarcity of spring and summer records makes it doubtful. Party of nine seen on 28/10/34.

British Blue Titmouse. *Parus coeruleus obscurus* Prazak. Resident, fairly common.

British Long-tailed Titmouse. *Ægithalos caudatus roseus* (Blyth). Uncommon visitor, four seen on 28/11/34.

Red-backed Shrike. *Lanius c. collurio* L. Not recorded in 1933. A pair nested just outside the farm in 1934, being first seen on June 3rd; two young not long out of the nest were on the farm on July 29th.

Spotted Flycatcher. *Muscicapa s. striata* (Pall.). Recorded in spring and summer only. I have no evidence of nesting although there seems little reason why it should not; may have been overlooked.

Chiffchaff. *Phylloscopus c. collybita* (Vieill.). Spring and autumn records only.

Willow-Warbler. *Phylloscopus t. trochilus* (L.). Summer visitor; a few pairs nest on the boundaries.

Reed-Warbler. *Acrocephalus s. scirpaceus* (Herm.). On 3/9/33 I saw one adult with three very young birds; these were possibly bred on the farm. In 1934 two pairs nested, one pair in an elder bush and the other in reeds; no young were seen.

Sedge-Warbler. *Acrocephalus schoenoboenus* (L.). Very common summer visitor. On arrival in spring the farm seems to be full of Sedge-Warblers, but after a week or two they spread out. In 1934 one pair built in the fork of a bush about four feet from the ground; the nest was subsequently destroyed.

Garden-Warbler. *Sylvia borin* (Bodd.). Heard and seen once only, 3/6/34.

Whitethroat. *Sylvia c. communis* Lath. Common summer visitor. Like the Sedge-Warbler, its cheerful song can be heard on all parts of the farm. Late date, 14/10/34.

Lesser Whitethroat. *Sylvia c. curruca* (L.). Scarce summer visitor. One, or possibly two pairs nested on the boundaries.

Fieldfare. *Turdus pilaris* L. Winter visitor. Between February 11th and April 31st, 1934, numbers varying from 10 to 35 were present.

Mistle-Thrush. *Turdus v. viscivorus* L. Scarce visitor, usually in winter.

British Song-Thrush. *Turdus philomelus clarkei* Hart. Resident; at least ten pairs nested in both years.

Blackbird. *Turdus m. merula* L. Fairly common resident, a number being seen on each visit.

Wheatear. *Œnanthe œ. œnanthe* (L.). Passage migrant, chiefly in spring; a few travel across the farm but the majority keep to the banks of the Lea. Three seen on 15/4/34.

Whinchat. *Saxicola r. rubetra* (L.). Summer visitor. About four pairs nested in both seasons, many young being seen on various dates. Very late date; one seen on 15/10/33.

British Stonechat. *Saxicola torquata hibernans* (Hart.). Two pairs present during both winters, but not seen in the breeding season.

British Robin. *Erithacus rubecula melophilus* Hart. Fairly common resident.

British Hedge-Sparrow. *Prunella modularis occidentalis* (Hart.). A few resident; numbers increase in late autumn.

Swallow. *Hirundo r. rustica* L. Summer visitor. A few pairs nest on the farm, but large numbers are always present during late summer. On 16/9/34 about 200 were seen. Late bird seen on 14/10/34.

Martin. *Delichon u. urbica* (L.). I do not know of any nesting site on the farm, but a number of birds is usually seen. There are a few small colonies about ¾ mile away. I have watched Martins taking mud from the farm, and from the direction of their flight they must have been carrying it to a nesting site nearly a mile away.

Sand-Martin. *Riparia r. riparia* (L.). It is interesting to note that although there is a large sand-pit on the farm, the Sand-Martins do not attempt to nest there, yet just outside the farm by Cooks Ferry Inn, and all along the aqueduct to King George Reservoir, they nest in drainage pipes. Here we have a case not only of adaptation, but of a preference for the adaptation. As a consequence this species has increased in recent years in this area.

Swift. *Apus a. apus* (L.). Common throughout the summer, but no evidence of nesting.

KINGFISHER. *Alcedo atthis ispida* L. Fairly common visitor. One bird was seen on three occasions leaving a hole in the bank of a stream during April 1934, but the site, which appeared to be ideal for nesting, was abandoned.

BRITISH GREAT SPOTTED WOODPECKER. *Dryobates major anglicus* (Hart.) A frequent visitor in the winter months; most of the trees bear evidence of its activities.

CUCKOO. *Cuculus c. canorus* L. Summer visitor, one pair usually seen about the farm. Bird of the year seen on 6/8/34.

LITTLE OWL. *Athene noctua vidalii* A. E. Brehm. Rare visitor. Although this is considered to be a greatly increased species, it is certainly uncommon in this district. During eight years' watching I have only seen or heard the bird on four occasions. One seen on 8/4/34 is my only record for the farm.

WHITE-BREASTED BARN OWL. *Tyto a. alba* (Scop.). A pair of Barn Owls have frequented the farm for many years. I have on many occasions seen them about in the daytime. On 8/4/34 I found one that had been shot; the mate was hovering about the spot. Since this date I have not seen any on the farm, but have heard them not far away. There appears to me to have been a slight increase of this species in recent years along the Lea valley.

KESTREL. *Falco t. tinnunculus* L. One pair regularly seen. These I believe to be the pair that nest each year in Hall Lane just outside the farm. Three young seen on 2/7/33, and four were present on 15/10/33, possibly the same family party.

SPARROW-HAWK. *Accipiter n. nisus* (L.). Only record, one on 14/1/34.

COMMON HERON. *Ardea c. cinerea* L. Frequent visitor, a number usually being put up on early morning visits.

MALLARD. *Anas p. platyrhyncha* L. Two pairs nested in 1933 and reared small families. In 1934 only one pair nested successfully, rearing a family of nine. These family parties stayed about the farm until mid-summer and then went off. A few birds are put up in winter.

TEAL. *Anas c. crecca* L. Only record, one put up on 25/11/34.

WOOD-PIGEON. *Columba p. palumbus* L. Scarce resident. One or two pairs nest on the boundaries, but they are never present in large numbers, the most seen at one time being six.

TURTLE-DOVE. *Streptopelia t. turtur* (L.). Only record, one on 12/8/33.

LAPWING. *Vanellus vanellus* (L.). Four pairs were present during the spring of 1933, but only two pairs nested successfully, rearing two young each. In 1934 two pairs had arrived by March 31st; they stayed to nest and reared one and two young respectively. Another very young bird was seen on June 3rd, evidently one of a later brood. In both seasons the birds nested on very marshy ground, and I think the reason they rear so few young is because of the periodical flooding, which must seriously endanger nest and young. These nesting birds leave towards the end of September but I have seen parties of from 6 to 20 pass over the farm in winter.

Common Sandpiper. *Tringa hypoleucos* L. Passage migrant, recorded as follows:—30/5/33, four; 30/7/33, two; 12/8/33, one; 11/9/33, three; 29/7/34, three; 6/8/34, five; 12/8/34, three.

Green Sandpiper. *Tringa ochropus* L. Recorded as follows:—30/7/33, two; 6/8/33, two; 10/9/33, one; 29/7/34, four; 6/8/34, three; 12/8/34, four; 16/9/34, two.

Common Redshank. *Tringa t. totanus* (L.). In 1933 one pair was about the farm from early spring until July 2nd, and from the actions of the birds I felt certain that at times I was very near either nest or young, but no positive evidence was obtained. The following year four were present on March 25th, and a week later six were seen; after this four remained about the farm until June 3rd, but again no positive evidence of nesting obtained.

Common Snipe. *Capella g. gallinago* (L.). Snipe began to appear on the farm early in August 1933, and were seen in numbers varying from 1 to 35 all through the autumn and winter, the numbers reaching a maximum early in April. In 1934 four birds (probably two pairs) stayed all through the summer, being recorded in each month. Drumming was heard, and two birds seen giving aerial displays during May and June, so there is a possibility of the birds having attempted to nest. 35 to 40 were present again on 11/9/34.

Jack Snipe. *Lymnocryptes minimus* (Brünn.). Rare winter visitor, one seen on each of the following dates:—9/12/33, 24/12/33, 8/4/34.

Black-headed Gull. *Larus r. ridibundus* L. Fairly common in winter, but never present in very large numbers, about 150 being the most seen on any one visit. Many thousands pass over the farm during the evening flight to King George Reservoir. A bird ringed as young at Oppeln, Silesia, S.E. Germany, on June 3rd, 1933, was recovered on the farm on November 1st, 1934.

Common Gull. *Larus c. canus* L. A few occasionally seen in winter.

Herring Gull. *Larus a. argentatus* Pont. Few regularly seen in winter.

Land-Rail. *Crex crex* (L.). One heard calling on May 21st, and again on May 28th, 1933. In previous years the Land-Rail has been recorded from Chingford Marsh on the opposite side of the river, and the bird heard calling was probably driven from that spot, which is now over-run by people and dogs in spring.

Water-Rail. *Rallus a. aquaticus* L. One seen on 11/2/34, and again on 18/3/34.

Moor-Hen. *Gallinula c. chloropus* (L.). Common resident, breeding in large numbers. This bird seems quite at home in the most polluted of waters, and judging from the number of young seen each year appears to thrive in such conditions.

Coot. *Fulica a. atra* L. Only records, two seen on May 15th and June 3rd, 1934, so apparently the Coot is more particular than the Moor-Hen.

Pheasant. *Phasianus colchicus* L. A pair of Pheasants frequented the farm from March 31st until late June in 1934; the cock was heard

calling on a number of occasions. Employees on the farm tell me that young were about in July, but as young Partridges were also about at the time there is some doubt on this point.

Common Partridge. *Perdix p. perdix* (L.). A few pairs nested in both years. Party of nine seen on 19/11/33, three pairs on 31/3/34 and again on 8/4/34, and a few small family parties seen during the summer of 1934.

Notes on Dragonflies, 1934.

By E. B. Pinniger.

THE season for Odonata started very late, and the first productive excursion was on May the 13th. The River Lea was visited at the marshes below Chingford and three species of dragonfly observed. One teneral male and a mature female of *Calopteryx splendens* Harris. were seen and naiads taken which emerged about three days later. *Ischnura elegans* Van der Lind. was common, both sexes mature. *Pyrrhosoma nymphula* Sülz. was scarce and immature.

The New Forest was visited on May 19th to 22nd. *P. nymphula* was common and a few *Libellula depressa* L. were out but nothing more was seen. On the 26th of May, Epping Forest yielded *Cordulia aenea* L., *P. nymphula*, *I. elegans*, *Agrion puella* L. and teneral *Erythromma naias* Hansem. The Basingstoke Canal was worked on May 27th and several species seen, including *L. depressa* (very common), *L. quadrimaculata* L. (very common), *C. aenea* (very common), *Somatochlora metallica* Van der Lind. (teneral), *B. pratense* Müll. (very common), and a large number of Agrionidae. By June *Anax imperator* Leach and *B. pratense* were very common in Epping Forest. *Platycnemis pennipes* Pall. was found on both the River Roding, Essex, and the Basingstoke Canal. A visit to the latter locality on July 28th found *S. metallica* still on the wing with *Æ. juncea* L. and *Æ. cyanea* Müll. out. Hainault Forest, which was visited on August 4th, produced *Sympetrum sanguineum* Müll. and *Orthetrum cancellatum* L. commonly. I believe the last species to be a new one to the County of Essex. *Æshna mixta* Latr. was found at Byfleet, Surrey, and Blean Woods, Kent, during August. *Lestes dryas* Kirby still persists in a favoured spot on the Essex marshes and was taken this season.

The last species seen were examples of *S. sanguineum* and *S. striolatum*, still abundant in Epping Forest on the 28th of October.

British Butterflies in 1934.

By H. J. Burkill, M.A., F.R.G.S.

I DESIRE to thank the following members of the Society and other correspondents who have kindly assisted me with information during the past year, viz., Misses E. M. Gibson, C. E. Longfield, and E. M. Miller, and Messrs R. Adkin, O. A. Alexander, E. L. Arnold and G. L. Barclay (both of Holt School), E. B. Bingham, K. G. Blair, J. O. Braithwaite, E. A. Cockayne, C. L. Collenette, G. F. Crowther, R. C. Cyriax, Major J. C. Eales White, R. S. R. Fitter, W. J. Fordham, W. E. Gaze, G. H. Heath, D. Leatherdale, C. Mellows, C. Nicholson, E. B. Pinniger, R. W. Robbins, G. B. Routledge; St John's School, Leatherhead; W. O. Steel, G. Talbot, L. J. Tremayne, Brig.-Gen. B. Tulloch, C. L. Watson, E. H. Wattson, C. E. Wilson of Harrow School, and D. G. Underhill.

The mention of one name in the above list strikes a melancholy echo, as I shall never again have the pleasure of receiving records from Mr G. B. Routledge, whose death occurred on 19th December. Though unknown to me personally, I always found him a most courteous correspondent, willing to give information on any point I put to him.

Another hot summer with little rain in the South was responsible for several reports showing generally an increase in the numbers of butterflies seen. *Polygonia c-album* and *Limenitis camilla* have continued to spread round London, while *Argynnis cydippe* and *Leptidea sinapis* have reached places within the Society's area. This extension of the range of certain species has attracted the attention of several of my correspondents, while others have mentioned the question of hibernation. Mr Wattson has sent me information received from other writers, one of whom stated he had found *Vanessa atalanta* every month of the winter hibernating under dead leaves, in hollow oaks or willows, and in old barns. Another one finds them in the belfry of his Parish Church. There were others who testified to finding them in hiding in the winter. These details come with a timely bit of evidence to the article by Brig.-Gen. Tulloch in *The Entomologist*, February 1935. Mr Nicholson has mentioned *V. cardui* as hibernating, and the subject is one that might with advantage be further investigated by our members.

The order and nomenclature in the following notes are those given in the Royal Entomological Society's list published a year ago.

Danaus plexippus L. Not personally seen, but Mr Nicholson sends in records of 9 captures during the year.

Pararge egeria L., fairly common in the South in most districts. Several seen Co. Cork (C.E.L.). *P. megera* L., generally common in the South and West. Both broods common near Carlisle (G.B.R.). Very common, S.W. Ireland (C.E.L. and C.M.). *Erebia epiphron* Knoch, abundant Keswick and Rannoch, early July (C.M.). *E. aethiops* Esp., common to plentiful, Inverness-shire (G.L.B.), and Arnside

(R.W.R. and C.E.W.). *Satyrus galathea* L., abundant in many places, and said to be increasing its range. *Eumenis semele* L., plentiful in a few districts, but often absent in others. *Maniola tithonus* L., plentiful in the South in most localities. *M. jurtina* L., very abundant almost everywhere. "In Co. Cork in thousands" (C.E.L.). *Coenonympha pamphilus* L., mostly common, but not so everywhere. *C. tullia* Muller, Western Ross (C.L.W.), and Aviemore (K.G.B.). *Aphantopus hyperanthus* L., increasing; very abundant in some places. "A Ringlet year in Co. Cork" (C.E.L.).

Argynnis selene Schiff., common in places in the Home Counties. Common near Carlisle (G.B.R.). *A. euphrosyne* L., common to abundant in some spots in the South. Also Western Ross (C.L.W.), and seen at Aviemore (K.G.B.). *A. aglaia* L., plentiful in several places. *A. cydippe* L., Claygate (R.S.R.F.), Byfleet (E.A.C.), and Bookham (H.J.B.). *A. paphia* L., plentiful in many places and seen within fifteen miles of London. *Euphydryas aurinia* Rott., only a few records. Monmouth (B.T. and G.F.C.). Still common near Carlisle (G.B.R.). Very abundant in Dorset (C.M.). *Melitaea cinxia* L., Isle of Wight (W.J.F. and C.M.). *M. athalia* Rott., Sussex (R.A.), Kent (W.J.F.), and common in one district (C.M.). Two unconfirmed reports of this species reached me, one in Monmouth and the other near Leatherhead.

Vanessa atalanta L., fair but not in numbers as in 1933. The dates extend from 31st March in Monmouth (B.T.) to 7th November at Richmond, Surrey (J.C.E.W.), and 25th November at Truro (C.N.). *V. cardui* L., a poor year. Cornwall (C.N.). Common in June, but not afterwards near Leatherhead (St.J.). Common at Southgate and Edmonton in August (W.O.S.). All other correspondents report only a few. *Aglais urticae* L. larvae seemed to be plentiful in early summer. I took three lots and bred them up, and as only a very few were parasitised I expected a lot of wild ones later, but it was not abundant, and from all accounts is still below its old numbers. *Nymphalis polychloros* L., more reported than in any previous year. Records from Sussex, Bucks, Berks, Hants, Herts, Essex and Surrey. *N. io* L. Locally abundant, especially so in the spring in Monmouth (B.T. and G.F.C.). Mr Mellows remarks on the number and size of those seen in Co. Kerry. *Polygonia c-album* L. has reached Chelmsford (E.M.M.), and Broxbourne (E.L.A.). Seen in Hampstead (R.C.C.), Richmond, Surrey, and Kingston Hill (C.L.C.). Plentiful in various places in Surrey (D.L. and St.J.). In the West it has been common and has spread to Truro (C.N.). *Apatura iris* L., one taken (O.A.A.), and I have heard of others in the South. *Limenitis camilla* L., abundant in places in Surrey and Sussex. Reported from Essex and Herts.

Hemearis lucina L., a few records from round London, and also from Arnside (C.E.W.).

Cupido minimus Fuessl., near Eastbourne (R.A.). Near Petersfield (E.M.G.). Plentiful in two localities on the North Downs (St.J.). *Plebejus argus* L., in fair numbers in the New Forest (E.M.G.). Numerous near Holt (G.L.B.), and seen three times on Epsom Downs (St.J.). *Aricia agestis* Schiff., more frequent than usual (R.A.). Ewhurst

(E.H.W.). Near Padstow (G.L.B.). Arnside (R.W.R.). Ewell and Colley Hill (R.S.R.F.). Several freshly emerged near Kenley when the Society was down there. *Polyommatus icarus* Rott., generally more numerous and apparently keeping up the improvement noticed a year ago. Very large specimens, Co. Kerry (C.M.). Very common, Co. Cork (C.E.L.). *Lysandra coridon* Poda., locally plentiful, and in lesser numbers in some other places. *L. bellargus* Rott., plentiful in Sussex and Kent, with a few in other areas. I failed to see any on the North Downs where they occur most years. *Maculinea arion* L. was not reported by anyone. *Lycaenopsis argiolus* L., on the whole the spring brood was a good one, but the summer one showed reduced numbers. *Lycaena phlaeas* L., though about in most places, was in nothing like the profusion of the previous year. *Callophrys rubi* L., in good numbers in its haunts. *Thecla quercus* L., common locally (B.T.). A few seen in the New Forest or elsewhere in Hants (E.M.G.). Haslemere (E.L.A.). *Strymon w-album* Knoch, recorded from more fresh localities.

Leptidea sinapis L. In good numbers in its old haunts, and is extending its range, having been reported within twenty miles of London. In order to give the insect a chance of establishing itself there, I omit the locality and the names of the recorders, but I can add that I saw the species in the wood named. *Pieris brassicae* L., hardly up to the usual numbers, very few larvae being seen in the autumn. The same can be said of *P. rapae* L. Most observers say *P. napi* L. was common, but others say a decided decrease in numbers. *Euchloe cardamines* L., generally plentiful.

It was certainly not a " Clouded Yellow " year, but a few *Colias hyale* L. were taken in Kent (O.A.A.). *C. croceus* Fourcroy, twelve seen at Eastbourne one day (R.A.). Three near Carlisle (G.B.R.). Three in the Isle of Wight (K.G.B.). A few at Branscombe (D.L.). One at Padstow (G.L.B.). None in the S.W. of Ireland (C.M.). *Gonepteryx rhamni* L., plentiful in the spring but a large number of the larvae were ichneumoned.

Papilio machaon L., in good numbers in the Fen districts.

Erynnis tages L., fairly plentiful. *Syrichtus malvae* L., common in places. Good numbers seen in Surrey on the North Downs. *Adopoea sylvestris* Poda., only noticed by a few, who say common to abundant. *A. lineola* Ochs., plentiful at Benfleet (K.G.B.). " Seen in my garden at Bishop's Stortford " (C.M.). *Hesperia comma* L., missed by most people. Recorded from Royston (C.M.) and Eynsford (K.G.B.). Absent from Box Hill and Colley Hill (R.S.R.F.). I also missed it this year on the North Downs. *Ochlodes venata* Brem. & Grey, ssp. *septentrionalis* Ver., common.

Flora of the River Mole.

SOME OBSERVATIONS ON A DRIED-UP WATER COURSE.

By Harold J. Burkill, M.A., F.R.G.S.

THE River Mole south of Leatherhead has an underground channel from near Box Hill to just above Leatherhead, a length of about three miles. The water seeps gradually out of sight and reappears just as gradually further north, but this underground channel is not large enough to accommodate all the water in normal times, so that there is usually a steady river above ground, while in dry summers the volume shrinks so much that the river bed may only be occupied by a narrow stream, or on occasions by a series of disconnected pools. In 1933 this last condition was in evidence for some weeks when no stream ran over the stones, and in 1934 the situation was much drier. Hardly a pool was left in the stretch from Norbury Park to just above Thorncroft.

From time to time I had wandered down into the bed of the river in different places, but it was not until 25th of last August that I walked along it for some distance, and then I was impressed by the variety of plants that had sprung up since the river ceased flowing in the early summer. I suggested to several members of the Botanical Section of the Society that it might be worth while making a further study of the subject, so a second visit was paid on 1st September, when I was accompanied by Messrs R. W. Robbins and J. E. S. Dallas, whose assistance in identifying several of the plants was most valuable.

The portion of the river we worked was only a short one, the half mile immediately below the bridge at the north end of Norbury Park. Here the river bed consists chiefly of rounded water-worn flint stones with a thin coating of fine mud, but in places the solid chalk comes to the surface. The floor is very irregular, big depressions occurring where the current has scoured out its channel, while there are also banks of stone lying along or across the direction of flow. On either side we noticed from time to time shoals of blackish mud, irregular in size and shape, rising in places as much as three feet from the central floor. These shoals are as a rule submerged. Outside these are the banks, usually steep and often vertical.

I listed the plants, taking note of the different situations of the various species, and these are given below in their respective habitats. No attempt was made to deal with the trees on the banks, while the grasses were also ignored except one species, and the list is not claimed to be in any way exhaustive of the possibilities; it is merely an example of a number of species whose seeds must have been washed down by the stream and which seized their opportunity to develop as the waters dried up. It will be seen that more species were found in mid-channel among the stones than on the banks or the mud, thus showing that the seeds from which these plants sprung had themselves come down

stream some distance and had not fallen from plants growing on the banks nearby. Most of the plants were themselves seeding, but whatever seeds they produced were probably carried away a few days later by the reappearance of the river, which I found on my next visit to be flowing again and covering the mud patches. At times the waters rise and flood the neighbouring meadows, and they may of course collect some seeds from these which are then washed into the channel. Others may be blown in by the winds sweeping through the Mickleham gap in the hills.

The names are taken from *The London Catalogue of British Plants*, 11th edition.

(1) Species found on the river banks, below meadow level:—

Papaver somniferum L., *P. Rhoeas* L., *Nasturtium amphibium* R. Br., *Impatiens biflora* Walt., *I. parviflora* DC., *Lythrum Salicaria* L., *Conium maculatum* L., *Angelica sylvestris* L., *Dipsacus pilosus* L., *Tanacetum vulgare* L., *Carduus crispus* L., *Cnicus arvensis* Hoffm., *Lysimachia vulgaris* L., *Cuscuta europaea* L., *Scrophularia nodosa* L., *Lycopus europaeus* L., *Scutellaria galericulata* L., *Atriplex hastata* L., and *Urtica dioica* L.

The *Cuscuta europaea* was noticed growing on *Tanacetum vulgare*, *Cnicus arvensis*, and *Urtica dioica*. The most striking plant seen was *Angelica sylvestris*, of which there was a very fine clump eight feet high at the foot of the bank below the bridge into Norbury Park.

The Rev. P. H. Cooke visited the river four days after we did and added *Lappula echinata* Gilib. to the list, having found this plant growing at the foot of the right bank.

(2) Species found on the mud banks:—

Nasturtium amphibium R. Br., *Erysimum cheiranthoides* L., *Impatiens biflora* Walt., *I. parviflora* DC., *Lythrum Salicaria* L., *Conium maculatum* L., *Apium nodiflorum* Reichb., *Bidens tripartita* L., *Tanacetum vulgare* L., *Arctium majus* Bernh., *Sonchus asper* Hill, *Lysimachia vulgaris* L., *Cuscuta europaea* L., on *Tanacetum vulgare* and *Urtica dioica*, *Solanum Dulcamara* L., *Scrophularia alata* Gilib., *S. nodosa* L., *Lycopus europaeus* L., *Scutellaria galericulata* L., *Atriplex hastata* L., *Polygonum Convolvulus* L., *Urtica dioica* L., *Iris Pseudacorus* L., *Alisma Plantago-aquatica* L., *Butomus umbellatus* L., and *Phalaris arundinacea* L.

Two plants, if not more, of *Scrophularia alata* were seen, one of them in flower, at the foot of a mud bank on the right-hand side of the stony bed. *Lycopus europaeus* was growing very luxuriantly in places, one plant on a mud bank being four feet in height. The *Phalaris arundinacea* was dominant in one place, where dense masses seemed to be blocking up the river bed.

(3) Species found on the chalk bed and among the flint stones:—

Ranunculus repens L., *Papaver Rhoeas* L., *Nasturtium amphibium* R. Br., *Erysimum cheiranthoides* L., *Brassica arvensis* O. Kuntze,

Coronopus didymus Sm., *Stellaria aquatica* Scop., *S. media* Vill., *Impatiens biflora* Walt., *I. parviflora* DC., *Callitriche stagnalis* Scop., *Lythrum Salicaria* L., *Galium verum* L., *G. Mollugo* L., *Bellis perennis* L., *Filago germanica* L., *Gnaphalium uliginosum* L., *Bidens tripartita* L., *Matricaria inodora* L., *Senecio vulgaris* L., *Sonchus asper* Hill, *Anagallis arvensis* L., *Myosotis palustris* Hill, *Cuscuta europaea* L., growing on *Nasturtium amphibium*; *Solanum Dulcamara* L., *S. nigrum* L., *Scrophularia aquatica* L., *Mentha arvensis* L., *Lycopus europaeus* L., *Scutellaria galericulata* L., *Plantago major* L., *Chenopodium polyspermum* L., *C. album* L., *C. rubrum* L., *Atriplex patula* L., *A. hastata* L., *Polygonum Convolvulus* L., *P. Hydropiper* L., *P. Persicaria* L., *P. lapathifolium* L., *Rumex crispus* L., *Urtica dioica* L., *Iris Pseudacorus* L., *Sparganium ramosum* Curt., *Alisma Plantago-aquatica* L., *Sagittaria sagittifolia* L., *Butomus umbellatus* L., and *Phalaris arundinacea* L.

The *Nasturtium amphibium* was dominant across the floor of the channel and covered a large area, while a little higher up *Chenopodium rubrum* took its place in dense beds, and still further on we saw *C. polyspermum* almost as abundant.

Some of the plants had been attacked by gall-causing insects, most of which would have far less chance of surviving under water than the plants themselves. I noted *Dasyneura sisymbrii* Schrank on *Nasturtium amphibium*, *Pemphigus filaginis* Fonsc. on *Filago germanica*, *Urophora cardui* L. on *Cnicus arvensis*, *Aphis atriplicis* L. on *Atriplex hastata*, and *Perrisia urticae* Perris, and *Trioza urticae* L. on *Urtica dioica*.

Hundreds of empty shells of fresh water snails (*Limnaea* spp.) were seen in places on the Chalk floor or among the flints, their inhabitants having perished in the drought. A few *Anodonta* were noticed in one of the pools.

Archaeological Inspections, 1934.

By G. J. B. Fox.

RECORD visits were paid to the Churches of St Margaret Pattens, Eastcheap, E.C., and Hayes (Middlesex) on 13th January and 13th October respectively.

ST MARGARET PATTENS.

The Church stands at the south end of Rood Lane—so called from a Rood in the Churchyard wantonly destroyed in the night of the 23rd May 1538—but previously known as St Margaret Pattens Lane or Street. An earlier Church, held by Westminster Abbey, is mentioned in a Charter of Henry I as the "wooden chapel of St Margaret of Eschep"; in a XIIc. deed Ranulf and Robert Patin are mentioned as

benefactors, hence the addition to the Saint's name. Stow says the Lane had its name because pattens were usually made and sold there, but he also says that the pattenmakers were "cleane wore out." (Kingsford in his edition of Stow's *Survey* notes that the first statement is purely conjectural). The spelling varies:—"Patynz (temp. John) in various forms; Paten, etc.; Patton, etc."

The Church mentioned by Stow as "newly builded" in 1538 was burnt in the Great Fire of 1666; rebuilt by Wren in 1684-1689 at a cost of £4986 18s 8d (*Archaeologia*, LXVI) in rectangular form with eastern projection, with west vestibule, north aisle, north-west tower, north-east vestry, of brick and Portland stone, and without structural division between nave and chancel, or chancel screen.

Interior:—The south wall has Corinthian pilasters on pedestals, supporting a continuous architrave; on the north three columns mark off the aisle; the ceiling is flat and coved at the sides (that of the aisle is flat and plain); the walls are panelled; the communion rails have twisted balusters and panelled posts; the reredos has three divisions with Corinthian columns and entablature; the central division has a segmental pediment; each side division has two panels with Lord's Prayer, etc., and carvings, and the central a subject in tapestry; the pulpit is of oak and hexagonal; the marble font has a moulded bowl with heads and swags, its stem is octagonal with acanthus ornament; the choir stalls are remade, on one panel is scratched "D.H. 1709"; the Litany desk is made up of old woodwork, and shows an eagle with serpent; at the west end are two Churchwarden pews with canopies supported on metal columns, panelled backs with openings filled in with original glass; the soffit of the south pew has the monogram C.W., etc., and 1686; (Wren had a house in Love Lane which remained till 1906); the south pew has a carved lion, the north pew a unicorn; the large metal cross was originally on the steeple; a pair of pattens are in a glass case, and were presented by the Pattenmakers' Company, whose banner hangs from the north gallery; there are two Swordstands. The aisle has at its east end a reredos made from a door-head, with Corinthian pilasters, entablature and pediment; the latter has a Della Robbia plaque of the Virgin and Child; the altar front has pictures of the Virgin, etc.; at the west end is an engraving after Raphael of St Margaret and the dragon. The front of the north gallery has a moulded cornice and base carried round the columns, each bay has three panels; the staircase is at the west end; the west gallery is supported by two fluted Ionic columns and two fluted pilasters; its front is panelled and has the Royal Arms (? James II); on the north wall of the nave are the arms of Charles I, with 1649 and "Touch not mine anointed." The vestry projects from the east end of the north aisle.

Exterior:—The south front is partly hidden by a house; one bay has a round-headed and a round window; the west bay has a square-headed doorway with architrave, cornice and segmental pediment, over it are two circular windows; it is finished with a cornice and a plain parapet. The west side has a cornice and pediment and a circular window in the tympanum; the central bay has a round-headed doorway

with moulded imposts, etc., Doric pilasters and entablature; the west window is round-headed, with pilasters, keystone and swags; each side bay has a round-headed and a circular window. The tower is of Portland stone, in four stages marked by cornices: (1) has a square-headed doorway in its north face, two windows in west face; (2) and (3) each has a circular window in the west face; (4, the bell chamber) has a two-light square-headed window in each face; (2), (3), and (4) have angle pilasters supporting an entablature; the balustraded parapet has angle pedestals; the octagonal timber spire is panelled with lead with rectangular or oval lunettes, and has a vane; there are two bells of 1624 by Thos. Bartlett. The north side shows four round-headed windows, the easternmost being blocked, a square-headed doorway, cornice and parapet. The east side has a plain cornice and parapet; the central bay projects, and the pediment has a circular window in the tympanum; a large round-headed window with imposts and keystone; each side bay has two windows.

HAYES.

The place-name has varied greatly; in 790 it occurs as Liganhase or Lingahaese (Linga apparently meaning heather, and Hese, brushwood); Haese (831); Hesa (D.B.); Heys (Cal. of F.R., 1498); Hayes (Valor, 1535), etc.; "Haia" was an enclosure for catching and slaughtering wild animals.

The parish was a peculiar of the Archbishops of Canterbury, and was granted to them in 790; in Domesday Book a priest is mentioned; in 1093 Anselm, Archbishop of Canterbury, was resident here.

The original Church was probably of wood, like that at Greensted, near Chipping Ongar, and was replaced, c.1300, by one of stone and flint, showing chancel and nave; later, aisles were added, a west tower and a south porch; it was restored in 1873/4 by Scott.

The chancel:—The east window is a P. insertion of five lights, and in it were coats-of-arms; other windows are E.E. and D.; there are piscina, aumbry (in east wall) and triple sedilia; screens once crossed the Church from north to south, portions exist at the west end made up into a partition. The nave was altered in XIVc.; the arcades have four bays with octagonal piers; two at the north-west show a red chessboard pattern; the pulpit was on an arch over the centre alley with a reading desk at each end, approached by stairs in the aisles (an illustration is in Mill's *History of the Parish*). Each aisle had a chapel at its east end, screened off; each had a chantry priest; that in the north aisle was the chapel of Hayes Park and was perhaps founded by Walter Grene (d.1430); the picture at the east end (Adoration of the Shepherds), formerly over the high altar, was given by James Jenyns, Lord of the Manor, in 1726; the south aisle has two brackets on the east wall, and a piscina. A painting, somewhat defaced, of St Christopher and the Child Christ remains on the north wall of the north aisle, opposite the south doorway; it was an article of faith that anyone seeing such a picture and saying a prayer, would not be subject to sorrow or death

on that day; a mermaid, a fisherman, a crab, eels, etc., and bullrushes are also depicted. Traces of painting remain at the east end of the aisle also. (Reference should be made to C. Hussey's *Supplement to Blomefield's Norfolk* (1926) for details of this legend.)

The nave roof is panelled, and the bosses are carved with the Passion Emblems, Tudor rose, etc. The wall plate on the north side of the chancel slightly projects at the west, and is supported by three stone arches with grotesque corbels.

The font is Norman and has a circular bowl carved with foliage, on a circular shaft; eight detached small columns have neither caps nor bases.

Brasses:—In choir—Robt. Lenee or Levee, rector, demi-effigy (c. 1370); Robt. Burgeys, rector, inscription (1421); Henry Clerke, clerk of the peace, inscription (1609); in north aisle—Walter Grene, on table-tomb, in armour; two shields, mutilated marginal inscription (1456); in nave—inscription to Anne, daughter of Alan Hendre and Anne Millet (1605); Rev. S. Spencer (1730); in south aisle—Thomas Higate, on table-tomb, in armour, and wife Elizabeth, mutilated, five sons, four daughters, six Latin and six English verses, coat-of-arms, one shield (1576); Veare Jenyns, daughter of Sir James Palmer of Dornye (1644); E. C. Walker (1810).

Monuments:—Sir E. Fenner (1612), Judge of the King's Bench; recumbent figure; inscription and coat-of-arms; on north wall of chancel. Edw. Fenner, son of Sir Edward (1614); half length; inscription removed; on south wall of chancel. Sir George Cooke, Lord of the Manor (1741); on south wall. Dorothy, wife of John Jenyns (1720), on north wall. Also others and ledgers. In the churchyard are many; one to a lady—

> She was, but words are wanting to say what;
> Think what a wife should be, and she was that.

Also one to John Mason Neale, late of the East India House (1819).

There are many graffiti on the piers of the arcades; dates (1581, etc.), initials, names, crosses, etc.; one unusual graffito shows the Resurrection.

The registers begin in 1557 and contain references to C. Wesley, burials in woollen and linen, bad behaviour in Church (not by the laity only!).

The Plate includes a cup of 1623, etc.

The west tower has three stages; it has been suggested that the base may be pre-Norman; the south porch is of oak, c. 1500, with original doorway and ironwork. The lychgate is unusual, it swings on a pivot, as at Heston; a " right-of-way " passes through the churchyard on the south side.

Contributions towards a Study of London's Starlings.

IN 1933 the Ornithological Section invited its members to undertake an investigation into the habits of the Starlings in the London area. From among the reports submitted the following two have been selected as being of special interest. Mr Hale was able to track the line of flight of Starlings which feed on the Hendon sewage farm and roost in Trafalgar Square and St James's Park. He traced it as far as Baker Street and showed the line on a map. If this line is extended it passes through Trafalgar Square. Mr Johnston, on the other hand, followed flocks which feed in Greater London and roost some miles beyond Bishops Stortford. Much more work of a similar nature is required before we can piece together the whole story of London's Starlings.

STARLINGS OF HENDON DISTRICT.

By R. W. Hale.

The chief result of my observations has been to track a flight line from Hendon to Baker Street. Unfortunately, I have not had an opportunity to complete the last mile or so to the roost, but Mr Bayne tells me that the extension of this line reaches Trafalgar Square.

I first noticed the flight line from Starlings passing over my tennis club in Hocroft Avenue, Cricklewood Lane. At about 6.45 p.m. on June 2nd, 1933, Starlings were steadily passing overhead to the South. This was over two hours before sunset. I also noticed that some ten or twelve Starlings, which seemed to have gathered expectantly from the neighbouring gardens at the top of a tall elm, eventually joined one of the passing flocks. Sometimes the passing birds uttered a short, quiet, twittering flight note.

From that day I rarely failed to see the Starlings passing overhead when I was at tennis. Sometimes they passed high, sometimes very low, just above the housetops. They came over along a front extending for about a quarter of a mile. I did not feel justified in drawing definite conclusions as to the reason for the varying altitude, because on the same evening different parties would fly both high and low. It was noticeable, however, that on warm, still, sunny evenings they usually came high overhead and kept low if there was a strong wind, more especially if it was against them.

Every evening in June they came over in good numbers. There would be a passage of birds for about half-an-hour in parties of ten or so up to about two hundred, with desultory parties for half-an-hour both before and after the peak period. By August, however, the numbers had noticeably increased. On August 26th, 1933, single birds were passing from 4.30 p.m. onwards and the numbers increased until from

6 p.m. to 6.30 p.m. the main flight went over. Sometimes I would see one large flock of several hundred birds spread over a broad front. The formation of these large flocks continually changed. Usually only one such big flock would fly over in any one evening.

As soon as possible I tried to pick up the flocks further along the route and on August 28th I found them passing over Finchley Road Station. The biggest flock passed high overhead at 6.20 p.m., but parties were also going over fairly low. The next points at which I picked them up were near Lord's Cricket Ground and at Baker Street Station. On September 7th Starlings were passing low over Marylebone Road towards the S.S.W.

The next move was to follow them out beyond Cricklewood and, suspecting the Hendon Sewage Farm as the source of these flocks, I went there on October 28th. Hundreds of Starlings were feeding on the sprinklers and there was a dense flock feeding in a field nearby with Gulls and Carrion Crows. These Starlings often rose, circled round and settled again. At 3.15 p.m. I noticed a few Starlings passing over fairly high from the direction of Mill Hill—none of these parties, however, exceeded twenty and their occurrence was irregular. Meanwhile some of the birds in the field had gathered in a tree, others in a hedge, and many were crossing the road Northwards and settling on the sprinklers. At about 3.30 p.m. the birds on the sprinklers began steadily to rise in small parties and fly South, and soon those in the field and on the tree rose in a dense flock and followed them. While waiting for the birds to leave, I had also noticed that other small parties of about half-a-dozen were coming in from the West and settling on the sprinklers. Since then I have noted a few birds approaching the Sewage Farm from the West over the Welsh Harp (or Brent Reservoir). Beyond the Welsh Harp Starlings join another flight line passing over Neasden.

I have been North of the Sewage Farm and noted Starlings passing over from Mill Hill, but the largest party was not more than twenty and they went over at infrequent intervals. The main source seems to be the Sewage Farm.

Another flight line passes over Wembley Park. The number of birds is not large, but I have seen one flock of at least a hundred. They do not fly over in a steady stream, yet there is a definite line from Kenton and Wealdstone over Wembley Park and Neasden. Although most Starlings are flying South-west, a few travel in the opposite direction. There is no Starling roost in the Wembley Park area.

During the course of my observations on Starlings I have seen a number of House Sparrows following the same route as the birds from the Sewage Farm. Sparrows passed over the tennis courts singly and in small parties up to six in number. This was confirmed at Hendon, where I noticed Sparrows flying over towards London. It was difficult to estimate numbers, but not more than a hundred would pass in fifteen minutes' watching. They were coming from further out, and on December 31st, 1933, on the north side of the Welsh Harp I was interested to see about fifteen Sparrows in the top of a tall tree at 3.25 p.m. In a few minutes seven of these left, flying in a South-westerly direction.

Those remaining were joined by two others and at 3.35 p.m. six flew off in the same direction. Three more came to the tree and at 3.40 p.m. the remainder departed. One evening in St James' Park I noticed a few Sparrows coming in to roost.

THE STARLINGS OF WIPERS WOOD.

By F. J. Johnston.

Three weeks in January 1933 were devoted to following up the evening flighting line of the Starlings. Starting from a point at Chingford commanding a view of the Lea Valley, the hunt went north over Waltham and Roydon by successive stages, and at the end of a week we had reason to believe that we were in touch with our objective—the roosting place. Our surmise was premature, for the following week-end proved the flight line to Standon with the trail still leading north. The end of the quest was accomplished on the next occasion and the roost found at Albury Hall Park, some two miles north of Little Hadham and six miles north-west of Bishops Stortford. From our starting point we had followed the birds for twenty miles.

The roost is known as Wipers Wood, a rectangular plantation about 500 yards long and 200 yards wide. By the courtesy of Mr Bradley, the Estate Agent, we were permitted to inspect the plantation, and as we passed along the ride we found a veritable thicket of whitethorn interspersed with a few larches and pines, the general height of which would be no more than 15 to 20 feet. The branches and ground beneath were defiled with excreta and a strong pungent smell as of the hen-roost permeated the atmosphere.

At four o'clock flocks of Finches and Buntings like wind-tossed leaves commenced to arrive in companies large and small. We also observed what appeared to be large flocks of Starlings come up out of the horizon to disappear again at some point in the near distance, the reason for which transpired a little later.

We left the wood to take up a point of vantage with the object of watching for birds coming in from the south (London) side, and here we made the discovery that large flocks of Starlings were at feed on both pasture and ploughland, and incoming birds joined them. One vast throng on the pasture stretched like a broad black band for some hundreds of yards. Then we became aware of other arrivals settling in various outlying trees within the park.

It seemed as though at a signal and by a common impulse the various flocks commenced to converge from all directions into the roost. We watched one vast army of birds come in over the plough, and, flying low, not more than a yard high, they gave the uncanny impression of a flowing river of jet or a giant serpent crossing the red-brown earth. We could not see the head or tail of it.

Over the wood itself dense masses of birds were wheeling and tossing as dust in a whirlwind; myriads of black atoms rising and falling in a fantastic devil-dance. One impression of the bushes that were so lately

stark in their nakedness was that they now became clothed in funereal plumes; another, that they were laden with dense clusters of strange black fruit. As we walked up the ride the birds rose in clouds before us, the aggregate of their wing-beats creating a strong current of air on our faces, recalling memories of a plague of locusts in the bush veldt of South Africa. Within the roost the shrill chatter of the multitude was an unvarying crescendo. A furlong away it was as the noise of a dozen mammoth engines with the steam escaping at full blast, and at half-a-mile, as the roar of a mighty waterfall.

The Starlings have been in possession for some five years and have resisted all attempts by the owner with guns and fireworks to force them to other quarters. On one occasion these measures appeared to have succeeded, but within three weeks they were back in full strength once more.

Since then I have made further visits to, and have had news of, the roost from Mr Bradley.

In November 1933 he wrote saying the birds had been dispersed by means of sulphur fumes. In February 1934 the birds were back in considerable numbers, but only a small proportion of the multitudes of the previous winter. I think it is fairly well established that when disturbed from Wipers Wood the Starlings used a roost near Braughing, a few miles away.

There is still a large flight of birds up the Lea Valley to Albury, or alternately the Braughing Roost, but a recent development, of which I have only just become acquainted, is that Starlings have commenced using the Whitethorn thickets on Yardley Hill, Chingford, and quite a few thousand birds are now making their roosting quarters there. Yardley Hill is on Forest land, overlooking the Lea Valley, the site therefore is fortunately chosen, insomuch that they are scarcely likely to meet with interference to their continued occupation, besides being easily accessible for the purpose of observation.

After watching the evening performance in 1933, I found the eyes were so affected, that long after the flighting had actually ceased, flocks appeared to be still coming up from the horizon, and it was only by means of the field glasses that we were persuaded that it was reflex action induced by the continual register of the incoming hordes on the vision.

Plant Gall Records for 1934.

Compiled by H. J. Burkill, M.A., F.R.G.S.

THE first half of the year seemed to be even less productive of specimens than 1933. With the exception of *Biorrhiza pallida* Oliv., Oak galls were only to be seen in small numbers, and this state was reflected in the autumn forms. Root galls on other plants were, however, much more numerous in various places than we have seen them in

previous years. Some of the Midge galls were conspicuous in the latter half of the season, while there were various specimens found whose identity could not be specifically determined.

The following probably represent fairly accurately the more interesting records for the year: —

CYNIPIDAE.

Quercus Robur L. Four years ago Mr Niblett found some catkin galls which he was at the time unable to identify. This year the insects have been determined as *Andricus xanthopsis* Schl., a species only previously recorded for Britain by Bagnall and Harrison in the north of England. He also records *A. amenti* Giraud, another catkin gall that is rarely seen. The undetermined bud gall found in 1930 on Coldharbour Common was found again this year, but no flies were obtained, the galls brought in failing to produce the insects. The flies from the first series are still awaiting identification at South Kensington.

Papaver Rhoeas L. was found attacked by *Aylax papaveris* Perr. in some numbers in two places near Ockham, and by *A. minor* Htg. very plentifully round Fetcham, and in lesser numbers near Mickleham. A few galls of *A. papaveris* were also found on *P. dubium* L. near Ockham.

Centaurea Scabiosa L. provided many fine colonies of *Isocolus scabiosae* Gir. in different places in Surrey. *I. fitchi* Kieff. was found on Epsom Downs and at Fetcham. *I. rogenhoferi* Wachtl. was reported regularly from Surrey but not in any quantity. It was also recorded from near Cambridge (H. M. Burkill).

Tragopogon minus Mill. also bore many clumps of galls of *Aulacidea pigeoti* Kieff. in Surrey. On some of the plants the galls were at the base of the leaves well up the stem instead of being on the root.

Sonchus arvensis L. Three specimens of *Timaspis sonchi* Stefani were obtained near Epsom in August. We believe this insect has only been recorded once before for Britain, and then on the root of *S. asper* Hill.

CHALCIDIDAE.

Agropyron repens Beauv. galled by *Isosoma graminicola* Gir., Epsom Downs.

TENTHREDINIDAE.

Pontania proxima Lepel was not nearly so plentiful as it was in 1933, though the second brood was about up to the average in numbers. Few records were sent in of other species, but *Salix cinerea* L. provided galls of *Cryptocampus ater* Jur. near West Horsley. Mr Niblett records *Pontania viminalis* Htg. on *Salix purpurea* L.

COLEOPTERA.

Lotus corniculatus L. Mr Niblett reports *Apion loti* Kir. emerging in September from galled seed pods.

Linaria vulgaris Mill. was well galled by *Mecinus noctis* Herbst. in Surrey, while *Plantago maritima* L. attacked by *M. collaris* Germar was sent in from Hunstanton (H. M. Burkill).

LEPIDOPTERA.

Epilobium montanum L. galled by *Mompha decorella* Steph. near Ockham.

Heracleum Sphondylium L. Stems swollen and twisted, having cavities in them containing cast skins of a species of Micro-lepidoptera. Fetcham.

Achillea Millefolium L. Stems and side shoots swollen and malformed, containing larvae of a Micro-lepidopteron. Fetcham and Limpsfield.

Polygonum aviculare L. One specimen of *Augasma aeratella* Zell. near Chigwell (B. T. Ward). This moth seems to be local, and we have not heard of the gall in the Society's district before.

Salix cinerea L. Swellings induced by *Trochilium formicaeformis* Esp. Barnthorn's Wood, Effingham.

CECIDOMYIDAE.

Hypericum humifusum L. *Perrisia hyperici* Bremi. Box Hill.

Pimpinella Saxifraga L. (1) *Contarinia traili* Kieff. Epsom Downs and elsewhere. (2) *Lasioptera carophila* F. Loew. Frequent with the last named. (3) *Kiefferia pimpinellae* F. Loew and (4) *Trotteria umbelliferarum* Kieff. Both frequent.

Pimpinella major Huds. (1) *Contarinia traili* Kieff. (2) *Lasioptera carophila* F. Loew. Both Colley Hill, Reigate.

Silaus flavescens Bernh. (1) *Kiefferia pimpinellae* F. Loew. Bookham Common. (2) *Lasioptera carophila* F. Loew. Bookham Common and Downs Lane, Leatherhead. (3) Unilocular swelling, 8 mm. long by 3 mm. diameter, on the stem near the top, containing a yellow larva. Bookham Common (Miss Longfield). (4) *Perrisia dittrichi* Rubs. A few.

Angelica sylvestris L. (1) Flowers unopened and swollen, coloured pink, each containing a small orange coloured larva. (2) Umbel swollen and thick walled, enclosing a yellow larva. The galls resemble those of *L. carophila* but the larva is not the colour of that species. Both these galls found near Oxshott.

Peucedanum sativum Benth. & Hook. (1) *Kiefferia pimpinellae* F. Loew. Seeds swollen, larvae yellowish. Fetcham Downs, Bookham, Claygate and Epsom Downs. (2) *Contarinia pastinacae* Rubs. Seeds slightly swollen, yellow larvae. Fetcham. Houard records this species only from Germany. (3) *Trotteria umbelliferarum* Kieff. Seeds very much enlarged, containing orange red larvae. Fetcham Downs. Not recorded on this host plant by Houard. (4) *Lasioptera carophila* F. Loew. Umbel swollen, with a large cavity enclosing a red larva. Recorded from six localities in Surrey.

Heracleum Sphondylium L. *Kiefferia pimpinellae* F. Loew. Cannon Court Farm, Fetcham.

Daucus Carota L. (1) *Lasioptera carophila* F. Loew. (2) *Kiefferia pimpinellae* F. Loew. (3) *Trotteria umbelliferarum* Kieff. Seen many times in Surrey.

Caucalis Anthriscus Huds. *Lasioptera carophila* F. Loew. Ashtead.

Viburnum Lantana L. Flower buds swollen by larvae of (1) *Syndip-*

losis lonicerearum F. Loew (yellow larvae); (2) *Contarinia viburni* Kieff. (white jumping larvae); (3) Cecidomyid (white non-jumping larvae). All from near Polesden Lacy.

Scabiosa Columbaria L. *Perrisia scabiosae* Kieff. Epsom Downs.

Erigeron acre L. The unidentified Midge galls found last year near Headley were obtained this year near Tattenham Corner and on Fetcham Downs. Mr Niblett has been successful in breeding out the insects, but they have not yet been identified.

Achillea Millefolium L. (1) *Rhopalomyia millefolii* H. Loew. This gall, which was abundant some thirty years ago, has hardly been met with for several seasons. Now it has reappeared in the Fetcham district. (2) Similar shaped galls but much larger and multilocular, situated at ground level on the main stem, varying in colour from white to pink and then greenish purple. Several galls in my garden at Fetcham. Some were sent to Mr Niblett, who bred out the flies, a different species to *R. millefolii*. (3) Another species with smaller galls at the base of the stem, found by Mr Niblett, who bred out the midges in August.

A. Ptarmica L. *R. ptarmicae* Vallot. Not plentiful this year, and only recorded from Effingham.

Senecio erucifolius L. *Stictodiplosis jacobeae* H. Loew. Near Effingham (Mrs Wilde) and also towards Bookham.

S. Jacobaea L. *S. jacobeae* H. Loew. The Glade, Fetcham.

Salix cinerea L. Slight swelling in the twig with an inner cell in the wood containing a white larva of a midge. The colour of the larva does not fit any species I have been able to trace. West Horsley.

Carex hirta L. Cecidomyid larvae in the utricles (Houard 390). Bookham Common.

Brachypodium sylvaticum Roem. & Schult. *Poomyia hellwigi* Rubs. Bagdon Hill. Scarce this year.

Populus tremula L. *Harmandia cavernosa* Rubs. Effingham (M. Niblett).

MUSCIDAE.

Achillea Millefolium L. (1) *Oxyna flavipennis* H. Loew. Once at Limpsfield. Several times at Fetcham. (2) Two spherical swellings, 3 to 5 mm. in diameter, on the stem of a plant. Each contained a small fly larva. Limpsfield.

Senecio erucifolius L. *Sphenella marginata* Fallen. Ashtead Forest.

Cnicus lanceolatus Willd. *Urophora stylata* Fab. Abundant.

C. arvensis Hoffm. *U. cardui* L. Also plentiful.

Populus tremula L. A few fresh and many old scars of *Melanagromyza simplicoides* Hendel were obtained at Limpsfield.

Phragmites communis Adans. *Lipara lucens* Meigen. Very abundant at the Black Pond, Esher.

Brachypodium sylvaticum Roem. & Schult. *Chlorops cingulata* Meigen. Ranmore Common Woods, Surrey. When recording this species a year ago I was not aware that it had been previously placed on the British list. I have since found that Dr R. S. Bagnall reported having obtained specimens in Kent (*Ent. Record*, November 1929).

Agropyron caninum Beauv. *Chlorops taeniopus* Meigen. Near Dorking.

A. repens Beauv. *C. taeniopus* Meign. Plentiful in Surrey.

PSYLLIDAE.

Achillea Ptarmica L. *Psylla ptarmicae* Kieff. Margins of the leaves rolled upwards, but not so tightly as when the rolling is induced by *Eriophyes*. Both these galls may occur on the same plant. Found by Dr Bagnall at Effingham, July, making an addition to the British list. (See *Ent. Record*, October 1934).

Juncus articulatus L. *Livia juncorum* Latr. Galls were found under water in a pond, and when opened some days later the insects were quite lively, thus showing that they are not affected by immersion.

APHIDIDAE.

Pimpinella Saxifraga L. *Aphis anthrisci* Kalt. Epsom Downs.

ERIOPHYIDAE.

Malva moschata L. *Eriophyes gymnoproctus* Nal. Box Hill and Eynsford.

Achillea Ptarmica L. *Eriophyes* sp. rolling the margin of the leaf up into a tight roll. Effingham.

Campanula glomerata L. *E. campanulae* Lindr. and *E. schmardae* Nal. Box Hill.

Gentiana Amarella L. *E. kerneri* Nal. Box Hill.

Juglans regia L. A young tree about twelve feet in height on Fetcham Downs, which for the past three years has been noted as bearing galls of *E. tristriatus* Nal., var. *erinea* Nal., was cut down to the ground in the winter and all the branches and leaves burnt. Fresh shoots have sprung up from the roots and on one of the leaves some fresh galls appeared this summer—an instance of the ability of the mite to survive under adverse conditions. There are no other *Juglans* trees near from which a fresh colony of mites could have come.

Corylus Avellana L. *E. vermiformis* Nal. Near Headley. Similar affected buds have been seen on Ranmore Common, but the mites have not yet been detected under the microscope.

Dactylis glomerata L. *Tarsonemus spirifex* Marchal. Fetcham.

Agropyron caninum Beauv. *T. spirifex* Marchal. Dorking.

NEMATODA.

Hypochaeris radicata L. Galls on the mid ribs of the leaves found to be swarming with Eelworms and their eggs. Bookham.

Agropyron caninum Beauv. Swellings just above the roots. *Heterodera radicicola* Greeff. Reigate.

A. repens Beauv. As on the last. *H. radicicola* Greeff. Claygate.

The Pupation of Papilio podalirius L.

By J. A. Simes, O.B.E., F.R.E.S.

THE larvae of this species were common on blackthorn in the second week of August 1934, at Agay, Var, S. France. I brought home half-a-dozen, and these duly pupated in the usual way, that is to say, on the stems of the food plant. The pupae exhibited the dimorphism so frequent in the *Papilionidae*, one being green and the remainder brown. The green pupa produced a butterfly at the end of September, but all the brown pupae have gone over the winter, and clearly emergence will be deferred until the spring. These facts seem to me most interesting; and, while one cannot infer much from a single observation, it is perhaps permissible to put forward a suggestion which may lead to further investigation. It seems to me probable that the green pupa, if it did not produce a butterfly in the autumn, would have no chance of survival, for on the leafless, chocolate-coloured stems of the blackthorn it would have been a most conspicuous object. The brown pupae, on the other hand, are exactly the colour of withered leaves of blackthorn, and no doubt escape the attention of enemies by their resemblance to withered leaves which have somehow remained attached to the plant.

Bird Ringing, 1934.

THE Society's returns under the *British Birds* Marking Scheme for the year again show a considerable increase. 1336 birds of 46 species were ringed by our members and this compares with 799 birds of 47 species in 1933. Thirteen ringers took part in the work—one more than last year—and the following table shows their results:—

Name of Ringer.	Nestlings.	Trapped.	Ringed.
Stuart Boardman	29	39	68
M. V. Boys	37	695	732
H. J. Burkill	—	1	1
C. S. Clarke	2	—	2
C. L. Collenette	8	51	59
J. E. S. Dallas	4	—	4
R. M. Jones	233	11	244
Miss C. Longfield	8	—	8
H.M. Office of Works	—	25	25
E. G. Pedler	22	—	22
J. E. Sulman	27	103	130
G. Waller	—	28	28
B. T. Ward	10	3	13
	380	956	1336
1933 figures	521	278	799

Thanks to Messrs M. V. Boys and J. E. Sulman, we have been able to increase the number of birds trapped to a figure more than double that of the nestlings.

The following were the most numerous species:—

Starling	526	Greenfinch	114
Swallow	131	Song Thrush	98
Blue Tit	119	Great Tit	75

We welcome Messrs H. J. Burkill and B. T. Ward as new ringers. The Bird Ringing Secretary—R. W. Hale, 6 Grendon Gardens, Barn Hill, Wembley Park, Middlesex—will be pleased to hear from any member who would like to take up ringing. There is a charge of 9d for each packet of twenty rings.

RECOVERIES OF RINGED BIRDS.

The following recoveries of birds ringed by our members have been reported in *British Birds* since the last list was compiled:—

Starling. *Sturnus v. vulgaris* L.

Recovered where ringed:—

1. TF28, ringed 29/1/33 at Laindon (Essex) as an adult by G. Nicholson and recovered 11/12/33.
2. AN3306, ringed 21/10/31 at Woodford Green (Essex) as an adult by C. L. Collenette and recovered 10/8/33.
3. TF34, ringed 16/7/33 at Laindon (Essex) as a nestling by G. Nicholson and recovered 15/3/34.
4. AN3327, ringed 20/12/31 at Buckhurst Hill (Essex) as an adult by C. L. Collenette and recovered 22/5/34.
5. FK615, ringed 28/10/33 at Friern Barnet (Middlesex) as an adult by M. V. Boys and recovered in May 1934.

Recovered elsewhere. The following eight Starlings were all ringed as adults at Friern Barnet (Middlesex) by M. V. Boys:—

6. FK805, ringed 20/1/34, and recovered 11/2/34 at Chelmsford (Essex) by J. Thompson.
7. FK680, ringed 5/11/33, and recovered in January 1934 at Luton (Beds) by W. Lawrence.
8. FN778, ringed 14/1/34, and recovered 6/4/34 at Duxford (Cambs) by A. Webb.
9. FK609, ringed 28/10/33, and recovered in March 1934 at Alphen-on-Maas, Guelderland, Holland, by M. Spoon.
10. FH474, ringed 11/9/33, and recovered 8/6/34 in Piccadilly, London, by Mrs Law.
11. FH542, ringed 3/12/33, and recovered 2/11/34 in Moorgate, London, by C. Bird.
12. SY264, ringed 22/12/33, and recovered 25/5/34 at Telsiai, Lithuania, by Prof. Ivakauskas.
13. H2376, ringed 16/12/33, and recovered 25/7/34 at Gumbinnen, East Prussia, by W. Delming.

HERRING GULL. *Larus a. argentatus* Pont.

14. AA9532, ringed 24/6/34 at Point Grosnez, Jersey, as a nestling by E. G. Pedler, and recovered at St Nazaire (Loire, Inf.), France, 1/11/34, by R. Thourimberg.

The following birds ringed abroad have been recovered by our members:—

BLACK-HEADED GULL. *Larus r. ridibundus* L.

Rossitten, ring No. E103466, ringed as young 1/7/34 at Adelsdorf, near Grossenhain, Saxony, and recovered at Littleton Reservoir, Middlesex, 14/1/35, by J. P. Hardiman.

Helgoland, ring No. 561700, ringed as young 3/6/33 at Oppeln, Silesia, S.E. Germany, and recovered at Edmonton Sewage Farm, Middlesex, 1/11/34, by E. Mann.

Birds in the London Area, 1934.

BIRDS OBSERVED WITHIN TWENTY MILES OF ST PAUL'S CATHEDRAL.

Selected and Arranged by the Ornithological Records Committee (C. S. BAYNE, R. C. HOMES, L. PARMENTER, and C. WEEKS).

THE breeding of Teal at Ruislip and the appearance of Golden Oriole, Hoopoe, Hen Harrier, Bittern, and Glaucous Gull were outstanding this year. The best record is probably Dr G. Carmichael Low's identification of the Arctic Ringed Plover, the latest addition to the British List, in our area. The dry summer of 1934 renders the notes on the water birds of more than usual interest, and in consequence more space has been devoted to them.

For 1935, members are asked to specially study the Redstart, Great Spotted Woodpecker, and Pochard. A list of the points for observation drawn up by the British Trust for Ornithology, with whom we are co-operating, has already been sent to all observers. It will be of great assistance to the recorders if notes for past years were sent in as soon as possible and if all notes sent in are listed under counties on separate sheets.

All records are for 1934 except in the special report on Hawfinch, Lesser Redpoll, Brambling, Tree Sparrow, Sedge Warbler, and Little Grebe, and where otherwise stated. Observers responsible for the published notes are indicated by initials, as are the counties. (*B.B.* = *British Birds* magazine).

The Committee beg to acknowledge Mr E. G. Pedler's assistance in searching the *Field* and *Country* Life for records.

The Committee thank the following 71 observers for their notes:—

Miss C. M. Acland.
K. R. Ashby, per R.C.H.
H. G. Attlee, per C.L.C.
Miss J. Baggallay.
H. Bentham.
Miss J. E. Bingham.
A. H. Bishop, per C.L.C.
P. F. Bunyard, per R.S.R.F.
H. J. Burkill.
Dr J. S. Carter.
S. A. Chambers, per L.P.
C. L. Collenette.
G. W. Collett.
Miss K. Douglas-Smith.
W. H. Dunkin.
C. R. Eddison, per A.H.M.
L. M. Emberson.
F. R. Finch.
R. S. R. Fitter.
W. E. Glegg.
D. Gunn, per A.H.M.
J. P. Hardiman.
A. H. Harris, per C.W.
R. W. Hayman, per C.L.C.
P. D. Hayward.
E. W. Hendy, per A.H.M.
F. Hibberd, per R.C.H.
R. C. Homes.
G. Hopkins.
A. B. Hornblower.
F. J. Johnston.
L. Jones, per W.B.W.
Dr N. H. Joy.
Mrs E. L. King.
Dr H. L. Lack.
Miss C. E. Longfield.
Dr G. Carmichael Low.
A. Holte Macpherson.
E. Mann.
F. R. Mann.
G. E. Manser.
D. A. T. Morgan.
E. T. Nicholson.
L. Parmenter.
C. W. G. Paulson.
E. G. Pedler.
R. W. Pethen.
P. W. Ratcliff.
Miss M. Rew.
J. E. Roberts.
J. Ross.
E. C. Rowberry.
D. Seth-Smith, per A.H.M.
R. McKenzie Smith.
Miss M. Songhurst, per R.C.H.
Dr A. H. Spicer, per A.H.M.
Dr F. G. Swayne.
H. Thompson, per A.H.M.
A. E. Tomlinson.
Miss D. Venour.
Miss P. I. Wallis.
Miss H. Watkins.
C. L. Watson.
Mrs W. Boyd Watt.
C. Weeks.
Miss E. M. Wheeler.
J. S. Wightman.
A. E. Wilson, per C.L.C.
A. R. Wilton, per R.C.H.
R. E. Windsor, per C.L.C.
W. A. Wright.

Hooded Crow. *Corvus c. cornix* L.

E. King George V Reservoir, Chingford, one on 3rd November (W.A.W.) and on 15th December (K.R.A.). Roding Valley, one on 26th December (E.T.N., R.McK.S.). Walthamstow Reservoirs, one on 6th (W.A.W.) and on 7th April (R.W.P., R.McK.S., see also *Essex Naturalist*, 24, p. 193).

H. Watford sewage farm, one on 9th and 16th December (G.H.).

K. Elmers End sewage farm, one from 3rd November to 2nd December (G.E.M., P.W.R.).

M. Bushy Park, one seen frequently during second half of December (J.E.R.).

S. Beddington sewage farm, one to three from 2nd November to the end of the year (H.B., S.A.C., G.W.C., L.P.). Epsom sewage farm, one on 20th January (H.B.). Wimbledon, one during the autumn (R.W.H.).

CARRION-CROW. *Corvus c. corone* L.

E. Walthamstow Reservoirs, 90 or more roosting in the trees at dusk on 10th March (L.P.), falling to 26 on 16th June and rising again to 51 on 18th August, 93 on 8th September, and at least 100 on 24th November (R.W.P.).

MAGPIE. *Pica p. pica* (L.).

B. Near Colnbrook, one on 28th September and three on 26th October (C.E.L.).

E. Epping Forest, probably nested in the vicinity of Hawk Wood house (J.R.).

H. Waterside, Colney Street, two seen on 11th March (R.C.H.).

K. Shoreham, two seen on 10th June (L.P.).

M. Bushy Park, seen regularly; party of four on 21st July (J.E.R.).

S. Carshalton, two on 13th October (S.A.C.). Ewell, nested (A.H.H.). Headley, one on 11th September (L.P.). Richmond Park, one on 22nd October (A.H.M.) and 1st December (A.E.W.).

STARLING. *Sturnus v. vulgaris* L.

E. Epping Forest, a new roost was started on Yardley Hill in November. Birds flew in from the south and south-west but many flocks continued to pass over northwards as before (J.R.).

GOLDEN ORIOLE. *Oriolus o. oriolus* (L.).

S. Near Mitcham, one on 17th April (P.F.B.).

SISKIN. *Carduelis spinus* (L.).

E. Highams Park lake, four on 3rd March (E.T.N.). Woodford Green, two to seven from 17th March to 8th April (R.McK.S.).

M. Bushy Park, five on 21st October (J.E.R.). Near Uxbridge, one on 29th March (F.R.F.), and two on 1st December (F.R.F., G.C.L.).

S. Abrook Common, at least six on 1st April (L.P.). Oxshott Heath, a few on 1st April (L.P.), six on 8th April (L.M.E.). Richmond Park, a flock of 40 on 17th March, some remaining until 2nd April (C.L.C., L.M.E., J.E.R.). Reigate, about 25 on 24th March (H.B.).

BRITISH BULLFINCH. *Pyrrhula p. nesa* Math. & Ired.

S. Nested at Bookham, Chessington (J.E.R.), Ewell (A.H.H.), and Richmond Park (C.L.C.).

CORN-BUNTING. *Emberiza c. calandra* L.

S. Beddington sewage farm, one, 29th April to 4th May (G.W.C., L.P.). Cuddington, at least one pair during the summer and one on 28th October (R.S.R.F.). Ewell Downs, nested (A.H.H.).

CIRL BUNTING. *Emberiza c. cirlus* (L.).

S. Oxshott Heath, three on 30th December (R.C.H.).

REED-BUNTING. *Emberiza s. schœniclus* (L.).

M. Brent Reservoir, nest with three young on 1st June (N.H.J.). Hampstead Heath, a pair by the Leg of Mutton pond on 2nd December (J.E.B.).

Snow Bunting. *Plectrophenax n. nivalis* (L.).

E. King George V Reservoir, one on 4th November (E.T.N., W.A.W.). Walthamstow Reservoirs, one on 3rd (E.T.N.), (see also *B.B.*, 28, p. 212) and one on 17th November (E.M.).

Wood-Lark. *Lullula a. arborea* (L.).

S. Nested at Boxhill (R.C.H.), and Richmond Park (C.L.C.).

Rock-Pipit. *Anthus spinoletta petrosus* (Mont.).

E. Walthamstow Reservoirs, one on 20th January, 10th February, 6th, 20th, and 21st October (E.T.N., W.A.W.).

Yellow Wagtail. *Motacilla flava rayi* (Bp.).

M. Ruislip Reservoir, passage commenced 23rd July, some hundreds from 7th to 17th, none after 20th August (G.H.).

S. Nested on Esher Common (J.E.R.).

Grey Wagtail. *Motacilla c. cinerea* Tunst.

K. Elmers End sewage farm, nested (R.C.H., G.E.M.).

S. Beddington sewage farm, seen with young on 29th July (G.W.C.). Fetcham, nested (J.E.R.).

White Wagtail. *Motacilla a. alba* L.

M. Edmonton sewage farm, one on 8th April (E.M.).

S. Barn Elms Reservoirs, one on 15th, three on 22nd and 23rd, and two on 28th April (G.C.L., C.W.G.P.). Beddington sewage farm, one on 18th and 26th March (S.A.C., L.P.). Ewell, 14th March (R.S.R.F.).

British Willow-Titmouse. *Parus atricapillus kleinschmidti* Hellm.

B. Near Denham, one seen on 10th February (F.R.F.).

M. Ruislip Common, resident (G.H.).

S. Epsom Common, nested in 1933 (J.E.R.). Tadworth, one on 11th March (H.B.).

British Golden-crested Wren. *Regulus r. anglorum* Hart.

M. Bushy Park, a large influx was noted in the first week of November (J.E.R.).

Red-backed Shrike. *Lanius c. collurio* L.

E. Epping Forest, seen at Baldwin's Hill, Chingford Plain, Fairmead, Goldings Hill, Hawkwood and Whitehall Plain (J.R.).

K. Beckenham, nested (G.E.M.). Stone marshes, a male and two females on 26th May (L.P.).

M. Elstree Reservoir, probably bred (C.L.W.). Edmonton sewage farm, one pair bred nearby (E.M.). Harrow, a male on 2nd and 5th February (M. H. C. Williams in *B.B.*, 27, p. 353). Between Northwood and Ruislip, three pairs bred successfully (G.H.). Staines Reservoirs, three pairs on 23rd June (G.C.L.).

S. Banstead Downs, one young on 29th August (S.A.C.). Bookham Common, nested (J.E.R.). Epsom Common, believed to have nested (R.C.H.). Epsom Downs, nested (A.H.H.). Ham Common, a pair with three young (A.H.M.). Wimbledon Common, seen on 7th June (R.E.W.).

PIED FLYCATCHER. *Muscicapa h. hypoleuca* (Pall.).

K. Beckenham, a pair, seen from 21st to 24th April (G.E.M., P.W.R.).

S. Richmond Park, one on 26th August (C.W.). Wimbledon Common, at least two from 1st to 9th September (R.E.W.)

WOOD WARBLER. *Phylloscopus s. sibilatrix* (Bechst.).

E. Epping Forest, seen or heard near Clay Ride, at Hawkwood, High Beach, near Ludgate Plain, Red Path, and on Warren Hill (J.R.). Lords Bushes, two on 20th May (R.McK.S.).

K. Beckenham, seen on 5th May (G.E.M.). Dulwich, seen during the summer (W.H.D.). Keston, seen on 13th May (R.S.R.F.).

S. Ashtead, one on 27th May (R.S.R.F.) and 9th June (R.C.H.). Carshalton, heard on 3rd May (S.A.C.). Chessington, nest with 6 eggs on 23rd May (J.E.R.). Colley Hill, one on 16th June (R.S.R.F.). Esher, five young on 3rd June (J.E.R.). Ewell, seen on 18th April (A.H.H.). Gatton Park, seen on 4th August (H.B.). Headley, seen on 17th June (R.C.H.). Tadworth, one singing on 1st July (H.B.). Richmond Park, at least two pairs nested (C.L.C.). Weybridge, one on 13th May (L.P.). Wimbledon Common, two in song on 16th April (R.E.W.).

GRASSHOPPER-WARBLER. *Locustella n. nævia* (Bodd.).

M. Ruislip Reservoir, one on 13th, and two from 23rd to 25th July (G.H.).

S. Ashtead Common, three pairs (J.E.R.). Bookham Common, four at least on 25th and 28th May (R.C.H., L.P.), three on 9th June, heard eight on 17th, heard seven and saw five others on 30th June, on the 21st July at a low estimate there were twenty birds (H.J.B.). Epsom Common, estimated four or five pairs (A.H.H., R.C.H., J.E.R.).

REED-WARBLER. *Acrocephalus s. scirpaceus* (Herm.).

B. Colnbrook, one at a gravel pit on 28th September (C.E.L.).

E. Luxborough, young seen on 21st July (R.McK.S.). Sewardstone gravel pit, bred (R.McK.S.). Walthamstow Reservoirs, colony decreased (J.P.H.).

S. Beddington, seen in three localities (R.S.R.F., L.P.). Godstone, several pairs, two nests found (C.M.A., J.E.R.).

RING-OUZEL. *Turdus t. torquatus* L.

S. Surbiton, a male on 19th September (J.E.R.).

GREENLAND WHEATEAR. *Œnanthe œ. leucorrhoa* (Gm.).

M. Regents Park, six on 19th May and two on 2nd September (M.R.). Ruislip, one on 25th August (G.H.).

S. Bookham Common, a pair on 12th May (R.C.H.).

WHINCHAT. *Saxicola r. rubetra* (L.).

H. Probably nested near West Hyde (G.H.).

K. Beckenham, one on 26th December (P.W.R.).

M. Ruislip, passage lasted from 11th August to 15th September (G.H.).

S. Nested at Bookham Common (L.P., J.E.R.), Epsom Common (A.H.H., R.C.H.), and Richmond Park (C.L.C., L.M.E.).

British Stonechat. *Saxicola torquata hibernans* (Hart.).

K. Swanscombe marshes, a pair on 26th May, probably nesting (L.P.).

M. Ruislip Reservoir, one pair nested nearby (G.H.).

S. Bookham Common, at least two pairs nested (L.P., J.E.R.). Epsom Common, two nests (A.H.H., R.C.H., J.E.R.). Ewell, nested (A.H.H.). Mitcham Common, 3 pairs nested (L.P.).

Redstart. *Phœnicurus p. phœnicurus* (L.).

E. Epping Forest, six pairs on Fairmead; very local even in favoured area (D.A.T.M.). Woodford Green, one on 21st April (R.McK.S.).

K. Beckenham, a female on 22nd April (P.W.R.).

M. Bushy Park, several families seen; considered a good year (J.E.R.). Hampstead Heath, a female by the Viaduct Pond on 15th April (W.B.W.). Regents Park, seen on 20th and 21st April (M.R.). Ruislip, one on 30th April, and on passage from 8th to 27th August (G.H.).

S. Richmond Park, nesting commonly (C.L.C.). Walton Heath, one on 11th September (L.P.).

Nightingale. *Luscinia m. megarhyncha* Brehm.

M. Bushy Park, two pairs bred as usual (J.E.R.).

Nightjar. *Caprimulgus e. europaeus* L.

M. Northwood, two heard in Copse Wood, and two or three heard in Park Wood, Ruislip, during the summer (G.H.).

S. Epsom Common, one pair (R.C.H.). Richmond Park, a male from 24th June to 1st July (C.L.C.).

Hoopoe. *Upupa e. epops* L.

M. Three were seen in Middlesex on 16th April and one remained until the 24th (C. A. Pooley in *Field* of 12th May 1934).

Wryneck. *Jynx t. torquilla* L.

K. Stone Marshes, one on 26th May (L.P.).

M. Northwood golf course, five young birds were seen on 18th August and on the following day they were on Ruislip Common (G.H.). Staines, one on 29th April (G.C.L.).

S. Banstead, one on 17th June (R.C.H.). Bookham Common, seen in April and May (S.A.C., L.P., M.S.). Tadworth, seen on 20th April (H.B.).

Long-eared Owl. *Asio o. otus* (L.).

S. Barn Elms Reservoirs, one on 3rd November (G.C.L., E.G.P.). Coulsdon, one pair bred (H.B.).

White-breasted Barn Owl. *Tyto a. alba* (Scop.).

E. Epping Forest, one over Fairmead on 24th April (D.A.T.M.). King George V Reservoir, one on 17th March (W.A.W.). Walthamstow Reservoirs, one on 17th October (W.A.W.).

K. Elmers End sewage farm, one seen on 13th March. In its roosting place were found the remains of a Snipe and the leg of a Black-headed Gull. As shooting takes place on this farm the Snipe was possibly a winged bird (G.E.M.). Also seen here on 9th May (F.G.S.).

M. Ruislip Reservoir, one seen several times in April (G.H.). Staines Reservoirs, one on 27th January (G.H.).

S. Epsom Common, one on 30th June (R.C.H.). Ewell, one on 20th July and 25th December (R.S.R.F.). Richmond Park, one on 27th May (C.L.C.).

Hen Harrier. *Circus c. cyaneus* (L.).

S. Beddington sewage farm, a close view was obtained of a female on 7th November (G.W.C.).

Sparrow-Hawk. *Accipiter n. nisus* (L.).

B. Richings Park, breeds (J.E.R.).

H. West Hyde, one on 15th July (G.H.).

K. Dulwich, one on 15th May (W.H.D.). Elmers End, nested (G.E.M., F.G.S.).

M. Bushy Park, seen several times during the year (J.E.R.). Harefield, one by the canal on 25th March. Ruislip, one on 28th April, 15th September, 20th October, and 29th December (G.H.). Staines Reservoirs, one on 22nd April (F.R.F., G.C.L.).

S. Reigate, one on 15th December (H.B.). Richmond Park, seen during the year (C.L.C.).

Common Heron. *Ardea c. cinerea* L.

E. Walthamstow Reservoirs. 47 pairs bred (R.W.P.).

S. Richmond Park, 48 nests, an increase of five on 1933 (C.L.C.).
(See special report under British Trust for Ornithology.)

Bittern. *Botaurus s. stellaris* (L.).

S. Near Mitcham, one on 28th February (P.F.B.).

[Flamingo. *Phoenicopterus ruber antiquorum* Temm.

E. King George V Reservoir, one on 14th and 15th July (W.A.W.). (See also *Essex Naturalist*, 24, p. 196. W.E.G. informs us it was meant to be in square brackets).]

Sheld-Duck. *Tadorna tadorna* (L.).

M. Brent Reservoir, a juvenile on 19th August (N.H.J.). Littleton Reservoir, two on 2nd May (J.P.H.). Staines Reservoirs, two on 26th April (J.P.H.). One was seen throughout the year by many observers.

Mallard. *Anas p. platyrhyncha* L.

E. Connaught Water, Epping Forest, numbers increased in October to about 100 on the 31st (J.R.).

Gadwall. *Anas strepera* L.

S. Godstone, a male seen on 21st January (C.M.A.). (See also *L.N.*, 1932 and 1933).
[Barn Elms Reservoirs, two on 21st October. They seemed tame and probably had come from St James Park (C.W.G.P.).]

Teal. *Anas c. crecca* L.

E. Navestock Lake, about sixteen on 31st March (R.McK.S.).

H. Elstree Reservoir, three on 23rd September (A.H.M.), and on 7th October (R.C.H.). Hamper Mill, five males in a flooded field on 29th December (G.H.).

M. Ruislip Reservoir, two pairs bred successfully. Five males on 6th June. None from the middle of July to 21st August (G.H.).

S. Barn Elms Reservoirs, two seen in February, March, April and up to 5th May, four on 21st and five on 28th October, and two on 18th November and 30th December (G.C.L., C.W.G.P.). Beddington gravel pits, two males on 25th November (H.B., L.P.). Epsom sewage farm, one on 5th August (H.B.). Richmond Park, one on 10th, two on 31st October and 18th November, and six on 16th December (C.L.C., W.E.G., A.H.M.).

Wigeon. *Anas penelope* L.

M. Brent Reservoir, a male on 23rd March (N.H.J.). Littleton Reservoir, fifteen on 13th April (J.P.H.). Ruislip Reservoir, a pair on 25th November, and three on 8th December (G.H.).

S. Barn Elms Reservoirs, one in January, February and March, October and December, two on 24th February (G.C.L., A.H.M., C.W.G.P., and other observers). Kingston, a male on 24th February (R.S.R.F.). Richmond Park, a male on 14th December (W.E.G.).

Pintail. *Anas a. acuta* L.

E. King George V Reservoir, a male on 12th October (E.G.P.).

M. Hampstead Ponds, a male seen on 16th, 25th and 30th December and at Highgate Ponds on 29th December (J.S.C., W.B.W., see also *B.B.*, 28, p. 281).

Shoveler. *Spatula clypeata* (L.).

E. Connaught Water, a male on 22nd January (J.R.). King George V Reservoir, three on 20th January (W.A.W.), and on 4th November (E.T.N.).

H. Hamper Mill, a male on 4th, a pair on 25th March, 8th and 15th April, and a male on 22nd April (G.H.).

M. Littleton Reservoir, one on 8th and 13th April, two on 2nd May, four on 7th June, two on 26th October, and three on 23rd November (J.P.H., A.H.M.). Ruislip Reservoir, three on 3rd, a pair staying until 11th March (G.H.). Staines Reservoirs, two on 17th and 18th March, ten on 7th and eleven on 8th April, nine on 18th, rising to twenty or more on 25th November, an unusually large number, and four were seen on 11th December (F.R.F., J.P.H., G.C.L., A.H.M.).

S. Barn Elms Reservoirs, one on 7th March (E.G.P.).

[Red-crested Pochard. *Netta rufina* (Pall.).

M. Staines Reservoirs, one on 26th April (J.P.H.) and on 10th May (A.H.M.). There is a possibility that this bird was an escape, hence the square brackets.]

Common Pochard. *Nyroca f. ferina* (L.).

B. Colnbrook valley, six males on a gravel pit on 26th October and twenty on 27th December (C.E.L.).

E. Connaught Water, one male on 27th January, eight on 17th February, last seen 18th March; one on 9th November and one or two from 11th December to the end of the year (J.R.). Walthamstow Reservoirs, forty on 10th March (L.P.), three on 28th April, eight on 2nd, 24 on 9th and 58 (51 being males) on 16th June, about 100 on 7th July, 40 on 18th August, and from then numbers remained fairly constant (R.W.P.).

H. Elstree Reservoir, one male and three females on 11th March (R.C.H.). Hamper Mill, present up to 18th March and from 23rd September onwards (G.H.).

K. Foots Cray gravel pits, a male on 28th October (E.M.W.).

M. Brent Reservoir, one to three from 29th March to 30th June, seen again on 21st October (N.H.J.). Elstree Reservoir, a male on 14th April (R.C.H.). Kensington Gardens, on the Round Pond on 11th January there were 82 (60 being males), on 18th January there were 66 males and 12 females, during February between 50 and 70 were seen, but on 19th March there were only nineteen and the last five were seen on 10th April (G.C.L.). Ruislip Reservoir, about twelve during the winter 1933-34, last seen on 18th March, returned 29th September (G.H.).

S. Barn Elms Reservoirs, 252 on 28th January, 373 on 4th, down to 11 on 25th February and then numbers varied but slightly in March and April; three were seen on 5th May. On 30th June there were 30, but 97 on 3rd and only 30 on 8th July, 20 on 5th, 117 on 9th September, but only one on 14th October. In November there was one on 4th, 47 on 11th, and 12 on 18th (C.W.G.P.). 222 on 18th December (A.H.M.). Beddington gravel pits, 20 on 13th January (S.A.C.), two to six in March (L.P.), two males and a female on 23rd June (R.S.R.F.). On a flooded gravel pit near Mitcham Junction Station there was one male on 4th, 23 on 25th November, and 12 on 12th December (S.A.C., L.P.).

Tufted Duck. *Nyroca fuligula* (L.).

E. Sewardstone, nested at gravel pit (R.McK.S.). Walthamstow Reservoirs, 795 counted on 10th March on eleven of the reservoirs, 388 acres, being 70 per cent. of all ducks, grebes and coots present (L.P.); 117 adults and five broods of young on 7th July (R.W.P.).

K. Nested at Dulwich (W.H.D.) and Beckenham (G.E.M.).

M. Staines Reservoirs, one with eight young on 22nd July, the first young ever seen here (A.H.M.).

S. Nested at Barn Elms Reservoirs (G.C.L.), Beddington gravel pits (R.S.R.F.), Gatton lake (H.B.), Reigate Priory (H.B.), and Richmond Park (C.L.C.).

Scaup-Duck. *Nyroca m. marila* (L.).

E. Walthamstow Reservoirs, one on 10th and 31st March, 6th and 20th April (E.T.N., R.W.P., W.A.W.).

M. Staines Reservoirs, a female on 30th September (F.R.F.).

Goldeneye. *Bucephala c. clangula* (L.).

E. King George V Reservoir, five on 7th January (K.R.A. in *B.B.*, 27, p. 300), and three females on 4th November (E.T.N.). Walthamstow Reservoirs, a female on 13th and a pair on 27th October and 3rd November, three females on 11th and 17th November and one on 8th December (E.M., E.T.N., W.A.W.).

M. Hampstead, a pair on the Vale of Health pond on 26th December (L.J.). Kensington Gardens, a female from 19th October until the end of the year (G.C.L., E.G.P.). Littleton Reservoir, six to ten on 23rd November (J.P.H.). Ruislip Reservoir, three on 25th February and a pair from 4th to 18th March (G.H.). Staines Reservoirs, maximum numbers 30 on 15th February (A.H.M.), 30 or more on 11th March (L.M.E.).

S. Barn Elms Reservoirs, one in January, February and March (G.C.L., C.W.G.P., L.M.E., and other observers). Beddington sewage farm, two on 28th October (G.E.M.). Molesey Reservoirs, 33 on 13th January (F.R.F., J.P.H., A.H.M.).

Long-tailed Duck. *Clangula hyemalis* (L.).

M. Staines Reservoirs, one from 19th January to 7th April (A.H.M. and other observers); four on 18th (A.H.M.), and one from 23rd October until the end of the year (A.H.M. and other observers).

Common Scoter. *Oidemia n. nigra* (L.).

M. Staines Reservoirs, two on 7th April, one on 24th May (A.H.M.) and on 23rd (G.C.L.) and on 24th June (F.R.F.).

Goosander. *Mergus m. merganser* L.

E. Connaught Water, two on 13th March (J.R.). King George V Reservoir, two on 31st March (W.A.W.). Walthamstow Reservoirs, two on 8th, ten on 27th January, three on 10th February, 10th and 31st March and on 6th April, one on 22nd December (J.P.H., R.W.P., W.A.W.).

M. Littleton Reservoir, three on 8th April (A.H.M.) and six or more on 23rd November (J.P.H.). Ruislip Reservoir, one female on 14th January, 10th and 25th February (G.H.). Staines Reservoirs, maximum numbers for the winter 1933-4 were later than usual, while one or two stayed to an exceptionally late date. There were 50 on 4th (G.C.L., A.H.M.), about 65 on 11th (L.M.E.) and during the rest of March, 63 on 1st, 22 on 8th, two on 15th, and one on 29th April and 12th and 13th May, six on 18th November rising to 50 on 16th and falling to 12 on 23rd December (G.C.L., A.H.M.).

S. Maximum numbers seen. Barn Elms Reservoirs, eleven on 11th February (C.W.G.P.). Molesey Reservoirs, 39 on 13th January (A.H.M.). Richmond Park, 29 on 3rd March (P.I.W.).

Red-breasted Merganser. *Mergus serrator* L.

M. Staines Reservoirs, a male from 16th to 23rd December (F.R.F., G.C.L., A.H.M.).

SMEW. *Mergus albellus* L.

E. Walthamstow Reservoirs, maximum numbers yet recorded, 25 on 24th February (R.W.P., see also *Essex Naturalist*, 24, p. 200).

M. Staines Reservoirs, one to six from 7th January to 7th April, three on 30th November, one from 7th December until the end of the year. On the 30th December there were two including one abnormally coloured having dull brown cheeks and neck (G.C.L., A.H.M.).

S. Maximum numbers seen. Barn Elms Reservoirs, six on 21st January (G.C.L.). Lonsdale Road Reservoirs, ten on 3rd March (G.C.L.). Molesey Reservoirs, 51 on 25th January (C.R.E.). Richmond Park, one on 9th March (C.L.C., P.I.W.).

CORMORANT. *Phalacrocorax carbo* (L.). ? sub-species.

E. King George V Reservoir, one on 4th (J.P.H.), seven on 6th, five being seen to arrive from the north-east (E.T.N.), three from 9th to 14th October (various observers).

M. Littleton Reservoir, one on 8th April (A.H.M.), two on 7th June and 29th September and four on 26th October (J.P.H.). Staines Reservoirs, one on 19th May (A.H.M.).

S. Barn Elms Reservoirs, two on 15th September (G.C.L.).

GANNET. *Sula bassana* (L.).

M. Harlesden, one found alive by the canal on 30th November and taken to the Zoo (D.S.-S.).

GREAT CRESTED GREBE. *Podiceps c. cristatus* (L.).

E. King George V Reservoir, over 100 on 9th October (A.H.M.). Walthamstow Reservoirs, maximum—68 on 24th November, all on Banbury reservoir (R.W.P.).

H. Hamper Mill, six pairs present in June, at least two pairs nesting successfully (G.H.).

M. Brent Reservoir, maximum—9 on 17th May; immature seen on 28th July, but did not breed here (N.H.J.). Littleton Reservoir, 330 on 29th September, there being 81 at Staines on this date (G.C.L.). Staines Reservoirs, 91 on 2nd January (A.H.M.), decreased to about 15 on 24th June (R.C.H.), but had risen to 70 on 15th July (A.H.M.); maximum—117 on 30th November (A.H.M.).

S. Barn Elms Reservoirs, maximum for each month, January 12, February 42, March 22, April 36, May 35, June 44, July 37, August 44, September 60, October 104 (on 21st), November 81, December 35 (various observers). Gatton lake, four pairs on 4th August (H.B.). Molesey Reservoirs, 69 counted on 13th January (J.P.H., A.H.M.). Richmond Park, two pairs were present in the breeding season but only one pair brought off young (C.L.C.).

SLAVONIAN GREBE. *Podiceps auritus* (L.).

E. Walthamstow Reservoirs, one in summer plumage on 16th June (R.W.P., W.A.W.); one in winter plumage on 12th August stayed until 29th September (E.T.N., R.W.P., W.A.W.).

M. Kensington Gardens, one on the Round Pond on 28th to 30th November (G.C.L., E.G.P., see also *B.B.*, 28, pp. 241-2).

Black-necked Grebe. *Podiceps n. nigricollis* Brehm.

M. Staines Reservoirs, one on 18th August (R.C.H., J.E.R.), 30th September (F.R.F.), 13th October (G.C.L., A.H.M.), and four on 29th November (J.E.R.).

S. Barn Elms Reservoirs, one seen on 9th, 15th and 19th September (G.C.L., E.G.P.).

Red-throated Diver. *Colymbus stellatus* Pontopp.

M. Hyde Park, one on the Serpentine on 15th March. On the 16th it was on the Long Water, Kensington Gardens, where it stayed until 25th April (G.C.L., E.G.P., and other observers). Staines Reservoirs, one from 16th to 30th December (F.R.F., G.C.L., and A.H.M.).

Wood-Pigeon. *Columba p. palumbus* L.

E. Chingford Wood, large influx noted on 14th December, flocks of a hundred or more being seen for the rest of the month (J.R.).

H.M. Northwood—Watford district, very large flocks from the middle of December onwards (G.H.).

S. Richmond Park, estimated at 4000 in December (C.L.C.). Thornton Heath, a flock of at least 300 flying south-west at 8.20 a.m. on 18th December (L.P.).

Stone-Curlew. *Burhinus œ. œdicnemus* (L.).

K. Elmers End, one on 5th April (G.E.M.).

British Oyster-Catcher. *Haematopus ostralegus occidentalis* Neumann.

M. Ruislip Reservoir, one on 25th November (G.H.).

Ringed Plover. *Charadrius h. hiaticula* L.

E. King George V Reservoir, one on 8th and four on 30th September, two on 4th, five on 6th, one on 12th and 13th October (various observers).

H. Hamper Mill, one on 3rd June (G.H.).

M. Ruislip Reservoir, a bird of the year on 2nd July (G.H.). Staines Reservoirs, one on 25th September (A.H.M.).

S. Barn Elms Reservoirs, one on 8th and 28th August and 9th September (A.H.M., E.G.P.). Beddington sewage farm, one on 4th May (S.A.C.).

Arctic Ringed Plover. *Charadrius hiaticula tundrae* (P. R. Lowe).

B. Langley sewage farm, a juvenile male shot on 2nd August, 1926 (G.C.L., *B.B.*, 28, p. 66). This is the first time that this sub-species has been identified in the Society's area.

Golden Plover. *Charadrius apricarius* L. ? sub-species.

E. King George V Reservoir, three on 31st October (J.P.H.). Nazeing Common, 30 on 18th and 24th November (R.McK.S., W.A.W.). Thornwood, near Epping, about 150 on 19th and 300 to 400 on 22nd December (R.McK.S.).

S. Beddington sewage farm, one on 25th November (H.B., L.P.) and 30th December (G.W.C.).

TURNSTONE. *Arenaria i. interpres* (L.).
M. Ruislip Reservoir, one on 25th November (G.H.).

RUFF. *Philomachus pugnax* (L.).
E. King George V Reservoir, one on 4th October (J.P.H., A.H.M.).
H. Watford sewage farm, one on 23rd September (G.H.).
S. Barn Elms Reservoirs, one on 7th October (E.G.P.).

KNOT. *Calidris c. canutus* (L.).
M. Ruislip Reservoir, two on 25th November (G.H.).
S. Barn Elms Reservoirs, one on 1st and 2nd October (A.H.M., E.G.P.).

DUNLIN. *Calidris alpina* (L.). ? sub-species.
E. King George V Reservoir, seen on 14th April (W.A.W.) and up to 14 from 29th September to 13th October (various observers).
M. Brent Reservoir, two on 24th, and one adult and five juveniles on 26th August (N.H.J.). Littleton Reservoir, one on 8th and 13th April (J. P. H., A.H.M.). Ruislip Reservoir, one on 25th November (G.H.). Staines Reservoirs, one on 22nd September (J.P.H.) and on 25th November (L.M.E.).
S. Barn Elms Reservoirs, one on 5th, four on 7th May, one on 15th July and 10th September (A.H.M., C.W.G.P., E.G.P.).

LITTLE STINT. *Calidris minuta* (Leisl.).
E. King George V Reservoir, two on 29th and 30th September and 6th October and one on 13th October (E.T.N., R.McK.S., W.A.W.).

COMMON SANDPIPER. *Tringa hypoleucos* L.
Recorded in the area in every month from April to October.
M. Chertsey weir, one on 2nd June (E.C.R.).
S. Mitcham Common, two flying northwards at 10 p.m. on 31st May (L.P.).

GREEN SANDPIPER. *Tringa ochropus* L.
E. Abridge, one at Woolston Hall on 15th and at the sewage farm on 29th April (R.McK.S.). King George V Reservoir, one on 25th August (R.C.H.). River Roding, one or two near Chigwell sewage farm from 13th January to 18th March and from 28th June to the end of the year (R.McK.S.).
M. Chertsey weir, one on 2nd June (E.C.R.). Edmonton sewage farm, four on 29th July, six on 6th and four on 12th August and two on 16th September (E.M.). Ruislip Reservoir, one on 15th September (G.H.). Staines Reservoirs, three or more on 18th August (R.C.H., J.E.R.).
S. Chertsey weir, see above. Leatherhead, one on 21st April (M.S.).

COMMON REDSHANK. *Tringa t. totanus* (L.).
E. Abridge, returned to breeding locality on 18th March. Chigwell sewage farm, passing birds on 15th April and 12th May (R.McK.S.). King George V Reservoir, one on 4th October (J.P.H., A.H.M.). Navestock Park, one on 29th April (R.C.H.). Walthamstow Reservoirs, one on 10th March (R.W.P.) and 6th April (W.A.W.). Woodford Green, one passing on 11th March (R.McK.S.).

H. Watford district, from 11th March until 6th June a pair divided their time between Watford sewage farm and Hamper Mill, a third being seen sometimes (G.H.).
K. Stone marshes, three pairs nesting and twenty pairs on Swanscombe marshes on 26th May (L.P.).
M. Edmonton sewage farm, first seen on 25th March, six on 1st April, four remaining until 3rd June (E.M.). Elstree Reservoir, one on 9th June flying off towards Watford (C.L.W.). Hyde Park, one on 8th October (G.C.L.). Between Northwood and Harefield, four on 17th March (G.H.). Staines Moor, one on 24th June (R.C.H.). Staines Reservoirs, one on 25th March (G.C.L.) and 23rd October (A.H.M.).
S. Barn Elms Reservoirs, one on 25th March (G.C.L.) and 7th October (E.G.P.). Beddington sewage farm, nested (S.A.C.), twelve seen on 22nd April (L.P.).

Greenshank. *Tringa nebularia* (Gunn.).
E. King George V Reservoir, one on 5th and 8th September, three on 4th, two on 6th and one on 12th October (various observers). Sewardstone gravel pit, one on 14th July (R.McK.S.). Walthamstow Reservoirs, three on 1st and two on 8th September (E.T.N., R.W.P., W.A.W.).
M. Brent Reservoir, one on 30th August (N.H.J.). Ruislip Reservoir, one on 27th August and 9th September (G.H.). Staines Reservoirs, one on 12th August, three on 30th September and two on 8th October (F.R.F., G.C.L., A.H.M.).
S. Barn Elms Reservoirs, one on 12th May, 8th and 27th August (A.H.M., E.G.P.). Epsom sewage farm, one on 27th October (R.S.R.F.).

Common Curlew. *Numenius a. arquata* (L.).
H. Waterside, Colney Street, one on 11th March (R.C.H.).
M. Staines Moor, two on 3rd August (E.G.P.). Staines Reservoirs, one heard on 24th May (A.H.M.), and one on 23rd June (G.C.L.).
S. Malden, a fairly large flock heard flying over from east to west on 27th March (L.M.E.).

Whimbrel. *Numenius p. phaeopus* (L.).
M. Kensington, one flew over Campden Hill on 22nd May and another flew over Kensington on 28th September (A.H.M.).

Common Snipe. *Capella g. gallinago* (L.).
M. Edmonton sewage farm, from January to April numbers varying from one to 35, reaching a maximum early in April. Four birds stayed throughout the summer (E.M.).
S. Ashtead Common, seen on 31st May (J.E.R.). Epsom, nested (J.E.R.). Epsom sewage farm, 40 on 17th November, 60 on 16th December (R.S.R.F.), 70 on 24th December (H.B.).

Jack Snipe. *Lymnocryptes minimus* (Brünn.).
E. Chigwell sewage farm, present from 21st January to 8th April (R.McK.S.), one on 28th October (W.A.W.) and from 4th November to 9th December, as many as five being seen (R.McK.S.).

K. Elmers End sewage farm, one on 2nd March (F.G.S.) and 18th November (G.E.M.).

M. Pall Mall, one picked up with an injured wing (D. Seth-Smith, *B.B.*, 28, p. 29). Ruislip Reservoir, one on 17th November, 1st and 8th December (G.H.).

Woodcock. *Scolopax r. rusticola* L.

See special report under British Trust for Ornithology.

Black Tern. *Chlidonias n. niger* (L.).

M. Littleton Reservoir, one on 2nd May (J.P.H.). Ruislip Reservoir, one on 31st May (G.H.). Staines Reservoirs, one immature bird on 13th October (G.C.L., A.H.M.).

S. Barn Elms Reservoirs, one on 16th and 17th April (F.R.F., G.C.L., A.H.M.), one on 7th and 15th September (G.C.L., E.G.P.).

Sandwich Tern. *Sterna s. sandvicensis* Lath.

E. Walthamstow Reservoirs, one on 8th September (E.M., R.W.P., W.A.W.).

M. Staines Reservoirs, one on 19th October (A.H.M.) and 4th November (F.R.F., G.C.L., A.H.M.).

Common Tern. *Sterna h. hirundo* L.

E. Walthamstow Reservoirs, one on 11th, 12th and 14th August and 1st September (E.T.N., W.A.W.).

M. Littleton Reservoir, one on 29th September and three on 26th October (J.P.H.).

S. Barn Elms Reservoirs, one on 2nd June (G.C.L.), four on 28th August, and two on 4th September (E.G.P.).

Little Tern. *Sterna a. albifrons* Pall.

M. Littleton Reservoir, two on 26th October (J.P.H.). Ruislip Reservoir, one on 21st April (G.H.).

Little Gull. *Larus minutus* Pall.

E. Walthamstow Reservoirs, one on 18th August (E.M., R.W.P.) and 8th September (E.T.N.).

M. Staines Reservoirs, an adult on 13th October (G.C.L., A.H.M.).

Scandinavian Lesser Black-backed Gull. *Larus f. fuscus* L.

M. Chiswick, two with several of the British form on 15th October. Hammersmith, three with several British on 12th November (A.H.M.). Hyde Park, one on 14th October 1933 (E.W.H.). Millbank, an adult on 4th November 1933 (H.G.A., *B.B.*, 27, p. 305). Osterley, two on 23rd and one on 24th September (E.C.R.).

S. Barn Elms Reservoirs, three on 18th November (G.C.L., A.H.M., C.W.G.P.).

British Lesser Black-backed Gull. *Larus fuscus graellsii* Brehm.

E. Walthamstow Reservoirs, seven on 23rd June (E.T.N.).

M. Bushy Park, one on 27th November (J.E.R.). Hammersmith, 41 on 18th July and over 100 on 22nd September (A.H.M.). Littleton Reservoir, ten or more on 2nd May (J.P.H.). Staines Reservoirs, 131 here and on the adjoining fields on 19th May (A.H.M.), 78 on 3rd (G.C.L.), and about 40 on 24th June (R.C.H.).

S. Barn Elms Reservoirs, 173 on 22nd July (D.G.).

Great Black-backed Gull. *Larus marinus* L.

K. Swanscombe marshes, eleven, including two adults, on 26th May (L.P.).

M. Hammersmith, one on 22nd January, 13th and 30th October (A.H.M.). Littleton Reservoir, one on 2nd May (J.P.H.). Millwall, one adult and one immature bird on 4th November 1933 (H. G. Attlee, *B.B.*, 27, p. 305). Staines Reservoirs, two to four from 4th to 18th February, two on 4th March and 8th April (A.H.M. and other observers).

S. Barn Elms Reservoirs, one on 28th January (C.W.G.P.), 25th April (H.G.A.), 2nd June, 27th September, 18th and 26th November, 2nd and 3rd December (J.P.H., G.C.L., A.H.M.). Lonsdale Road Reservoirs, two on 18th December (A.H.M.). Mitcham, on a flooded gravel pit, one immature on 25th November (L.P.).

Glaucous Gull. *Larus hyperboreus* Gunn.

M. Staines Reservoirs, an immature bird, considered to be in third winter plumage, from 9th to 13th February (F.R.F., G.C.L., A.H.M.).

Razorbill. *Alca torda* L.

E. Walthamstow Reservoirs, one from 11th November to the end of the year (E.T.N., E.M., R.W.P., W.A.W.).

M. Littleton Reservoir, 16 were found dead on 26th October (J.P.H., see also *B.B.*, 28, pp. 188-190). The flock was seen alive on 22nd October by the resident engineer (*B.B.*, 28, p. 245). One of the skins is now in the Society's collection.

Little Auk. *Alle a. alle* (L.).

M. Staines Reservoirs, one seen at close quarters on 10th October (H.T.).

Water-Rail. *Rallus a. aquaticus* L.

E. Chigwell sewage farm, one first seen 12th November 1933 (*L.N.*, 1933, p. 113), remained until 4th March (R.McK.S.), while one was also seen on 7th April and 9th September (W.A.W.).

H. Chorleywood, one by R. Chess on 5th April (F.R.F.). Hamper Mill, one on 11th March (G.H.). West Hyde, one by R. Colne on 18th November (G.H.).

M. Brent sewage farm, one on 18th November (C.L.W.). Ruislip Reservoir, one on 1st August (G.H.).

S. Beddington, one on 18th and 23rd March, 5th May and 25th November (H.B., G.E.M., L.P.).

Coot. *Fulica a. atra* L.

S. Walton on the Hill, a nest with four eggs on 1st April, an early date (H.B.).

Red-legged Partridge. *Alectoris r. rufa* (L.).

E. Chigwell sewage farm, young birds were seen (W.A.W.).

H. Watford sewage farm, one on 6th May (G.H.).

M. Staines, two on 15th April (F.R.F.).

S. Reigate, heard on 1st December (H.B.).

SPECIES FOR SPECIAL STUDY.

As so few of our members reside or even visit that part of our area in the county of Kent, it will be seen in the report below that the Kent portion compares unfavourably with Surrey and Middlesex. In view of this it is hoped that a special effort will be made to cover our Kent area in the further special studies.

Mr R. C. Homes has summarised the records for the northern area and Mr L. Parmenter those for the southern area. The report is based on the Society's records and the following publications:—

(1) 1900-33—*Proceedings and Trans. of Croydon Nat. Hist. Society.*
(2) 1900-31—*Transactions of Herts. Natural History Society.*
(3) 1902—*Victoria County History of Surrey* (*Birds*), J. A. Bucknill.
(4) 1907—*Notes on the Birds of Kent*, R. J. Balston, C. W. Shepherd, and E. Bartlett.
(5) 1907—*Birds of Kent*, W. J. Davis.
(6) 1909—*History of the Birds of Kent*, N. F. Ticehurst.
(7) 1910—*Ornithological Notes from a South London Suburb*, F. D. Power.
(8) 1921-34—*Reports of the Royal Parks Bird Sanctuaries Committee.*
(9) 1924—Birds of Epping Forest (*L.N.*, 1923).
(10) 1925—Birds of Walthamstow Reservoirs (*L.N.*, 1924), R. W. Pethen.
(11) 1929—*History of the Birds of Essex*, W. E. Glegg.
(12) 1930—Birds of Middlesex (*L.N.*, 1929), W. E. Glegg.
(13) 1931—Birds of the Harrow District (*L.N.*, 1930), T. H. Harrisson.
(14) 1932—*Nature Notes of Warlingham and Chelsham*, A. Beadell.
(15) 1932—*Oxted and Limpsfield* (section on birds), R. W. Robbins.
(16) 1934—Birds of the Norwood District (*L.N.*, 1933), F. G. Swayne.

HAWFINCH. *Coccothraustes c. coccothraustes* (L.).

B. In 1933 it was reported to breed annually near Iver.

E. The Hawfinch was at one time very common in Epping Forest, and in 1917 one observer stated that he had up to then heard of or seen over a hundred nests. In 1918 another recorder heard of twenty nests. Few nests have been reported in recent years, but it bred in Gilwell Park in 1923, and at Woodford Green in 1929. In 1934 it was seen throughout the year in Knighton Wood, Woodford Green, where young were being fed in July. The species is most in evidence during the winter, being very shy in the nesting season, although in 1933 a marked increase was noted in the Chingford district in April. It was seen in Larks Wood in 1928 and 1932, Hainault Forest in 1933, and has been seen in Wanstead Park, but it is very scarce outside the vicinity of Epping Forest.

H. Very few records. A female was killed at Oxhey Warren in 1911, and one was seen near Elstree for about three months in the same year. A young bird was seen near Chorleywood on 1st July 1933. In 1934 one was seen in the Chess valley on 21st April.

K. Ticehurst (1909) stated that it bred in the Darenth valley, at the Crays, Orpington, and Swanley. In 1906, a fruit grower is recorded to have shot more than 50 birds at Swanley. In 1934 it nested at Beckenham and was seen in Dulwich Woods in April and May. In 1933 it nested at Farnborough. At Beckenham flocks of six to twelve birds have been seen for the past ten years but our only other record is a small family party seen at Mottingham in July 1931.

M. Harting said that the Hawfinch was noticeably increasing in 1866, when it bred annually at Hampstead. It was then common near Ealing, and increased in February especially around Edgware, Harrow Weald, Hendon, Kingsbury and Stanmore. Glegg (1930) considers that it may have increased until 1910, but there is little recent information. In 1930 a few pairs were stated to breed at Northwood; one pair bred at Harrow Hill in 1927-8 and two pairs in 1930; one pair at Stanwell in 1931. One or two were observed on Hampstead Heath in March 1932 and 1933.

S. It has nested at Addlestone, Banstead Woods, Caterham, Chelsham, Chipstead, Godstone, Marden Park, Nore Hill, Richmond Park, Tadworth, Tandridge, Walton on the Hill, and Wimbledon Common, but there are no definite nesting records for 1934. It has probably nested at Epsom Downs, Hurst Green, Kingswood, Limpsfield, Oxted, Walton Heath, Warlingham, White Hill Caterham, Woldingham, Worms Heath, and on the north downs above Caterham, Godstone, and Oxted. It has occurred at Ashtead, Beddington Park, Bletchingley, near Boxhill, Burgh Heath, Carshalton, Chaldon, Cheam, Clapham Common, Colley Hill Reigate, Crohamhurst, Earlswood Common, Epsom Downs, Gatton Park, Godstone, Headley, Kew Gardens, Leatherhead, Mickleham, Mitcham Common, Norwood, Nutfield, Oxshott, Redhill, Reigate, Selsdon, Streatham, Titsey, Tooting Common, Upper Caterham and Weybridge. In Richmond Park they are seen only about hornbeams. Flocks of over twenty birds are uncommon. H.B. saw 35 to 40 on 27th March 1921, at Marden Park, and on 20th February 1927 he reports "enormous flock at Leatherhead containing hundreds of birds."

Lesser Redpoll, *Carduelis flammea cabaret* (P. L. S. Müll.).

B. No records.

E. A regular winter visitor to Epping Forest in some numbers, parties of up to a hundred or more being seen, especially at High Beach. It is also seen at Highams Park, Lords Bushes, Buckhurst Hill, Passingford Bridge, and Woodford Green, while in 1909 Meares stated that it was of annual occurrence in the breeding season around Brentwood. A flock was seen at this locality in November 1921. There are eight breeding records for Epping Forest, and as the species is partial to breeding in gardens, more nests may pass unnoticed. In 1909 a pair bred near Waltham Abbey.

H. Occasional in winter in Bushey, Elstree, Rickmansworth, and Watford districts. It has bred at Haileybury, 1907, and Cassiobridge, 1913, while a nest was destroyed when half completed at Sandy Lodge in 1914. In 1909 it was recorded in May in Oxhey Woods and between Watford and Rickmansworth. A flock of 20 seen in September 1930 at Elstree Reservoir consisted chiefly of birds of the year. The only record for 1934 was of two near Moor Park in October.

K. Ticehurst (1909) stated that by 1905 it was breeding at Beckenham, Bromley, Chislehurst, and Ravensbourne. Also in 1905 it was reported as becoming a common breeding species in the Darenth valley. In 1907 it was estimated that there were 20-30 nesting pairs around Bromley and it nested in the same year at Lower Sydenham. In 1910 three nests were found at Farnborough. Although it probably still breeds in our area of the county the only records received refer to winter visitors, the localities being Abbey Wood (1930), Brasted (1930), Chislehurst (1920, 1931, 1933), Hayes Common (1933), Kelsey Park, Beckenham (1932), and Otford (1929).

M. In 1866 Harting had only one record of breeding, but the species has since bred at Pinner (1902), Staines (1903), Hampstead (1908, 1909, and 1910, when seven nests were found), Perivale (1910), probably Finsbury Park (1919), Harrow (1928). It is said to breed locally at Stanmore and Harrow Weald and birds have been seen on Stanmore Common in May. Nesting was suspected at Staines in 1932, and on Hampstead Heath it was seen in June 1925 and throughout 1929, though breeding has not been proved recently. It is a regular winter visitor at Hampstead Heath, Ruislip, Staines and Uxbridge, and there are occasional notes from Bushy Park and Regents Park. In 1934 it probably bred at Northwood, where it was seen in May, while a family party was frequently observed in June and July.

S. In 1934 it nested at Reigate Heath (F.H.) and Wimbledon Common (also in 1902, 1931) and has probably done so in other years at both these localities. It has nested at Caterham (1917), Kingswood (1914, 1927, 1929), Limpsfield (1912, 1913, 1915), Oxted (1908), Richmond Park (prior to 1921), Tadworth (1925, 1928, 1930), Upper Warlingham (1914), and Waddon (1932). It has probably bred at most of these localities in other years and also at Bookham Common, Godstone, Headley, Reigate, Tandridge, and Tilburstowhill Common. It is more generally distributed in winter, and has occurred at Addington, Addlestone, Arbrook Common, Beddington, Burgh Heath, Carshalton, Chipstead, near Cuddington Downs, Epsom, Esher, Fetcham, Hurst Green, Kenley, Leatherhead, Lower Warlingham, Malden, Mickleham Downs, Nore Hill, Putney Heath, Riddlesdown, Selsdon, Sheen Common, Sutton, Wallington, Walton on the Hill, and Worms Heath. Flocks of over twenty birds are not often seen, but are said to be seen regularly at Esher. They are generally reported on alders and birches frequently in the company of Siskins and Goldfinches.

Brambling. *Fringilla montifringilla* L.

B. Five near Langley on 5th May 1928, and seen once in the Colnbrook district, 1931.

E. A regular winter visitor, especially to Epping Forest, but numbers vary considerably. It is sometimes recorded very late, having been seen in the Forest in June 1932. Bramblings are normally found under beeches but about March 1934 the flocks moved away from the beech district and were found chiefly among hornbeams. It is possible that in addition to local movements numbers are augmented by passing birds on spring passage. Seen regularly in Lords Bushes and Knighton Wood until 15th April, the largest party containing 40 to 50 birds. In 1920 a flock of 30 was observed in Dagenham, where it has been seen on one or two other occasions.

H. In 1905-6 large flocks were seen in the Watford district, but there were no further records until 1916. A flock was also seen in this area at Bushey Hall Farm. In 1934 a female was seen at Watford Sewage Farm in February and March, and a flock of about a dozen on 8th April; Bottom Wood (south of Chorleywood), several on 18th February; a large flock was seen in Moor Park on 9th December; and later in the day a flock was seen flying towards Chorleywood.

K. At Elmers End there were twenty to fifty in February 1934. It has been reported from Beckenham, Farnborough, Joydens Wood, and Romney Street in recent years, but it is impossible to give its status in our area of Kent owing to the few records.

M. An irregular winter visitor in fluctuating numbers. Has occurred exceptionally in June and July, Hampstead, 1926, and in July, Enfield, 1923, but normally seen October to April. Particularly common since 1927 in south-west Middlesex, a flock of 500-600 having been observed at Osterley feeding on brewery waste. In 1934 considerable flocks were noted between Northwood and Harefield on 24th March and 8th April. One or two were seen by the Highgate ponds and on Hampstead Heath from 15th April to 4th May. It has occasionally been seen in Kensington Gardens, a recent record being for 3rd May 1933.

S. Of this species H.B. says (*in litt.*, 1933), " I have notes of the occurrence of this bird in Surrey (within the L.N.H.S. area) for every year from 1905 to 1933. It is difficult to determine whether the bird is more numerous at the present time than in past years. My notes extending over nearly thirty years show that the numbers vary considerably from year to year. Occasionally what may be termed a 'Brambling Winter' occurs, when the bird is unusually abundant. The winters of 1905-6, 1920-1, 1922-3 were remarkable for large numbers. There is often a marked increase of birds during March when many pass through the county during the northward migration."

There is little to add to this summary but a list of localities where it is known to have occurred may be of interest:—Banstead, Barn Elms Reservoirs, Beddington, Carshalton, Chelsham, Chip-

stead, Church Cobham, Coulsdon, Crohamhurst, Dulwich Woods, Epsom Downs, Epsom sewage farm, Headley, Kew, Kingswood, Mitcham Common, Mortlake, Purley, Richmond Park, Sutton, Tadworth, Titsey, Wallington, and Warlingham. It has been noted feeding under hornbeams and beeches with other finches. Earliest date seen, 28th September 1930, Sutton, and latest date seen 23rd April (H.B.).

TREE-SPARROW. *Passer m. montanus* (L.).

B. Seen in the Colnbrook district in March 1927 and September 1930. In 1931 it was said to breed in this part.

E. Breeds in fair numbers in several localities in the Chingford and Woodford districts. For the last six or seven years three pairs have bred on the edge of Chingford marsh. In 1919 it was reported to breed annually at Romford. Seen regularly in Wanstead Park in May; noted in Weald Park in 1929, at Cheshunt, April 1930, regularly at Howlett Hall, Navestock, and between Theydon Bois and Abridge, in all of which localities it probably breeds. Nests have been found in haystacks at the Lea Valley Reservoirs, 1914, and at Knightsland Wood, Toothill, 1933. Fairly well distributed with probably an increase in winter.

H. In 1904 Bickerton found it nesting for the first time near Watford, and in 1914 there were half a dozen nests along the Colne. A nest with young was found in 1916, but there is little information for the breeding season. It is commoner in winter and roosts with flocks of finches, about fifty having been seen in the Aldenham district in December 1932. Several were noted in Cassiobury Park in June 1929. In 1934 a flock was seen in January at Chorleywood, while at Watford Sewage Farm a few were present until April and during the late summer and early autumn. A nest was found at Hamper Mill, Sandy Lodge, and there may have been others.

K. Ticehurst (1909) stated that the colonies at Beckenham, Bromley, Hayes, Keston, and West Wickham were the largest in the county. It has also nested at Dartford. It has occurred at Danson Park (1929, 1930) where it probably nests, Dartford (1929), Greenhithe (1929), and at Elmers End where between 200 and 250 were seen on 21st October 1934.

M. Harting, in 1866, knew it only as a winter visitor, and the first record of breeding was at Hampstead in 1871, since when it has become a regular, though local, breeder in most parts of the county. In south-west Middlesex it breeds regularly in the lower Colne and Crane valleys, though there are a few pairs east of the Crane. In 1901 it was said to be frequent along the Brent between Hanwell and Greenford and along the Yeading brook. In 1928 small colonies were noted at South Harrow, Edgware, and Elstree, and in 1933 a colony of about 15 pairs was found on Barn Hill, Wembley. Breeds regularly at Perivale Wood, and is seen in summer in most years at Stanmore and by the Brent Reservoir. Numbers are increased in winter and flocks are frequently seen around Stanwell.

S. In 1904 it nested in Richmond Park and has done so in most years if not annually ever since. It has bred at Beddington (1912, 1914, 1929-1934, and probably in other years), Banstead (1915), and Molesey Reservoirs (1932). It has also occurred at Barnes, Cheam, Epsom sewage farm, Fetcham mill pond, Godstone, Ham, Headley, Leatherhead, Limpsfield Common, Lower Morden, Mitcham Common, Oxted, Palewell Common, Purley, Tandridge, and Wallington. It is more numerous and more widely distributed in autumn and winter than in summer, but probably breeds in some of the localities mentioned. The largest colony is that at Beddington.

Sedge-Warbler. *Acrocephalus schoenobaenus* (L.).

B. In 1902 it was common along the Misbourne near Denham, was seen near Thorney in 1931, and breeds regularly near Colnbrook.

E. Fairly generally distributed along the Lea and Roding. It is a scarce summer resident at the Walthamstow Reservoirs, where, although no nest has been found, it probably breeds regularly. It is regular along the Roding from Chigwell to Navestock, nests having been found in various years at Chigwell sewage farm, Abridge, Passingford Bridge, and Navestock. Found all along the Lea, and bred at Sewardstone gravel pit in 1934. Has also been found breeding at Dagenham and is probably regular here and around East Horndon. Other localities where it has been seen are Hatch Grove Chingford, and Hainault Forest.

H. In 1916 it was stated to be scarce in Haileybury and Watford districts, but now breeds freely in suitable localities, especially along the Chess and Colne. In 1934 one pair nested at Hamper Mill.

K. It has nested at Bromley, Dartford marshes, Erith and Lewisham, and is still found in the Thames marshes and at Eynsford (1932) and Elmers End (1934).

M. On passage it is very common along the river valleys and occasional in Hyde Park and Kensington Gardens. In south-west Middlesex it is a fairly common resident in most suitable localities, such as lakes, overgrown ditches and gravel pits. Localities frequented are Boston Manor, Brentford, Osterley Park, Wyke Sewage Farm, along the Crane and Colne and throughout the Staines, Ashford and Stanwell district. Elsewhere it breeds at Ruislip, where there were six pairs in 1934, at Elstree Reservoir, and at Edmonton Sewage Farm. In 1934 two new localities were noted, a nest being found at Brent Reservoir and young being seen by the Long Water in Hampton Court.

S. It has nested at Beddington (1932 and probably before and since), Black Pond, Esher (1933), Dulwich Park (1901), Epsom Sewage Farm (1929 and probably since), Godstone (1904 and probably ever since), Ham gravel pit (1934), Nutfield Marsh (1902), Old Malden (1933), Oxted (1907-1912), Thorpe (1907) and Weybridge (1929). It has occurred also at Barn Elms Reservoirs, Bookham Common, Chertsey, Gatton Park, Kew, Kingston, Wimbledon Common, and on migration even on high ground away from water at Caterham,

Epsom Downs, Tadworth and Walton Heath. It probably nests regularly along the R. Thames from Kew upwards and along the R. Wey and Mole and at many reeded ponds, but our records are too few to prove this. Earliest date seen, 14th April 1933, at Beddington, and latest date seen, 5th October 1930, at Beddington.

Little Grebe. *Podiceps r. ruficollis* (Pall.).

B. In 1901 it was common on the Misbourne, near Denham, and bred on the Colne in 1901 and 1902. It was breeding at Wraysbury in 1931 and two pairs nested on the Poyle Pits, Colnbrook, in 1933, this number being probably regular. It may be said to be well distributed in the Colne valley.

E. A local but sparse breeder, though there is an influx in the winter months. It breeds intermittently on various ponds in the Epping Forest district, as, for example, at Theydon Bois in 1906 and on the Wake Valley Pond in 1923 and 1933, while for the last four years it has attempted to nest in Knighton Wood. Breeds annually on the Eagle Pond, Wanstead, and two nests were seen in Wanstead Park in 1932. Numbers increase in autumn, when it is seen at Hainault Forest and on the Walthamstow Reservoirs. The largest number seen here was 20 in December 1931. A few pairs may breed at these reservoirs.

H. It is plentiful on the Chess and Colne and on gravel-pits around Rickmansworth, Northwood and Watford. Also breeds at Elstree Reservoir. Numbers increase in the Colne valley in winter, flocks of up to eleven being seen at times. In 1934 one pair was seen at Hamper Mill throughout the year, although there is very little cover.

K. It has nested at Dartford marshes (1929), Kelsey Park (1924-1932), Langley Park (1934), and has occurred in winter at Foots Cray, Lullingstone Lake, and Westerham.

M. Fairly common, breeding on most suitable waters including River Colne, and gravel pits and ponds in its vicinity, Stanwellmoor Park, Osterley Park, where there were four to five pairs in 1933, Elstree and Ruislip Reservoirs. It used to breed regularly around Enfield, Grovelands, and Winchmore Hill, and may still do so on some ponds. A young bird was seen in Regents Park in 1928 and empty nests have been seen in other years. Young were also seen in Kenwood in 1927, occasional birds being reported from Hampstead and Highgate ponds. Maximum number on the Brent Reservoir in 1934 was about 25 in August, but breeding is prevented by boating. Six pairs were present at Ruislip in July 1934 and at the end of the month 16 adults and three or four young were counted, but none stay during the winter, there being probably a movement into the Colne valley. There is a decided influx about September, fifty or more having been seen at Brent Reservoir, and over thirty at Stoke Newington Reservoirs. It is also an occasional winter visitor to Staines and Kensington Gardens, though probably in smaller numbers than formerly, 98 having been seen on one occasion in the past.

S. Bucknill (1902) stated that it bred at Battersea Park and Kew Gardens. It has nested Addlestone (1929), Beddington (1908, 1929-34), Bookham Common (1933, 1934 and probably since 1928), Chertsey (1934), Fetcham Mill Pond (1914—6 broods, 1928-1933 and probably in most other years), Godstone, 3 ponds (1915-1934 probably without exception and also in previous years), Ham gravel-pits (1929), Kew Gardens (1934), Kingston (1933, 1934), on the R. Mole at Leatherhead (1934), near Mitcham (1907), Molesey gravel-pit (1931, 1932), Oxted (1907-1911 and probably ever since), South Norwood (1933, 1934), Waddon Mill (1933), Walton on the Hill (1930, 1931), Weybridge (Broadwater, 1930), and Wimbledon Common (1929). There is little doubt that this bird nests in small numbers on most of the suitable ponds in the area but our records are incomplete. Its breeding season is a long one as downy chicks have been seen in October at Beddington. It has occurred also at Barn Elms and Lonsdale Road Reservoirs, Dulwich Park, Gatton Park, the R. Thames at Kew and Richmond, Molesey Reservoirs, Reigate Priory, Richmond Park, Weybridge (Mill pond and Seven Arches pond), and Wimbledon Park, but generally only in the autumn and winter. On 13th September 1919 one was caught at the side of a road at Caterham (H.B.). The only locality where large flocks occur at any time is Fetcham Mill Pond; here as many as 60 birds have been counted on two occasions, 13th December 1930 and 13th January 1934.

ARRIVAL OF MIGRANTS, 1934.

The order is that of the earliest recorded date for each species. The table gives only the earliest date for each county.

WHEATEAR.

Mar. 11—S. Richmond Park A.H.S.
April 7—E. Walthamstow Res. E.T.N., R.W.P.
,, 12—M. Hampstead ..... M.R.
,, 15—H. Watford ..... G.H.

WHITE WAGTAIL.

Mar. 14—S. Ewell ..... R.S.R.F.

CHIFFCHAFF.

Mar. 30—S. Richmond Park H.G.A.
April 5—K. Beckenham ..... G.E.M.
,, 7—E. Lords Bushes .. W.A.W.
,, 7—E. Walthamstow Res. R.W.P.
,, 7—M. Northwood ..... G.H.
,, 8—H. Hamper Mill ..... G.H.

TREE-PIPIT.

April 1—S. Epsom ..... R.S.R.F.
,, 7—M. Ruislip ..... G.H.
,, 16—E. Epping Forest ..... J.R.

WILLOW-WARBLER.

April 5—S. Barn Elms Res. G.C.L.
,, 8—M. Staines Res. ..... G.C.L.
,, 14—E. Chigwell ..... R.McK.S.
,, 14—E. King George V Res. W.A.W.
,, 15—K. Chislehurst ... R.S.R.F.

STONE-CURLEW.

April 5—K. Beckenham ..... G.E.M.

YELLOW WAGTAIL.

April 7—M. Staines Res. .... A.H.M.
,, 8—S. Barn Elms Res. G.C.L.
,, 14—E. Chigwell ..... R.McK.S.
,, 14—E. King George V Res. W.A.W.
,, 15—H. Hamper Mill ..... G.H.
,, 15—H. Watford ..... G.H.

REDSTART.

April 7—S. Richmond Park H.G.A.
,, 10—M. Bushy Park ..... J.E.R.
April 19—E. Epping Forest ..... J.R.
,, 22—K. Beckenham ..... P.W.R.

CUCKOO.

April 7—M. Ruislip ..... G.H.
,, 13—K. Beckenham ..... G.E.M.
,, 14—S. Banstead ..... R.S.R.F.
,, 15—E. Chigwell ..... R.McK.S.

BLACKCAP.

April 12—S. Ewell ..... A.H.H.
,, 20—M. Northwood ..... G.H.
,, 22—E. Epping Forest J.R., R.McK.S.
,, 22—E. Lords Bushes .. W.A.W.
,, 22—K. Beckenham ..... G.E.M.

SWALLOW

April 12—S. Beddington ..... G.E.M.
,, 12—S. Ewell ..... A.H.H.
,, 12—S. Fetcham ..... H.J.B.
,, 13—M. Littleton Res. ... J.P.H.
,, 14—E. King George V Res. E.M., W.A.W.
,, 14—H. Elstree Res. ..... R.C.H.

COMMON SANDPIPER.

April 13—S. Richmond Park. H. Thursfield in *Field*, 21/4/34.
,, 14—E. King George V Res. W.A.W.
,, 16—K. Beckenham ..... G.E.M.
,, 22—H. Hamper Mill ..... G.H.
,. 24—M. Kensington Gardens E.G.P.

WHINCHAT.

April 14—E. Chingford Marsh E.M.
May 3—M. Regents Park ..... M.R.
,, 5—S. Richmond Park ... D.V.

MARTIN.

April 14—E. King George V Res. W.A.W.
,, 15—M. Staines Res. ..... G.C.L.
,, 19—S. Ewell ..... A.H.H.
,, 29—H. Hamper Mill ..... G.H.

SAND-MARTIN.

April 14—E. King George V Res. E.M., W.A.W.
,, 14—M. Ruislip Res. ..... G.H.
,, 14—M. Uxbridge ..... G.C.L.
,, 15—S. Richmond Park G.C.L.

SEDGE-WARBLER.

April 15—M. Mill End ..... G.H.
,, 16—S. Beddington ..... S.A.C.
,, 21—H. Chess valley ..... G.C.L.
,, 29—E. Luxborough .. R.McK.S.

WOOD-WARBLER.

April 16—S. Wimbledon ..... R.E.W.
,, 29—H. Chorleywood ..... G.H.
May 5—K. Beckenham ..... G.E.M.
,, 5—M. Stanmore Common R.C.H.
,, 11—E. Epping Forest ..... J.R.

LESSER WHITETHROAT.

April 16—S. Wallington ..... S.A.C.
,, 22—E. Epping Forest R.McK.S., W.A.W.
,, 22—H. Watford ..... G.H.
,, 29—M. Staines ..... G.C.L.

SWIFT.

April 16—M. Kensington Gardens E.G.P.
,, 16—S. Kew Gardens. G. J. Robinson in *Field*, 28/4/1934.
May 5—E. King George V Res. W.A.W.
,, 5—H. Elstree Res. ..... R.C.H.

BLACK TERN.

April 16—S. Barn Elms Res. F.R.F.

NIGHTINGALE.

April 17—E. Epping Forest ..... J.R.
,, 21—M. Northwood ..... G.H.
,, 22—S. Bookham ..... M.S.

GRASSHOPPER-WARBLER.

April 19—S. Bookham ..... J.E.R.

WHITETHROAT.

April 19—M. Regents Park ..... M.R.
,, 21—E. Chigwell ..... R.McK.S.
,, 21—H. Chess valley .... G.C.L.
,, 22—S. Beddington ..... L.P.
,, 22—S. Tadworth ..... H.B.

WRYNECK.

April 20—S. Tadworth ..... H.B.
,, 29—M. Staines ..... G.C.L.

PIED FLYCATCHER.

April 21—K. Beckenham G.E.M., P.W.R.

REED WARBLER.

April 22—S. Beddington ..... L.P.
,, 30—M. Ruislip ..... G.H.
May 12—E. Chigwell ..... W.A.W.

GARDEN WARBLER.

April 22—S. Leatherhead .... R.C.H.
May 3—E. Epping Forest ..... J.R.
,, 6—M. Ruislip ..... G.H.

TURTLE-DOVE.

April 22—S. Fetcham ..... H.J.B.
May 13—E. Lords Bushes R.McK.S., W.A.W.
,, 22—M. Northwood ..... G.H.

SPOTTED FLYCATCHER.

May 5—K. Beckenham ..... G.E.M.
,, 7—M. Regents Park ..... M.R.
,, 14—S. Wallington ..... S.A.C.
,, 20—E. Knighton Wood R.McK.S.

RED-BACKED SHRIKE.

May 10—E. Epping Forest D.A.T.M.
,, 13—K. Beckenham ..... G.E.M.
,, 13—M. Staines G.C.L., A.H.M.
,, 25—S. Bookham ..... L.P.

GREENLAND WHEATEAR.

May 12—S. Bookham ..... R.C.H.

NIGHTJAR.

May 22—M. Ruislip ..... G.H.

COMMON TERN.

June 2—S. Barn Elms Res. G.C.L.

WIGEON.

Sept. 15—E. King George V Res. W.A.W.
,, 23—H. Elstree Res. ..... A.H.M.
Oct. 28—S. Barn Elms Res. C.W.G.P.

SCAUP-DUCK.

Sept. 30—M. Staines ..... F.R.F.

REDWING.

Oct. 13—S. Tadworth ..... H.B.
,, 18—M. Kensington Gardens E.G.P.
,, 21—E. Chigwell ..... R.McK.S.

GOLDENEYE.

Oct. 13—E. Walthamstow Res. E.T.N.
,, 19—M. Kensington Gardens E.G.P.
,, 19—M. Staines Res. ..... A.H.M.
,, 28—S. Beddington ..... G.E.M.

BRAMBLING.

Oct. 17—S. Richmond Park W.E.G.
,, 20—K. Beckenham ..... G.E.M.
Nov. 29—M. Staines Res. ..... J.E.R.
Dec. 9—H. Moor Park ..... G.H.

SISKIN.

Oct. 21—M. Bushy Park ..... J.E.R.

GOOSANDER.

Oct. 23—M. Littleton Res. ... J.P.H.
Dec. 14—S. Richmond Park R.E.W.

FIELDFARE.

Oct. 30—M. Bushy Park ..... J.E.R.
Nov. 2—S. Richmond Park R.E.W.
,, 4—E. Chigwell R.McK.S., W.A.W.

HOODED CROW.

Nov. 2—S. Beddington ..... S.A.C.
,, 3—E. King George V Res. W.A.W.
,, 3—K. Beckenham G.E.M., P.W.R.
Dec. 9—H. Watford ..... G.H.

SMEW.

Nov. 30—M. Staines Res. .... A.H.M.
Dec. 1—E. Walthamstow Res. R.W.P.
,, 21—S. Barn Elms Res. E.G.P.

LATEST DATES OF MIGRANTS, 1934.

The order is that of the latest date for each species. As less is known of the departure of migrants than of their arrivals, it is hoped that the increase of notes under this heading received for 1934 will be maintained.

WHINCHAT.

Dec. 26—K. Beckenham ..... P.W.R.
Oct. 13—E. Walthamstow Res. E.M.
Sept. 15—M. Ruislip ..... G.H.
,, 9—H. Croxley Green ..... G.H.
Aug. 27—S. Beddington ..... L.P.

WHEATEAR.

Nov. 4—E. King George V Res. E.T.N., W.A.W.
Oct. 8—S. Ewell ..... A.H.H.
Sept. 30—H. Watford ..... G.H.
,, 29—M. Littleton Res. ... J.P.H.
,, 29—M. Ruislip Res. ..... G.H.

SWALLOW.

Nov. 4—S. Barn Elms Res. G.C.L., C.W.G.P.
Oct. 21—E. Chigwell ..... W.A.W.
,, 21—H. Watford ..... G.H.
,, 14—M. Edmonton ..... E.M.

MARTIN.

Oct. 28—S. Barn Elms Res. E.G.P.
,, 14—H. St Albans ..... R.C.H.
,, 13—E. Walthamstow Res. R.W.P.
,, 10—M. Ruislip ..... G.H.

COMMON TERN.

Oct. 26—M. Littleton Res. ... J.P.H.
Sept. 4—S. Barn Elms Res. E.G.P.
,, 1—E. Walthamstow Res. E.T.N.

SAND MARTIN.

Oct. 20—E. Walthamstow Res. E.T.N.
,, 11—S. Barn Elms Res. E.G.P.
,, 6—M. Staines Res. R.C.H., J.E.R.

WHITETHROAT.

Oct. 14—M. Edmonton ..... E.M.
Sept. 11—E. Epping Forest ..... J.R.
,, 1—S. Boxhill ..... R.S.R.F.

COMMON SANDPIPER.

Oct. 13—E. King George V Res. W.A.W.
,, 7—S. Barn Elms Res. E.G.P.
Sept. 30—H. Hamper Mill ..... G.H.
,, 29—M. Littleton Res. ... J.P.H.

YELLOW WAGTAIL.

Oct. 8—M. Staines ..... A.H.M.
,, 7—S. Barn Elms Res. E.G.P.
Sept. 30—H. Watford ..... G.H.
,, 15—E. King George V Res. W.A.W.

CHIFFCHAFF.

Oct. 8—S. Ewell ..... A.H.H.
,, 5—E. Woodford ..... D.A.T.M.
,, 2—M. Kensington Gardens E.G.P.

WILLOW-WARBLER.

Oct. 8—S. Ewell ..... A.H.H.
Sept. 29—M. Hampstead ..... K.D.-S.
,, 7—E. Epping Forest ..... J.R.

TREE-PIPIT.

Oct. 6—S. Epsom ..... R.S.R.F.

SEDGE WARBLER.

Oct. 2—S. Barn Elms Res. E.G.P.
Sept. 16—M. Edmonton ..... E.M.
,, 9—H. Hamper Mill ..... G.H.
Aug. 12—E. Chigwell ..... W.A.W.

TURTLE-DOVE.

Sept. 30—E. Lords Bushes W.A.W.
,, 10—M. Kensington Gardens E.G.P.
,, 3—S. Fetcham ..... H.J.B.

REED WARBLER.

Sept. 28—B. Colnbrook ..... C.E.L.
Aug. 23—E. Sewardstone D.A.T.M.

SWIFT.

Sept. 22—S. Barn Elms Res. E.G.P.
,, 8—E. Walthamstow Res. E.M., R.W.P.
Aug. 24—M. Ruislip Res. ..... G.H.

RING OUZEL.

Sept. 19—S. Surbiton ..... J.E.R.

SPOTTED FLYCATCHER.

Sept. 15—S. Ewell ..... R.S.R.F.
,, 10—E. Epping Forest ..... J.R.
,, 9—M. Ruislip ..... G.H.

BLACK TERN.

Sept. 15—S. Barn Elms Res. G.C.L., E.G.P.

REDSTART.

Sept. 11—S. Walton Heath ..... L.P.
,, 10—E. Epping Forest ..... J.R.
Aug. 27—M. Ruislip ..... G.H.

PIED FLYCATCHER.

Sept. 9—S. Wimbledon Common R.E.W.

BLACKCAP.

Sept. 9—M. Northwood ..... G.H.

CUCKOO.

Sept. 5—E. King George V Res. E.G.P.
Aug. 27—S. Beddington ..... L.P.
,, 27—S. Fetcham ..... H.J.B.
,, 13—M. Kensington Gardens E.G.P.

RED-BACKED SHRIKE.

Sept. 2—E. Epping Forest ..... J.R.
Aug. 29—S. Banstead ..... S.A.C.
,, 25—M. Ruislip ..... G.H.

NIGHTJAR.

Aug. 27—M. Ruislip ..... G.H.

LESSER WHITETHROAT.

Aug. 25—S. Ashtead ..... R.S.R.F.

WOOD WARBLER.

Aug. 23—H. Hamper Mill ..... G.H.

GARDEN WARBLER.

Aug. 23—H. Hamper Mill ..... G.H.

NIGHTINGALE.

Aug. 19—M. Ruislip ..... G.H.

WRYNECK.

Aug. 18—M. Northwood ..... G.H.

GOOSANDER.

May 15—M. Staines Res. G.C.L., A.H.M.
April 7—S. Richmond Park H.G.A., L.M.E., G.C.L.
,, 6—E. Walthamstow Res. W.A.W.

BRAMBLING.

May 4—M. Hampstead Heath W.B.W.
April 21—E. Epping Forest ..... J.R.
,, 15—S. Richmond Park C.L.C.
,, 13—K. Beckenham ..... G.E.M.
,, 8—H. Watford ..... G.H.

FIELDFARE.

April 22—S. Beddington ..... L.P.
,, 10—M. Bushy Park ..... J.E.R.
Mar. 30—E. Walthamstow .. R.W.P.

SCAUP-DUCK.

April 20—E. Walthamstow Res. E.T.N.

WIGEON.

April 13—M. Littleton Res. ... J.P.H.
Mar. 31—E. King George V Res. W.A.W.
,, 18—S. Barn Elms Res. C.W.G.P.

REDWING.

April 11—S. Richmond Park H.G.A.
Mar. 30—E. Epping Forest W.A.W.
,, 25—M. Mill End ..... G.H.
,, 25—H. Watford ..... G.H.

SISKIN.

April 8—E. Woodford Green R.McK.S.
,, 8—S. Oxshott ..... L.M.E.
Mar. 29—M. Uxbridge ..... F.R.F.

GOLDENEYE.

April 8—M. Staines Res. ..... G.C.L.
Mar. 7—S. Barn Elms Res. E.G.P.

HOODED CROW.

April 7—E. Walthamstow Res. R.W.P., R.McK.S.

SMEW.

April 7—M. Staines Res. .... A.H.M.
Mar. 17—S. Londsdale Rd. Res. Barnes .. .. A.H.M.
,, 10—E. Walthamstow Res. R.W.P.

61. ILLECEBRACEAE.

SCLERANTHUS Linn. 355.

1617. **S. annuus** Linn. *Knawel.*

In divisions 1, 2, 4, 5, 7, 9, 10, 11, 13, 15, 17, 18 and 19. Distribution irregular, owing to the plant's dislike of clay and chalk.

62. AMARANTHACEAE.

AMARANTHUS Linn. 356.

1619. **A. retroflexus** Linn.

19. Limpsfield. A casual on garden ground.

63. CHENOPODIACEAE.

CHENOPODIUM Linn. 357.

1621. **C. polyspermum** Linn. *Many-seeded Goosefoot.*

In divisions 1, 4, 6, 8, 9, 10, 11, 14, 15, 17 and 20. Appeared in great quantity in the dry bed of R. Mole, near Mickleham, in August 1934.

1622. **C. Vulvaria** Linn. *Stinking Goosefoot.*

18. Warlingham (W.W.).

1623. **C. album** Linn. *Common Goosefoot. Fat Hen.*

In divisions 7, 8, 9, and all the southern divisions (13 to 24). The absence of records in the northern area must be due to the reluctance of recorders to identify this very abundant plant.

1625. **C. opulifolium** Schrad.

12. Rainham (L.B.H.).

1626. **C. ficifolium** Sm.

6. Harringay Park, 1905. 13. Near Thorpe.

1629. **C. murale** Linn. *Nettle-leaved Goosefoot.*

12. Chadwell Place.

1630. **C. hybridum** Linn. *Maple-leaved Goosefoot.*

6. Grange Park (L.B.H.).

1631. **C. urbicum** Linn. *Upright Goosefoot.*

In divisions 4, 6, 8, 9, 15, 19 and 24. Uncertain in appearance and, possibly, in identification.

1632. **C. rubrum** Linn. *Red Goosefoot.*

1. Iver. 3. West Drayton. 4. Totteridge. Between Northolt and Southall. 6. Hornsey. Highgate. 19. Limpsfield.

1634. **C. glaucum** Linn.

12. Dagenham (L.B.H.). 19. Brickfield at Limpsfield (R.W.R.).

1635. **C. Bonus-Henricus** Linn. *Good King Henry.*

2. Bricket Wood. 3. Near Hampton Court. 9. Epping. 12. North Ockendon. Rainham. 13. Thorpe. 15. Slyfield, Great Bookham. 19. Limpsfield. 20. Keston.

Formerly cultivated as a pot herb.

BETA Linn. 358.

1637. **B. maritima** Linn. *Sea Beet.*

12. Purfleet. 21. Swanscombe Marshes. Stone Marshes.

Also in 11 and 14, obviously escaped from cultivation.

ATRIPLEX Linn. 359.

1640. **A. patula** Linn. *Orache.*

In divisions 1, 14, 15, 16, 17, 19, 20 and 21.

1641. **A. hastata** Linn. *Orache.*

In divisions 4, 11, 13, 14, 16, 17, 19, 21 and 23. One of the species plentiful in the dry bed of the River Mole in 1934.

Var. b. *deltoidea* Moq.

6. Hornsey. 15. Near Leatherhead Station. Epsom.

This genus seems to be insufficiently recorded, particularly in the north.

SALICORNIA Linn. 360.

S. europæa Linn. *Glasswort.*

12. Grays. Possibly *S. stricta* Dum., but the segregate has not been identified.

SUÆDA Forsk. 361.

1656. **S. maritima** Dum. *Seablite.*

12. Grays.

64. POLYGONACEAE.

POLYGONUM Linn. 363.

1659. **P. Convolvulus** Linn. *Black Bindweed.*

Recorded in every division except 5 (Mimms). Surely in all.

1660. **P. dumetorum** Linn.

20. Lesness Abbey Wood. Uncertain in appearance. Very fine in 1927.

1661. **P. heterophyllum** Lindman. *Knotgrass.*

In all divisions. Recorded as *P. aviculare* and doubtless includes *P. aequale* Lindman, though the various leaved plant is much more noticeable.

1666. **P. Hydropiper** Linn. *Water Pepper.*

In all divisions except 12 (Rainham), 16 (Norwood), 18 (Caterham) and 21 (Kent Marshes). Division 18 is practically waterless. It is probably in the others.

1667. **P. minus** Huds.

9. Cooks Folly Wood. Epping Forest. 10. Hainault Forest.

1668. **P. laxiflorum** Weihe **(mite** Hook.).

13. Near Thorpe. 14. Thames bank between Kew and Richmond, plentifully. 20. Chislehurst Common. Petts Wood.

1669. **P. Persicaria** Linn.

All divisions except 12.

1670. **P. lapathifolium** Linn.

No records in divisions 2, 3, 5, 8, 10, 11, 12, 21, 22 and 24. Most frequent in 1 (Colnbrook).

1672. **P. amphibium** Linn.

No records in divisions 5, 9, 10, 12, 15, 17, 18, 22 and 23. Elsewhere quite as often in fields (f. *terrestre* Leers) as in the water. A charming water plant.

1673. **P. Bistorta** Linn. *Bistort. Snakeweed.*

4. Mill Hill. Between Harefield and Rickmansworth. 19. Barrow Green, Oxted. 20. Hayes. 22. Darenth. 24. Near Brasted. Sundridge. Plentiful and apparently native at the stations in divisions 4 and 24.

† **P. cuspidatum** Sieb. & Zucc.

3. West Drayton. 13. Little Heath, Oxshott. 15. Near Stoke D'Abernon.

Alien. Native of Japan.

FAGOPYRUM Hill. 364.

1676. **F. sagittatum** Gilib. *Buckwheat.*

Recorded from divisions 3, 7, 9, 11 and 17. An escape from cultivation, pheasantries, etc.

RUMEX Linn. 366.

1678. **R. glomeratus** Schreb. **(conglomeratus** Murr.**)**.

Scattered records in all divisions except 1, 8, 12, 17, 18 and 21 to 24.

1680. **R. condylodes** Bieb. **(sanguineus** var. **viridis** Sibth.**)**.

Also scattered records, in all divisions except 1, 2, 5, 8 and 10. Apparently more frequent in the south.

1682. **R. maritimus** Linn. *Golden Dock.*

4. Totteridge. 11. Hare Street, Romford. 12. Rainham.

1683. **R. limosus** Thuill. *Yellow Marsh Dock.*

4. Hendon, in the Brent meadows. 5. Shenley. 12. Dagenham.

1684. **R. pulcher** Linn. *Fiddle Dock.*

3. Hampton Court, towing path. 4. Hendon. 9. Blake Hall, Ongar. 20. Abbey Wood. 21. Stone Marshes. 22. Crayford.

1686. **R. obtusifolius** Linn. *Common Dock.*

Abundant on roadsides and waste places but not yet recorded in division 12.

1687. **R. crispus** Linn. *Common Dock. Curled Dock.*

Likewise abundant in waste places and fields but without record in division 9.

1690. **R. Hydrolapathum** Huds. *Great Water Dock.*

Plentiful by the watersides in divisions 1, 2, 3, 4, 7, 8, 13, 14 and 21. Also at the following: 5. Park Street. 6. Hampstead, Ken Wood. 10. Chigwell. 22. Crayford. 24. Along the Darent below Westerham.

1694. **R. Acetosa** Linn. *Sorrel.*

In all divisions.

1696. **R. Acetosella** Linn. *Sheep Sorrel.*

In all divisions.

65. ARISTOLOCHIACEAE.

ARISTOLOCHIA Linn. 368.

1698. **A. Clematitis** Linn. *Birthwort.*

3. Hampton Court. A large patch in the turf outside the Palace Gardens is probably an ancient escape from the gardens. European.

† **A. rotunda** Linn.

18. On a southern slope of chalk in East Surrey. A considerable patch, fruiting freely, which has every appearance of a natural introduction. S. and W. Europe.

66. THYMELEACEAE.

DAPHNE Linn. 369.

1700. **D. Laureola** Linn. *Spurge Laurel.*

2. Near Sarratt. 7. Crews Hill. 9. Epping Forest and neighbourhood, many records. 17. Downs Lane, Leatherhead. 18. Woldingham. Caterham. Downs above Tandridge. 20. Chislehurst. 22. Stone Wood near Darenth. 23. Several stations. 24. Chevening Park.

68. LORANTHACEAE.

VISCUM Linn. 371.

1702. **V. album** Linn. *Mistletoe.*

1. Between Horton and Wraysbury, on black poplar. 3. Hampton Court Park, on lime. 4. Moor Park, on lime. 6. Waterlow Park, Highgate, on lime. 10. Chigwell, on apple. 13. Claremont Park, on lime. 15. Near Fetcham Park, on lime. 17. Several stations about Leatherhead, Fetcham Park and Norbury Park, on poplar, lime and elm. 19. Broadham Green, on black poplar. 24. Sundridge, on old limes.

Not uncommon by the Thames (1 and 3), in the Mole valley (17), and the upper valley of the Darent (24). Elsewhere generally single trees.

69. SANTALACEAE.

THESIUM Linn. 372.

1703. **T. humifusum** DC. *Bastard Toadflax.*

17. Colley Hill, Reigate. Park Down, Chipstead. Fetcham Downs. Epsom Downs. 18. Purley.

Semi-parasitic. Confined to the chalk downs.

70. EUPHORBIACEAE.

EUPHORBIA Linn. 373.

1705. **E. Helioscopia** Linn. *Sun Spurge.*

In all divisions except 5, 6, 8 and 9.

1712. **E. amygdaloides** Linn. *Wood Spurge.*

Generally frequent in woody places. No records in divisions 3, 5, 8, 11, 12, 14, 16 and 21.

1714. **E. Esula** Linn.

6. Chiswick old golf links. 9. Hale End. Chingford. 10. Grange Hill. 12. Grays. Dagenham. 14. Barn Elms Reservoir (*fide* Kew). 15. Ashtead. 17. Wallington. 20. Above Charlton chalk pits. 23. Near Leaves Green.

The above include (and are probably chiefly) *E. virgata* W. & K.

1715. **E. Cyparissias** Linn.

22. Dartford Heath. Probably an escape.

1718. **E. Peplus** Linn. *Petty Spurge.*

Recorded in every division except 18 (Caterham).

1719. **E. exigua** Linn.

Less common than the preceding species. Records in divisions 1 to 5, 7, 9, 11, 17, 18, 19 and 23. Frequent on the chalk.

BUXUS Linn. 374.

1721. **B. sempervirens** Linn. *Box Tree.*

17. Box Hill. Norbury Park. Chipstead Downs. 18. Downs above Oxted and Limpsfield. Kenley. 22. Between Chelsfield and Shoreham. 23. Downs above Shoreham.

MERCURIALIS Linn. 375.

1722. **M. perennis** Linn. *Dog's Mercury.*

Generally abundant, but no records in divisions 12, 13, 14 and 21.

1723. **M. annua** Linn. *Annual Mercury.*

3. West Drayton. 6. Hornsey. Stoke Newington. Highbury. 8. Hackney Marshes. Clapton. 12. Grays. 14. Sheen. Near Barnes Bridge. 16. Norwood. 21. Dartford. 22. Several stations. 23. Shoreham.

A garden weed. Most frequent in Kent.

71. URTICACEAE.

ULMUS Linn. 376.

1724. **U. montana** Stokes. *Wych Elm.*

In divisions 1, 3, 4, 5, 9, 13 to 15, 17 to 20 and 23.

The Wych Elm is frequently planted, but has the appearance of being native in several Surrey stations and at Abbey Wood (division 20).

× **U. major** Sm. **(montana × nitens).**

13. Near Cobham Station (W. of line). 21. Woolwich Arsenal, near Cartridge Factory. Believed to be correct.

1725. **U. campestris** Linn. *English Elm.*

Recorded in all divisions except 5 (Mimms), where it is certainly present. There is confusion in the specific identity of hedgerow elms, and

more than one form is found. In division 7 (Enfield Chase) a tree with gracefully drooping branches is frequent.

HUMULUS Linn. 377.

1729. **H. Lupulus** Linn. *Hop.*

Generally common. All divisions except 6 (Hampstead) and 18 (Caterham).

URTICA Linn. 378.

1730. **U. dioica** Linn. *Stinging Nettle.*

Abundant in all divisions.

1732. **U. urens** Linn. *Small Nettle.*

Frequent, but no records in divisions 2 (Rickmansworth), 5 (Mimms) and 24 (Westerham).

PARIETARIA Linn. 379.

1733. **P. ramiflora** Mœnch. *Wall Pellitory.*

Recorded in divisions 1, 3, 4, 8, 9 and 12 on the N. side. Well distributed S. of the River, but not recorded in divisions 13 and 19.

72. MYRICACEAE.

MYRICA Linn. 380.

1734. **M. Gale** Linn. *Sweet Gale. Bog Myrtle.*

20. Keston Bog. "A considerable clump constituting the only station I know in the county. Not recorded by the older botanists who visited the bog. The habitat is a natural one," W.W., 1921.

73. CUPULIFERAE.

BETULA Linn. 381.

1735. **B. alba** Linn. **(verrucosa** Ehrh.**)**. *Birch.*

Generally distributed, but no records in divisions 2 (Rickmansworth), 5 (Mimms), 8 (Lea Valley), 12 (Rainham).

1736. **B. pubescens** Ehrh. *Birch.*

1. Black Park. 4. Stanmore Common. 9. Epping Forest, and southern divisions 13 to 21, 24.

Both species of Birch are insufficiently recorded in the northern divisions, particularly *B. pubescens*, which is the dominant species in Epping Forest, and probably elsewhere also.

ALNUS Hill. 382.

1738. **A. rotundifolia** Mill. **(glutinosa** Gærtn.**)**. *Alder.*

The Alder, strictly a tree of the waterside and swamps, is recorded in every division except 18 (Caterham), where there is no water.

CARPINUS Linn. 383.

1740. **C. Betulus** Linn. *Hornbeam.*

In all divisions except 12, 16, 18 and 21.

Often planted, but native in most woods not on the chalk. Epping Forest is perhaps the headquarters of the Hornbeam in Britain.

CORYLUS Linn. 384.

1741. **C. Avellana.** *Hazel. Nut.*

In all divisions except 7 (Enfield Chase, surely an oversight), and 21 (Kent Marshes). Remarkably scarce in Epping Forest.

QUERCUS Linn. 385.

1742. **Q. Robur** Linn. *Oak.*

The Oak is recorded in every division except on the marsh lands of the lower Thames valley, i.e., divisions 12 and 21.

× **sessiliflora.**

1. Dromenagh (Iver parish). 4. Ruislip. 20. Chislehurst Common.

1743. **Q. sessiliflora** Salisb. *Durmast Oak.*

Much less common than the preceding species. Recorded in the following divisions: 1, 2, 4, 6, 10, 12 (Aveley), 16 to 20, 22, 23, 24. Often the records are single trees, but the species is frequent at Highgate-Churchyard Bottom Wood, Bishops Wood, Ken Wood (division 6), along the Crystal Palace ridge (division 16), and at High Chart, Limpsfield (division 19).

1744. **Q. Ilex** Linn. *Holm Oak.*

17. Roman Road, near Leatherhead. Norbury Park. 22. Near Chelsfield. 24. Between Westerham and Brasted. A tree of the Mediterranean region. Introduced.

1745. **Q. Cerris** Linn. *Turkey Oak. Mossy-cupped Oak.*

The Turkey Oak, an introduction from Southern Europe, has established itself by seedlings in many places, particularly on light soils. Records in divisions 3, 4, 5, 9, 13, 15, 16, 17, 19 and 24.

CASTANEA Hill. 386.

1746. **C. sativa** Mill. *Chestnut.*

7. Northaw. 9. Wanstead Park. 11. South Weald. And many records in all the southern divisions (13 to 24) except 21.

It is doubtful if this famous tree of Southern Europe has any native status in Britain, but it is an ancient denizen in the southern counties.

FAGUS Linn. 387.

1747. **F. sylvatica** Linn. *Beech.*

There are no records of the Beech in the three river-meadow divisions, i.e., 8 (Lea Valley), 12 (Rainham), and 21 (Kent Marshes). It requires a well drained soil. Elsewhere it is generally distributed in suitable places. The beech-groves of High Beach and Monks Wood in Epping Forest are fine and characteristic natural beech woods.

74. SALICACEAE.

SALIX Linn. 388.

1748. **S. pentandra** Linn. *Bay-leaved Willow.*

14. Wimbledon Common. 20. Chislehurst.

No doubt planted. A northern species, chiefly.

1749. **S. triandra** Linn.

19. Oxted. 20. Chislehurst. Crofton.

1750. **S. fragilis** Linn. *Crack Willow.*

In divisions 1, 3, 4 and 6 northern, and all the southern, i.e., 13 to 24.

Surely an instance of imperfect recording in the northern divisions. One cannot believe that the Crack Willow is absent in, say, division 8, the Lea Valley.

1751. **S. alba** Linn. *White Willow.*

Recorded in divisions 3, 7, 8 and 19.

Var. c. *vitellina* Linn.

20. Derrick Common.

× **triandra (undulata** Ehrh.**).**

14. Towpath, Kew (J. Fraser).

1754. **S. purpurea** Linn. *Purple Osier.*

4. By Grand Junction Canal near Rickmansworth and near Denham. 8. Broxbourne. 9. Epping Forest. 14. Thames bank between Kew and Richmond. Barnes Common. 17. Howe Green. 20. Chislehurst. 24. Dunton Green (f. *Lambertiana* Sm.).

1755. **S. viminalis** Linn. *Osier.*

4. Harefield. Ruislip. 14. Ham gravel pits. 15. Near Great Bookham Common. 19. Oxted.

1757. × **S. acuminata** Sm.

20. Chislehurst (W.W.).

1759. **S. aurita** Linn.

1. Alderbourne Valley. 9. Epping Forest (High Beach, etc.). 13. Abrook Common. 14. Wimbledon Common. 15. Epsom Common. 19. Limpsfield Chart. Reigate Heath. 20. Keston Bog. Bromley Common.

× **caprea (capreola** J. Kern**).**

19. Oxted (J.F.).

× **cinerea (lutescens** A. Kern**).**

15. Epsom Common (J.F.). 19. Oxted (J.F.).

1760. **S. caprea** Linn. *Sallow, Goat Willow, "Palm."*

There are no records of this common shrub in divisions 3, 5, 6, 8, 10, 12, 16, 21 and 24. But it is probably in all.

1761. **S. cinerea** Linn. *Grey Sallow.*

Recorded in divisions 1, 4, 6, 7, 9, 13 to 16, 19, 24. Likely to be in others, though it is definitely rare on the chalk.

1762. **S. repens** Linn. *Dwarf Sallow.*

2. Bricket Wood. 4. Near Ruislip Reservoir. 6. Hampstead Heath. 9. Many stations in Epping Forest. 11. Warley Common. 13. Esher Common. 14. Barnes Common. 19. Reigate Heath. 20. Chislehurst. Crofton. Keston.

Forma *ascendens* (Sm.).

6. Hampstead Heath. 9. Cooks Folly Wood. 15. Epsom Common.

Forma *incubacea* (Linn.).

6. Hampstead Heath. 9. By Walthamstow Ponds, Epping Forest (W.W.).

POPULUS Linn. 389.

1770. **P. alba** Linn. *White Poplar.*

2. Denham. 9. Snaresbrook. 10. Lambourne. 12. Stifford. 14. Near Ham. 15. Banks of R. Mole, near Bookham. 16. Hackbridge. 22. Near Shoreham. 24. Westerham.

1771. **P. canescens** Sm. *Grey Poplar.*

15. Epsom Common. 19. Between Redhill and Wray Park.

Some records of *P. alba* may belong to this species. Both are frequently planted.

1772. **P. tremula** Linn. *Aspen.*

The Aspen, our undoubtedly native Poplar, has been recorded in all divisions except 2, 3, 7, 8, 12, 16, 18, 21 and 23.

1773. **P. nigra** Linn. *Black Poplar.*

Recorded in 2, 6, 7, 9, 14, 16, 17, 19 and 24.

These records probably include the American *P. deltoidea*, var. *serotina*. All Black Poplars in the district are probably planted.

76. CERATOPHYLLACEAE.

CERATOPHYLLUM Linn. 391.

1775. **C. demersum** Linn. *Hornwort.*

2. Near Uxbridge. 8. Near Lea Bridge, Clapton. 12. Near Purfleet.

77. HYDROCHARIDEAE.

ELODEA Michx. 392.

1777. **E. canadensis** Michx. *Canadian Waterweed.*

In streams, canals and ponds, generally. But no records in divisions 1, 8, 10 to 12, 14 to 17, 22 and 23, in several of which it is probably found.

HYDROCHARIS Linn. 394.

1779. **H. Morsus-ranæ** Linn. *Frogbit.*

1. Between Wraysbury and Staines. 3. Hampton Court Park ponds. 9. Epping Forest ponds, near Walthamstow and Cooks Folly Wood. 12. Grays. 13. Ditches between Thorpe and Chertsey.

78. ORCHIDACEAE.

NEOTTIA Adans. 399.

1784. **N. Nidus-avis** Rich. *Bird's-nest Orchis.*

9. Woodridden Hill, High Beach and near the Wake Arms, Epping Forest. 17. Roman road near Mickleham. Norbury Park. 18. In woods on downs N. of Limpsfield and Titsey. 19. Lane near Limpsfield Common. 20. Holwood. Darrack Wood, Orpington. 23. N. of Cudham.

LISTERA Br. 400.

1786. **L. ovata** Br. *Twayblade.*

Frequent in woods in divisions 4 (Harrow), 7 (Enfield Chase) and 20 (Blackheath). Also 12. Cranham. 18. Titsey Plantation. 19. Oxted. 22. Joydens Wood. Stone Wood.

SPIRANTHES Rich. 401.

1787. **S. spiralis** Koch. **(autumnalis** Rich.**).** *Lady's Tresses.*

17. Box Hill. 20. Camden Park, Chislehurst.

CEPHALANTHERA Rich. 404.

1794. **C. grandiflora** Gray. *White Helleborine.*

17. Headley Lane. Mickleham Downs. 18. Warlingham. Reigate. Oxted. 20 and 23. Wood between Farnborough and Lower Hook.

On the bare floor of beech woods on the chalk. Locally abundant.

EPIPACTIS Crantz. 405.

1796. **E. palustris** Sw. *Marsh Helleborine.*

Recorded by L. B. Hall in Queens Wood, Highgate, but without date.

1797. **E. latifolia** Sw. *Helleborine.*

2. " Finchs Avenue." 7. Wormley Woods. 9. Epping Lower Forest. 10. Hainault Forest. 11. Brentwood. Warley Wood. 17. Several stations. 18. Downs above Oxted. Titsey Plantation.

1798. **E. purpurata** Sm. **(violacea** Druce**).**

17. Buckland Woods. Lane near Headley. Norbury Park. 18. Botley Hill woods. Wood at Tatsfield. 23. Downe.

Unmistakable by its clustered stems and numerous greenish flowers.

1799. **E. atropurpurea** Raf.

17. Norbury Park. 18. Titsey Plantation.

ANACAMPTIS Rich. 406.

1800. **A. pyramidalis** Rich. *Pyramidal Orchis.*

12. Purfleet. 17. Downs by Banstead Woods. Fetcham Downs. 18. Oxted Downs. 23. Near Eynsford. Near Shoreham and Otford.

ORCHIS Linn. 408.

1806. **O. morio** Linn. *Green-winged Orchis.*

4. Near Northwood. 5. Colne meadows near Colney Street. 7. Broxbourne. 9. Toot Hill. 10. Near Lambourne Church. 11. Between Brentwood and Little Warley. 15. Ashtead. 18. Near Worms Heath. 17. Itchingwood Common. 24. Crockham Hill.

1807. **O. mascula** Linn. *Early Purple Orchis.*

2. Sarratt. 9. Near Hale End (1900). Wood Hatch. Copy Wood near Nazeing Gate. 11. Strawberry Wood, Navestock. 19. Woods between Moorhouse and Titsey. Oxted. 23. N.E. of Otford.

1809. **O. incarnata** Linn.

14. Bog on Wimbledon Common.

1810. **O. praetermissa** Druce. *Marsh Orchis.*

12. Purfleet. 13. Chertsey Mead. 19. Marshy field, Oxted. 20. Crays.

The above, recorded as *O. latifolia*, are almost certainly to be placed under this specific name.

1813 and 1814. **O. maculata** Linn. (aggregate). *Spotted Orchis.*

4. Stanmore Heath. Between Ruislip and Harefield. 6. Coldfall Wood. 7. Broxbourne. Essendon. 9. Epping Forest, beyond High Beach. 10. Lambourne. 12. Purfleet. 18. Downs above Oxted. 19. Titsey Wood. Oxted. 20. Darrack Wood. 22. Joydens Wood. 23. Shoreham.

It is impossible to distinguish the records of *O. elodes* Gris. and *O. Fuchsii* Druce among those quoted above. The plants want re-recording. Both species are certainly to be found in Surrey.

1813. **O. elodes** Gris.

20. Keston Bog (*teste* W.W.).

ACERAS Br. 409.

1815. **A. anthropophora** Br. *Man Orchis.*

17. Box Hill towards Betchworth Quarry. Near Cherkley. 18. Near Worms Heath.

OPHRYS Linn. 410.

1816. **O. apifera.** *Bee Orchis.*

4. Harefield Quarry. 9. Near Theydon Bois. 17. Chipstead. Fetcham Downs. Box Hill. Banstead Downs. 18. Oxted Downs. Farthing Down. 19. Oxted and Limpsfield, on the gault. 23. Near Leaves Green. N.E. of Otford.

1819. **O. muscifera.** *Fly Orchis.*

18. Woldingham. Above Limpsfield. Titsey Plantation. 23. Downe.

HERMINIUM Br. 411.

1820. **H. monorchis** Br. *Musk Orchis.*

17. Box Hill, north side.

GYMNADENIA Br. 412.

1821. **G. conopsea** Br. *Scented Orchis.*

17. Box Hill, towards Betchworth. 18. Oxted Downs. 23. Shoreham.

G. conopsea × **Orchis Fuchsii** Druce.

23. Downs at Shoreham (R.W.R.).

PLATANTHERA Rich. 416.

1826. **P. bifolia** Reich. fil. *Lesser Butterfly Orchis.*

9. Near the "Robin Hood," Epping Forest (circa 1900). 20. Poverest, near Orpington. 23. E. of Eynsford. N. of Kemsing.

1827. **P. chlorantha** Reich. *Butterfly Orchis.*

18. Near Titsey (Titsey Plantation). 19. Titsey Wood.

79. IRIDACEAE.

IRIS Linn. 418.

1829. **I. foetidissima** Linn. *Gladdon.*

2. Sarratt. 17. Norbury Park. Banks of R. Mole. 18. Titsey Plantation. 19. Between Redhill and Wray Common. 20. Keston. Darrack Wood, Orpington. 23. E. of Eynsford. 24. Near Crockham Hill.

1831. **I. Pseudacorus** Linn. *Yellow Flag.*

Recorded in divisions 1, 3 to 8, 13, 14, 17, 19, 20, 22 and 24. Most frequent in 1 (Colnbrook), 3 (Hounslow) and 8 (Lea Valley).

CROCUS Linn. 419.

1833. **C. officinalis** Huds. **(vernus** All.**).** *Spring Crocus.*

6. Friern Barnet.

In 1901 said to be plentiful in this old and well-known station. No recent records.

SISYRINCHIUM Linn. 421.

1836. **S. angustifolium** Mill. *Blue-Eyed Grass.*

23. Cultivated field E. of Eynsford Church, one plant, 1920.

An American species, frequent in Western Ireland.

80. AMARYLLIDACEAE.

NARCISSUS Linn. 423.

1839. **N. Pseudo-Narcissus** Linn. *Wild Daffodil.*

2. Wood between Uxbridge and Chalfont St Peter. 5. Aldenham. 7. W. of Broxbourne. 9. Cooks Folly Wood, and near Connaught Water, Epping Forest. Fields near Blake Hall. 20. Abbey Wood.

Except near Broxbourne and at Abbey Wood, where it is common and native, the Daffodil has a very slight hold in our district.

GALANTHUS Linn. 424.

1846. **G. nivalis** Linn. *Snowdrop.*

15. By the River Mole near Slyfield, Stoke D'Abernon; abundant. 18. In a copse at Chelsham.

Appears truly wild in division 15 (E.B.B.).

81. DIOSCOREACEAE.

TAMUS Linn. 426.

1849. **T. communis** Linn. *Black Bryony.*

This elegant climber has been recorded in every division except 3 (Hounslow), 10 (Hainault), 12 (Rainham) and 21 (Kent Marshes), usually freely.

82. LILIACEAE.

RUSCUS Linn. 427.

1850. **R. aculeatus** Linn. *Butcher's Broom.*

3. Syon House. 6. Hampstead Heath (1902). 7. Hadley Woods. Potters Bar. 8. Chingford. 9. Many stations in Epping Forest. 10.

Lambourne. 15. Bookham and Epsom Commons. Ashtead Wood. 17. Mickleham. 20. Chislehurst. Pauls Cray Common. Hayes Common. West Wickham Woods. 22. Stone Wood. Near Joydens Wood. 24. Chevening Park.

POLYGONATUM Hill. 429.

1853. **P. multiflorum** All. *Solomon's Seal.*

9. Near High Beach Church (1901). 22. Joydens Wood. Farningham Wood.

[MAIANTHEMUM Weber. 430.

1855. **M. bifolium** Schmidt. *May Lily.*

6. The ancient locality for this rare plant in Ken Wood appears to have been destroyed by path-making.]

CONVALLARIA Linn. 431.

1856. **C. majalis** Linn. *Lily of the Valley.*

1. Black Park Wood. 6. Winchmore Hill Wood. 9. Epping Forest, several spots. Ongar Park Wood. 11. Warley Wood. 20. Holwood. 22. Joydens Wood.

First recorded from Hampstead Heath, 1597, by Gerard. Flowers very sparsely in our district, although plentiful in places.

ALLIUM Linn. 433.

1862. **A. vineale** Linn. *Crow Garlic.*

1. Galley Hill. 3. Tow path by Hampton Court and from Penton to Chertsey. 4. Near Greenford. 7. Hatfield Hyde. 13. Weybridge. Near Thorpe. 14. Towpath, near Richmond. 19. Limpsfield. 20. Chislehurst Common.

The above are mainly referable to var. *compactum* Thuill.

1868. **A. ursinum** Linn. *Ramsons.*

In divisions 2, 4, 6, 7, 9, 12, 13, 15, 17 to 20 and 24. Not generally plentiful, except in division 4 (Harrow).

SCILLA Linn. 435.

1870. **S. autumnalis** Linn.

3. Near Hampton Court. 14. Near Ham.

On the Thames banks.

1872. **S. non-scripta** Hoffm. & Link **(festalis** Salisb.**)**. *Bluebell.*

The favourite wild flower of Londoners is recorded in all divisions except 8 (Lea Valley) and 11 (Brentwood), the latter surely an oversight.

ORNITHOGALUM Linn. 436.

1874. **O. umbellatum** Linn. *Star of Bethlehem.*

20. Hayes (1931).

LILIUM Linn. 437.

1877. **L. Martagon** Linn. *Martagon Lily.*

17. In the Mickleham district. Seen recently still flourishing in this old station.

TULIPA Linn. 439.

1879. **T. sylvestris** Linn. *Wild Tulip.*

4. Harefield, in a grove near the church. Long known here.

NARTHECIUM Huds. 443.

1883. **N. ossifragum** Huds. *Bog Asphodel.*

14. Wimbledon Common. 20. Keston.

Absent from Essex, Middlesex, and Herts.

PARIS Linn. 445.

1885. **P. quadrifolia** Linn. *Herb Paris.*

2. Denham. 19. Oxted. Limpsfield. 20. Poverest, near Orpington. Holwood Park. Crofton.

83. JUNCACEAE.

JUNCUS Linn. 446.

1886. **J. bufonius** Linn. *Toad Rush.*

Recorded in divisions 1, 2, 4, 5, 8, 9, 13 to 17, 19, 20, 22, and 24.

1888. **J. squarrosus** Linn. *Heath Rush.*

4. Harrow Weald Common. Stanmore Heath. 9. Snaresbrook, Great Monk Wood, High Beach, etc., in Epping Forest. 13. Oxshott Heath. 14. Wimbledon Common. 16. Shirley. 20. Keston. Hayes.

1890. **J. Gerardi** Lois.

12. West Thurrock Marsh. Grays. 21. Stone Marshes. Dartford Marsh. On salt marshes.

1891. **J. tenuis** Willd.

17. Box Hill. 19. Limpsfield Chart. 20. Abbey Wood.

A plant of American origin, which is extending its range in Britain.

1894. **J. inflexus** Linn. **(glaucus** Ehrh.**)**. *Hard Rush.*

No records in divisions 8, 10, 12, 17, 18, 22, and 23. A plant of wet clays.

1895. **J. effusus** Linn. *Soft Rush.*

Frequent generally, but no records in divisions 2, 3, 8, 10, 12, 17, and 23.

× **inflexus (diffusus** Hoppe**)**.

This hybrid has been found, with the parents, at 1. Alderbourne Watersplash, Fulmer. 19. Itchingwood Common, Limpsfield (teste C.E.S.).

1896. **J. conglomeratus** Linn.

In divisions 1, 4, 5, 7, 9, and 11 North, and all Southern except 18 and 21.

1897. **J. maritimus** Lam. *Sea Rush.*

12. Fairly common at West Thurrock Marsh.

1899. **J. bulbosus** Linn. **(supinus** Mœnch**)**.

1. Black Park. 7. Hadley Common. 9. Near Theydon. 19. Moorhouse. 20. Keston. 24. Squerries Park, Westerham.

1902. **J. articulatus** Linn.

Sparsely recorded in divisions 4, 5, 6, 9, 13, 14, 17, 19, 20, and 22.

1904. **J. sylvaticus** Reich **(acutiflorus** Ehrh.**)**.

Recorded in the Northern divisions of 1, 2, 4, 7, 9, and 11. Southern only in 19. Limpsfield. Abundant in Epping Forest. Recorders appear to have "shied" at these two species, 1902 and 1904.

LUZULA DC. 447.

1909. **L. Forsteri** DC.

17. Walton-on-the-Hill. Between Ashtead and Mickleham. 19. Limpsfield Common and Chart. 20. Many stations. 22. Near Southfleet. Near Chelsham. 23. Westerham Hill. 24. Crockham Hill.

The first British record of this species is Hainault Forest, 1795.

× **L. pilosa (Borreri** Bromf.**)**.

Records of this hybrid at: 17. Lane near Walton-on-the-Hill, towards Headley. 20. Holwood Park.

1910. **L. pilosa** Willd. *Wood Rush.*

Generally distributed in woods. No records in divisions 1, 3, 5, 8, 12 to 14.

1911. **L. sylvatica** Gaud. *Great Wood Rush.*

6. Bishops Wood, a few plants in 1902. 9. Ongar Park Wood. 13. Near Walton. 17. Wood between Headley and Walton-on-the-Hill. Chipstead. 19. Leigh Mill, Godstone. 22. Joydens Wood. 23. S.E. of Shoreham. N. of Cudham Grange.

1914. **L. campestris** DC.

Recorded freely in all divisions except 8 (Lea Valley), 12 (Rainham) and 21 (Kent Marshes).

1915. **L. multiflora** DC. **(erecta** Desv.**)**.

4. Stanmore Heath. 7. Broxbourne. 9. Plentiful in Epping Forest. 11. Warley Common. 14. Richmond Park. 16. Spring Park, Addington. 17. Reigate Heath. Oxted Woods. Limpsfield. 20. Chislehurst Common. Keston. Hayes. Holwood. 24. Westerham. Crockham Hill.

The var. *congesta* (Lej.) is the commoner form.

84. TYPHACEAE.

TYPHA Linn. 448.

1917. **T. latifolia** Linn. *Bulrush, Reed Mace.*

Recorded in divisions 1, 3, 5 to 8, 9 (many stations) and 11 on the north side; and on the south at: 14. Sandpit pond, Wimbledon. 15. Epsom Common. 19. Oxted. Godstone. 24. Force Green.

Probably in others.

1918. **T. angustifolia** Linn.

9. Bog near "Rising Sun," Walthamstow. Staples Pond, Loughton. Ambresbury Banks. 11. Little Warley. Passingford Bridge. 12. Stifford. 13. Little Heath, Oxshott. 21. Stone Marshes.

SPARGANIUM Linn. 449.

1919. **S. ramosum** Curt. *Bur-reed.*

In all the northern divisions except 10 and 12, and in the following southern divisions, 15, 16, 19, 20, 23 and 24.

1920. **S. neglectum** Beeby

4. Totteridge. R. Brent at Hendon. 5. Colney Furze Field. 13. Near Weybridge. 15. Leatherhead Mill Pond. 19. Limpsfield brook.

1921. **S. simplex** Huds.

1. Colnbrook. 3. R. Colne at Uxbridge. 4. R. Brent at Hendon. 5. Colney Heath. 7. Broxbourne. 9. Plentiful in Epping Forest. 15. Great Bookham Common. 20. Keston Ponds.

Rare on the south side.

85. ARACEAE.

ARUM Linn. 450.

1924. **A. maculatum** Linn. *Lords and Ladies.*

In all divisions, usually abundant. The leaves are as frequently unspotted as spotted.

ACORUS Linn. 451.

1926. **A. Calamus** Linn. *Sweet Sedge.*

4. Totteridge. Grand Junction Canal, near Greenford, and near Denham. 8. Between Piggotts Lock and Ponders End, and between Broxbourne and Rye House. 9. Epping Forest. 13. Thames towpath, East Molesey. Chertsey Mead. 14. Thames side between Ham and Kingston.

86. LEMNACEAE.

LEMNA Linn. 453.

1928. **L. trisulca** Linn. *Ivy-leaved Duckweed.*

Recorded in divisions 1, 3, 4, 6, 8, 9, 13, 15, 17 and 19. Reported in flower at Whitchurch Common, division 4, on 27th May 1906.

1929. **L. minor** Linn. *Duckweed.*

Frequent records in most divisions, but none in divisions 1, 5, 7, 17 to 20 and 22.

Found in flower at the same place and time as *L. trisulca.*

1930. **L. gibba** Linn.

2. Near Uxbridge. 4. Harefield. 8. River Lea and ditches at Clapton. 9 and 10. River Roding near Buckhurst Hill and near Chigwell. 12. Rainham. 13. Thorpe.

1931. **L. polyrrhiza** Linn.

3. Pond in Hampton Court Park. 9. Cooks Folly Wood. 10. Pond at Chigwell. 13. Near Weybridge. 15. Great Bookham Common. 19. Redhill, in a stream.

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Meetings are held on the First Four Tuesdays in each month (except July and August) in the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1. The room is open from 6 p.m. to 9 p.m., and meetings begin at 6.30 p.m. punctually and terminate about 8.30 p.m., unless other arrangements are announced.

The CHINGFORD LOCAL BRANCH meets at The Clifton Restaurant, opposite Chingford Station, at 8 p.m., on the Second Monday in each month during the winter months.

At these meetings specimens of Natural History interest are exhibited, and papers on various subjects are read and discussed. Visitors may be introduced by members of the Society and are cordially welcome.

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The Society looks with confidence for the support of all who are interested in the study of Natural History.

Further information may be obtained from the Secretary:—

A. B. HORNBLOWER, 91 Queen's Road, Buckhurst Hill, Essex.

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