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. THE
LONDON NATURALIST



The Journal of the
LONDON NATURAL HISTORY SOCIETY

FOR THE YEAR
1932

PRICE FIVE SHILLINGS

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

1933.

London Natural History Society.

Founded 1858.

Honorary President:

THE RIGHT HON. THE VISCOUNT GREY OF FALLODON, K.G., P.C.

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Lanternists:

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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 National Trust, the Federation of Rambling Clubs, and the Commons and Footpaths Preservation Society.

BRITISH
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GREAT CRESTED GREBE AT NEST.

Note that she is standing on the nest and also the ripple caused by the bird leaving the water.

Photograph by Miss Clemence M. Acland.

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T. BUNCLE & Co., ARBROATH.

1933.



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Editorial Notes.

THE work of the Society during the past year has again been one of progress, both in organisation as well as in its researches into Natural History and kindred subjects, and, in presenting some of the results of this work, the Publications Committee wishes to express its appreciation of the kindness of those members whose donations to *The London Naturalist* Fund have made this issue possible.

During the year careful attention has been given to the subject of finance; a committee of the Council has had the matter under consideration, and its recommendations have been adopted.

The publication of this Journal is one of the items presenting the greatest difficulty. It is impossible to publish it in its present form out of the Society's ordinary income at the current rate of subscription, and consequently the Publications Committee has had to appeal every year to the generosity of members for special donations. This appeal has always caused dissatisfaction in some quarters and its necessity has always been very greatly regretted. On the other hand, we feel certain that members would not like to see the size of the Journal reduced.

It has been determined to create a Reserve Fund, but without the active support of the members themselves the Council's power in this direction will be very small. They therefore desire to make an earnest appeal to all those in whose power it is to respond to assist the Society as occasion serves by way of donations and legacies, in the assurance that their contributions will be gratefully received and properly conserved in the Society's interests.

The form of this issue has been largely controlled by the nature of the notes and papers received. It is regrettable that members do not make greater use of these pages for publishing the results of their observations. A large number of the shorter communications made at our meetings which would not otherwise appear in published records are very acceptable, and members are invited to submit to the Editor or the Sectional Secretaries notes for inclusion in *The London Naturalist* for 1933.

Our President, Miss C. E. Longfield, has consented to remain in office for 1933, an honour which we all appreciate. She is the first lady to occupy this position, and it is felt that the continued success of our work is due in no small measure to her presence in the Presidential chair.

The publication in the *Proceedings of the Royal Society* and in *The Entomologist* of the results of observations by our member, Mr J. D. Gillett, on the climbing organs of a certain insect has been noted with pleasure, as have also the researches of the Plant Galls Section on Gall-causing Cynipidae in Britain, published in *The Entomologist*. Among the books published by our members we learn of the issue of Volume I. of *The Nidification of Birds of the Indian Empire* by E. C. Stuart Baker.

This work is to be completed in four volumes, that issued dealing with the families Corvidae—Cinclidæ. Mr C. W. L. Mackworth-Praed is publishing *The Birds of Africa*, dealing with those to be found between Egypt and Nyasaland.

Mr Roland Green's sixth annual exhibition of bird pictures was held at Ackermann's Galleries from November 16th until Christmas Eve. His pictures are not only very life-like portraits of birds, but are also delightful landscapes, showing the birds in their natural surroundings.

The backgrounds were as varied as they were pleasing—from the rocky passes of Scotland with rushing mountain torrents over which Grouse fly, to the still mystery of the broads of Norfolk, Mr Green's own county, where Ducks rise quacking in the twilight, or Lapwing rest by the snow-covered sedges. As usual there were several pictures of Swans in flight, "Bewick's Swans Migrating" being particularly striking. There are several additions to the etchings, among them being a particularly attractive group of fluffy baby Long-tailed Tits.

To provide simplified methods of recording ornithological notes for the London Area we are publishing in chart form a complete list of the records received to date for the area covered by the Society's records. Separate copies of this may be obtained on application to the Librarians (price 6d each), so that members may keep the records available and insert their own observations.

The Annual Exhibition was held on the 19th January, and it was gratifying to see an even greater number of members and visitors assembled than were present during the two preceding years. The proceedings were diversified by two short lecturettes with lantern illustrations, Miss G. Lister, F.L.S., telling us of some of the Birds in the Haute Savoie, whilst the Rev. H. J. Gamble lectured on "Some Pharaohs of Ancient Egypt." The number of exhibitors showed a remarkable increase over those of the preceding years, and it is of interest to learn that nearly one half of the number showed cases of entomological specimens.

At the 37th Congress of the South Eastern Union of Scientific Societies, Mrs H. Boyd Watt again acted as the Society's delegate and furnished a detailed report of the proceedings.

The subject of the preservation of bird life in all directions is occupying the attention of bird-lovers, whether they take an active interest in bird-watching or not. In addition to requesting the provision of statutory control, ornithologists all over the country are paving the way to a more complete system of preservation. An important link in the chain has recently been forged by securing a large portion of the natural sanctuary of Dungeness as a permanent reserve. London is particularly fortunate in having a number of bird sanctuaries under the control of H.M. Office of Works, but the total compared with the area served is small. A complete list of these sanctuaries together with brief details is to be found in this issue.

An essential member of the Society's organisation has been the President. Ever since the formation of our parent Society in 1858 a President has played a vital part in the control of the Society's welfare.

Originally the officials were elected quarterly and this practice remained for nearly twenty years. The growth of the Society, however, demanded that controlling representatives should remain in touch with the work for longer periods. Experience had shown that Presidents retained office for several quarters so by general resolution it was decided that officials should be elected annually. We are publishing this year for the first time a list of Past Presidents, from the inception of the Society 75 years ago down to the present date.

READING CIRCLES.

It is perhaps not known as widely as it might be that various scientific periodicals are circulated amongst groups of members, who share the cost of the annual subscriptions. By this means any member can keep in touch with the current literature of his special subjects at a small cost. The following is a list of the publications at present circulated in this way, with the approximate annual contribution required and the name of the member responsible:—

Antiquity. (Quarterly.) W. C. Forster, 2/6.

British Birds. (Monthly.) Mrs Clanchy, 2/6.

Botanical Society and Exchange Club of the British Isles, Report. (Annual.) G. R. A. Short, 1/-.

Entomologist. (Monthly.) R. Marshman Wattson.

Entomologist's Monthly Magazine. R. Marshman Wattson. } 2/-.

Journal of Animal Ecology. (Half-yearly.) Mrs Clanchy, 1/9.

North Western Naturalist. (Quarterly.) H. J. Burkill, 1/-.

Reviews.

THE JOURNAL OF ANIMAL ECOLOGY. Vol. 1. No. 1. Edited by C. Elton.
(Cambridge University Press, 22/6.)

This Journal is the outcome of a desire on the part of the British Ecological Society to provide space for articles dealing with Animal as distinct from Plant Ecology, which would otherwise be crowded out from its official organ, *The Journal of Ecology*. The latter will continue to publish papers on Plant Ecology and "comprehensive biological survey papers dealing with both plants and animals."

That a periodical such as the present is necessary and will take its place among the authoritative scientific publications of the future is evidenced by the interest of the articles and by the intensive studies over series of years which have gone to their production. The contents range from "The Rookeries of the Wirral Peninsula" to "Territory Among Wood Ants."

It is pleasing to note that some of the investigations have been under the auspices of official or semi-official bodies, a testimony to the growing use of the scientific naturalist and experimenter in matters of national economics. Perhaps the most interesting articles are those dealing with the Infestation of Wheat by certain species of Midges, and with the Fruit Bats of Australia (the so-called Flying-foxes), which include cultivated fruits in their diet.

The general production of the Journal is of course of a high order, and a very useful feature of the articles is the fact that each is provided with a short summary of the investigations and of the conclusions reached.

The British Ecological Society is to be congratulated on its new venture, and all naturalists will join in wishing it every success.

Papers Read to the Society.

THE list of papers read at the meetings held in 1932 is given below.

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. 5—"Egg Collecting,"

E. C. Stuart Baker, J.P., O.B.E., F.L.S., F.Z.S., M.B.O.U.

Jan. 19—Annual Exhibition.

(1) "Birds in Haute Savoie," Miss G. Lister, F.L.S.

(2) "Some Pharoahs of Ancient Egypt,"

Rev. H. J. Gamble, M.A.

Jan. 26—"The Relationships of Animals, Birds and Plants as shown by their respective Parasites," Dr R. S. Bagnall, F.R.S.E.

Mar. 1—"Some Remarks on the Migration of Birds and Insects,"

F. W. Frohawk, F.E.S., M.B.O.U.

April 5—Bacot Memorial Evening.

"Heredity and Disease," Prof. M. Culpin, M.D., F.R.C.S.

May 3—"St Paul's Cathedral," W. W. Begley.

May 17—"Burma," Rev. P. H. Cooke, M.A.

June 7—"The Botany of the Bermudas,"

Dr W. G. Axford, C.B., F.L.S.

Sept. 20—"Dessert Fruits from Overseas,"

W. G. Freeman, B.Sc.(Lond.), F.L.S., A.R.C.S.

Oct. 4—"Hadrian's Wall," P. M. Andrews, A.R.I.B.A.

Nov. 15—"Some of our Rarer British Birds at Home,"

Miss C. M. Acland, M.B.O.U.

Dec. 6—Annual General Meeting.

President's Address: "Nature Study Through the Ages,"

Miss C. E. Longfield, F.R.G.S., F.E.S., F.Z.S., M.B.O.U.

Two evenings were devoted to Film Shows, viz.:—On 2nd February six reels by the Ensign Film Library Company were shown, and on 1st November three reels by the British Instructional Films Ltd., and one by Dr R. N. Chrystal, M.A., showing his investigations into the life history of the Wood Wasp (*Sirex gigas* L.) and its parasites, *Rhyssa persuasoria* L. and *Ibalia cultellator* Latr. Dr Chrystal kindly explained the film as it was displayed.

PAPERS READ AT SECTIONAL MEETINGS.

- Jan. 12—Archaeology. “Blythburgh and Southwold Churches,”
G. J. B. Fox.
- Feb. 9—Botany. “What is Botany?” H. Spooner.
- Feb. 16—Ornithology. “Birds of St Kilda,” T. H. Harrisson, M.B.O.U.
- Feb. 23—Entomology. “Luminous Insects,” K. G. Blair, B.Sc., F.E.S.
- Mar. 15—Archaeology. “Some Norwegian Pictures,” J. E. S. Dallas.
- Mar. 22—Ramblers. “Stained-glass Windows of Chartres and York,”
Sir Thomas Legge, C.B.E.
- April 12—Botany. “Some Aspects of Plant Ecology,” C. H. Rice, B.Sc.
- April 19—Plant Galls. “Cynipid Galls other than those of the Oak,”
M. Niblett.
- May 10—Ramblers. “Rambles in a Naturalist’s Diary,”
Mrs H. Boyd Watt.
- May 24—Ornithology. “Some Comparisons between American and
British Birds,” T. H. McKittrick, M.B.O.U.
- June 21—Plant Galls. “Notes on *Neuroterus ostreus* Htg. and other
Oak Galls,” M. Niblett.
“Gall-causing Cynipidae in Britain,” H. J. Burkill, M.A.
- June 28—Entomology. “The Paraneuroptera of Epping Forest,”
E. B. Pinniger.
- Sept. 13—Ornithology. “Birds and Man,” H. N. Southern.
- Sept. 27—Entomology. “Butterfly Collecting in France,”
R. W. Robbins.
“Some remarks on Reduviid Bugs,” J. D. Gillett, F.E.S.
- Oct. 11—Ramblers. “Rambling in the Black Forest,”
Miss I. Croal-Thomson.
- Oct. 18—Ornithology. “At the Bird Table, Residents or Visitors,”
Stuart Boardman.
- Nov. 8—Botany. “Leaf development in a Liverwort,” J. Ross.
- Nov. 22—Archaeology. “Some old German Towns,” W. C. Cocksedge.
- Dec. 13—Plant Galls. “Galls of the Caprifoliaceae,” ... M. Niblett.

LONDON NATURALIST ACCOUNT.

Donations,	£40 7 0	Printing London Naturalist,	£56 13 6
Refund of Cost of One Paper, 1931,	17 7 0	Balance at Bank, 31st October 1932,	5 17 9
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Sales of London Naturalist,	£57 14 0		
Reprints and Maps,	3 16 2		
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LIFE COMPOSITION ACCOUNT.

Balance, 1st November 1931,	£75 0 0	Balance at Bank, 31st October 1932,	£15 0 0
Life Membership Composition,	15 0 0	£75 3½ per cent. Conversion Loan,	75 0 0
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	£90 0 0		£90 0 0

RESERVE ACCOUNT.

Balance, 1st November 1931,	£30 0 0	Balance at Post Office, 31st October 1932,	£30 0 0
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Audited and found correct, 25th November 1932.

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

F. G. DELL,
Treasurer.

Council's Report, 1932.

DURING 1932 the Society has continued to progress in every way despite the universal depression that pervades the world. Perusal of the Sectional Reports will show an increased activity and the discovery of many fresh forms, some of them new to Science.

Our numbers have increased, a total of 58 new members having joined, while 26 have fallen out, leaving a nett gain of 32. The number of Associates has remained about level, and we have had the pleasure of enrolling this year our first Affiliated Society.

The average attendance has been 68 per meeting, which we should like to see increased. The syllabus has again been both attractive and well varied. One of the outstanding features was a display of Cine Films in November, when Dr R. N. Chrystal, M.A., also gave a lecture on the Sirex Wood Wasp and its Parasites, fully illustrated by living pictures.

The Library has been enhanced by the purchase of a handsome book-case to increase our storage facilities, and Messrs Pethen and Mann have continued their arduous work as Librarians to good effect, the result being that donations of books have increased, and greater use than ever is being made of the various works.

Finance continues satisfactory, but special contributions have still to be sought for *The London Naturalist*. This has well maintained its level. Its publication was retarded owing to the sudden death in early April of the Editor, Mr J. C. Robbins, whose loss we all deeply deplore, not only in this connection, but in very many other activities of the Society. Completion of the work was carried out by Messrs C. L. Collette and B. T. Ward, assisted by Mr R. W. Robbins.

A letter from the President, published in *The Times*, had the effect of bringing in many new members, and it is hoped that every member will further this effort by striving to bring in at least one new member each to join us during the ensuing year.

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

Librarians' Report, 1932.

THE important position occupied by the Library in the Society's organisation has been made increasingly evident during 1932, a greater number of books, etc., having been borrowed by members than in any previous twelve months, the numbers being:—335 books, manuscripts, etc., issued to 59 individual members, compared with 223 and 40 respectively in the previous year.

Two Memorial Volumes, in memory of the late Mrs R. W. Robbins and of her son, the late Mr J. C. Robbins, have been placed on the library shelves. These books are:—

The Standard Natural History, edited by W. P. Pycraft, and
Further Illustrations of British Plants, by R. W. Butcher.

Members are requested to take special care when using these volumes.

Many other valuable additions were received during the year from members and friends. Special mention must be made of the generous gift, presented by Mr Donald Gunn, of 33 books, dealing chiefly with Ornithology, and of the 3 volumes of Coward's *Birds of the British Islands*, and also *The Art of Bird Watching* and *Birds in England*, both by E. M. Nicholson, presented by the Ornithological Section.

The total additions for the year amount to:—275 books, magazines and other publications, compared with 90 in 1931, and 140 in 1930.

A loose-leaf type-written catalogue, for the use of members, has been prepared, also a card index (primarily for the Librarians' use), and these will be kept up to date.

Members are reminded that the Librarians are always to be found in attendance at the conclusion of Meetings.

ROBT. W. PETHEN,
EDWARD MANN,
Honorary Librarians.

Archaeological Section.

REPORT FOR 1932.

THE Section has made ten excursions, during which several churches have been visited, also Lincolns Inn, Old Battersea House, and the Victoria and Albert Museum.

As is now fortunately usual, we have received a great deal of assistance from the Clergy, apart from that of our member, the Rev. P. H. Cooke, who led a very successful ramble to Beddington, where, among other things, he gave us a most interesting account of the various extracts he had made from the Parish Registers. The Vicar of S. Stephen's, Walbrook, led us over his church and showed us a recent very successful example of flood lighting which brought out the beautiful details of the plaster work of the ceiling of the dome. The Rev. F. H. Smith led a very pleasant and well attended meeting over S. Andrew Undershaft and S. Katherine Cree Churches and gave us most interesting information about each. Mr Stanley took us over Hornchurch Church and gave a well informed account of the building; Mr Jehan kindly invited us to his house at Amersham to see some recently discovered Tudor Wall Paintings; at Old Battersea House Mr Stirling, the owner,

explained his many beautiful Art treasures. Mr Cocksedge took us round part of the Victoria and Albert Museum and explained in his usual interesting way some of the exhibits illustrating domestic art.

There have been two Record visits—(1) Merton and (2) Laindon and Langdon. The Rector of Laindon met us at his church and showed us the plate and also over the Priests' House. Both the Records have been made very complete and detailed.

The attendance at the excursions has been good, the average being 15.

The two general lectures provided by the Section were—(1) S. Paul's Cathedral, Old and New. Mr F. H. Mansford was to have given this lecture but owing to his absence Mr W. W. Begley kindly took his place at short notice, (2) Hadrians Wall by Mr P. M. Andrews.

There were four Sectional Meetings—(1) Mr Fox showed slides of Blythburgh and Southwold Churches, (2) Mr Dallas gave an account of his recent visit to Norway, (3) Discussion of Records, (4) Mr Cocksedge gave a lantern lecture on "Some Old German Towns." The slides, which were excellent, had been made from photographs taken by Mr Cocksedge.

At an informal meeting held in August several members showed post-cards and photographs by means of the epidiascope of places they had recently visited, and Mr E. Yates kindly showed some lantern slides of the Norman Churches at East Ham and Bengoe.

The Section numbers 66, a slight increase over last year. We have to deplore the death of some valued members.

There have been no changes in the Officers of the Section.

W. C. COCKSEGE, *Chairman.*

W. C. FORSTER, *Honorary Secretary.*

Botanical Section.

REPORT FOR 1932.

CONTINUING the custom of the Section, three of the excursions were arranged to enable members to inspect special plants in their native habitat. The special plants chosen this year were *Leucojum aestivum* L., *Danaa cornubiense* Burnat, and *Genista pilosa* L. Unfortunately, the search for the last-named was unsuccessful. In addition, visits have been paid to Richmond Park, Kew Gardens, Epping Forest, Stanford Rivers, and Farnborough (Kent), where *Lathraea Squamaria* L. was seen in some quantity. On an excursion to Tring, arranged jointly with the Entomological Section, *Iberis amara* L. and *Anagallis foemina* Mill. were found. The Section also arranged a visit to the Museum of the Essex Field Club.

At the Sectional Meetings at the Society's headquarters instructive and interesting papers have been read. Our Chairman, Mr Herman

Spooner, discussed Botany in detail, and Mr C. H. Rice, B.Sc., of the British Ecological Society, dealt with "Some Aspects of Plant Ecology."

The membership of the Section now stands at 109, an increase of eleven.

Publication of the Section's records was resumed in the last issue of *The London Naturalist*, and it is hoped that they will be continued until complete.

HERMAN SPOONER, *Chairman*.

BERNARD T. WARD, *Honorary Secretary*.

Entomological Section.

REPORT FOR 1932.

A BRIEF summer which began late and ended early had an adverse influence on the activities of the Section. Nine outings were carried through but few insects were met with, sometimes possibly because the species sought for had not appeared by the selected date.

The average attendance was poor, as only the most enthusiastic would turn out in unfavourable conditions. These conditions were reflected in the exhibits at indoor meetings. Five dates had been allotted to the Section, and at three of these papers were read, viz.:—February 23rd, "Luminous Insects," by Mr K. G. Blair; June 28th, "Paraneuroptera of Epping Forest," by Mr E. B. Pinniger; September 27th, "Butterfly Collecting in France," by Mr R. W. Robbins, and "A Climbing Organ in Reduviid Bugs," by Mr J. D. Gillett. On August 9th an Informal Meeting was held for the exhibition of specimens, and October 25th was devoted to the Annual General Meeting of the Section. The attendance at these meetings has been less than that for 1931, the average being 19.2 as against 24.25, but it is still well above that of three years ago.

The Outings were:—May 28th, Horsley; June 5th, Kenley; June 12th, Clandon; July 9th, Eynsford; July 10th, Tring; July 16th, Oxted; August 13, Claygate; and August 20th, Leatherhead.

On the Tring outing a midge was found on Solomon's Seal which proved to be new to science.

A number of members have kindly supplied detailed information as to species of butterflies seen during the year, from which the usual review of the season has been compiled (p. 93).

Lepidoptera have not been the only insects studied and we welcome the work of Mr Pinniger on Dragonflies and Mr Gillett on Hemiptera.

Mr Aris, the Curator, still desires certain species of Lepidoptera to fill up gaps in the collection, and would be glad to hear from members who have specimens to spare.

R. W. ROBBINS, *Chairman*.

H. J. BURKILL, *Honorary Secretary*.

Ornithological Section.

REPORT FOR 1932.

GENERAL.

FOUR Sectional Meetings were held during the year, when the following papers were read to the Section:—16th February, “Birds of St Kilda,” by Mr T. H. F. Harrison, M.B.O.U.; 24th May, “Some Comparisons between American and British Birds,” by Mr T. H. McKittrick, M.B.O.U.; 13th September, “Birds and Man,” by Mr H. N. Southern; 18th October, “At the Bird Table—Residents or Visitors?” by Mr Stuart Boardman.

At the request of our members Messrs Harrison and Hollom, who last year inaugurated a scheme for investigating the migratory habits of the Great-Crested Grebe (*Podiceps Cristatus*), the Committee decided to ask members of the Section to continue their observation for this year with a view to consolidating the information already obtained.

During the year the Society was asked by the Royal Society for the Protection of Birds to invite the co-operation of its members in assisting Mr G. B. Blaker, of Trinity College, Cambridge, who was making a study and a census of the Barn Owl (*Flammea Flammea*) in this country. The Committee agreed to ask members of the Section if they would assist Mr Blaker in this work and a circular letter was sent to members.

Any information regarding the Great-Crested Grebe enquiry or the Barn Owl Census will be gladly given on application to the Secretary of the Section.

It is with sincere regret that we have to record the death this year of our member, Mr R. Patterson, who since 1929 acted as Recorder of the Bird Sanctuaries in Bushey and Hampton Court Parks.

The Society has again been fortunate in having two of the Section's active members, Messrs C. L. Collenette and C. Weeks, appointed by His Majesty's Office of Works as the Official Recorders for the Bird Sanctuaries in Richmond Park as successors to the late Mr J. Rudge Harding.

The Section's membership continues to increase and we have now the satisfactory number of 216. A net increase of 19 on last year's figure of 197 was obtained, 42 new members replacing 23 resignations.

FIELD MEETINGS.

The Field Meetings have again been very successful, 86 different members and 31 visitors attending one or more of the 30 meetings held, the average attendance being 15.

Hawfinch, Wood-Lark, Wryneck, Garganey, Woodcock, Jack Snipe and Black Tern were among the 109 different species identified.

Twelve sub-districts of the Society's area were visited in the course of the following Field Meetings:—Nazeing Common, Kent Marshes, Tring Reservoirs, Guildford, Westerham, Headley, Walthamstow Reservoirs, Epping Forest, Chess Valley, Boxhill, Wanstead Park, Richmond Park, Cuffley, Chorley Wood, Ripley, Lea Valley, Essex Marshes, Reigate, Stanmore and Berkhamsted.

RINGING.

The Committee feel that the activities of our members in connection with the *British Birds* Ringing Scheme are not sufficiently widely known. With the object of giving greater prominence to this branch of our work a special article has been prepared and will be found on page 111.

READING CIRCLES.

There are seven copies of *British Birds* in circulation amongst 54 members of the Section, and by the continued kindness of Miss M. G. L. Best one copy of *The Scottish Naturalist* was again circulated amongst 18 members.

It is felt that the Reading Circles have further room for expansion and any information will be gladly given to members on application to the Secretary of the "Circles."

BOOK FUND.

During the year the Committee decided that a Book Fund should be established out of the proceeds of the sale of completed volumes and old copies of *British Birds*, with the object of purchasing standard ornithological works and presenting them to the Society's Library.

The following volumes were purchased during the year:—

1. *The Art of Bird Watching*, E. M. Nicholson.
2. *Birds in England*, E. M. Nicholson.
3. *Birds of the British Isles* (3 volumes), T. A. Coward.

COLLECTIONS.

The skin collection has been considerably increased this year owing to the gift of a number of skins by Mr H. Candler, of Ashted, Surrey. Skins were also given by Miss J. Aldis, Miss C. E. Longfield, Mr C. L. Collenette, and Mr B. T. Ward.

A deserted nest of the Dartford Warbler, containing eggs, was presented by Miss K. Douglas-Smith.

The photographic collection now consists of 259 photographs on 218 sheets.

RESEARCH WORK.

The Committee desire to call attention to the following research work which is being conducted by both members and the Section and the co-operation of all will be cordially welcomed.

An enquiry is being made by members of the Ornithological Section to ascertain the positions of the roosts used by Starlings in the London area and the habits of the Starlings that occupy them.

A list of questions covering the whole ground has been sent to all members of the Section, and the Committee hope that every member will co-operate in the work by paying particular attention to the activities of Starlings in any part of our area during 1933, and, as a result of his or her observations, answering as many of the questions as possible. The list when completed should be sent to C. S. Bayne, 92 Fleet Street, E.C.4, who will be glad to supply extra copies to any member who may require them.

Miss A. Hibbert-Ware is making an intensive study of the economic status of the Little Owl (*Athene noctua vidalii* A. E. Brehm.). Members of the Society can assist by sending her any first-hand evidence that may come to their notice concerning the food of the bird. She will be glad to receive the bird itself, if found dead. Any pellets found are also asked for and either should be forwarded to Miss A. Hibbert-Ware, Hilary, Girton, Cambridge.

Gulls have become a very marked feature of the bird life in the London area, and it is well known that there has been a steady increase in the numbers visiting us each year. A great amount of data has accumulated during the past twenty years and it is felt that it would be both interesting and profitable to make a complete survey of this question.

Members are invited to assist in this enquiry. Further information on the following points would be very useful:—

FLIGHT LINES. Especially details of late evening and early morning movements.

FEEDING AND FLOCKING AREAS.

ROOSTS.

Any information bearing on these points will be welcomed and may be sent direct to E. C. Rowberry, 7 Burlington Road, Osterley, Middlesex.

S. AUSTIN, *Chairman*.

D. H. CLANCHY, *Honorary Secretary*.

Plant Galls Section.

REPORT FOR 1932.

FOUR Meetings have been held during the year, at three of which papers were read and specimens exhibited, viz.:—19th April, Mr Niblett spoke on Cynipid Galls other than those on the Oak; 21st June, Mr Niblett gave notes on several species of Oak galls, and Mr Burkill read a list of Gall causing Cynipidae, Part I. October 25th was devoted to the Annual General Meeting of the Section, and on 13th December Mr Niblett opened a discussion on Galls on Caprifoliaceae.

Six outings have been carried through and two others abandoned

owing to weather, the places visited being:—Epping Forest, 7th May; Epsom Common, 21st May; Kenley, 11th June; Keston, 26th June; Epsom Downs, 30th July; and Chipstead, 17th September; while Harefield and Box Hill outings were cancelled.

Several interesting specimens were found, but on the whole the season was not a good one. None the less, a number of valuable observations were made in and as the result of field work, especially in relation to Cynipid galls on Oak, which have assisted and promise to assist in the solution of some difficulties connected with this intricate but most interesting section of our work.

A list of the more noteworthy species found has been compiled, and is given elsewhere in this volume (p. 117).

Mr Niblett has been appointed Curator of the collection for the Section, and any specimens for this collection should be sent to him.

Mr Tremayne has laid the foundations for a Plant-Galls list for Middlesex, having sent in a large number of records from his observations of the past few years.

The Entomologist for September and the following three months contained a list of Galls caused by Cynipidae in Britain, compiled by the Section, giving brief details of all species that are known to us as having been found in Britain.

J. Ross, *Chairman*.

H. J. BURKILL, *Honorary Secretary*.

Ramblers' Section.

REPORT FOR 1932.

THIRTEEN rambles have been held; attendance at these has varied between 2 and 21, the average being 10, which is an increase on last year.

These rambles by field-paths and by-ways, through some of the loveliest country round London, have included an all-night ramble to Newlands Corner and thence to Blackheath. Walks in the neighbourhood of Leatherhead, Effingham, Whiteleaf Cross, Wimbledon Common, Chandlers' Cross, Downe, Perivale, Shoreham, Epping Forest, Denham and Godalming have been carried out.

In addition visits were made to Mr Alfred Ezra's Zoological collection at Foxwarren Park, Cobham, and to the Whipnade Zoo.

Three indoor meetings have been held at Headquarters, when the following lectures were given:—"The Stained Glass Windows of Chartres and York," by Sir Thomas Legge, C.B.E., an extremely interesting lecture illustrated by a set of beautiful lantern slides made by the lecturer; "Rambling in the Black Forest," by Miss I. Croal-

Thomson, also illustrated by lantern slides; and "Rambles in a Naturalist's Diary," by Mrs H. Boyd Watt.

The attendance at these meetings has averaged 39. The Section continues to be affiliated to the Federation of Rambling Clubs.

A. CAPLETON, *Chairman.*

E. L. KING, *Honorary Secretary.*

Chingford Branch.

REPORT FOR 1932.

THE Associateship of the Branch suffered badly in numbers early in the year, but a few Associates joining towards the end of the year helped to balance this to a certain extent. The attendance at meetings, however, has not suffered on this account, and an almost uniformly good attendance has been preserved.

Still experimenting with the idea, we held an Exhibition with lecturettes this year. Although this was better attended than the ordinary Exhibitions we have held, the number present was below the average, and we feel that straightforward lectures are more appreciated by the Branch.

The following lectures and papers were delivered:—"Our Solar System," by J. E. Johnson; "Local Tradition and Lore," by A. B. Hornblower; "A Wall Moss," by J. Ross; "Dragonflies of Epping Forest," by E. B. Pinniger; "The Trees of London," by Miss M. D. Hubbard, B.Sc.; "A Naturalist on the Welsh Border," by E. B. Pinniger; "Fungi of Epping Forest," by F. G. Gould; "Nature and Folk in Norway," by J. E. S. Dallas; "The Origin of Scenery," by J. F. Hayward.

No outdoor meetings were held during the year.

JOHN F. HAYWARD, *Local Secretary.*

List of Presidents, 1858-1933.

HAGGERSTON ENTOMOLOGICAL SOCIETY.		GROCERS' COMPANY SCHOOL SCIENCE CLUB.	
1858.	I. S. Sayers.	1888-91.	J. Walter-Gregory, F.G.S.
1859.	H. Killingback.		
1860.	H. J. Harding.		
1861.	C. Healy.	NORTH LONDON NATURAL HISTORY SOCIETY.	
1862.	G. Pead.	1892.	A. Rose, F.E.S.
1863.	I. S. Sayers.	1893.	A. U. Battley.
1864.	S. F. Cowan.	1894.	J. Wheeler.
1865-7.	T. Eedle.	1895.	L. B. Prout, F.E.S.
1868-72.	E. Barlow.	1896.	C. B. Smith.
1873.	E. G. Meek.	1897.	C. Nicholson, F.E.S.
1874.	J. Bryant.	1898.	R. W. Robbins.
1875-6.	E. Guest.	1899.	L. J. Tremayne.
1877-8.	T. Hockett.	1900.	J. A. Simes.
1879.	H. Hillman.	1901.	M. Culpin.
1880.	J. Henderson.	1902.	L. B. Prout, F.E.S.
1881.	W. J. V. Vandenberg.	1903.	J. A. Simes.
1882-6.	T. Hockett.	1904.	A. J. Rose, F.E.S.
1887-9.	T. Cooke.	1905.	C. B. Smith.
		1906-8.	C. S. Nicholson, F.L.S.
		1909-10.	L. B. Prout, F.E.S.
		1911.	M. Greenwood, M.R.C.S., L.R.C.P.
		1912-3.	A. Bacot, F.E.S.
CITY OF LONDON ENTOMOLOGICAL SOCIETY.			
1890-5.	J. A. Clark, F.E.S.		
1896-8.	J. W. Tutt, F.E.S.		
1899-02.	L. B. Prout, F.E.S.		
1903-13.	A. W. Mera.		
LONDON NATURAL HISTORY SOCIETY.			
1914.	L. B. Prout, F.E.S.		
1915-19.	E. A. Cockayne, M.A., M.D., F.L.S., F.E.S.		
1920.	R. W. Robbins.		
1921-24.	E. B. Bishop.		
1925-7.	S. Austin, F.Z.S.		
1928-9.	W. E. Glegg, F.Z.S., M.B.O.U.		
1930-1.	L. J. Tremayne, F.Z.S.		
1932-3.	Miss C. E. Longfield, F.R.G.S., F.E.S., M.B.O.U., F.Z.S.		

List of Members.

(Corrected up to 10th May 1933.)

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

Honorary President:

THE RIGHT HON. THE VISCOUNT GREY OF FALLODON, K.G., P.C.

Honorary Vice-Presidents:

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

Honorary Members:

- 1894 Burrows, Rev. C. R. N., F.E.S., The Vicarage, Mucking, Stanford-le-Hope, Essex. (Lep.)
1927 Le Souef, A. S., C.M.Z.S., R.A.O.U., Taronoga Zoological Park Trust, Sydney, Australia.
1899 Massey, Herbert, M.B.O.U., F.E.S., Ivy Lea, Burnage, Didsbury, Manchester. (Lep., Orn., Ool.)

Members:

- 1929 Acland, Miss C. M., M.B.O.U., Walwood, Banstead, Surrey. (Orn.)
1892 Adkin, R., F.E.S., Hodeslea, Meads, Eastbourne. (Lep.)
1929 Aldis, Miss J. B. W., 68 Longton Grove, West Hill, Sydenham, S.E.26. (Orn., R.)
1925 Aldred, Miss B. A., 16 Boscastle Road, Dartmouth Park, Kentish Town, N.W.5.
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., 23 New Cavendish Street, W.1. (Ent.)
1932 Angel, Miss K. W., at 113 Canterbury Grove, 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.)
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.)
1892 Austin, S., F.Z.S., 43 Darent 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, 23 Seymour Road, Hampton Wick, Surrey. (Bot., 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, Edward C. S., 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.)
- 1927 Barclay-Smith, Miss P., F.Z.S., M.B.O.U., Park Lodge, Hervey Road, Blackheath, S.E.3. (Orn.)
- 1927 Barr, Mrs Margaret, 50 Penywern Road, Earls Court, S.W.5. (Orn., Bot.)
- 1930 Barton, Wm. C., 43 Rosary Gardens, S. Kensington, S.W.7. (Bot.)
- 1933 Bastian, Miss E., 49 Tavistock Square, W.C.1.
- 1932 Bastick, Miss M. E. S., 81 Gunterstone Road, Baron's Court, W.14. (Bot.)
- 1903 *Battley, Mrs, 21 Creswick Road, West Acton, W.3.
- 1932 Bayliss, C. V., 14 Conan Mansions, West Kensington, W.14. (Arch.)
- 1915 Bayne, Charles S., 92 Fleet Street, E.C.4. (Orn.)
- 1930 Beatty, W. G., 7 St Mary Abbots Place, Kensington, W.8. (Orn., Arch.)
- 1931 Becker-Bingham, N. F., 141 Half-Moon Lane, Herne Hill, S.E.24. (Orn., Ent.)
- 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 J. E., Dellfield, Featherbed Lane, Felden, Boxmoor, Herts. (Orn., Bot.)
- 1929 *Benson, R. B., M.A., F.E.S., F.Z.S., British Museum (Natural History), South Kensington, S.W.7. (Bot., Orn., Ent., esp. Sawflies.)
- 1932 Bentham, C. H., Thursley, Kingswood Road, Tadworth, Surrey. (Orn.)
- 1932 Binley, Miss E. M., 207 Grove Lane, Denmark Hill, S.E.5. (Orn.)
- 1932 Blackmore, A., 417 Fulham Palace Road, Fulham, S.W.6. (Bot.)
- 1930 Blair, K. G., B.Sc., F.E.S., 120 Sunningfields Road, Hendon, N.W.4. (Ent.)
- 1926 Blezard, Miss R., F.Z.S., M.B.O.U., 117 Sloane Street, S.W.1. (Orn., Bot.)
- 1933 Bomford, Miss N., 7 Woburn Square, W.C.1. (Orn., R.)
- 1933 Booth, H. P., B.A., 5 Snow Hill, E.C.1. (Orn.)

- 1933 Bowtell, J. J., 238 York Road, Southend-on-Sea, Essex.
- 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.
- 1929 Brants, Mrs J. C., The Sheiling, Jordans, nr. Beaconsfield, Bucks. (Orn.)
- 1929 Brearley, Miss B., 93 South End Close, Hampstead, N.W.3. (Orn., R., Bot., Arch., Ent.)
- 1930 Brend, Wm. A., M.A., M.D., B.Sc., 14 Bolingbroke Grove, Battersea, S.W.11. (Arch., Orn., R.)
- 1933 Bromley, Miss B., 24 Crescent Mansions, Ronalds Road, Highbury, N.5. (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.)
- 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.)
- 1931 Button, H. S., F.Z.S., The Cedar House, Hillingdon, Middlesex.
- 1932 Caiger-Smith, Miss J., Grove House, Roehampton Lane, Putney, S.W.15. (Orn.)
- 1928 *Campbell, J. M. H., M.D., 47 Arkwright Road, Hampstead, N.W.3. (Orn., R.)
- 1912 Capleton, A., Beaufort House, 37 Lansdowne Road, S. Woodford, E.18. (Mam., Orn., R., Bot.)
- 1926 Carr, Miss A. N., 7 Cambridge Road, Watford, Herts. (Orn., R.)
- 1932 Castell, C. P., 52 Graham Road, Wimbledon, S.W.19. (Bot., Geol.)
- 1932 Champneys, Mrs M., Hall Oak, Froggnal Lane, Hampstead, N.W.3. (Bot., Pl. G., Ent.)
- 1930 Chandler, S. E., D.Sc., F.L.S., 59 Anerley Park, Penge, S.E.20. (Bot.)
- 1932 Charles, Capt. R., 37 Tavistock Square, W.C.1. (Marine Biol.)
- 1931 Chester, Geo., 71 Holmdene Avenue, Headstone Lane, Harrow, Middlesex. (Bot.)
- 1931 Chubb, Sir Laurence, 71 Eccleston Square, S.W.1. (R.)
- 1927 Clanchy, Mrs B. L., Russell Mansions, 21 Coram Street, W.C.1. (R., Orn.)
- 1927 Clanchy, D. H., Russell Mansions, 21 Coram Street, W.C.1. (R., Orn.)
- 1928 Clarke, H. T., The Yews, Godmersham, Canterbury, Kent.
- 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.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.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.)
- 1914 Connoll, Miss E., 98 Connaught Avenue, Chingford, E.4. (Orn.)
- 1904 Cooke, Rev. P. H., M.A., 19 Hainthorpe Road, West Norwood,
S.E.27. (Bot., Arch.)
- 1928 Cox, Miss L. E., 72 Corringham Road, Golders Green, N.W.11.
(Bot.)
- 1929 Cranfield, Mrs V., Little Tompsetts, Forest Row, Sussex. (Orn.)
- 1932 Creighton, Miss M. B., Penshurst, Deans Lane, Edgware, Mid-
dlesex. (Bot., Biol., Pl. G.)
- 1930 Critchley, Miss R. D., 19 Clephane Road, Essex Road, N.1.
- 1931 Croal-Thomson, Miss I., 32 Cholmeley Park, Highgate, N.6.
(Orn., R.)
- 1930 Crocker, Miss L. H., 23 Upper Westbourne Terrace, W.2. (Bot.)
- 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.)
- 1928 Cuningham, Miss D. W. M., 50 Ladbroke Grove, Notting Hill,
W.11. (Orn., Ent., Pl. G., Bot.)
- 1930 Cunningham, J., M.B.O.U., Fernhill, Belfast. (Orn.)
- 1892 Cyriax, R. C., 23 Aberdare Gardens, West Hampstead, N.W.6.
(Arch., Aryan question, Indo-European languages.)
- 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.
- 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. (Pond Life,
Micr., Orn.)
- 1932 Denham, R., M.B.O.U., 21a Well Walk, Hampstead, N.W.3.
(Orn., Ent.)
- 1933 Doran, F. H., Toddsbrook, Gt. Parndon, Harlow, Essex. (Pond
Life.)
- 1928 Douglas-Smith, Miss K., 19 Thurlow Road, Hampstead, N.W.3.
(Arch., Orn., Bot.)

- 1927 Druce, F., M.A., F.L.S., 7 Culford Gardens, Chelsea, S.W.3.
(Bot.)
- 1927 Dunkerley, Rev. C. L., Iver Heath Rectory, Iver, Bucks. (Arch.,
Orn.)
- 1928 Emberson, L. M., 49 Adela Avenue, West Barnes, New Malden.
Surrey. (Orn.)
- 1927 English, Miss F., 8 Dorville Road, Ravenscourt Park, Hammer-
smith, W.6. (Orn., Bot., Arch., R.)
- 1927 Evans, E. B., 86 Emmanuel Road, Balham, S.W.12. (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.)
- 1930 Fitch, Miss V., 97 Longton Avenue, Sydenham, S.E.26. (R.)
- 1922 Forster, W. C., 40 Nevern Square, Earls Court, S.W.5. (Arch.,
R.)
- 1924 Foster, John B., B.A., 12 Conway Road, Wimbledon, S.W.20.
(Orn.)
- 1933 Fowler, Miss L. M., 14 Westbourne Grove Terrace, W.2. (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., Pond Life.)
- 1931 Frohawk, F. W., M.B.O.U., F.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.)
- 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.)
- 1931 Gillett, J. D., F.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., The House, Albion Brewery,
Whitechapel Road, E.1. (Orn.)
- 1910 Glegg, Mrs, The House, Albion Brewery, Whitechapel Road, E.1.
(Orn., Arch.)

- 1929 Goodfellow, Miss L., Flat 3, 28 John Street, Gray's Inn, W.C.1. (Orn.)
- 1930 Goodwin-Vanner, R. E., F.R.H.S., F.R.C.I., Essex Villa, Guildford, Surrey. (Arch.)
- 1927 Green, Roland, F.Z.S., Ruskin Studio, 7 New Court, Lincoln's Inn, W.C.2. (Orn.)
- 1933 Green, R., 22 Windsor Road, Wanstead, E.11. (Orn., R.)
- 1931 Greenwood, F. D., Farm Lodge, Edenbridge, Kent. (Lep.)
- 1899 *Greenwood, Prof. M., D.Sc., F.R.S., F.R.C.P., Hillcrest, Church Hill, Loughton, Essex. (Arch., Biol.)
- 1931 Grey, Mrs O., 90 Charing Cross Road, W.C.2. (Arch., Bot., Ent., Orn., Pl. G., R.)
- 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, S., 53 Hanover Gate Mansions, N.W.1. (Orn.)
- 1929 Gulliver, Miss M. D., 84 Endsleigh Gardens, Ilford, Essex. (Orn.)
- 1932 Hadfield, J., 14 Framfield Road, Highbury, N.5. (Orn.)
- 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.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.)
- 1931 Hartley, P. H. T., 29 Christchurch Park, Sutton, Surrey. (Orn.)
- 1927 Harvey, J. H., Dallinga, Lower Road, Great Bookham, Surrey. (Bot.)
- 1930 Haworth, Miss F. M., B.Sc., F.Z.S., 13 Theobalds Road, W.C.1. (Zoo., Bot.)
- 1931 Hay, Mrs M., 38 Nella Road, Hammersmith, W.6. (Bot., Orn.)
- 1927 Hayward, Jno. F., 17 Heathcote Grove, Chingford, E.4. (Geol., Zoo.)
- 1933 Hearn, Miss K. L., 56 Meadvale Road, Ealing, W.5. (Orn., R.)
- 1932 Hearn, Miss O. T. G., 56 Meadvale Road, Ealing, W.5. (Orn., Bot.)
- 1902 Heath, G. H., M.A., 7 St Philip's Road, Surbiton, Surrey. (Lep.)
- 1930 Hick, A. E., 68 Brockswood Lane, Welwyn Garden City, Herts.
- 1929 Hicks, John B., F.E.S., 30 Stanhope Gardens, South Kensington, S.W.7. (Ent.)
- 1932 Higgins, T. T., F.R.C.S., 34 Harley Street, W.1. (Orn., Ent.)
- 1931 Hine, Mrs S. McDougall, Mayfield, Meopham, Kent. (Orn.)
- 1932 Holden, H., 39 Cawley Road, Victoria Park, E.9. (Fish and Fish Life.)
- 1929 Hollom, P. A. D., Birchfield, Addlestone, Surrey. (Orn.)

- 1932 Homes, R. C., 2 Penerley Road, Catford, S.E.6. (Orn.)
- 1930 Hopkins, Graham, Beaumont, Hervines Road, Amersham, Bucks. (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., 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., 13 Theobalds Road, W.C.1. (Bot., Zoo.)
- 1932 James, Mrs R. E., 33 Headstone Road, Harrow-on-the-Hill, Middlesex. (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., 61 High Street, 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., St Denys, 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.E.S., 271 Kilburn Lane, North Kensington, W.10. (Orn., Col.)
- 1899 *Kaye, W. J., F.E.S., Caracas, Ditton Hill, Surbiton, Surrey. (Lep.)
- 1931 Kent, Mrs J. Barton, 2a Grove End House, St John's Wood Road, N.W.8. (Arch.)
- 1930 King, Miss C. A., 152 Harley Street, W.1. (Orn., Arch.)
- 1929 King, E. L., 34 Wallorton Gardens, East Sheen, S.W.14. (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, D. L., M.B.O.U., 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.)
- 1929 Lamb, Mrs K. E., Mildura Cottage, Lymington, Hants. (Orn.)
- 1927 Lane, J. H., 571/3 Commercial Road, E.1. (Chem.)
- 1932 La Touche, J. N. Dignes, M.Inst.C.E., Woodcroft, Baldwin's Hill, Loughton, Essex.

- 1933 Leak, D. A., 25 Gloucester Road, Kingston Hill, Surrey. (Orn.)
- 1932 Le Cocq, L., 17 Highbury Hill, N.5. (R., Orn.)
- 1930 Ledlie, R. C. B., M.B., B.Sc., F.R.C.S., 23 Beaumont 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.)
- 1929 Leigh, Kenneth, 24 Queen's Road, Beckenham, Kent. (Orn.)
- 1922 Lemon, Mrs M. L., M.B.E., J.P., M.B.O.U., F.Z.S., 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.)
- 1926 *Longfield, Miss C. E., F.R.G.S., F.E.S., M.B.O.U., F.Z.S., 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.)
- 1931 McDowall, R., 105 Abingdon Road, Kensington, W.8.
- 1932 McInnes, Miss J., 12 Kenilworth Avenue. Wimbledon, S.W.19. (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.
- 1929 Mackay, Helen M. M., M.D., 28 John Street, Bedford Row. W.C.1. (Orn.)
- 1931 McKittrick, Thos. H., Jun., M.B.O.U., 28 Chelsea Park Gardens. S.W.3. (Orn.)
- 1932 McKittrick, Mrs T. H., Jun., 28 Chelsea Park Gardens, S.W.3. (Orn.)
- 1932 Mackworth-Praed, C. W., F.R.G.S., F.Z.S., F.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., Pond Life.)
- 1923 Mann, Edward, 10 Frankland Road, S. Chingford, E.4. (Pond Life, Orn.)
- 1932 Marks, Miss R. E., 118 Victoria Road, Brondesbury, N.W.6. (Orn., Bot., Arch.)
- 1932 Marshall, Major H. S., 6 Sloane Gardens, S.W.1. (Orn.)

- 1929 Marshall, John G., Rye House, Green Lane, New Eltham, S.E.9.
(Orn.)
- 1932 Mason, C. T., 118 Birchanger Road, S. Norwood, S.E.25. (Ent.,
Arch.)
- 1931 Maud, F., 19 Belsize Park Gardens, S. Hampstead, N.W.3.
(Arch.)
- 1931 Maud, Mrs F., 19 Belsize Park Gardens, S. Hampstead, N.W.3.
(Arch.)
- 1933 Maund, Miss A. N., 32 Chardmore Road, Stoke Newington, N.16.
- 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 Priory Road, Bedford Park, W.4. (Bot.,
Orn.)
- 1928 Murphy, Miss H., 43 Stafford Row, Bow, E.3. (Bot., Orn., Ent.,
Arch.)
- 1926 Niblett, Montague, 10 Greenway, Wallington, Surrey. (Ent.,
Pl. G.)
- 1893 *Nicholson, Miss B., Rotherwood, 49 Danecourt Road, Parkstone,
Dorset. (Bot.)
- 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.)
- 1931 Northway, W. D., 419 Hale End Road, Woodford Green, Essex.
(Orn., Ent.)
- 1933 Oke, E. E., Tweenways, The Mount, Leatherhead, Surrey. (Orn.,
Ent.)
- 1932 Oldfield, Miss A. R., 259 Lea Bridge Road, Leyton, E.10. (Arch.,
Bot.)
- 1926 *Oldham, Charles, F.L.S., F.Z.S., M.B.O.U., The Bollin, Shrub-
lands 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.
(Orn.)
- 1921 Parsons, S. T. T., 33 Trebovir Road, Earls Court, S.W.5. (Orn.)
- 1933 Paulson, C. W. G., 10 King's Bench Walk, Temple, E.C.4. (Orn.)
- 1922 Payne, C. H., 13 Kidderpore Gardens, Hampstead, N.W.3.
(Orn., Arch.)
- 1930 Payne, E. D. B., 9 Oaktree Avenue, Palmer's Green, N.13. (Orn.)
- 1923 Payne, E. M., Tilgate, Long Lane, Hillingdon, Middlesex.
(Bot., Orn.)
- 1923 Payne, L. G., 22 Marksbury Avenue, Richmond, Surrey. (Bot.)
- 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., 38 Richmond Road, Bayswater, W.2. (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 Pooch, Sydney G., 17 Green Moor Link, Winchmore Hill, N.21. (Orn.)
- 1928 Poole, A. C., 42 The Mall, Ealing, W.5. (Orn., Bot.)
- 1933 Poppo, Miss W. N., 11 Pemberton Gardens, Upper Holloway, N.19. (Orn., R., Pond Life.)
- 1932 Poynter, Miss D., Rycot, The Ridgeway, Kenton, Middlesex. (Orn.)
- 1910 Pratt, W. B., 10 Lion Gate Gardens, Richmond, Surrey. (Lep.)
- 1892 Prout, L. B., F.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.)
- 1932 Rasin, Miss A. M., 3 Maurice Walk, Hampstead Garden Suburb, N.W.11. (Orn., Bot.)
- 1926 Rankin, The Hon. Lady, Kensington Palace Mansions, De Vere Gardens, Kensington, W.8. (Orn.)
- 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, Barrowell Green, Winchmore Hill, N.21. (Orn., Ent.)
- 1928 Richardson, G., 74 Tulse Hill, Brixton, S.W.2. (Bot.)
- 1892 Robbins, R. W., The Rosery, Limpsfield, Surrey. (Bot., Lep., Orn., Arch., Pl. G.)
- 1933 Robinson, G. F. B., 28 Cholmeley Park, Highgate, N.6. (Orn.)
- 1931 Robinson, Miss M., 26 Loraine Mansions, Widdenham Road, Holloway, N.7.
- 1931 Robinson-Embury, Lt.-Col. P., C.M.G., 51 South Street, W.1. (Orn.)
- 1932 Rosevear, D. R., Forestry Department, Victoria, British Cameroons, West Africa. (Ent., Bot.)

- 1910 *Ross, J., 18 Queen's Grove Road, Chingford. E.4. (Bot., Pl. G., Orn.)
- 1932 Rotter, Miss G. H., Penmon, 2 Park Hill Road, Sidcup, Kent. (Bot., Arch.)
- 1890 Routledge, G. B., J.P., F.E.S., Tarn Lodge, Heads Nook, Carlisle, Cumberland. (Lep., Col., Hem.)
- 1931 Rowberry, E. C., 7 Burlington Road, Osterley, Middlesex. (Orn.)
- 1930 Rushen, W. N., 55 Kendall Road, Beckenham, Kent. (Orn., Arch.)
- 1932 Ryan, A. P., 19 Barnsall Street, Chelsea, S.W.3.
- 1932 Salmon, Miss J. G., 95 St Mary's Mansions, W.2. (Orn.)
- 1929 Sampson, E. S., 60 Alexandra Road, Epsom, Surrey. (Orn.)
- 1930 Scudamore, Miss M., 31 Ashchurch Park Villas, Ravenscourt Park, W.12.
- 1932 Seton, Sir Malcolm C. C., K.C.B., M.B.O.U., 26 Upper Park Road, Hampstead, N.W.3. (Orn.)
- 1929 Short, G. R. A., 201 Bedford Hill, Balham, S.W.12. (Bot., Micr., Pharmacognosy.)
- 1929 Shorter, Miss E. M. L., 75 Onslow Gardens, Muswell Hill, N.10. (R.)
- 1892 Simes, J. A., O.B.E., F.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.)
- 1892 Smith, A. C., 18 Mornington Road, Woodford Green, Essex. (Ent.)
- 1931 Smith, Miss A. M., Rambler Cottage, Blenkarne Road, Wandsworth Common, S.W.11. (Arch.)
- 1892 Smith, C. B., F.E.S., 61 Onslow Gardens, Muswell Hill, N.10. (Lep.)
- 1929 Smith, Mrs H. K., 61 Onslow Gardens, Muswell Hill, N.10.
- 1926 Smith, Miss M. H., 177 Holly Lodge Mansions, Highgate, N.6. (Orn., Bot., R.)
- 1931 Snell, A. P., 25 Anne Boleyn's Walk, Cheam, Sutton, Surrey. (Bot.)
- 1931 Snow, B., 3 Whitworth Road, S. Norwood, S.E.25. (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.)
- 1928 Sparkes, Mrs T., 23 Drayton Road, West Ealing, W.13. (Arch., Bot., R.)
- 1922 Spooner, Herman, 21 Musgrave Crescent, Walham Green, Fulham, S.W.6. (Orn., Bot., Arch., R.)
- 1933 Stacy, W. L., 126 Fairway, Southgate, N.14. (Orn.)
- 1931 Story, P., 8 Alvanley Gardens, Kilburn, N.W.6. (Orn.)
- 1931 Story, Mrs J., 8 Alvanley Gardens, Kilburn, N.W.6. (Orn.)
- 1920 *Stowell, H. S., L.R.I.B.A., 26 Queen's Gardens, Ealing, W.5. (Arch.)
- 1927 Swain, A. M., 436 Blandford Road, Beckenham, Kent. (Orn.)

- 1932 Swanton, E. W., The Educational Museum, Haslemere, Surrey.
(Pl. G., Zoo., Bot.)
- 1930 Swayne, F. G., M.A. (Cantab.), M.B., M.B.O.U., Beulah Spa
Hotel, Norwood, S.E.19. (Orn.)
- 1928 Talbot, G., F.E.S., Mon Plaisir, Wormley, Surrey. (Lep.)
- 1930 Tassart, Miss O. F., 36 Alfriston Road, Clapham Common, S.W.11.
(Arch., Orn.)
- 1926 Taylor, Mrs K., The Vine House, Sevenoaks, Kent. (Orn.)
- 1920 Thomas, Mrs G. E., 9 Talbot Road, Isleworth, Middlesex. (Orn.,
R.)
- 1927 Thresher, Miss G. A., 34 Henrietta Street, W.C.2. (Arch., Bot.,
Ent., Pl. G., R.)
- 1932 Todd, Miss G. E., 19 Inverness Terrace, W.2. (Bot., Orn.)
- 1932 Tomlinson, A. E., 13 Danecroft Road, Herne Hill, S.E.24. (Orn.)
- 1931 Tours, H. J., 8 Harvard Road, Gunnersbury, W.4.
- 1892 Tremayne, L. J., F.Z.S., Avenue House, 21 Northumberland
Avenue, W.C.2. (Bot., Lep., Arch., Pl. G., Orn., R.)
- 1908 Tremayne, Mrs, Avenue House, 21 Northumberland Avenue,
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, Winch-
more Hill, N.21. (Lep.)
- 1931 Underwood, R. A., Avila, Eskdale Avenue, Chesham, Bucks.
(Orn.)
- 1932 Varley, Miss D. K., 29a Park Road, Bromley, Kent. (Orn., R.)
- 1927 Veitch, Miss A., 79 Shirley Gardens, Faircross, Barking, Essex.
(Arch.)
- 1929 Venour, Miss D., 54a Dennington Park Road, N.W.6. (Orn.)
- 1933 Vincent, W. G., 154 Winchester Road, Hale End, E.4. (Orn.)
- 1933 Waller, Miss E., Baldwin's Hill, Loughton, Essex. (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.)
- 1920 Watkins, Miss H., 12 Connaught Avenue, East Sheen, S.W.14.
(Orn., R., Bot.)
- 1926 Watt, Hugh Boyd, 90 Parliament Hill Mansions, Lissenden Gar-
dens, N.W.5. (Orn., Ecology, Zoo., Bot.)
- 1925 *Watt, Mrs Winifred Boyd, 90 Parliament Hill Mansions, Lissen-
den Gardens, N.W.5. (Orn.)
- 1932 Wattson, Miss C. M., Fairholt, Oakleigh Avenue, Whetstone,
N.20. (Orn., Ent.)
- 1893 Wattson, R. Marshman, 32 St Andrews Road, Stoke Newington,
N.16. (Arch., Ent.)
- 1928 Weeks, Claude, 7 Paynesfield Avenue, East Sheen, S.W.14. (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.)
- 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.)
- 1922 Wilkinson, E. B., F.L.S., 75 St Mark's Road, W.10.
- 1931 Wilkinson, Miss M. O., Cartref, 157 Hale Drive, Mill Hill, N.W.7.
- 1932 Williams, A. R., Barclay's Bank (D.C. & O.), 54 Lombard Street, E.C.3. (Orn.)
- 1880 Williams, C. H., 5 Lower Belgrave Street, Eaton Square, S.W.1. (Lep.)
- 1931 Williams, Miss J. G., 25 Paget Road, Ilford, Essex. (R.)
- 1930 Williams, Miss P. H., 127 St George's Road, S.W.1. (Orn., Bot.)
- 1931 Wills, Miss A. M., 37 St George's Road, Buckingham Palace Road, S.W.1. (R., Arch.)
- 1931 Wilmott, A. J., British Museum (Natural History), Cromwell Road, South Kensington, S.W.7. (Bot.)
- 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.)

Affiliated Society:

1932. Barking Natural History Society. Representative—Mrs G. R. German, 96 Corbet's Tey Road, Upminster, Essex. (Bot.)

Branch Associates:

- 1925 Boardman, Stuart, 45 Empress Avenue, Woodford Green, Essex. (Orn., Ent.)
- 1930 Brightman, Miss A., St Osyth, Hampstead Road, Upper Walthamstow, E.17.
- 1927 Chappell, Miss M., Monkams End, Monkams Lane, Woodford Green, Essex.
- 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.
- 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.
- 1928 Holland, Miss M., 27 Victoria Road, Chingford, E.4.
- 1928 Langford, R. E., 17 Brodie 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.
- 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.
- 1920 Proctor, Mrs E. M., 10 Woodland 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., 12 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.
- 1929 Youé, Miss E., 46 Station Road, Chingford, E.4. (Bot.)
- 1932 Youé, Miss D., 46 Station Road, Chingford, E.4.

Country and School Associates:

- 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.)
- 1920 Biddiscombe, W., 3 Broadway, Woking, Surrey. (Bot.)
- 1896 Bishop, E. B., Lindfield, Marshall Road, Godalming, Surrey.
(Bot., Arch., Pl. G., Orn.)
- 1908 Bostock, E. D., Oulton Cross, Stone, Staffordshire. (Lep.)
- 1924 Collins, Miss Florence, School of Gardening, Clapham, near
Worthing, Sussex. (Orn.)
- 1929 Correspondent, The, Natural History Society, St John's School,
Leatherhead, Surrey.
- 1892 Culpin, Millais, M.D., F.R.C.S., Meads, Loughton, Essex. (Biol.)
- 1930 Foster, Mrs S., 12 Victoria Road, Bridgnorth, Shropshire. (Orn.)
- 1932 Frazer, A. D., M.B., Ch.B., The Church House, Eccleshall, Staffs.
(Pl. G.)
- 1898 Hall, L. B., F.L.S., Lingdene, King's Avenue, Parkstone, Dorset.
(Bot., Pl. G., Biol., Geol., Micr.)
- 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,
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- 1926 Hibbert-Ware, Miss A., F.L.S., M.B.O.U., Hilary, Girton, Cam-
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- 1915 Hopkins, Prof. Sir F. Gowland, M.A., M.D., F.R.C.P., F.R.S.,
71 Grange Road, Cambridge. (Biochemistry.)
- 1929 King, W. F. W., Blue Coat School, Aldworth's Hospital, Reading, Berks.
- 1927 Mellows, C., M.A., F.E.S., Alliot 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., Middleton Dene, 151 Middleton Hall Road, King's Norton, Birmingham. (Lep.)
- 1930 Nicholson, C., F.E.S., Nansgwithick, Tresillian, Truro, Cornwall. (Ent., Bot., Orn., Ast.)
- 1932 Offen, Miss E., Ulva, Scott's Hill, Southminster, Essex. (Orn.)
- 1918 Pike, Oliver G., F.Z.S., M.B.O.U., The Bungalow, Leighton Buzzard, Beds. (Orn.)
- 1924 Ridyard, Mrs M. E., Codnor, Derby.
- 1931 Spittle, R. J., Alaska, Farnham Road, Farnham Royal, Slough, Bucks. (Col., Orn.)
- 1914 Studd, E. F., M.A., B.C.L., F.E.S., Exeleigh, Starcross, Devon. (Lep.)
- 1928 Thoday, A. G., 31 Upper Brook Street, W.1. (Bot., Ent.)
- 1904 Ward, J. Davis, Limehurst, Grange-over-Sands, Lancs. (Lep.)
- 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.)

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; Ent., Entomology; Ethn., Ethnology;
 Geol., Geology; Hem., Hemiptera; Hym., Hymenoptera; Ichth.,
 Ichthyology; Lep., Lepidoptera; Mam., Mammalogy; Micr., Microscopy;
 Neur., Neuroptera; Orn., Ornithology; Orth., Orthoptera; Ool.,
 Oology; Pl. G., Plant Galls; R., Ramblers' Section; Rep., Reptilia;
 Zoo., Zoology.

*Signifies a Life Member.

Obituary.

THOMAS SPARKES.

The death of Mr Thomas Sparkes on 10th November 1932, although not unexpected, was a matter of much sadness to his many friends in the Society.

Born at Manchester on 2nd December 1875, he early learned to take an interest in Natural Science. At school he was introduced to Geology and became an ardent collector of minerals and fossils of the Carboniferous rocks of Lancashire and Derbyshire. In addition, with others of his year he began the study and collection of the local Lepidoptera and Coleoptera. Later his zest for the observation of living things was less specialised and covered a wider field; he also took great pleasure in antiquarian matters.

His vocation as an Electrical Engineer took him to Russia and Spain, where in addition, he found some time to study local habits and topography.

Mr Sparkes joined the London Natural History Society in May 1928 and took a share in the activities of many Sections, serving on the Committee of the Ramblers' Section from 1930 until his death. His loss will be keenly felt by all those who came in contact with his breezy outlook and originality of character.

S. F. STANLEY.

We regret to record the passing of Mr S. F. Stanley in December 1932. He joined the Society in 1927, and was a member of both the Ornithological and Archaeological Sections, taking an active interest in the work of the latter.

Nature Study Through the Ages.

By Miss C. E. LONGFIELD, F.R.G.S., F.E.S., F.Z.S., M.B.O.U.

Presidential Address delivered 6th December 1932.

MUCH has been written on the History of Science, to which is linked that of Natural History, but little that I can find on the progress of Nature Study as apart from purely scientific research, so I propose, therefore, to attempt a short survey of the study of Natural History from the Dawn of Man to Darwin. I shall be content if I am able to draw your attention to some aspects that have occurred to me, when delving into the past history and customs of mankind. In the limited time at my disposal, and the limited knowledge I possess, I can do no more than give an outline of the subject.

Man was a practical naturalist long before the dawn of history, classifying plants into edible and inedible, and accumulating a lore of the animals he hunted. Paleolithic Man, perhaps 20,000 years ago, was already making the most beautiful, life-like drawings of the animals that concerned him. What could depict with greater faithfulness the actions of living animals than the Stone Age drawings in the caves of Spain and France, the reproductions of which are familiar to the archaeologists. Fifteen species of animals can be clearly recognised, all animals of the chase, and it is quite possible that the drawings were supposed to have a magical effect in aiding the hunter to find and secure his quarry. Whatever the reason, the fact remains that the artists most certainly were naturalists, who carefully studied the actions and the forms of the animals they portrayed in drawings and in clay models.

The Neolithic Age was the time of active biological enterprise, for man then tamed and domesticated nearly every animal that has ever been tamed or domesticated; and he began also the deliberate breeding of them. Paleolithic Man painted animals with greater freedom than Neolithic Man, but the latter domesticated the animals, the former only hunted. The naturalistic art of painting and modelling seems to have been lost for some time when agriculture, another activity of Neolithic Man, began. There seems to have been a very close association between agriculture and sacrificial religion, and it is thought by some, for that reason, that primitive man had never actually linked the seed to the plant that followed. Neolithic communities of cultivators had discovered the Seasons, and had invented an elaborate but clumsy kind of Astronomy. The sacrifice upon the altar, and the stars, were linked together with the plough and the labouring beast, and on these co-ordinations the prosperity of the community was understood to depend. There was a great fear of disturbing the order of things. Atonement had to be made if something went wrong, so that the order of seed-time and harvest must continue

undisturbed by human sin. Why should primitive man, because of sacrifices at seed-time or at human burial, be supposed to have never connected seed to grain or to have known of death? Do we at this present time know much more about Life, and do we, as yet, comprehend Death?

It is possible that agriculture was first started in Pre-dynastic Egypt, where barley and millet are natives, and where the ebb and flow of the inundations of the Nile gave the first idea of cultivation. Wheat must have been introduced into Egypt, perhaps from the Aegean Islands, as it is not a native, and from thence was taken to Sumeria, as it was known there by its Egyptian name.

Between 4000 and 3000 B.C. the great Sumerian kingdom held sway in Mesopotamia, and in Ur of the Chaldees some exquisite figures and ornamentations have been discovered, showing keen study by the artists of the living animal. I have seen a bronze and gold statuette of an Ibex caught by its horns in a thicket, which could not have been more naturalistically portrayed even in these days.

At this time, the Minoan civilisation was growing up in far-off Crete, where the highest expression of the culture culminated in the most beautiful realistic paintings of domestic animals and their young, which have been found in the Palace of Minos. This realistic treatment of animal subjects in art spread to the mainlands of Greece and Asia Minor, while further north, in Russia, a nomad race, the Scythians, were modelling animals in bronze and gold in a wonderfully free style of their own, choosing the fauna of the different districts, from North Russia to China, in which area they worked, to form their models.

In Egypt, at the same period as the highest culture in Crete, King Akhnaton, the reformer, perceived the scientific truth that all force and life is dependent on the energy of the sun's rays. He proclaimed a new religion with an adoration of the radiant energy of the sun, and truth was to be the object of life; art was to copy truth, and during his short reign the love of nature and the expression of its beauty blossomed out over all decoration and literature. Probably, as is thought by Egyptologists, Cretan artists executed the designs, but, all the same, Akhnaton was undoubtedly a naturalist who probed into the why and the wherefore of the living world around him. The most exquisite paintings and mosaics of water plants, ducks, and similar subjects date from his reign, and the art of the natural portrayal of insects, birds and animals does not seem to have been lost for many dynasties.

In about 800 B.C. Assyrian art was at its best, and the great frescoes on the walls of the Palace of Ashurbanipal at Nineveh, showing scenes of lions, wild asses and goats, give the actions of the animals before and during the hunt, proving that the artist must have given much time and trouble to studying his subjects while at their ordinary pastimes, and ran no doubt considerable risk in watching their reactions while being hunted. For the sake of their art, these craftsmen were also naturalists. There is little doubt that during the course of these early

centuries ideas were exchanged on art between the nations I have mentioned as well as on religion and culture. In almost all these races the style of treatment was, however, different, although all show the same careful study of the habits and actions of animals, proving that the models were not simply copied one from another, or the design would have become conventionalised, as it is in the art of the early American and Pacific Ocean peoples, and indeed in our own Saxon art, but that having been given the idea, the models by which to interpret that idea were sought afresh from life.

The Rulers and nobles in each of the Eastern Kingdoms were fond of the chase, and animals or birds cannot be successfully hunted or trapped unless a careful study is made of their habits by those in charge of the sport. There must have been professional hunters, trappers, keepers and rangers, who would have had little to learn from us of the life-histories of the birds and beasts it was their job to know. A great deal of study and experiment was also given to breeding dogs suitable for use in hunting or war. Dogs are descended, it is generally believed, from domesticated wolves, and several breeds date from the early Stone Age. The Mediterranean and the Eastern Peoples I have mentioned took great trouble to get pure-bred strains of mastiffs, greyhounds and terriers, as we know from the numerous records left in painting and sculpture. In these early days of history, books or parchments were scarce, and the wealthy had their biographies depicted on stone, plaster or wood, which, happily, now enables us to form a very good idea of the occupations of those times.

We have a few other records showing researches in Nature Study, and these are in the Bible. At whatever dates the different Books of the Bible were actually written, I believe there is no doubt that they carry us back to very early times, and many were contemporary manuscripts of the age of which they tell. We know from the Bible that flax was cultivated and used for making linen in very early times, not only in Egypt, but in Palestine, where it was also used for lamp wicks. I am, however, unable to tell you which country first cultivated it. The Mosaic Law of the Hebrews gives a detailed account of the methods used to eradicate "dry rot" in houses. You will find it in Leviticus. There are also very minute directions as to what beasts are to be used as food, and here one glaring biological mistake strikes you at once, but is, I think, fairly easily explained. The hare is placed with animals that "chew the cud," but the motion of a rodent's jaws might, I think, be mistaken for the chewing of a ruminant by those who obviously did not know the anatomical reasons for chewing the cud. They did recognise that the camel was a ruminant, although differing from the cattle and sheep in structure. You may perhaps think that another mistake was made when the insects are referred to as having four feet. Such emphasis, however, is placed on the *four feet*, that it is intended, I am very sure, to convey to the reader that the front pair were considered to take the place of hands. I think this shows considerable observation of insects, when it is recalled that flies, grasshoppers, and others use the

front pair with which to clean their eyes and jaws, just as if they were hands. Three species of locust or grasshopper were recognised, as we learn from the different Hebrew names used for them in the original manuscripts, and this shows systematic work on the part of this ancient race.

Job, as we read, was a naturalist, overwhelmed by the extent of his ignorance of the nature of the natural phenomena, but giving us an accurate account of the nesting habits of the ostrich and the eagle, and touching on the mystery of bird migration. Again, King Solomon had studied migration, as we read in the reference to the Season of the return of the Turtle-Dove. We learn that he wrote several treatises on natural history; about trees, flowers, beasts, birds, fishes and insects. He was also a horticulturist. It was probably Solomon who introduced into Palestine the Walnut tree from Persia, and the Apricot (wrongly translated Apple) from Armenia, as he did many other fruit and ornamental trees, evidently delighted as all keen gardeners are when they get a new plant to establish itself successfully. Later on in the Bible, we have a reference by St Paul to the grafting of the olive tree, a tree which has to be grafted to yield good fruit, proving that this method of propagating was well understood even in the days of the Roman Empire.

We are, however, advancing too fast. We must retrace our steps to the time before the Roman Empire existed. It was the Greek Republics that saw the dawn of modern science. The transition from a generally mythological view of natural events to a more scientific and philosophical attitude was a very slow one. A series of Greek philosophers, beginning in 500 B.C., culminated two hundred years later in Aristotle, the greatest thinker of them all with regard to his scientific achievements. He was the first to attempt the classification of all the orders of the animal and vegetable kingdom, and was the first to see that the apes were close to man in organisation. When his pupil, Alexander the Great, founded Alexandria in Egypt, the Greeks met with Egyptian and Babylonian culture and the colony became the greatest seat of scientific learning of ancient times. Aristotle and his followers began an organised search for facts, bringing scientific methods to bear on Egyptian and Babylonian practical discoveries. Dissection and vivisection we first hear of in Alexandria during the Hellenic empire. Arabs took up the new learning, and it spread quickly throughout the East, Asoka, the great Indian ruler, for example, starting botanical experiments on acclimatisation in India. Theophrastus, a pupil of Aristotle, was interested in the germination of seeds, and although most of Aristotle's works have been lost, we still have Theophrastus' *History of Plants*.

So we see the Greek-Arab mind had, between the 5th and 3rd centuries B.C., attained to an experimental attitude towards thought, but the impetus of that intellectual dawn died away during the decline of the Roman Empire and the coming of Christianity. Pure science did not appeal so much to the Romans, although they produced several

noted philosophers and naturalists, among others Pliny the Elder, who wrote a famous book on Natural History in which he copied and enlarged on Aristotle's work. Dioscorides, too, in the 1st century, catalogued all the known vertebrates of his day, and his manuscript on plants was copied in 500 A.D. with beautiful and natural drawings of the flowers.

As the Christian Church grew in power the study of science declined, most of the Apostolic Fathers being hostile towards the scholars, who were in turn unsympathetic towards the former's dogmatism. When (in 529 A.D.) the Emperor Justinian had all the schools of philosophy closed the West was left to darkness and the Church. Many teachers fled to Syria and Persia, and science found a refuge there during the Dark Ages in Europe. The Arabs translated the Greek and Roman writers into their own language, thus preserving many works that would otherwise have been lost. They based their own writings on the Greco-Roman naturalists, and added descriptions of new species. El Kasvini, of Northern Persia, wrote *Wonders of Nature*, in which he quotes Persian predecessors and also Hippocrates and Aristotle. He was an exponent of the Aristotelian theory of the development of life from lower to higher forms. Many others followed him, until we come down to Ibn-Rushd, the greatest of them all, a Spanish-Arabian, and one of those instrumental in bringing science back into Europe. This came about by the Moorish invasion of Spain, when the works of the early European writers were re-translated into Greek and Latin.

The Far East had from very early days given attention to the study of Nature. Agriculture and the domestication of animals were known there from before History. All domestic fowls have been derived from the wild Jungle-Fowl of India, domesticated in Neolithic times. The Elephant was used in the service of man from as far back as can be dated the most ancient of the monuments. Ceylon in 200 B.C. produced the finest examples of the carving of elephants in high relief, and during the first centuries of Anno Domini the "elephant frieze," so popular in Buddhist art, appears in all its perfection in such far removed places as Angkor in Cambodia, Borobudur in Java, and the rock temples of Hyderabad in India. Equally well represented are horses, camels, and other animals, birds or fishes.

The silk industry in China is a very ancient one, and the Chinese also used oxen, sheep, camels, horses, dogs and birds, as models for the bronze or pottery figures dating from the Chou, T'ang, Sung, Ming and other dynasties.

Neither must we leave out the Americas. Here, from early times, the Peruvians had domesticated the llama, the alpaca, and the guinea-pig. The Mexicans were using the domestic turkey and the cochineal insect long before the Spaniards first set foot there.

Even in the Dark Ages in Europe the study of natural history was carried on to a certain extent. A nun, Hildegarde of Bingen, has left personal notes on animals and plants from the 12th century, while the medical men, perforce, studied and described the beasts whose parts

were used in medicine in those days, and it is they who, at the Renaissance, finally helped to lift the study of Life out of its superstition and ignorance.

In the 13th century the Dominican Order took up the works of Aristotle and others, newly translated from the Arabic, in order to try and reconcile Christian theology with philosophy, to which science, for some time to come, natural history was linked. This revival of philosophy was mainly due to the big Universities which had been founded in the previous century, and where a certain expansion of thought and learning had come about. Three Dominican Friars did their best for the study of Natural History, Vincent de Beauvais, Albert Magnus and Brabantius. Their methods were far removed from scientific treatment, and they mixed up crude superstitions with the truth. They were bitterly opposed by the Franciscan Order, and as most of the teaching was in the hands of ecclesiastical bodies opposed to original research, all freedom of thought was more or less repressed for two centuries.

Leonardo da Vinci, the great painter and one of the first anatomists, never dared publish his anatomical researches during his lifetime, but luckily his note books and sketches have been preserved. Roger Bacon, who tried hard to persuade others to use scientific observation and experiment, was condemned by his Franciscan Order. Mediaeval Europe became saturated with superstition, as witness the subject of bird migration. In the Bible, as you can read, the coming and going of birds, in season, was understood. Homer tells of the passage of the cranes, Anacreon the return of the swallows to Greece, while Aristotle discussed the problem in a scientific spirit. And yet, in the Middle Ages, this knowledge was lost, and the most absurd theories were invented, such as the Turtle-Dove changing into the Stock-Dove, the Redstart becoming the Brambling, or that other migrants hibernated in hollow trees or ponds, the latter idea persisting till quite recent times. One man, however, in the 13th century stands out as a keen naturalist. He was Frederick II, Emperor of the Holy Roman Empire, who studied the anatomy, habits and migration of birds, and wrote some excellent works on the animals and birds of the chase and on fishes and insects.

While the scientific workers were struggling in a morass of superstitions and myths, the beauty of the colour and form of animal life still appealed to the artist. My illustrations this time will be taken from illuminated manuscripts. There is a French Missal dated 1370, in the Victoria and Albert Museum, with the most minutely detailed insects, flowers and birds painted round the margins. There are Italian 15th century manuscripts with butterflies, grasshoppers and birds. You can recognise a goldfinch easily. There are Dutch illuminations of the 15th and 16th centuries with perfectly life-like animals and birds. One has a thrush, snails, beetles, a fly, moths and flowers; another a caterpillar on a strawberry blossom. Any of these subjects painted could be seen in the monastery gardens, the bulk of the illuminations being executed by the monks.

The Venetian School of painting, at this time, was very fond of introducing the Red-legged Partridge, the Peacock and the Goldfinch into their pictures on sacred subjects, as we had the opportunity of seeing during the Italian Exhibition. In spite of all the suppression of scientific research throughout the Dark Ages and even the Middle Ages, the humble naturalist still watched the animals, birds and insects, and examined the flowers around him, unmoved by the controversies on creation.

A new era, however, was just beginning for the nature student, and this came about in the 15th century by the invention of printing, which helped to spread freer ideas and, by the distribution to a far larger public of the printed zoological and botanical works of the earlier writers, stimulated a revival in biological research work. Several copies of a Latin "Herbarius" were soon in existence, and were translated into Bavarian, Flemish, Italian and French. The plants discussed were all natives of Germany. At the same time a rich German caused another "Herbarius" to be compiled, and had all the plants drawn from life, for this end travelling with an artist through Italy, the Balkans, the Greek Archipelago, Palestine, Arabia and Egypt. This pioneer work, as far as the illustrations are concerned, was much copied into other languages, and the drawings were used by other writers until the 16th century.

The great voyages of discovery in the 15th and 16th centuries greatly aided in this new birth of Science. The importation of such commodities as cane sugar, tobacco, tea and coffee into Europe, and the researches into the acclimatisation of new food-plants, dated from the opening up of new worlds by the sailors and colonists of the European countries. Men like Francis Bacon, Copernicus and Vesalius shook the Church mythology to its foundations by their writings, the former by the position he held, having a better opportunity than many another to be listened to. Supernaturalism, the great enemy of science, was being steadily excluded from the study of the natural phenomena, but, even so, some of the greatest pioneers of the modern spirit of science compromised with the Church on this subject. The steady march of Astronomy probably deserved the chief credit in emancipating science from mystification, a great help to the nature student.

The first half of the 16th century contained many noted naturalists. One of the first, Otto Brunfels, the German herbalist, had no knowledge of the distribution of plants, and became hopelessly muddled in trying to apply the identifications for Mediterranean plants to those that grew on the Rhine, although Theophrastus, more than eighteen hundred years earlier, had clearly pointed out that plants differed in different regions. However, his illustrations of plants, exactly as they are, were very advanced. Bock and Fuchs both followed within a few years. Bock was singularly free from the superstition of his own and former times, and took great pains to verify and explode different traditions. Fuchs' *Herbal*, published in 1542, surpasses Brunfels in the illustrations and Bock's in the text. He employed at least two artists, and Indian Corn or Maize and the Pumpkin, both introduced from America, were

figured for the first time. Dr William Turner, an Englishman, wrote a herbal in 1548, using Fuchs' drawings.

Dodonaeus wrote a history of plants in Dutch, which was translated into French in 1560 and into English in 1578. The author shortly followed it by another edition with illustrations, which was also translated into English and which formed the foundation of Gerard's work. Gerard, who lived late in the 16th century, supervised the gardens of Lord Burleigh, and also had a famous garden of his own in Holborn, where he grew many newly-introduced plants, trees, and vegetables. His *Herball*, so well known by name, is really a translation of Dodonaeus' by a Dr Priest. Gerard found the manuscript, added notes and observations of his own, and published it in 1597.

At the same time lived the Swiss anatomist, Gaspar Bauhin. He was also a keen botanist, and his *Index of Plants* follows a system highly commended by Thomas Johnson in his foreword to Gerard's *Herball*, which he amended and edited in 1633. Johnson writes the following about Bauhin, which I think is worth quoting, as being still so very true to-day. "And lastly (which I chiefly commend him for) he gives the Synonima's or severall names of each plant given by each late Writer, and quoteth the pages. Now there is nothing more troubles such as newly enter this study, than the diversitie of names, which sometimes for the same plant are different in each Author; some of them not knowing that the plant they mention was formerly written of, name it as a new thing, others knowing it writ of, yet not approving of the name." Poor Johnson, he seems to have suffered as badly from nomenclature as we do now.

Nor were the zoologists left behind. We have Gesner, the Swiss, whose famous work was influenced by Aristotle and Pliny in the mode of classification into the four divisions of quadrupeds, birds, fishes, and insects and reptiles. The book was illustrated by the best artists of the day, the rhinoceros being by Albert Dürer. Two Frenchmen stand out—Rondelet, whose work on marine fishes, whales, seals, cephalopods, crustacea and vermes, both discussed and contradicted many assumptions on the part of Aristotle; and Belon, who also wrote on marine life, travelling extensively in the East, and discovering many forms hitherto unknown. His classification approaches the modern. He is even better known as an ornithologist, arranging birds into various groups according to their structure and habits. He was a pioneer in the study of morphology and comparative anatomy. Belon was followed by Fabricius, the Italian surgeon, another comparative anatomist, who did pioneer work on the development of the ovum, and was the first comparative embryologist. Another Italian, Marcus Aurelius Severinus, a more important comparative anatomist than any, brings my list of 16th century naturalists to a close.

One botanist I shall mention here, the last of the herbalists, who published his *Paradisus* in 1629. I refer to John Parkinson, gardener to King Charles I. The originality of his book lies in the fact that he gave a complete gardening dictionary, with illustrations and descriptions of all the flowers, fruit trees, ornamental shrubs and vegetables

grown in England at that date. He tells how the Asiatic flora came to us *via* Constantinople, Italy or Greece; the North American mostly through France from her colonies there; and the South American and West Indian through Spain and Portugal, while the latter country and Holland introduced the East Indian flora, and the African came *via* Southern Europe. Many garden species were derived from English wild flowers, supplemented by others from Europe. It is a revelation to read Parkinson's book, and see what a vast amount of our present-day flowers were cultivated in gardens in the times of Queen Elizabeth, King James I and King Charles I. The only well-known flowers I could find that were missing from the book were the hot-house Orchids, Hydrangeas, Chrysanthemums, Rhododendrons and Sweet Peas. Several varieties of Jasmynes, Lilacs, Syringa, Peonies and Cannas were grown. The Sunflower had just been introduced from Peru, Lavender from Spain, Clematis from Italy, and three kinds of Tobacco were known; while the Yucca and the Pomegranate tree were causing great excitement amongst the horticulturists, as they were so delicate and rare.

Perhaps the most astounding is the vast number of varieties of all the commoner plants they had, and apparently catalogues of these for sale were issued as now. Nearly every species of Lily was grown; 135 varieties of Tulips, early, middle and late flowering; about 75 kinds of Iris; nearly 50 varieties of Anemones; about 50 Primulas; 61 Carnations including Pinks; vast numbers of Daffodils, Narcissi and Jonquils, both double and single; and roughly 30 kinds of Roses, some being so long established in England that Parkinson could not say where they came from originally. This abundance of choice was also to be found in the fruit trees, where I verily believe the Loganberry is the only fruit they did not know. They had Melons; Peaches and Nectarines of 26 varieties; at least 37 Cherries, including Morella and White Hart; 25 Grapes; at least 62 Plums, including Damsons; 6 kinds of Apricots; more than 50 Apples and 60 Pears; and Oranges could be grown with care, but the eating sort were better imported, while Lemons and Citrons were tried, but were found too delicate altogether. For vegetables, Parkinson gives us more than I have ever heard of, and tells you how they are best eaten. Rhubarb is the only one he does not know correctly how to enjoy. He first grew it himself, having been sent some from the East Indies. Beetroots, Endives, Lettuces, Cucumbers, were all favourite salads. Artichokes, French Beans and Asparagus they had learned the delights of from the French; while Jerusalem Artichokes had also come *via* France from Canada, and the Potato had been sent us from Virginia.

The invention and development of the microscope in the 17th century revealed a whole new world of unsuspected life-forms, and insects, so neglected since the days of the ancient Egyptians, began to be studied and talked about. The great interest taken in flowers brought insects, beneficial and harmful, into prominence. Artists have always, necessarily, reflected the fashions and interests of their time. Just as we

saw that during the Egyptian, Assyrian and Babylonian civilisations, the passion of their patrons for the chase led them to study minutely and portray the lives of hunted animals, so in the 17th century the artists showed the popular taste for flowers, wild or garden, and the newly-awakened interest in insects, in so many of their works. The Dutch School dotted butterflies, beetles, flies, lady-birds, indeed insects of all sorts, over the bouquets of flowers in their still-life pictures.

The chase still had its devotees, and the best examples of animal portraiture come from Persia. We had the opportunity only a short time ago of seeing many of the exquisitely painted book covers, on which the forms of deer, hares, dogs and birds, were so beautifully designed. One of the Shahs of Persia, Abbas II, at this period, was a keen naturalist, and the Persians have always been a race very appreciative of the beauties of nature. They were great sportsmen too, fine riders, and great authorities on falconry.

The founding of important Societies and Museums, in the 17th century, was the next step forward. Societies such as the Royal Society and the Académie des Sciences, began at once issuing important publications, before which the marvels of witchcraft and other mediaeval superstitions vanished rapidly. The day of the herbalist was over and that of the modern botanist begun. Grew and Malpighi laid the foundations of the science of Plant Anatomy, while Morison and John Ray advanced systematic botany.

And so we reach the 18th century with Linnaeus, the father of systematic biology, as the outstanding figure. At the same time the study of fossils was advanced, Woodward and Cuvier laying the foundations of the science of palaeontology. Linnaeus laid down as a biological dogma that "the number of species is as many as the different forms created in the beginning." The story that the fossils revealed, however, is one of steady evolution. They testify to the evolution of life, as directly as do the discoveries of archaeology to the evolution of human culture. Linnaeus' and Cuvier's ideas on creation, only led to the perplexity of the biologists, until Lamarck, Réaumur and St Hilaire first propounded their theories of evolution.

As the 19th century opened, Lyell, in his *Principles of Geology*, refuted the view that sudden catastrophes had repeatedly interrupted the succession of living things on the face of the earth. With the accumulation of collections in the museums, the increasing discoveries of the palaeontologists, and the great strides the embryologists and anatomists were making, it is not surprising that several men, at the same time, were working on the theories of evolution, first thought of towards the end of the previous century. Darwin and Wallace actually brought out their papers on "natural selection" on the same day. They were followed only a few years later by Huxley and Haeckel. Darwin took twenty years to collect the data for his famous work *The Origin of Species*, only to bring down a storm upon his head from the intolerant Churchmen. However, since the fact of evolution was clearly stated, and gained general acceptance, and the idea of "separately created

species" lost favour, systematic work became much easier. All biologists are now-a-days agreed that the method of evolution is through the natural selection of variations, the only differences of opinion amongst them being the reasons that cause those variations.

With Darwin, one of the greatest field workers of all time and the founder of all modern methods of Nature Study, I will now leave you, hoping that this short survey will have shown that Man, for whatever reason, be he hunter, farmer, artist, gardener or scientist, has never, at any period, neglected the study of Nature, from before the Dawn of History down to our own times.

The Great North Wood.

By W. C. COCKSEGE.

TO-DAY, the Norwood Hills are almost completely submerged under a grey sea of houses, undistinguished both in character and tradition. Only a few generations back, however, this elevated district was almost as silent and deserted as the tomb save for the occasional ringing notes of the woodcutter's axe and the sound of voices from a sequestered gipsy camp, for over nearly the whole of this extensive region stretched the vast mantle of the Great North Wood. The name seems a misnomer, but in default of other derivations we are bound to accept the customary explanation that it was so called with reference to its position northward of the ancient town of Croydon.

It cannot be said that it has been dealt with very adequately from a topographical point of view. J. C. Anderson wrote a little book about it (1898) and A. M. Galer also deals with the subject (1890) but there is a great similarity in matter in all the scattered writing about the Great North Wood. The fact is, no doubt, that it has little history save of that sort which can only be laboriously gleaned from the study of obscure maps and ancient legal documents, and apparently no one has considered it worth while to undertake this dusty research.

The deserted state of this region in early days is attested by its parochial history. There are no ancient churches, chapels, or religious foundations within its bounds, and no archaeological discoveries have been made in the area. The nearest churches—Streatham, Beckenham, Camberwell and Croydon—were comparatively distant and the Wood sprawled over adjacent parts of the ancient parishes of Camberwell, Lambeth, Croydon and Battersea (detached). These four parishes met at the Vicar's Oak, now represented by the lamp-post at the intersection of Crystal Palace Parade, Westow Hill, Church Road, and Anerley Road, and there are many references during the 16th and 17th centuries in Parochial Accounts to the expenditure of money upon drink and food

when the bounds were beaten to this spot. In 1704, for instance, occurs the entry:—

“ paid for 100 lbs. of cheese spent at the Vicar’s Oke 8/-.”

In Rocques’ Map (1745) the spot is described as Oak Corner.

The connection of Penge with Battersea is of very ancient origin. In a charter of A.D. 957 connected with the mother parish occurs the addendum, “ Hereto belongeth the wood that is called Paenge, 7 miles and 7 furlongs and 7 feet round about.” Assuming the shape of the wood to have been approximately circular, it contained over four times the area of the modern Urban District of Penge, which is 770 acres. The artificial nature of the measurement, however, will be noticed.

Penge has had a strange history. Mr Taylor, in his monumental work *Our Lady of Batersey* (1925) has unearthed various references to Penge in the Battersea Parochial Archives which show that Penge was not altogether neglected by the distant mother parish, although, until the beginning of last century, it had an exiguous population. In 1639, for example, Penge with its 12 families contributed £9 towards building a new steeple to Battersea Parish Church. By arrangement, the inhabitants of Penge were under the spiritual care of the incumbent of Beckenham.

With the enclosure of Penge Common the population rapidly increased and the district became known as the Hamlet of Penge, a term which occurs, however, as early as 1639. Finally, in 1899, it was transferred from Surrey to Kent and made an Urban District, and now has the densest population for its area of any division in the latter county. There is general consent that the name is derived from Pencet, “ the headland wood,” cf. Penketh, in which case, it is of especial interest as one of the few Keltic place-names in South-east England. The old border of the county is marked by the Boundary Brook, a tiny stream partly culverted which runs under the Beckenham Road at the junction of Kent House Road and joins the Pool River (or Chaffinch) in Cator Park.

References to the Great North Wood in olden days are few and far between. In Domesday Book is the entry:—

“ Archepiscopus Lanfrancus tenet in dominio Croindene Silva de C.C. porcis.”

This probably relates to the portion of the Great North Wood in Croydon. In 1067 King William had granted the wood of Penge with its hunting to the Abbot of Westminster.

Elizabethan writers have many merry quips at the expense of the colliers or charcoal burners of Croydon, for the most part comparing them with the Prince of Darkness. In the reign of Edward VI, one, Grimes, a collier who lived at the farmhouse called Colliers Water, near Thornton Heath Station, was summoned by Archbishop Grindal for causing a nuisance with the smoke of his kiln. Strange to say, the collier won his case. The house was pulled down in 1897. The gable fronting Parchmore Road bore date 1590. Even as late as the 18th Century

Ducarel writes in his history of Croydon, "the town is surrounded with hills well covered with wood whereof great store of charcoal is made."

At the time of the enclosures the woods were chiefly coppice and much of the area was open common. A Parliamentary inventory of the time of Cromwell preserves the names of several of the woods.

The gipsies of Norwood have been referred to by various writers but only in a vague and casual way. The Beckenham registers record the burial of Margaret Finch, "Queen of the Gipsies," on the 24th October 1740. Her niece, Bridget, was buried in the Old Graveyard, Dulwich, in 1768. Lysons (1786) mentions an old woman, grand-daughter of Queen Margaret, who was then living in a hut adjoining the "Gipsy House." This sign still exists in Gipsy Road, West Norwood.

Galer has unearthed an account of a criminal trial which occurred in 1779. Thos. Humphreys, who kept the "Sign of the Gipsies," prosecuted Humphrey Finnimore at the Town Hall, Southwark, on January 14th for stealing five turkeys. In a curious passage the counsel for the prosecution said, "My client lives in a wood, has lived there a long time, so long that he has become rusticated, at least his manners are not the most refined; in short he is not a courtier." The accused called as witness to his character Catley of the "Horns," who was the father of the celebrated actress, Miss Catley (b. 1745, d. 1789). The inn is marked on Rocques' map and is now represented by a small public-house opposite West Norwood Station.

A fairly clear idea of the vast extent of the Great North Wood and its adjacent Commons in the 18th Century can be obtained from an examination of Rocques' map of London, 1741-5. At that date the wood itself extended from the Grove Tavern at the junction of Dulwich Common and Lordship Lane to a point near Selhurst, a distance of three miles. It lay mainly to the north of the ridge of the Norwood Hills, the greatest breadth being about one mile where it extended from the neighbourhood of West Norwood to the present Crystal Palace Parade. The course of some of the principal existing roads can be traced although the map is unfortunately rather freely drawn. A detached piece covered Honor Oak Hill on the north east, and at the other extremity another detached wood bearing the singular name of the Leather Bottle lay at the foot of the hills towards Norbury and Thornton Heath. It will be interesting to examine the map more in detail.

At this date (1741-5) the Great North Wood and its adjoining Commons formed an almost continuous expanse of uncultivated land, stretching from a point near S. Luke's Church, West Norwood, by way of Dulwich Wood to the foot of Sydenham Hill and thence by Sydenham Village, Penge, South Norwood, Woodside, and Beulah Hill back to the starting point. This area, however, included, besides the Great North Wood, four commons.

Knights Hill Common extended from the "Horns" at West Norwood by way of the present Knights Hill Road past the end of Crown Lane (marked Knights Hill Pound) to a point near Beulah Hill Hotel. It was bordered on the east by a wood which covered the site of the

present Norwood Park and by a more extensive wood called Bewlys Wood, which stretched from the grounds of the Convent in Central Hill to beyond the summit of Beulah Hill, where it adjoined Whitehorse Wood.

Croydon Common filled the area between Whitehorse Lane and the western side of South Norwood Hill and extended to Woodside and Selhurst. To the east of Croydon Common, and only separated from it by a track now more or less represented by South Norwood Hill, was the extensive Penge Common, which stretched southward to the Croydon Road and eastward to Crystal Palace Park Road and High Street, Penge. Cultivated ground extended from here to Sydenham Village, where Westwood Common started, stretching northward to Honor Oak, being bordered on the west by the Great North Wood in the direction of Sydenham Hill and on the east by Perry Vale. Sydenham Wells were situated on Westwood Common.

Between the northern border of Penge Common and the Great North Wood was, however, an extensive cultivated area called Barnards Farm, which covered the grounds of the Crystal Palace and extended westward across Anerley Road almost to South Norwood Hill.

The Great North Wood remained almost intact until the beginning of last century, but the absence of any landmarks in this amorphous area no doubt accounts for the vagueness of contemporary references to it in literature. At one time Campbell, the poet, lived at Sydenham, and Sir Chas. Bell describes a visit paid to him there, in which he records "we wandered over the forest; not a soul to be seen in all Norwood." About the same period we have a welcome account by Hone of a walk from Dulwich through Penge to Beckenham.

The days of the Great North Wood, however, were numbered. On 22nd October 1809, the Croydon Canal from Rotherhithe to West Croydon was opened. It followed the same route as the London and Croydon Railway, which was opened in 1836. It ran across Penge Common, which was enclosed in 1827. The other commons had already been enclosed and henceforth the development of the district was rapid and not always too fortunate.

The Great Crested Grebe in the London Area.

By P. A. D. HOLLON.

THE area covered by the London Natural History Society is particularly favoured by the Great Crested Grebe, both as a breeding species and during the autumn and winter. It seems that the large reservoirs are mainly responsible for this; obviously and directly in autumn and winter when the birds have nearly all left the natural breeding waters, but probably during the breeding season also the large,

bare, concrete-banked reservoirs, where successful breeding is impossible, play their part in attracting birds to the neighbourhood. The abortive attempts at breeding made in 1930 at Staines and Barn Elms reservoirs show that there is considerable local pressure, and that the birds frequenting the reservoirs throughout the summer would not necessarily remain non-breeders if there were untenanted waters nearby, suitable for nesting. This, however, makes rather puzzling the desertion in 1931 of the secluded water at Teddington, where Grebes had nested for a number of years previously.

A comparison of the Society's area with the counties of England, regarding the numbers of breeding pairs as revealed by the 1931 Great Crested Grebe Enquiry, is of some interest. In 1931 in this area, involving the whole of Middlesex and portions of five other counties, 34 waters held 68 pairs, as arranged below under their respective counties:

Water.	Pairs in 1931.
BUCKINGHAMSHIRE.	
Colnbrook Bypass, gravel pit,	2
ESSEX.	
Dagenham Breach,	1
Lea Valley Reservoirs (13 waters in 4 groups), ...	c. 24
Navestock Park,	1
Thorndon Park,	1
HERTFORDSHIRE.	
Cheshunt Reservoir,	2
Elstree Reservoir,	3
Wormley Bury,	1
KENT.	
—————	—
MIDDLESEX.	
Feltham Gravel Pit,	4
Gunnorsbury Park,	1
Osterley Park,	2
Ruislip Reservoir,	4
Stoke Newington Reservoirs,	3
Trent Park, Cockfosters,	1
SURREY.	
Gatton Park,	9
Godstone,	1
Pen Ponds, Richmond Park—(1) Larger,	2
(2) Smaller,	1
Silvermere,	1
Weybridge Mill Pond,	1
Weybridge, Seven Arches,	1
Wimbledon Park,	2

Norfolk was the only county with a larger number of occupied sites, having 53, while Shropshire was next with 32. As regards numbers of pairs, only three counties exceed the L.N.H.S. area; Norfolk with about 202, Northamptonshire with 86, and Cheshire with 78 pairs.

But the L.N.H.S. area is larger than that of many counties (16 counties are *larger* than the L.N.H.S. area), and so a comparison of the numbers per unit area gives a fairer impression. The Society's area covers a circle of 20 miles radius round London, that is, an area of about 804,000 acres, and the Grebe population was therefore 8.45 pairs per 100,000 acres. This density is only exceeded in seven counties; Norfolk has 15.50, Northamptonshire has 14.78, Cheshire has 12.36, Surrey has 10.47, Warwickshire has 9.64, Staffordshire has 8.59, and Hertfordshire has 8.52 pairs per 100,000 acres.

Compared in this way, the six counties that help to comprise the Society's area stand in the following order:—Surrey 10.47, Hertfordshire 8.52, Middlesex 8.29, Essex 3.43, Kent, 2.98, and Buckinghamshire 2.71 pairs per 100,000 acres.

So much for the breeding pairs. Out of the breeding season the Grebe population undoubtedly far exceeds that of any other inland area of similar size in the country. This is of course due to the reservoirs, which have had a profound effect on the aquatic bird population generally.

It was thought that detailed information about this reservoir population might yield valuable results, and so during 1931 and 1932 members of the Ornithological section were asked to make a special point of counting regularly the numbers of Grebes on the reservoirs. This was to be the first piece of co-operative bird work attempted by the Society, and seemed of the right type to make a start with, in view of the percentage of records in *The London Naturalist* referring to the reservoirs.

There are six important reservoirs or reservoir groups involved:—Barn Elms, Littleton, Molesey, and Staines in the Thames valley, and Walthamstow and King George V reservoir in the Lea valley. A few records have also been received from some of the lesser reservoirs.

The 1931 results have already been published in summarised form in *The London Naturalist* for that year, but attention may be drawn to one or two points in connection with them.

The maximum number of birds was recorded on three out of the four Thames valley reservoirs in the second half of October (Barn Elms, 91 on 17th October; Molesey, 162 on 24th October; Staines, 156 on 18th October). At the fourth, Littleton, 50-60 on 24th September was the highest figure, but notes from this reservoir were scanty, and larger numbers may well have passed unobserved.

The Lea valley reservoirs maxima were about two months earlier than the Thames—King George V, 144 on 22nd August, and Walthamstow, 116 on 22nd/23rd August.

The minimum numbers were:—Barn Elms, 6 in early June; Littleton, none on 26th February; Molesey, 7 on 17th May; Staines, 1 on 4th

April; King George V, 17 on 28th December; Walthamstow, probably in March or April, but the counts were incomplete.

The 1932 reports from these six reservoirs are summarised below in the same way as in 1931.

BARN ELMS.—40 on 3rd January, decreased gradually; 16 on 26th January, 6 on 21st February, to 1 on 9th March. Numbers for April, May, and June never reached 10, and these months averaged 3, 3, and 7 respectively. Slow increase in July and August to 36 on 30th August. Fairly steady in September. A further increase in October to 76 on the 20th. A rapid decrease to 30 on 6th November, around which figure numbers fluctuated for the rest of the year, extremes being 43 on 15th November and 25 on 11th December.

LITTLETON.—7-8 on 15th January (only record).

MOLESEY.—Numbers erratic early in the year—47 on 3rd January, 7 on 23rd January, 32 on 14th February, 2 on 5th March, 7 on 12th April, and thereafter apparently a steady increase to 175 on 11th November, but the figures are insufficient; 10 on 24th April, 16 on 22nd May, 24 on 23rd June, 76 on 14th August, 85 on 24th August, 124 on 9th October.

STAINES.—Erratic between 1 and 16 during the first five months of the year, averaging 8 for January, 8 for February, 7 for March, 6 for April, 13 for May. Risen to 60 on 10th July, and about 88 on the 16th, but down to 32 on 24th July, and 14 on 30th July. A steady increase in August to 63 on the 25th, 45 on 24th September, 35 on 6th October, 20 on 15th October, up again to 39 on 19th October. The numbers varied between 20 and 30 during November. Reached 50 on 14th December, and fell to 31 on the 28th December.

WALTHAMSTOW.—About 58 on 30th/31st January, 58 on 19th/20th March, 44 on 9th/10th April, 58 on 28th/29th May, 82 on 6th/7th August, 114 on 24th/25th September. A decrease throughout autumn, and on 17th December 10 out of the 12 reservoirs in this group held only 9 Grebes between them.

KING GEORGE V RESERVOIR.—14 on 16th January, 5 on 30th January, 20 on 20th February, 12 on 19th March, 16 on 30th April, increased to the maximum of 44 on 11th June, 25 on 2nd July, 42 on 6th August, decreased, slowly at first, to 6 on 15th October, 9 on 5th November, 3 on 10th December, and none on 30th December.

Thus in 1932 the maximum figures were:—Barn Elms, 76 on 20th October; Littleton, ?; Molesey, 175 on 11th November; Staines, about 88 on 16th July (with a secondary peak of 63 on 25th August); King George V, 44 on 11th June, and Walthamstow, 114 on 24th/25th September.

And the minima were:—Barn Elms, none on 13th April; Littleton ?; Molesey, 2 on 5th March; Staines, 1 on 9th March; King George V, none on 30th December, and Walthamstow, 9 on 17th December.

Comparing the two years, the numbers were nearly all lower in 1932 than in 1931—at King George V reservoir, the extreme case, there were about three times as many in 1931 as in 1932. The following table shows

the combined totals of the three main Thames valley reservoirs (Barn Elms, Molesey, and Staines) fortnightly for each of the two years. The figures are necessarily estimated, being based on graphs drawn from the records received. It will be seen that only in mid-June, July, and December were the 1932 figures the higher.

	January		February		March		April		May		June	
Date	1	15	1	15	1	15	1	15	1	15	1	15
1931	164	148	102	82	104	86	31	40	38	45	50	40
1932	99	47	26	55	26	16	12	12	26	32	44	69

	July		August		September		October		November		December	
Date	1	15	1	15	1	15	1	15	1	15	1	15
1931	60	73	118	158	196	241	275	360	288	233	189	134
1932	81	134	91	155	183	191	194	240	242	218	209	180

At Barn Elms the numbers followed very much the same trend in 1932 as in 1931, but on a reduced scale. At Molesey the 1932 figures were considerably lower till about mid-April; were almost identical from then till October, but in November exceeded 1931. Staines, however, showed the greatest difference. The numbers were similar till the beginning of June. Then in 1932 a steep rise to the maximum in mid-July was followed by decreases and ever-lessening rises until mid-November; whereas in 1931 a series of rises and decreases began early in August to reach the maximum late in October, after which there was a rapid and almost uninterrupted decrease to the end of the year.

In connection with the composition of the post-breeding season flocks, A. H. Macpherson adds the following note to his records: "A curious feature of these gatherings in late summer and autumn is the very small number of birds to be seen in juvenile plumage. It is so every year. In 1932, the largest number of these birds in juvenile plumage which I saw in any gathering was three on 9th August at Barn Elms."

Generally speaking, then, Barn Elms, Molesey, and Staines have their lowest numbers in late spring or early summer, as might be expected at the height of the breeding season, and from then increase, slowly at first, to the maximum in autumn, with a decrease again in late autumn. The numbers fluctuate during winter with a tendency to decrease. This tendency becomes more marked in early spring, till the minimum is again reached.

This continued decrease in spring, when birds are returning to the breeding waters, is noteworthy. At this season they appear to shun the bare reservoirs, where breeding is impossible, preferring to use the larger breeding waters to break their journey. At Ruislip, in 1931, for instance, there were four breeding pairs, but on 22nd March there were about 17 Grebes. About the 11th March a cold snap had frozen over the breeding waters for a day or two and the birds perforce had to use the reservoirs. As a result the numbers at Molesey rose and fell again 50% within a week.

At the Lea valley reservoirs the numbers seem lowest about mid-winter, although they do not show the same regularity in the time of the maximum period. The difference between these and the Thames

valley reservoirs is perhaps attributable to the fact that the Lea valley reservoirs are largely breeding waters.

On the whole the response to the appeal to members to make an effort to send in records has been disappointing. Out of the 200 odd members who belong to the Ornithological Section, 14 sent in records in 1931, and even fewer have been received for 1932.

Archaeological Inspections, 1932.

By G. J. B. Fox.

Record visits were made to the Churches at Merton (Surrey) and Laindon (Essex) on 9th April and 8th October, 1932, respectively.

LAINDON, ST NICHOLAS. (Leinduna in Domesday Book.)

THIS church must be distinguished from that of Langdon Hills (St Mary and All Saints); both are situated on high ground (A.S. *dun*, a hill) over two miles apart. It was probably of XIIc. date, as indicated by the walls of the nave and the west ends of the chancel walls; its plan now shows a chancel, nave with south chapel, south porch, timber belfry, and a timber structure at the west end; materials include ragstone, re-used stone, pudding-stone, flints and brick; restored in 1883 by F. Chancellor; the building is picturesquely placed on an isolated hill of glacial loam. An unusual feature is the so-called "priests'-house."

The Chancel:—Rebuilt in XIVc. when the former chancel arch was removed; the width expands slightly from west to east; the east window is 1883 of three lights, with XIVc. splays and rere-arch. The north wall has two windows, each of two lights; one is modern with XVc. splays and rere-arch, the other is XVc. The south wall has two similar windows (restored) and a XVIc. priests' doorway (restored); the XVc. roof is of two bays with embattled purlins and wall-plates; the principals show curved braces rising from wall-posts, and the wind-braces have traceried spandrels. A brass on the north wall shows a priest in mass vestments holding chalice with wafer, c. 1480, possibly of John Kekilpenny, a rector; on the south wall is another of a priest in mass vestments (without stole) holding chalice with wafer, c. 1510, perhaps of Richard Bladwell, a rector. There is also a slab with indents of brass and inscription plate. In the east window are fragments of XVIc. glass, including a fleur-de-lys growing out of a leopard's head; a XIVc. piscina is in south wall with trefoil head.

The Nave:—The north wall has three windows: (i) XVc. of two lights (restored), (ii) XIVc. of one light (blocked), (iii) modern with XVc. splays, etc.; a doorway, XVc. restored. The south wall has a XIVc. arcade of two bays with two-centred arches and octagonal column; a

doorway with modern head, as in the north wall; a restored XVc. window of two lights; the west wall was replaced by a partition when the "priests'-house" was added. There is a slab with indents of a brass and inscription plate. The font is early XIIIc., with square bowl, each face having five slightly pointed arches, the stem is modern; at the west end a panel shows the benefactions of John Puckle, 1617; also a piece of woodwork with guilloche and the date 1630; a XVc. holywater stoup in south wall, with bowl cut away; the roof is XVc. of two bays with king-post trusses, the centre tiebeam is moulded, the east truss is modern; it was concealed by plaster removed in 1883.

South Chapel:—The east wall has a two-light window, XVc., restored; the south wall has been rebuilt, in its two windows are rebuilt XVc. splays and rere-arches; the roof is original, of braced collar-beam type without tie beams; in south wall is a XIVc. recess probably for a recumbent monument; also a XVc. piscina with two-centred head; probably a screen separated nave and chapel; the altar was dedicated to the Virgin and St Thomas; in front of it James Breton (d. 1517), priest of a chantry founded in 1329, was buried; the slab has disappeared.

The timber belfry stands inside the nave at the west end, supported on posts with curved braces and struts forming five arches; above the cross beams is trellis-like framing; the bell-chamber has a window in each face, and has a shingled spire.

Bells:—Five in number; one by Thomas Mears; one by Thomas Bartlet (1619); two by John Bird, inscribed "Iohannes Cristi Care Dignare Pro Nobis Orare," and "Sum Rosa Pulsata Mundi Katerina Vocata," respectively; one by Robert Mot, 1588 (recast).

The Porch has been rebuilt, the XVc. oak arches being re-used; the spandrels of the outer arch have foliage and rosettes; those of the inner arch show grotesques; on the west perhaps a crocodile with long protruding forked tongue; on east a spray of foliage and an ichneumon (?) over which is a cross. The door is XVc., and has nailstudded battens and strap hinges.

The timber-framed structure at the west end of the nave, usually termed the "priests'-house," is of three floors, the ground floor serving as vestry; in the latter the ceiling beams are plain, and on the east face of its east wall is a XVIc. moulded string; there is a chest, XVIIc., with two locks, and some XVII/XVIIIc. panels removed from elsewhere; a XVIIc. table with turned baluster legs and shaped brackets. The north side was replaced in brick in XVIIc. and the south side repaired in 1732. The date of erection is unknown, but it is probably XVIIc., or perhaps earlier. It has been suggested it was built for a Recluserium; it was used as the village school and schoolmaster's house (on wet days his wife dried clothes, etc., in the church). A. R. Powys (*The English Parish Church*, 1930, p. 64) says "in some places the Church house seems to have grown from a combination of the parish brewhouse and bakehouse. In a few instances, as at Flaunden (Herts.) and Laindon (Essex) the Church house was built against the west end of the nave as an extension of the Church."

The plate includes a silver cup of 1656; a silver paten of 1672, originally for domestic use, perhaps the lid of a porringer with a foot added later, etc.

The Registers commence in 1653, and show collections for relief of poor inhabitants distressed by the Great Fire of London, 1666, and for the renovation of St Paul's.

MERTON (ST MARY).

THE place-name may mean a "marsh" settlement in the valley of the Wandle, or a "boundary" town, as three parishes meet at a bridge over the stream; early forms are Merantun, Meretun, Meretone (in Domesday Book). It is, perhaps, doubtfully mentioned as early as 755, when Cynewulf, King of Wessex, was murdered at "Merantun"; in 967 Edgar made a grant of land at Merton near Wimbledon. A church is mentioned in Domesday Book; it had probably disappeared when Gilbert Norman built one in 1115; he founded Merton Priory (not "Abbey") in 1117; to it was granted the advowson of his church.

The nave to-day includes work of XIIc.; the chancel is XIIIc.; the south aisle was added in 1856 (rebuilt in 1907) and the north aisle in 1866; the original plan showed chancel and nave, with main doorway in the north wall. The exterior in XIXc. was stripped of plaster, the nave walls coated with cut flints, and the chancel walls covered with flint roughcast; roofs are tiled; the north porch, on a flint, etc., base, is a fine example of late XIVc. timber work, with tracery and verge-board; in the apex is a grotesque head; parts of the original north doorway have been rebuilt into the 1866 wall, but the angle shafts have been misplaced, and the width reduced; the door retains original iron strap-work and "C" hinges; at the west end is a shingled broached spire now containing five bells (the oldest is probably mid XVc.); the west doorway is XIVc., with a round inner arch; the label stops are said to show Edward III and his Queen Philippa; over it is a two-light window (restored).

The Chancel is unusually long; rebuilt and enlarged c. 1220, probably with four lancets in each north and south wall; the arch between nave and chancel dies into the jambs; no screen now remains; the east window is modern of three lights with vertical tracery, some older stones are re-used in the inner jambs. The north wall has two lancets and a later two-light window; in the organ chamber at the west end is a reset XIVc. window of two lights. The south wall has two two-light windows (XIVc.), and two blocked lancets (visible in the vestry); the westernmost window is doubtfully said to have been a low-side window (it probably lighted the clerk's desk); in this wall is also a priests' doorway, the door and its ironwork are said to be of Saxon date. A blind arcade of four bays, without caps and bases, rises from floor to wall plate on each north and south wall (this feature is present in some other Surrey (notably Coulsdon) and Kent churches); the roof (c. 1400) is of modified hammer-beam type, with tie-beams and octagonal kingposts. Against

the south wall, in the second bay, is a large monument (restored 1889), with Corinthian columns and entablature, to Gregory Lovell (d. 1597), with three coloured figures of himself and two wives; he was cofferer (*i.e.*, treasurer) to Queen Elizabeth, who granted him a lease of the Priory, and perhaps stayed in his house in 1571, when she visited Merton; it has three coats of arms and two groups showing nine children; also a long inscription. In the easternmost window on the south side is a head of Christ with nimbus, of mid XVc. date, formerly in the east window.

The west end of the nave is the oldest portion remaining (XIIc.); the pointed arch of XVc. style connecting the west ends of the aisles was put up in 1897, and a wooden gallery of 1703 removed; west of this arch, in the north wall, is a round-headed window with modern external head; at the west end is a painting of Christ bearing His Cross, of the Vandyke school (the original is said to be in St Paul's Church at Antwerp); at one time it was proposed to sell this painting to raise money for restoration work; here are the Royal Arms of Charles II, formerly over the chancel arch. The roof, till 1929, was plastered; it is continuous over the south aisle; four dormers are on each side; the font is modern, and stands in a Baptistry dedicated to those parishioners who fell in the Great War. There are neither old brasses nor slabs with indents; Aubrey mentions a brass to the memory of "Katern Lok," d. 1537, probably the wife of William Lock, to whom the Priory granted leases in 1520 and 1522. There are six Hatchments on the north and south walls of the nave to Lord Nelson (1805), Sir William Hamilton (1803), Admiral Smith (1831), Sir Robert Burnett (1816), Lady Burnet (1802); one is unknown.

The aisles stop short of the west wall of the nave. The north aisle has now in the east window pieces of old glass formerly in the east window of the chancel:—Royal Arms, quarterly France (modern) and England (Edward III), and Arms of Merton Priory (or, fretty az, an eagle displayed arg., on each crossing of the fret.); there is a monument to Captain Cook, who had lived in Merton.

In the vestry is a bench said to have been used by Nelson when attending service; the Register contains a record of the baptism of the son of Bernard and Elizabeth Suckling, to whom Nelson was sponsor; the child was born in 1803, but the christening was delayed until Nelson's return in 1805. Nelson Place was pulled down about 1840.

The Inventories of the Church Plate, etc., temp. Edward VI, were printed by J. R. Daniel-Tyssen in 1869; the church was looted, as the oldest piece of plate now is a silver-gilt cup and silver paten-cover of 1709.

Brambles of Kent and Surrey (5).

By WILLIAM WATSON.

Rubus Radula Whe. Putney Heath and Littleworth Common, v.-c. 17. A small form occurring on Littleworth Common with the type may be *R. exilis* Joh. Lange Fl. Dan., 3027.

R. linguifolius Genev. Syn. *R. ericetorum* Lef. nomen; *R. Radula*, sub-sp. *anglicanus* Rogers. Barnes Common, v.-c. 17. This is the same as the Bournemouth plant issued as No. 39 of the Set of British Rubi to represent *R. Radula*, var. *anglicanus* Rogers, and collected again by Linton to represent *R. ericetorum* Lef. in Sudre's *Batotheca Europaea*.

Rubus sectiramus, nov. sp. In the London neighbourhood there occurs a bramble which is distinct from the last but has generally received the same name, although a specimen gathered on Sheen Common was named by Rogers *R. podophyllus*. See *Rep. B.E.C.*, 1921, p. 557, where Rogers's determination is amended to *R. Radula*, var. *anglicanus*.

R. sectiramus may be known from *R. linguifolius* by its being eu-Radulan, whereas *R. linguifolius* is practically a sub-Koehlerian. If the leaves are compared it will be seen that *R. linguifolius* has the terminal petiolule one half or more as long as the terminal leaflet, and the intermediate petiolules less than one half as long as the terminal petiolule; whilst *R. sectiramus* rarely has the terminal petiolule so much as one half as long as the terminal leaflet, and always has the intermediate petiolules more than one half as long as the terminal petiolule. *R. linguifolius* has a broad pyramidal panicle with long-peduncled branches, and large showy flowers with rose-pink petals, pink stamens, red styles and pilose anthers. Against this, *R. sectiramus* has an equal panicle, with the middle and upper (sometimes also the lower) branches divided to, or nearly to the base; smaller flowers with pinkish petals, white stamens and greenish or pallid styles and glabrous anthers. *R. sectiramus*, again, is only shortly hairy in the panicle, has crowded nearly patent acicular prickles on the panicle branches, and more decidedly deflexed prickles on the stem.

Turio arcuato-procumbens, angulatus, faciebus planis, fusco-brunneus, pruinosis, subglaber, aciculis glandulisque subaequalibus crebris instructus. *Aculei* plane deflexi, ab aciculis magno intervallo discreti. *Folia* quinato-digitata; petiolus petiolulusque centralis supra plani, aculeis falcatis armati; petiolulus centralis intermediis minime duplo longior; petioluli infimi usque ad 8 mm. longi. *Foliola* supra strigosa subtus pubescentia cinerea, anguste cuspidata, serrato-vel sinuato-denticulata; terminale ellipticum vel obovatum, basi subintegrum. *Ramus* angulatus inferne glabriusculus, superne tomentosus et laxe villosus, aculeis tenuibus declinatis instructus. *Inflorescentiae* aequalis elongatae obtusae inferne interruptae rami medii alte vel usque ad imum divisi, cum ramulis appresse tomentosi, brevissime et subaequaliter glan-

dulosi, aculeis parvis acicularibus confertis armati. *Petala* roseola, mox albicantia, elliptica, in flore aperto remota; stamina alba, inaequalia, longiora stylos pallidos multo superantia. *Sepala* deflorata laxa reflexa. *Germina* pilosa.

Type specimen gathered on Putney Heath, Surrey, where the plant is frequent; now in my herbarium.

Occurs also at Shooters Hill, Addington Wood, Keston Common, and Hosey Common (v.-c. 16); and Wimbledon Common, Palewell Common, Sheen Common, Tooting Common, etc. (v.-c. 17).

R. Radula, sub-sp. *echinatoides* Rogers. Chislehurst Common, Keston Common, Lane east of Eltham Park, Hayes Common, Dartford Heath (v.-c. 16); Barnes Common, Tooting Common, Littleworth Common, near Oxshott Heath, Milford Heath (v.-c. 17). Prickles unequal, the smaller ones often glandtipped; longer stalked glands also occur, and with the long acicles become numerous on strong branches. It is thus not strictly speaking a Radulan. The axes turn blackish purple when growing in the sun. Sepals clasping the ripe oblong fruit. Panicle leaves becoming concave-conduplicate. Petals narrow, remote, pink or pinkish, at length patent and vaulted. Stamens white, exceeding the greenish styles. Carpels pilose. Thrives on clay.

R. Radula, sub-sp. *aspericaulis*, var. *cantianus* W. Watson in *Rep. B.E.C.*, 1931, p. 768. Barnet Wood Lane, Hayes; Pond Wood, Gosshill, Chislehurst; Leasons, between Chislehurst and St Mary Cray; Malling and Teston (v.-c. 16); and Bigberry and Harbledown (v.-c. 15). Well marked by the glaucous green stem, turning ochreous in the sun; the very broad, sometimes reniform, leaflets; the lax, short and broad panicle, with long-pedicelled flowers; the nearly white petals and the beet-root-coloured styles.

R. Genevieri Boreau. Lane east of Eltham Park (v.-c. 16). I have also seen it in Herefordshire, by the roadside at Kingswood Common, south of Kington. The plants match the Abbé Chaboisseau's specimens.

R. discerptus P. J. M. Bostal Heath, Eltham, Westwood Lane, Shooters Hill, Hurst, Puddledock, Featherbed Lane, Chelsham (v.-c. 16); Burgh Heath, Wimbledon Common, The Roughs (Merrow), Farley Heath (near Guildford) and Witley (v.-c. 17).

R. rudis Weihe. Barnet Wood Lane, Hayes; Hayes Common; Hayes Fields; Leasons, Chislehurst; Halstead and Westerham Hill, and generally in woods on the N. Downs; Rusthall Common, all in v.-c. 16. How Green and Coombe Wood, v.-c. 17.

R. cenomanensis Sudre. Lane east of Eltham Park, v.-c. 16. Rusthall Common, v.-c. 16.

R. Bloxamianus (Coleman as var. of *R. Radula*). Description in *Rep. B.E.C.*, 1889, p. 255. A shade form with leaves green beneath collected at Tilburstow Hill, v.-c. 17, by A. H. G. Alston.

R. fuscicortex Sudre. (*R. podophyllus* of the Handbook, not of Mueller). Lane south of Shooters Hill, v.-c. 16.

R. Griffithianus, sub-sp. *tardus*, nov. sub-sp. This plant was described in *Rep. B.E.C.*, 1927, p. 501, as belonging to *R. Griffithianus*,

but I did not name it then, not being sure that it was really distinct. It is described also under the name of *R. Lejeunei*, var. *ericetorum* (Lefv.) in the Handbook of British Rubi (1900), and under *R. ericetorum* Lefv. by Rogers and Ley in *Journ. Bot.*, 1906, p. 59.

A Surrey example from Godalming was originally named *R. Lejeunei* by Focke, and the record was published by him in *Abh. Nat. Ver. Bremen*, xii, p. 359. It occurs elsewhere in our district as follows:—Hayes Common; between Bromley and Pickhurst Mead; Bostal Heath; all in v.-c. 16. Addington Hills; Putney Heath; Tooting Bec Common; and Witley Common; all in v.-c. 17.

The specimens from Mortimer Common, Berks, issued by Rogers as part of No. 95 of his Set of British Rubi, under the name of *R. Lejeunei*, var. *ericetorum* (Lefv.), may conveniently be regarded as types of the plant now in view. I have consulted the example of No. 95 in the South London Botanical Institute.

Compared with *R. Griffithianus*, which appears to be restricted to the west of England and Wales, the present plant is less hairy, more pubescent and felted, and more prickly throughout; the leaflets are smaller and narrower; the terminal leaflet is obovate-cuneate, with an entire base and a less abruptly acuminate point; the teeth are more compound, and the basal leaflets longer stalked (3-5 mm). The prickles on the stem and petioles are more crowded, some confluent, some declining or falcate; whereas in *R. Griffithianus* they are almost entirely patent on stem and petioles, petiolules and panicle rachis. In sub-sp. *tardus* the strong prickles on the panicle are falcate from a compressed and often decurrent base, and the panicle is broader.

A *R. Griffithiano* differt foliolo terminali obovato-cuneato, basi integro; foliolis infimis longius petiolulatis (usque ad 5 mm. longis); foliolorum omnium serratura plene composita; aculeis crebris, in rachide paniculae saepe e basi extenso falcatis.

R. melanodermis Focke. Distributed in fair quantity over Putney Heath and Wimbledon Common, v.-c. 17.

R. Babingtonii Bell Salt. Wimbledon Common and Witley, v.-c. 17; Chislehurst Common, Farnborough Common, Hayes Common, Barnet Wood (Hayes), Wrotham Heath, Tunbridge Wells Common and Rusthall Common, v.-c. 16; Bigberry Wood, Sandling, Hothfield, and between Westenhanger and Smeeth, in the last three localities collected by Marshall, v.-c. 15. The fruits are fuscous before they turn black.

R. formidabilis M. & L. Putney Heath, Wimbledon Common, Coombe Wood, Littleworth Common, Abrook Common, etc. Frequent on Surrey commons, but I have not met with it in Kent. In Rogers's paper on the Rubi of the neighbourhood of London (1903) this figures under the name of *R. Babingtonii*, var. *phyllothyrsus* (Frid.), as a remarkably luxuriant form. Previously it was called *R. rosaceus*. In the last edition of the *London Catalogue* it appears as *R. festivus*. A description is given in *Rep. B.E.C.*, 1927, p. 499.

R. mutabilis, var. *Regnorum* W. Watson in *Rep. B.E.C.*, 1930, p. 437. Found at several places in S.W. Surrey near Witley, extending

into W. Sussex to Midhurst and Lynch. It proves to be an Irish bramble also.

R. Bloxamii Edw. Lees. One large plant against Caesar's Well, Wimbledon Common, v.-c. 17. Wrotham Heath, Leybourne Wood, Offham and Teston, v.-c. 16.

R. thyrsiflorus Whe. Putney Heath and Wimbledon Common, in two stations a mile apart, v.-c. 17. Seen also last August at Arnos Grove, close to the new Tube station, Middlesex, growing with *R. Bloxamianus* and *R. chaerophyllus* Sag. and Sch. The Putney Heath plant claimed in the *Fl. Surrey* as *R. scaber* is this.

R. largificus W. Watson in *Rep. B.E.C.*, 1927, p. 507, and 1931, p. 766. Hayes Common, Keston Common, Fox Hill (Keston), Ninian's Wood (Farnborough), v.-c. 16. Worms Heath and Frith Wood (Farleigh), v.-c. 17. The Hayes Common plant appears as *R. scaber* in the paper on the Rubi of the neighbourhood of London, above referred to. Forma *androdynamica* on Rusthall Common, v.-c. 16, extending into E. Sussex at Eridge.

R. fuscus, var. *nutans* Rogers. Chislehurst Common, Eltham Park, Bostal Heath, v.-c. 16. Burgh Heath and Oxshott Heath, v.-c. 17. Occasionally a sixth leaflet is formed by the splitting of the terminal leaflet on one side. The lower leaves on the flowering branch are deeply incised, recalling the leaves of the nettle. I think this will probably prove to be *R. insectifolius* L. & M., which occurs in the north of France and in Belgium.

R. insericatus, var. *hyposericeus* Sudre. Syn. *R. fuscus*, var. *macrostachys* Rogers, cit. P. J. Muell. Wood south of Higham's Hill, W. Kent., v.-c. 16. In some ways this much recalls *R. macrothyrsos* Lange, for which the classic plant at Bangor, No. 87 in the Set of British Rubi, was mistaken by our authorities. There is less reason for its confusion with *R. uncinatus*, but plants found by E. F. Linton in woods above Troy House, Monmouth, were determined by Focke as "exactly the same as the original *R. uncinatus* gathered by Mueller in the fir-woods of S.W. Germany." A similar error due to Focke was made in the case of a plant gathered by Ley in the Lea Bailey Enclosures, Forest of Dean, in 1899, and distributed as *R. uncinatus*. As the description of *R. uncinatus* in the Handbook is there said to have been drawn up from the Troy Wood specimens we are provided with a second and more useful description of *R. insericatus*, var. *hyposericeus*, from Rogers's hand.

Focke seems not to have known *R. macrothyrsos*, *R. uncinatus* or *R. macrostachys* very well, and one may hesitate to accept his statement that *R. Radula*, var. *anglicanus*, agrees exactly with Mueller's plant *R. macrostachys*. Speaking for myself, I have seen authentic specimens of each plant, and I think them quite distinct. Mueller describes his plant as having white petals, white stamens and green styles. *R. Radula*, var. *anglicanus*, has rose-pink petals, pink stamens and reddish styles. The armature of the respective plants is also very different. It must be admitted, however, that one does not know what plants

Focke may have received besides the Bournemouth plant as *R. Radula*, var. *anglicanus*.

R. rhombophyllus M. & L. Near Harbledown, v.-c. 15. *Rep. B.E.C.*, 1931, p. 766.

[*R. obscurus* Kalt.] A plant discovered by Mr C. E. Britton at Hosey Common, v.-c. 16, in 1908, was determined by Rogers as "*R. fuscus*, var. *obscurus* (Kalt.): record for Kent." I think the plant is *R. glareosus*, which was not described until 1912. Mr R. W. Robbins has met with *R. glareosus* at Hosey Common and Crockham Hill.

R. pallidus Whe. Chislehurst Common, Eltham Common, Shooters Hill, Bostal Heath, Shrewsbury Park (Plumstead), where it is abundant, all in v.-c. 16. Putney Heath, one group, v.-c. 17. Leaflets often somewhat bullate.

Var. *leptopetalus* Rogers ex Frid. Chislehurst Common, Paul's Cray Common, Farnborough Common, Keston Common, Eltham Common, Shooters Hill, Bostal Heath, Row Hill, all in v.-c. 16. Wimbledon Common, v.-c. 17. This bramble endures shade well, and sometimes carpets the ground in dark woods. In the open it makes a strong bush, and in this state has been mistaken for *R. fuscus*. Many of the records in *Fl. Kent* for *R. fuscus* belong here or to *R. fuscus*, var. *nutans*. I have not seen *R. fuscus* in Kent or Surrey yet.

R. glareosus R. & M. Downs near Shoreham, Hosey Common, Crockham Hill, v.-c. 16. Witley, Milford, Haslemere, Hurt Wood, v.-c. 17.

R. rosaceus Whe. Chislehurst Common, Hayes Common, Keston Common, Nash, Shooters Hill, Lesness Wood, v.-c. 16. Frith Wood (Farleigh), How Green and Limpsfield Common, v.-c. 17. Two plates reproducing paintings by Miss C. G. Trower illustrate this plant exceedingly well in *Rep. B.E.C.*, 1928.

Quite a different plant from the above has in the past gone under the name of *R. rosaceus*, viz., a plant of the west of England and the west of France, unknown in the Rhineland, which produced the plant which served as Weihe's type.

A similar confusion, of long standing, has prevailed abroad since Focke combined Kaltenbach's *R. aculeatissimus* of Aix with Weihe's original *R. rosaceus*, which Focke says he learned to know at Aix. Kaltenbach, writing some 20 years after Weihe, does not give *R. rosaceus* for Aix, neither does Foerster writing some 30 years later. Kaltenbach and Foerster were each author of a Flora of Aix, and each attended carefully to Rubi, and each described *R. aculeatissimus*. One can hardly suppose that *R. rosaceus* grew at Aix and was overlooked by both of them. It is much more likely that Focke found *R. aculeatissimus* and called it *R. rosaceus*. Foerster knew *R. rosaceus* as well as *R. aculeatissimus* and said that the two brambles were distinct and ought not to have been combined. He traces the confusion back to Weihe, who after having published the true plant from the Lower Rhine as *R. rosaceus* sent out the Aix plant also under the same name.

Wirtgen, another botanist belonging to the Rhineland who studied Rubi, distinguished the two plants in his *Flora der Preussischen Rhein-*

provinz (1857), and Braeucker, a botanologist of the Rhineland again, although he does not mention *R. aculeatissimus*, describes *R. rosaceus* in such a way as to show that he does not include *R. aculeatissimus* in it.

Focke was perhaps misled by seeing an Aix specimen (of *R. aculeatissimus*) named *R. rosaceus* by Weihe. He notes that he had seen an authentic specimen sent out by Weihe.

R. coronatus, var. *cinerascens*, nova var. Putney Heath, v.-c. 17. A luxuriant, climbing and far spreading plant. I have seen specimens also from Horsham, Sussex, collected by White in 1891, labelled by him “? *R. rosaceus* W. & N.” and passed by Rogers as “Right, I think;” and a specimen from Gallantry Bank, Chester, collected by Riddelsdell in 1926 and labelled by him “*adornatus* var.” The plant simulates *R. Murrayi* in some respects, but differs radically from it in habit, in the pale green stem, the panicle rachis and branches green to pale yellowish or reddish, the pink petals and stamens, the reflexed fruit sepals, the prickles throughout with a broad compressed base, the upper leaves—especially on the panicle—greyish beneath, and in the panicle remarkably elongate. Sudre records *R. coronatus* for the North of France and Belgium, and says that the Belgian plant has coloured styles and the sepals almost reflexed (as is the case with the Putney plant). I think that the differences are too great to treat it as a variety of *R. Murrayi* (the English “*R. adornatus*”).

R. coronatus, var. *cinerascens*, nova var. A *Rubus coronato* distinguenda foliis junioribus cum caulinis tum ramealibus subtus cinerascens, petalis ovatis, sepalis defloratis reflexis.

Type specimen: collected by W. Watson at Putney Heath, Surrey, towards Roehampton Church, scrambling over an old thorn in the pit where *Scirpus sylvaticus* grows, 30th August 1928; in Herb. W. Watson.

R. saxicolus P. J. Muell. Shooters Hill, v.-c. 16. The true plant of Mueller, here, I believe, for the first time recorded for Britain. The Sussex plant described in the Handbook “stem polished subglabrous yellowish-brown, etc.” is a var. of *R. saxicolus* Genev. (not of Mueller). The W. Glos. and Heref. plants named by Babington as *R. saxicolus* are *R. pallidisetus* Sudre (*R. divexiramus* in the Handbook). *R. horridicaulis* P. J. Muell. (not in our district) is different.

R. scaber Whe. Seal Chart, v.-c. 16. The plant recorded as *R. scaber* in *Fl. Kent* for hedges between Under River and Ightham is *R. dumetorum*, var. *raduliformis* A. Ley. See under *R. thyrsiflorus* above.

R. conspectus Genev. West of the Windmill in Hurt Wood, v.-c. 17.

R. thyrsiger Bab. Between Warwick Park and Hawkenbury, near Tunbridge Wells, v.-c. 16.

R. longithyrsiger Bab. In plenty between Shooters Hill and Avery Hill, v.-c. 16.

? *R. vallisparsus* Sudre. Crown Woods, Shooters Hill, v.-c. 16. A robust and showy, fertile plant; armature sub-Bellardian. Stem remarkably glaucous green; leaves mostly ternate, puberulent and slightly greyish beneath, rather large; terminal leaflet oval or somewhat obovate. Panicle pyramido-cylindrical; uppermost branches 1-flowered about 1 in.

long, patent; central branches 2-flowered divided beyond the middle, or 3-4-flowered divided to the base; lowermost axillary branches racemose, few-flowered, ascending at a low angle. Rachis and branches grey, pubescent, the stalked glands dark, mostly short but exceeding the hairs; prickles on the branches numerous, short, declining or slightly falcate. Buds even in contour (not loboid). Flowers rather large. Petals somewhat rhomboid-oval, tapered below, not clawed, apex emarginate, remote, pinkish with a yellowish middle. Stamens greenish-white, going reddish, hardly longer than the styles. Styles at first reddish towards the base, ultimately intense red throughout, not concealed by the stamens. Young carpels considerably pilose. Sepals long pointed, reflexed during flowering, afterwards ascending. Fruit rather large, rather oblong from a broader base, composed of a large number of rather small carpels, which are not dimpled; ripening slowly. Comes into flower with *R. vestitus*. The leaves are rarely 4-nate, or 5-natepedate. No cymes are produced.

R. vallisparvus, which I think will prove the correct determination, extends from the Pyrenees to the North of France, and has been (doubtfully) reported from Belgium. Occurs at Shooters Hill in two patches, half a mile apart. *R. longithyriger*, which it approaches, differs in its small, white flowers, suberect axillary panicle branches, etc.

R. saltuum Focke. General on sands and gravel, less often on clay, in most uncultivated places in all districts.

Notes on the Dragonflies of Epping Forest.

By E. B. PINNIGER.

THE object of this paper is to give a short introduction to the Dragonflies (Paraneuroptera), together with a review of the status of the species occurring in Epping Forest. I hope that the brief descriptions of each species together with records of its occurrence may assist readers to commence work on this highly interesting but neglected order.

The Paraneuroptera, also known as the Odonata, are insects whose early stages are aquatic and the metamorphosis incomplete, the pupal or dormant period common to many insects being absent from the life of a dragonfly. The imago is built slenderly with four similar long narrow membranous wings, crossed by a very complex system of nervures. The order is divisible into two distinct groups known as the *Anisoptera* and *Zygoptera*. The former group comprises insects of moderate to large size, fairly stoutly built, with wings complex in neuration. The *Zygoptera* are small, of fragile build, with wings much less elaborate in nerve structure and a very weak flight.

British Paraneuroptera number about forty-two species, of which at least twenty-two occur in Epping Forest. The majority of species

will be found in their season around the larger forest pools, but a few forms are abundant by small streams and in boggy glades.

In the following list, the nomenclature used is that adopted by the late Mr W. J. Lucas in his book, *British Dragonflies* (1900), and includes all the species he mentions in connection with the Forest. It is to be regretted that many have disappeared from the district. The references to *The Essex Naturalist*, mentioned hereafter, and a paper and list by Mr E. E. Syms will be found in Volume 22 of that Journal, pp. 292-297. I have also referred to Henry Doubleday's original list "Odonata occurring in the neighbourhood of Epping" (*E.M.M.*, Vol. 8, 1871-2), "Notes on the Season's Odonata" by W. J. Lucas (*Entomologist* from 1900), and "Dragonflies of Epping Forest" by F. W. and H. Champion (*Entomologist*, yearly notes 1903-1909). In the following notes, where species given by Doubleday are not included in the later lists the fact is mentioned. The descriptions given here are not detailed, many minor characters being omitted for the sake of brevity; also variation is not taken into account. The wing expanse is taken across the hind wings, and as individual specimens vary, only a rough average is taken for the species.

The first species of the *Anisoptera* belongs to the *Libellulidae* and is *Leucorrhinia dubia* Van der Lind. This insect is given by Lucas, on the authority of Doubleday's record, as occurring rarely on Coopersale Common among old gravel pits. The species is not mentioned in *The Essex Naturalist*, p. 297, and I have no records from the Epping district, nor does it occur in the other lists.

Male imago: Face yellow, eyes dark brown; thorax black, the front of which is marked with two broad crimson stripes, and the sides with the same colour; abdomen black with crimson markings on the dorsal surface. Wings hyaline with dark brown spot at the base, being triangular in the hind wings; pterostigma squarish and dark brown. Legs black. Female similar to male, but with the crimson markings replaced by a pale yellow. Wing expanse, 54 mm. Length from head to tip of abdomen, 36 mm. Date, May-August. Range usually North England and Scotland.

Sympetrum striolatum Charp. Lucas gives records by Doubleday. The species is mentioned in *The Essex Naturalist* and my own records indicate that the species is abundant in the Forest each year.

Male imago: Face dull yellow, eyes warm brown; thorax dull brown and hairy; abdomen scarlet with small paired black spots to the rear of each segment and some yellow coloration. Wings hyaline with red brown stigma. Legs yellow above, black below. Female similar but with all scarlet colour replaced by dull brown. Wing expanse, 59 mm. Length, 39-43 mm. Date, August, September.

Sympetrum flaveolum Linn. This species is usually absent from the Forest, but is seen in good numbers in certain years. Lucas gives it as irregular. E. E. Syms appends it to his list, and F. W. and H. Champion record it for 1906.

Male imago: Face deep yellow, eyes red brown; thorax deep red marked with black on the sides; abdomen red marked with paired black

spots on the posterior margin of segments 3 to 7. Wings hyaline with base yellowish, stigma red. Legs black. Female similar but with dull yellow replacing the red coloration of the male. Wing expanse, 56 mm. Length, 31-37 mm. Date, August, September.

Sympetrum sanguineum Müll. Lucas gives Coopersale Common, and the species figures in the list from *The Essex Naturalist*. From personal experience I find it occurs rarely but regularly in the Forest. Lists by F. W. & H. Champion show the same regularity of the species.

Male imago: Face yellow, frons bright red, eyes dull red; thorax red brown; abdomen deep crimson, constricted in central segments and dilated about the last segments. Wings hyaline tinged with yellow at the base; stigma red. Legs black. Female as male but with red coloration replaced by olive green. Wing expanse, 50 mm. Length, 33-36 mm. Date, August, September.

Sympetrum scoticum Don. This species is recorded from near Epping by Lucas, after H. Doubleday. Is included in the list on p. 297 of *The Essex Naturalist*. F. W. & H. Champion recorded it from near Loughton in 1906, and Lucas for the Forest in notes for 1926. My own records show that it is always present in the Forest, though numbers fluctuate considerably from year to year.

Male imago: Face black, eyes deep brown; thorax black with two yellow bands on the sides; abdomen black, short and constricted in the centre and dilated towards the last segments; wings hyaline, stigma black. Legs black. Female: Face yellowish, and abdomen not constricted as in male, but short and much compressed, with the upper surface warm brown. Wing expanse, 50 mm. Length, 33 mm. Date, July to September.

Libellula depressa Linn. This species, one of the best known dragonflies, is found in almost any locality. W. J. Lucas gives near Epping (H. Doubleday) and Wanstead Park. It is shown in *The Essex Naturalist* as having been taken in Epping Forest, and my own records show it to be fairly common each year in the Forest, which agrees with the other notes for the district.

Male imago: Face and eyes deep brown; thorax brown, with two bluish white dorsal stripes. Abdomen broad and very flat, colour bright blue with marginal spots of yellow. Wings hyaline with blackish triangular patch at the base of the hind wings, and a rectangular patch of the same colour at the base of the fore-wings; stigma black and narrow. Female, similar to male, but with the blue replaced by a warm brown. Wing expanse, 76 mm. Length, 42-47 mm. Date, May and June (rarely in August).

Libellula quadrimaculata Linn. Though the localities for this insect in Epping Forest are not those usually selected by the species, yet H. Doubleday records it for Epping. It is shown in *The Essex Naturalist*, and I have found it common in the Forest in favourable years.

Male imago: Head and eyes brown; thorax brown and hairy; abdomen long, conical, diminishing posteriorly, brown and hairy, with narrow marginal yellow spots. Wings hyaline, yellowish at base, the hind wings with a basal triangular brown patch. A black spot at the

node of all four wings gives the insect its specific name; stigma black. Legs black. Female, similar to male, but with a broader abdomen. Wing expanse, 74 mm. Length, 40 to 47 mm. Date, May to August.

Cordulia aenea Linn. This insect seems to have been recorded for Epping Forest, according to Lucas, by H. Doubleday and W. H. Bath. The list in *The Essex Naturalist* includes this species and my records show it to be a common one in the Forest.

Male imago: Head and eyes bronze-green; thorax hairy, and metallic greenish brown; abdomen broad in first two segments, constricted after the third and dilated to the eighth, diminishing again to the tip, colour bronze-green, reddish in some lights. Wings hyaline, base often slightly saffron. Stigma black and narrow. Legs black. Female similar in shape and colour, but with abdomen of a uniform diameter. Wing expanse, 68 mm. Length, 46 to 50 mm. Date, May to early July.

The next group, the *Æschnidae*, contains the largest and most handsome of our Dragonflies. The first species is *Gomphus vulgatissimus* Linn. W. J. Lucas gives an Epping locality on Doubleday's authority, but no mention is made of the species in *The Essex Naturalist*, or other recent lists, and so far I have failed to find it. Doubleday's locality was High Beach.

Male imago: Head black and yellow, eyes green; thorax yellow and black; abdomen shaped as in *C. aenea*. Colour black with longitudinal yellow markings. Wings hyaline, stigma brown. Legs black. Wing expanse, 64 mm. Length, 49 mm. Date, May and June.

Cordulegaster annulatus Latr. The occurrence of this species in Epping Forest was a surprise to me, for, so far as I know, there are no records of its existence in the district, although it has been recorded before in the vicinity of London. Unfortunately, it cannot be classed as a species resident in the Forest, although in July 1930 a fine female insect was taken near Loughton by myself. The insect, whose size and coloration makes it distinct from any other British species, is very striking, the eyes being emerald green, the head, thorax and abdomen black, striped and spotted with bright yellow, the latter portion of the body being very long and much constricted about the central segments. Wings hyaline, very long and narrow. Legs black. Wing expanse, 98 mm. Length, 84 mm. Date, June to early September.

Anax imperator Leach. This species, the finest of our Paraneuroptera, is abundant in the Forest each year. *British Dragonflies* and *The Essex Naturalist* record it for the district but do not indicate its abundance.

Male imago: Face yellow, eyes blue; thorax bright green; abdomen long, blue with black markings; wings hyaline, stigma brown. Legs black-brown. Female similar to male, but with abdomen green. Wing expanse, 106 mm. Length, 77 mm. Date, May to early August.

Brachytron pratense Müll. According to *British Dragonflies* and *The Essex Naturalist*, the species occurs in Epping Forest, but no indication is given in either case of its abundance in this particular district. F. W. & H. Champion found the species in the Forest in 1906,

1907, and 1909. Lucas records it in the district in 1926, and as I have failed to find it I cannot qualify what is already known.

Male imago: Face yellow with eyes blue; thorax brown and yellow; abdomen first segment black marked with yellow, the remainder black spotted with blue and yellow. Wings hyaline, stigma light brown. Legs black. Female similar, but with wings yellowish and lacking the blue abdominal markings. Both sexes are covered with thick down, which serves to distinguish this species from the true *Æschnas*. Wing expanse, 73 mm. Length, 56 mm. Date, May.

Æschna mixta Latr. Lucas gives H. Doubleday's observations that the species occurred rarely in Epping Forest. F. W. & H. Champion recorded it in 1902 and 1908, but so far I have failed to find other recent notes on the species. The fact that it may have been overlooked, due to its similarity to a small specimen of *Æ. cyanea* when seen on the wing, must be admitted. Wing expanse, 85 mm. Length, 63 mm.

Æschna cyanea Müll. This very beautiful and common species is given in both *The Essex Naturalist* and Lucas's *British Dragonflies* as occurring in Epping Forest. From my experience it is the most consistently common species in the district.

Male imago: Face yellow, eyes blue; thorax brown heavily marked with pale green; abdomen brown much spotted with blue. Legs black. Wings hyaline with pale brown tinge; stigma black. Female: Eyes green; abdomen with spots green in place of blue. Pterostigma brown. Wing expanse, 106 mm. Length, 74 mm. Date, July to October.

Æschna grandis Linn. Wanstead Park and Epping are mentioned by Lucas for this species. *The Essex Naturalist* also includes it for the Forest area. In abundance and distribution I find it almost similar to the preceding species.

Male imago: Face golden brown, eyes blue; thorax warm brown, marked with yellow on the sides, with a blue spot dorsally at the base of the wings; abdomen brown, very sparsely marked with blue. Wings golden; stigma brown. Legs dark brown. Female similar but with eyes brownish. Wing expanse, 104 mm. Length, 70 to 76 mm. Date, July to October. In sunlight, when flying, this species will often appear to be marked with purple.

The *Zygoptera*, which form the group into which the remaining species fall, may easily be separated from the *Anisoptera*. They have long and very slender bodies, rounded wings, and a broad, short head in which the eyes are the remote points and not contiguous as in the *Anisoptera*. They are small in size, weak in flight, and are seldom found far from their native water. The first two species most nearly approach the *Anisoptera* in size.

Calopteryx virgo Linn. This species is not a common one in the Forest, but from the fact that both *British Dragonflies* and *The Essex Naturalist* include records of it from the district, it seems to have been known there for some little time. Being one of the two largest *Zygoptera*, this species should be recognised easily.

Male imago: Head deep blue, eyes red brown; thorax blue, shot with green; abdomen deep metallic blue. Wings brown with deep iridescent blue sheen. Legs black. Female: body deep metallic green shot with copper; wings pale red-brown. Wing expanse, 64 mm. Length, 46 mm. Date, May to August.

Calopteryx splendens Harris. This species is much more abundant than the preceding, and figures on all the lists referred to above. In coloration similar to *C. virgo*, but with the wings in the male hyaline, with a central patch of deep blue; in the female the wings are pale yellowish green. Wing expanse, 64 mm. Length, 46 mm. Date, May to August.

Lestes sponsa Hansem. A fairly common species, recorded for the Forest before, in *British Dragonflies* and *The Essex Naturalist*, and other yearly notes.

Male imago: Head yellow and green, eyes blue; thorax bronze-green; abdomen, first and last two segments, blue, the rest green. Wings rounded and hyaline, stigma black. Legs black. Female stouter in build with the blue absent, and a bronze tinge over the whole insect, including the wings. Wing expanse, 43 mm. Length, 38 mm. Date, June to August.

Platynemis pennipes Pall. This little dragonfly is recorded by W. J. Lucas from Epping, and included in the list of *The Essex Naturalist*. Until last year (1932) I had not seen the insect in the Forest, but on a ramble last summer, Mr E. L. King drew my attention to a small dragonfly, which proved to be this species. Records by F. W. & H. Champion do not include the species.

Male imago: Head and eyes blue; thorax black and green; abdomen pale blue marked with black. Wings hyaline, stigma brown. Legs pale blue fringed with dark hair, tibiæ very much dilated. Female similar, but with pale yellow colour in place of blue. Wing expanse, 45 mm. Length, 37 mm. Date, June to August.

Erythromma naias Hansem. An uncommon little species which, to my knowledge, occurs on at least one pond in the Forest. The notes before mentioned record the species for the Forest.

Male imago: Face red brown, eyes red; thorax black, blue underneath; abdomen blue black, segments 1, 9 and 10 bright blue. Wings hyaline. Legs black. Female differing in that the abdomen lacks the blue segments. Wing expanse, 46 mm. Length, 35 mm. Date, May to July.

Pyrrhosoma nymphula Sülz. Lucas gives "near Epping abundant (H. Doubleday)." The species is included in *The Essex Naturalist*, p. 297. My experience is that the species occurs abundantly throughout the Forest.

Male imago: Head black and red; thorax black striped with red; abdomen red with segments 7, 8 and 9 partly black. Wings hyaline, stigma brown. Legs black. Female similar, but more bulky and with more black markings on the abdomen. Date, April to August. Wing expanse, 46 mm. Length, 37 mm. The smaller and similar *P. tenellum* Vill. is given for the Forest by Lucas (1871), but no later lists mention it.

Ischnura pumilio Charp. No recent evidence of this species is to hand, but H. Doubleday gives "Epping rarely." (*E.M.M.*, 1871, p. 87).

Ischnura elegans Van der Lind. "Common everywhere," the phrase used by H. Doubleday in 1871 (*British Dragonflies*, p. 276), still applies quite well to this species in the Forest. This little *Zygopterid* has a black body, but for segments 1 and 8, which are blue. Wings hyaline, stigma yellow; eyes green. Wing expanse, 35 mm. Length, 31 mm. Date, May to September. F. W. & H. Champion noted much variation in this species.

Agrion pulchellum Van der Lind. This dragonfly occurs rarely throughout the Forest and is included in both *British Dragonflies* and *The Essex Naturalist* as occurring there, although F. W. & H. Champion failed to find the species.

Male imago: Face and eyes bluish; thorax blue and black bronze; abdomen blue and dark bronze, second segment with black U-shaped mark joined to a circlet. Wings hyaline. Legs black. Eyes and thorax greenish in female. Expanse of wings, 43 mm. Length, 35 mm. Date, May to August.

Agrion puella Linn. A common species near most Forest ponds, previously recorded by H. Doubleday as common near Epping (*British Dragonflies*, p. 290), and in *The Essex Naturalist*.

Male imago: Head blue and black bronze; thorax black striped with blue; abdomen, blue and black, segment 2 with U-shaped mark not joined to the circlet as in *pulchellum*. Wings hyaline, stigma black. Legs black. Female similar, but with greenish tinge and the abdomen almost entirely bronze black. Wing expanse, 40 mm. Length, 36 mm. Date, May to August.

Enallagma cyathigerum Charp. This is probably the commonest of the small species, recorded before for Epping Forest by H. Doubleday, 1871, and in *The Essex Naturalist*.

Male imago: Head blue and black; thorax blue and black; abdomen blue with bronze-black markings, segment 2 with an elliptical black spot joined to the posterior marginal band. Wings hyaline. Legs black. Pterostigma black. Female similar, but with the blue coloration replaced by green. Wing expanse, 39 mm. Length, 32 mm. Date, April to September.

Doubleday's list gives the scarce *L. fulva* as rare over a large pond in Ongar Park woods, together with *C. vesta*, *L. dryas*, *L. virens*, and *O. curtisii*. Another interesting and more recent record is that of *Orthetrum cærulescens*, found by F. W. & H. Champion near Chingford in 1900.

In conclusion, I hope that the above very brief details of the several species found in Epping Forest will assist and interest those naturalists who have not a great knowledge of the Order, and I would point out that, for further details, books such as the volumes by W. J. Lucas are valuable, as are the many interesting articles and records of the Order in the monthly entomological journals.

At the Bird-Table.

ARE THEY RESIDENTS OR VISITORS?

By STUART BOARDMAN.

IN his delightful book *Jack Miner and the Birds*, Mr Miner says:—
 “ ‘ Do birds return to their same homes year after year? ’ This is a question that has been put to me more than any one along the bird line, and it is usually followed by ‘ How do you know? ’ Then I have had to take father’s advice, ‘ drop it,’ and talk about the weather or some other side line. For while I was sure of this in my mind, yet I had no proof.”

In the winter of 1930 I fixed up various attractions for the birds, and since a considerable number of Tits were continually flying up for food, I began to wonder—like Jack Miner—if they were the same birds constantly returning, or whether they were different birds. This brought to my mind an incident in 1928 when I lived in another part of Woodford Green, and as this has a bearing on this subject I would like to mention it before proceeding further.

For some years past there had been a pair of Blue Tits nesting in a nesting-box in the garden, and I determined to find out if they were, as I thought, resident birds. Accordingly, on 30th May 1928 I gently lifted the sitting adult bird off the nine young and one infertile egg upon which she was sitting, placed a small blue ring on her leg and then released her. That the bird was a resident was proved by my neighbour, Mr C. L. Collenette, who trapped it in his garden on 30th December of the same year. On 8th June of the following spring I again lifted a Blue Tit out of the same nesting-box and examined the ring on its leg—the ring was blue! Once again she was sitting on a charming family of nine youngsters (and, incidentally, again one infertile egg). That she still spent the following winter in the neighbourhood was shown by my trapping her on 5th January 1930. From these notes it will be observed that this bird (1) was a permanent resident of the neighbourhood, (2) had reared 18 young in two years, and that (3) she was at least three years old.

This gave me the idea of marking the Tits visiting the new garden to which I had just moved. My garden is but 66 by 20 feet, is flanked on either side by neighbouring gardens, adjoins a school playing field at the end, and is but a few yards from Epping Forest. The garden is, therefore, quite a small one, and the number of birds actually visiting the special attractions put for them is further restricted owing to the fact that these are suspended, under a glass roofed verandah, a few feet from the house, in order that the birds may be observed from indoors at close range. The attractions kept on the verandah for the birds are as follows:—A food-table 13 by 10 inches for various kitchen scraps, a seed hopper, a peanut hopper, and a tit-bell filled with fat.

The chief problem with which I was confronted was a quick but sure means of identification. The use of the well-known Witherby's British bird rings with the necessary constant retrapping of the birds for identification of the numbers was quite out of the question; it would take far too much time, and the results would not be so good as when the birds have freedom to come and go as they please. Accordingly, I adopted the plan of using coloured celluloid rings which could be seen quite distinctly (especially through a field glass) whenever the birds came to, or near, the food put for them. The Witherby rings (with number and address) are also used, on the other leg, to ensure a report should the bird be picked up outside my garden. I marked Great Tits and Blue Tits, but it was not long before I decided to concentrate my observations on the Great Tit only, as I found that this alone fully occupied the time available; incidentally, Great Tits are easier to watch than Blue Tits owing to their larger size, and their less agile movements.

Before long I was asked, "But why not make observations on less common species?" However, there was another reason why I was attracted to the observation of this bird, namely, its economic value, and I would like to draw attention to this very important point. Dividing all food consumed into three categories, we have the following percentages:—

By the eating of which man is <i>benefited</i> ,	...	66.5%
By the eating of which man is <i>harmed</i> ,	...	10%
By the eating of which man is <i>unaffected</i> ,	...	23.5%

These figures are taken from Dr W. E. Collinge's book *The Food of some British Wild Birds*, in which he states that the percentage of 66.5 (by the eating of which man is *benefited*) is made up as follows:—

Aphids and Scale insects,	...	16.5%
Beetles,	...	15.5%
Lepidopterous larvae,	...	29%
Dipterous larvae,	...	5.5%

It is obvious, therefore, that the Great Tit is greatly to be welcomed as a resident of the garden.

Coming now to the individual birds to which my observations refer, it is interesting to note that in this small garden forty-four Great Tits were ringed during the twelve months from 7th December 1930 to 7th December 1931, and a further ten Great Tits were ringed during the period from 8th December 1931 to 18th April 1932, making a total of fifty-four Great Tits in sixteen months. The accompanying chart shows the frequency with which these birds have visited the seed hopper or other food put for them. These observations were made, of necessity, at odd times of the day, and not necessarily every day, but they are sufficiently extensive to throw some light on the question of the frequency of visits of the birds concerned. Birds which have as yet made no re-appearance since being ringed are omitted from the chart.

Bird.	1931				1932								Total.	Date Ringed.
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.		
B	4	—	—	2	—	—	1	—	—	—	—	—	7	13/12/30
D	4	3	5 ¹	5	6	7	6	2	1	—	—	1 ¹	40 ²	14/12/30
I	—	—	—	—	1	2	1	—	—	—	—	—	4	17/1/31
J	—	2	1	1	1	4	4 ¹	1	—	—	—	—	14 ¹	18/1/31
Ja	—	—	—	—	—	—	—	1 ¹	—	—	4	2	7 ¹	30/1/31
K	7	5	6	1	3	—	3	—	—	—	—	—	25	„
L	—	—	1	—	—	—	—	—	—	—	—	—	1	„
M	—	—	2	2	5 ¹	4	5 ¹	4 ¹	—	—	—	1 ¹	23 ⁴	„
Q	—	—	—	—	6	2 ¹	—	—	1	—	—	—	9 ¹	28/2/31
R	10	3	—	—	—	—	—	—	—	—	—	—	13	1/3/31
T	—	3	—	—	—	—	—	—	—	—	—	—	3	„
W	—	—	—	—	—	—	—	1	—	—	—	—	1	8/3/31
Ya	—	—	—	—	3 ³	—	—	—	—	—	—	—	3 ³	15/3/31
Z	3	—	—	1	—	1	—	—	—	—	—	—	5	„
BB	7	—	6	4	3	1	2	4	—	—	—	—	27	3/5/31
DD	—	—	—	1	—	—	—	1	—	—	—	—	2	„
FF	—	—	3	—	—	—	—	—	—	—	—	—	3	4/10/31
GG	—	21 ¹	19 ²	7 ¹	10 ¹	6 ²	5	10	3	—	11	2 ¹	94 ⁸	„
HH	—	15	19	11 ¹	16 ²	13	17	9 ¹	6	—	2	3 ¹	111 ⁵	„
II	—	4	9 ¹	9	11 ¹	7 ¹	9	10 ¹	—	—	—	—	59 ⁴	„
JJ	—	1	2 ¹	—	—	—	2 ¹	1 ¹	—	—	—	—	6 ³	12/10/31
KK	—	2	—	2 ¹	1	3	4 ¹	2	—	—	—	—	14 ²	13/10/31
LL	—	1	—	—	1	—	—	—	—	—	—	—	2	14/10/31
MM	—	—	—	1	—	—	2	5 ¹	—	—	—	—	8 ¹	1/12/31
NN	—	—	—	1	—	—	—	—	—	—	—	—	1	3/12/31
OO	—	—	—	1	—	—	1	—	—	—	—	2	4	„
PP	—	—	—	5	11	2	1 ¹	—	—	—	—	—	19 ¹	7/12/31
SS	—	—	—	—	—	—	—	—	1	—	—	—	1	21/2/32
TT	—	—	—	—	—	—	—	—	1	—	—	—	2 ¹	8/3/32
UU	—	—	—	—	—	—	—	—	—	—	—	1 ¹	1 ¹	11/3/32
YY	—	—	—	—	—	—	—	3	1	—	—	—	4	17/4/32
ZZ	—	—	—	—	—	—	—	1	—	—	—	—	1	18/4/32
	35	60 ¹	73 ⁵	54 ³	78 ⁸	52 ⁴	63 ⁵	55 ⁶	14	—	17	13 ⁶	514 ³⁸	

N.B.—The figures under each month represent the number of different days on which the bird has been observed during that month; visits repeated the same day have not been recorded. The small numbers (at right-hand side of figures) indicate the number of times this particular bird has been re-trapped.

From these figures it would appear that certain birds, such as D, GG, HH, and II, can be regarded as residents of our garden and of the gardens adjoining, throughout the winter months; whereas such birds as B, I, and L would appear to be visitors from further afield (the Forest, perhaps) who are out on a foraging expedition on new ground, to which, for certain reasons, they have not returned, and which birds I therefore class as “visitors.”

In the chart above it is interesting to note that bird Ya appeared three times and was caught in the same trap on each occasion; and all within the short period of four days! It is also worth drawing at-

tention to the fact that bird D (one of the most frequent visitors during the winter of 1931-32) was ringed in December 1930.

During the course of these observations it has been noticed that there exists considerable diversity of character in Great Tits. While most birds fly away with the seeds obtained at the hopper, R prefers to eat his at the hopper, one after the other. HH considers the bird-table the proper place at which to eat, and invariably carries his seeds there from the hopper. BB usually approaches the table by hopping along the fence in preference to flight; incidentally, BB was back at the verandah within twenty minutes of being ringed there. II (who has an upper mandible half as long again as the lower) has discovered the existence of seeds in a nesting-box on the wall, and perches on the threshold (head outside, body inside) whilst hammering them open. The resident birds have been noticed to intimidate the less frequent visitors. At the end of February the approach of warmer weather caused the birds to become far more shy, and most seeds taken from the hopper were carried down to the bottom of the garden and eaten whilst the bird was perched on a hawthorn, underneath which there accumulated a carpet of seed-husks.

A friend has made the interesting suggestion that possibly some individual birds of the same species have a distinct preference for seeds rather than fat, or vice versa. Since this suggestion was made in the spring of this year, I have as yet had little opportunity of making observations on the matter; so far I have not noticed anything to confirm this suggestion, though with my own Great Tits I am certainly of the opinion that when sunflower-seeds are available they all will invariably make for these in preference to fat. Blue Tits, however, prefer the fat, and are hardly ever to be seen eating the seed. Another point of which I think it might be interesting to make a note is whether the largest number of visits per day coincides with the coldest weather? Personally, I doubt if they would, as I have frequently made a good day's record on a comparatively mild day when I expected to record nothing at all.

During the summer months—with so much natural food at hand—there was little opportunity for observation, and my notes were accordingly more casual. However, I did happen to see some of my old friends, as is shown by the chart. In the five summer months, April to August, 20 ringed birds were observed out of a total of 54 ringed birds. JJ, who appeared once in April, disappeared till 14th September, when he re-appeared—a very pitiful looking object—with a perfectly bald head and neck. With two exceptions he was seen every day till 29th September, but since then he has completely disappeared, and I fear we shall not see him again.*

Of the other birds visiting our garden, and which have been ringed in the same way for identification purposes, may be mentioned Cole Tits, Long Tailed Tits, Robins, Chaffinches, and Dunnocks; but as yet my notes on these are not sufficiently advanced to be of any interest.

*JJ was discovered dead in a neighbouring garden on 11th October 1932.

With regard to Robins, however, it is worth mentioning that in seven months (October 1931 to April 1932) I have had as many as twelve different Robins in the garden. Of these, one is known to have been killed by a cat, six have not been observed a second time, three have re-appeared occasionally, and two have appeared repeatedly. Considering the size of the garden, this number seems to be rather surprising; it certainly does not appear to agree entirely with the theory of a separate territory for each bird.

My coloured rings have sometimes provided amusing incidents, as when a neighbour living at the other end of the road (and who did not know that I was interested in birds) very seriously told me a story of rat-catching in his garden, he one day having caught a Tit by mistake. "And do you know," he said, "the remarkable thing about it is that there was a coloured ring on the bird's leg." "And do you know," was the reply, "that you trapped one of my birds?" On another occasion I was waiting for a 'bus in an adjoining road when I noticed a Blue Tit emerge from its nest in a lamp-post—and on its leg was one of my coloured rings! Two of my ringed Blue Tits mated and nested in a nesting-box six doors away from ours. They successfully reared seven young (there was one infertile egg), all of which were duly ringed before leaving the nest. I await with interest to see if the parents or any of the young turn up during the winter, and also to see if any of the same family use the same nesting-box next year.

And now just a word as to Ringing. It is probable that there are few who regard ringing as being in any way harmful to the birds, but I know some people are very doubtful about the matter. I think it is therefore worthy of note that of all the birds which have been constantly under my observation I have never seen a bird pecking at its ring for any length of time after it had been ringed. Most birds will peck at the ring for the first few minutes after the actual process of ringing has taken place, but I have had instances of birds returning to the verandah within twenty minutes of being ringed there. Frequent re-trapping and consequent handling of ringed birds has shown no signs of injury on the leg, either from aluminium or celluloid rings.

I fully realise that the figures in the chart are of little use in their present state, but their interest grows as time goes by and observations continue. Quite apart from any interesting data that may be obtained from the use of coloured rings, I must admit there is the continual fascination of looking out of the window with every chance of seeing a well-known feathered friend, and to be able to identify it as it flits from fence to swing, swing to food-table, food-table to hopper, with the feeling that one is beginning to know each bird quite intimately. As W. H. Davies has written:—

"And when the spring has gone and they are dumb,
Is it not fine to watch them at their play;
Is it not fine to see a bird that tries
To stand upon the end of every spray?"

And, I would add, is it not even more interesting to know them individually?

The Fritillary (*Fritillaria Meleagris* L.).

By HERMAN SPOONER.

IN the spring of 1929, members of the Botanical Section of the Society made an excursion to Berkshire to see the Fritillary in flower in its native habitat. They were rewarded by the sight of hundreds of the tessellated pinkish-purple bells intermixed with those of the white form, which were present in almost equal abundance. It was on this occasion that Mr Dallas obtained the excellent photographs that accompany this note.

The Fritillary is native to North and Central Europe, Russia and the Caucasus, and is the only representative in Britain of a genus comprising about 50 species. It grows in meadows on rich, damp grasslands that are subject to flooding. A plant of the Lily family, it has a bulb consisting of 2 or 3 thick scales from which arises a slender stem about 1 ft. high, furnished with a few grass-like leaves of glaucous green. The flower consists of 6 perianth leaves which, in the coloured type, are marked with squares of pink and purple in chess-board pattern. This chequering is less evident in the white forms of the flower. At the base of each perianth leaf is a prominent gland well supplied with nectar, but the flowers are scentless. The 3-lobed stigma is receptive before the anthers discharge their pollen, an arrangement which favours cross-pollination. The flower terminates the stem and appears in April and May. In the bud-stage the bud is held erect, but just before expanding the flower-stalk bends downwards, giving a bell-like, pendent position to the open flowers. The duration of the flower after expanding is 5 days. After pollination has been effected, the enlarging capsule reverts to an erect position, which assists the dispersal of the seeds.

This bending downwards of the open flowers serves not only to protect the pollen from wet but also prevents the visits of flies and other insects that would rifle the flowers of nectar without effecting pollination. The smooth waxy coating of the plant probably also serves, amongst other purposes, to prevent small creeping insects from obtaining access to the flowers.

According to Kunth the flowers are visited by the bumble bee (*Bombus terrestris* L.). The insect alights on the outside of a perianth leaf and then creeps round its lower margin into the inside of the flower and climbs upon the inner surface until it reaches the nectar. In doing so the insect brushes its back against the receptive stigma and dusts it with pollen brought from other flowers.

The peculiar chequer markings, which are the most striking feature of the flowers, have given rise to both the generic and the specific name of the plant. *Fritillaria* is derived from the Latin *fritillus*, a dice-box or chequer board, whilst *Meleagris* is derived from Meleager, son of Æneus of



FRITILLARIES.

Photograph by John E. S. Dallas.

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FRITILLARIES.

White form.

Photograph by John E. S. Dallas.

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HISTORY.

Greek legend, whose sisters were turned into guinea fowls, the markings of which the flower somewhat resembles. As Gerard says, "every leaf seemeth to be the feather of a ginnie-hen, whereof it took his name." Fortunately there are no synonyms for the scientific names, but several common names for the flowers are in use in different localities. In addition to "Ginnie-hen-flower" already mentioned, Gerard uses the names "Turkey-hen-flower," and "Chequered Daffodil," whilst Parkinson called it "Chequered Lily." "Turkey eggs" and "Turk's Head" are probably corruptions of the former name. "Snake's Head" is commonly used and is fairly obvious, but "Toad's Head," "Frog Cup" (Fro'cup) and "Death's Head" seem to be less appropriate. Two peculiar names are "Lazurus' Bell" and "Leopard's Bell," probably meaning "Lazar's Bell" and "Leper's Bell," names which had a more obvious meaning in the past when lepers were more common and used to wear a warning bell to announce their approach.

Although its distribution in this country is local, the Fritillary is usually abundant where it does occur. It is practically confined to the south and eastern counties, and particularly favours the valley of the Thames and its tributaries. It does not occur in Scotland or Ireland.

According to Druce's *Comital Flora* (1932) it occurs in 28 of the botanical counties and vice-counties. These localities extend from North Somerset in the west to Essex, Suffolk and Norfolk in the east. It is rather remarkable that such a striking and unusual plant should have remained unrecorded as a member of the British flora until the 18th century. In this connection it is an interesting fact that it was first recorded from a Middlesex locality. It is true that Gerard describes the plant in his *Herball* of 1597, but he gives no locality. The first record of it as a British plant is that of John Blackstone in 1737, in his list of plants around Harefield, the locality he gives being Maudefields, near Ruislip, which is thought to indicate Ruislip moor. Blackstone suspected it to be an outcast from gardens, although it had been observed for 40 years previously by a Mr Ashby, of Breakspears.

It appears to have been formerly found in several localities near London and within the Society's area, as the following records show:—

Middlesex.—Ruislip moor; Pinner Church; near Enfield; Finchley.

Herts.—Hatfield; St Albans; Watford; Bushey Heath; Totteridge; Mill Hill.

Bucks.—Denham; Iver, south-west of the village on right going from Iver to Thorney.

Essex.—Marsh between Lea Bridge and Walthamstow.

Kent.—Near Bromley; near Higham.

Surrey.—Between Mortlake and Kew Bridge. No record during past 50 years, but many previous to 1876.

So far as our records go, the Fritillary does not now occur within the Society's area of 20 miles round St Paul's Cathedral, and it is necessary to go farther afield to see the plant in a wild state. No doubt the building of embankments to prevent flooding and the extension of building areas have contributed towards its extinction. Unfortu-

nately for the plant, the flowers have an artistic value when gathered and used as decoration, for then the markings of the coloured form are more obvious than when seen in the field. As a garden plant the Fritillary is also of value for damp situations on rockeries and moist places in the wild garden, and no doubt it has been the fate of many bulbs to be transferred to the garden from the field. The plucking of the flowers is no doubt detrimental to the plant as, unlike Bluebells, Daffodils and Snowdrops, they cannot be gathered without the leaves. As the future welfare of the bulbs depends upon the leaves fulfilling their work of food preparation, the removal of leaves before this has been accomplished must weaken the bulbs. Apart from this, there is the loss of seed which must inevitably occur when the flowers are plucked. Fortunately, when out of flower the plant is inconspicuous, and not easily recognisable by the uninitiated when it is in bud or fruit. But all who are interested in conserving our flora should refrain from gathering flowers of this beautiful member and should do all they can to discourage the sale of flowers collected from the wild plants. It is, however, not always the thoughtless persons who are responsible for exterminating rare and beautiful plants. For instance, Druce states that one year no less than 3000 specimens of Fritillary were sent up to Kew for use in the Science and Art examinations at South Kensington, and he remarks, "the wanton way in which this plant is gathered threatens its destruction in the not distant future."

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Ornithological Records of the London Area.

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

Edited by the Ornithological Records Committee (C. S. BAYNE, H. A. LITTLEJOHN, L. PARMENTER, and C. WEEKS).

THE preliminary list of the birds of the area, published in *The London Naturalist*, 1928, pp. 33 to 59 (also as *London Naturalist Reprint*, No. 5), showed great gaps in the records. During the past four years there has been a steady accession of observers who have helped to fill many of these gaps. The following tables give the results to December 1932 for each division. It is hoped that their publication will be a help in the collection of further notes on the distribution of London's birds. It must be remembered, however, that because a species has been recorded in an area it does not necessarily mean that it still occurs there. The encroachment of buildings on the open spaces means a constantly altering status and annual reports from all over the London area are needed to modernise our knowledge.

The description of the divisions and their boundaries was published in *The London Naturalist*, 1928, pp. 33 to 36. A map giving the boundaries of the divisions may be obtained from the Librarians at the Headquarters of the Society, price one penny.

The nomenclature is that of *A Check List of British Birds* by H. F. Witherby, 1924, as amended in *British Birds*, 1924 *et seq.*

The total for the area is now 212 forms (99 of them nesting). The total for the area north of the Thames is 204 forms (94 nesting), and for the south 183 forms (95 nesting).

1=Recorded.

2=Nesting.

No. of Division,	1	2	3	4	5	6	7	8	9	10	11	12
No. of Species Recorded,	94	93	163	131	92	152	109	148	129	90	96	96
No. of Species rec. Nesting, ...	72	58	82	83	36	69	47	58	79	50	51	31
No. of Division,	13	14	15	16	17	18	19	20	21	22	23	24
No. of Species Recorded,	130	151	98	129	111	88	104	86	67	58	71	67
No. of Species rec. Nesting, ...	68	72	39	47	85	44	67	22	13	16	7	7

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Raven	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hooded Crow	—	—	1	—	1	1	—	1	1	—	—	1	1	1	—	1	1	1	1	—	—	—	—	—
Carrion-Crow	2	1	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	1	2	1	2	1
Rook	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2
Jackdaw	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	1	1
Magpie	2	2	2	1	2	2	1	1	2	1	2	1	2	1	1	1	2	2	2	—	—	—	—	1
Slender-billed Nuthacker	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
British Jay	2	2	2	2	1	2	2	1	2	1	1	1	2	2	2	2	2	2	2	1	—	1	1	1
Starling	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	1	1	2	2
Hawfinch	—	—	2	2	—	1	1	1	2	—	—	—	2	2	1	1	2	1	1	1	—	—	—	—
Greenfinch	2	2	2	2	1	2	2	1	2	1	2	2	2	1	1	2	2	2	2	1	1	1	1	1
British Goldfinch	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	1	2	1	1	1	1	1
Siskin	—	—	1	1	—	1	1	1	1	—	—	—	1	1	1	1	1	—	—	1	—	—	—	—
Twite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mealy Redpoll	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lesser Redpoll	1	1	2	2	—	2	1	2	2	1	1	—	1	2	2	1	2	1	2	2	—	2	2	1
Linnet	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	1	2	2	2	2	1	2	1	1
British Bullfinch	2	2	2	2	1	2	2	2	2	2	1	—	2	2	1	1	2	1	1	1	—	—	—	—
Common Crossbill	1	1	1	1	—	1	1	—	1	—	1	—	2	—	1	1	1	1	1	2	—	1	1	1
Chaffinch	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Brambling	1	—	1	—	—	1	1	1	1	—	—	1	—	1	1	1	1	1	1	—	1	—	1	—
House-Sparrow	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2
Tree-Sparrow	2	1	2	2	1	2	1	2	2	2	1	1	1	2	1	2	1	1	1	1	1	—	—	—
Corn-Bunting	1	1	1	2	1	1	—	1	1	2	—	1	2	—	—	—	—	1	1	—	—	—	—	—
Yellow Bunting	2	1	2	2	1	1	2	1	2	2	1	1	1	2	1	1	2	2	2	1	1	1	1	1
Cirl Bunting	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Reed-Bunting	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	—	—	—	—

1=Recorded.

2=Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Snow-Bunting	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Wood-Lark	—	—	—	—	—	—	1	—	—	—	—	—	1	2	—	—	2	1	1	—	—	—	—	—
Sky-Lark	2	2	2	2	1	1	1	2	2	2	2	2	1	2	2	2	2	2	2	1	1	1	1	1
Tree-Pipit	2	1	2	2	1	1	1	1	2	2	1	1	1	2	2	1	2	2	2	1	1	1	1	1
Meadow-Pipit	2	1	2	2	1	1	1	1	2	2	1	1	2	2	2	1	2	1	1	1	1	2	1	1
Rock-Pipit	—	—	1	—	1	—	—	1	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—
Blue-headed Wagtail	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Yellow Wagtail	2	1	2	2	1	2	1	2	1	1	—	2	2	2	—	2	2	—	1	1	2	—	—	—
Grey Wagtail	1	1	1	1	1	1	1	1	1	1	—	—	1	2	1	2	1	2	—	2	1	—	1	1
Pied Wagtail	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1
White Wagtail	—	—	1	1	—	1	—	—	—	—	—	—	1	1	1	—	1	—	1	—	—	—	—	—
British Tree-Creeper	2	2	2	2	—	2	2	2	2	1	1	1	2	2	1	2	2	1	2	1	—	—	—	1
British Nuthatch	2	2	2	2	2	2	1	2	2	—	1	—	2	2	1	1	2	1	2	2	—	—	—	1
British Great Titmouse	2	2	2	2	2	2	1	1	2	2	2	1	2	2	1	2	2	2	2	1	2	1	1	1
British Blue Titmouse	2	2	2	2	2	2	1	1	2	2	2	1	2	2	2	2	2	2	2	1	2	1	1	1
British Coal-Titmouse	2	1	2	2	1	2	1	2	2	1	1	1	2	2	1	1	2	1	2	1	—	—	—	1
British Marsh-Titmouse	1	1	2	2	1	1	1	2	2	2	2	—	1	1	1	1	2	1	2	1	—	—	—	1
British Willow-Titmouse	—	—	2	2	—	1	—	—	—	—	—	—	—	—	—	1	—	1	1	—	—	—	—	—
British Long-tailed Titmouse	2	2	2	2	2	2	2	2	2	1	1	—	2	2	2	1	2	2	2	1	1	—	—	1
British Golden-crested Wren	2	1	2	2	—	2	2	2	2	1	1	1	1	1	1	2	2	2	2	1	—	1	1	2
Fire-crested Wren	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—
Great Grey Shrike	—	—	—	—	—	—	—	—	1	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—
Red-backed Shrike	—	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	—	1	1	—	—
Waxwing	—	—	—	1	—	1	1	—	1	—	1	—	—	1	—	—	—	—	—	—	1	—	—	—
Spotted Flycatcher	2	2	2	2	1	2	2	2	2	2	2	—	2	2	2	2	2	2	2	1	—	1	—	—
Pied Flycatcher	—	—	—	1	—	1	—	1	—	—	1	—	—	1	—	1	—	1	—	1	—	—	—	—
Chiffchaff	2	2	2	2	2	2	1	1	2	1	2	1	2	2	1	2	2	1	2	1	—	1	1	1

1=Recorded. 2=Nesting

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Willow-Warbler	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Wood-Warbler	2	2	—	2	—	2	1	2	2	—	—	—	2	2	1	1	2	2	2	2	1	—	—	1
Yellow-browed Warbler	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Grasshopper-Warbler	—	—	1	1	—	—	1	1	1	—	1	—	1	—	2	—	2	1	—	—	—	—	—	—
Reed-Warbler	2	—	2	—	1	1	1	2	1	2	2	2	2	2	—	2	—	—	1	—	1	—	—	—
Marsh-Warbler	—	—	—	—	—	1	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
Sedge-Warbler	2	1	2	2	2	2	1	2	1	2	2	2	2	1	1	2	2	—	1	—	1	—	—	1
Aquatic Warbler	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Garden-Warbler	—	2	2	2	1	2	2	2	2	1	2	1	1	2	1	1	2	1	2	—	—	—	—	1
Blackcap	2	2	2	2	1	2	2	1	2	1	1	1	1	2	1	1	2	2	2	1	—	—	—	1
Whitethroat	2	2	2	2	2	1	2	1	2	2	1	1	2	2	1	1	2	1	2	1	2	—	—	1
Lesser Whitethroat	2	2	2	2	1	2	1	1	2	1	1	1	1	2	1	1	2	1	2	—	—	—	—	1
Dartford Warbler	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—
Fieldfare	1	1	1	1	1	1	1	1	1	1	—	1	1	1	1	1	1	1	1	1	1	1	1	1
Mistle-Thrush	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1	1	2	2	1	2	1	1	1	1
British Song-Thrush	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1
Redwing	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	—	1	1
Ring-Ouzel	—	—	—	—	—	1	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Blackbird	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Wheatear	—	1	1	2	1	1	1	1	1	1	—	1	—	2	1	1	2	2	1	—	1	1	1	—
Greenland Wheatear	—	—	1	—	—	1	—	—	—	—	—	—	—	1	—	—	1	1	—	—	—	—	—	—
Whinchat	2	2	2	2	1	2	1	2	2	2	—	1	2	2	1	1	2	2	1	1	2	—	—	—
British Stonechat	1	1	2	2	1	2	1	2	2	1	2	1	1	2	1	2	2	2	2	1	1	2	1	—
Redstart	—	2	1	1	1	2	1	1	2	1	1	—	2	2	1	1	1	2	1	1	—	—	—	—
Black Redstart	—	—	—	—	—	1	—	—	1	—	—	—	—	1	—	1	1	1	1	1	—	—	—	—
Nightingale	2	2	2	2	—	2	1	1	2	1	2	1	2	2	1	1	2	2	2	1	—	—	—	1
British Robin	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1

1=Recorded.

2=Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
British Hedge-Sparrow	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
Wren	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	1	2	1	2	1	1
British Dipper	—	—	1	—	1	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Swallow	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	1	1	1
Martin	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	1	1	2	1	2	1
Sand-Martin	2	2	2	2	1	2	2	2	2	2	2	2	1	2	1	1	2	—	2	—	2	—	—	—	1
Swift	2	2	2	2	1	2	2	1	2	2	2	2	2	2	1	1	2	2	2	2	2	1	1	1	1
Nightjar	—	1	1	2	—	2	2	2	2	2	2	—	1	1	1	1	2	2	1	2	—	—	—	—	2
Hoopoe	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Kingfisher	2	2	2	2	2	2	2	1	2	1	2	2	2	2	1	1	2	—	2	1	1	—	—	—	1
Green Woodpecker	2	2	2	2	2	1	1	1	2	1	1	2	2	2	2	1	2	1	2	1	—	—	1	1	1
British Great Spotted Woodpecker	2	2	2	2	—	2	1	2	2	1	2	1	2	2	1	2	2	1	2	2	—	—	1	1	—
British Lesser Spotted Woodpecker	1	2	2	2	—	2	1	2	2	1	2	—	2	1	1	2	2	1	2	2	—	—	1	—	—
Wryneck	1	1	1	1	1	2	2	2	2	—	2	—	1	1	2	2	2	2	2	2	1	—	—	2	1
Cuckoo	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	—	—	2	1
Little Owl	2	2	2	2	1	2	2	2	2	1	2	1	2	2	2	1	2	2	2	2	1	1	1	1	—
Long-eared Owl	—	—	—	2	—	1	1	1	1	—	—	—	—	—	1	1	—	—	—	1	—	—	—	—	—
Short-eared Owl	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
British Tawny Owl	2	2	2	2	—	2	1	2	2	2	2	1	2	2	1	2	2	2	2	1	—	—	—	—	—
White-breasted Barn-Owl	2	—	2	2	1	2	1	2	2	2	1	2	1	1	1	1	2	1	1	1	—	—	—	—	1
Peregrine Falcon	—	—	1	1	—	1	1	—	—	—	—	—	1	1	—	—	1	—	—	—	—	—	—	—	—
Hobby	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Merlin	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Kestrel	2	2	2	2	2	2	1	2	2	2	1	1	2	2	1	2	2	2	1	2	1	—	—	—	1
Common Buzzard	—	—	—	—	—	1	1	—	1	—	—	1	—	—	—	1	1	—	1	1	—	—	—	—	—
Sparrow-Hawk	2	2	2	2	—	1	2	1	2	2	2	—	1	2	1	1	2	1	2	1	2	—	—	—	—
White-tailed Eagle	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1 = Recorded.

2 = Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Osprey	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Common Heron	2	2	2	1	1	1	2	2	2	1	1	1	2	2	1	2	2	1	2	2	1	1	1	1
Bittern	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Bewick's Swan	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mute Swan	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	—	2	1	1	—	—	1
Grey Lag-Goose	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
White-fronted Goose	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pink-footed Goose	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sheld-Duck	—	—	1	1	—	—	—	1	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—
Mallard	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	2	—	2	1	1	—	—	1
Gadwall	—	—	1	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Teal	1	—	2	1	1	1	1	1	1	—	1	—	1	1	1	1	1	—	1	1	1	—	—	(nested in Surrey area)
Garganey	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Wigeon	1	—	1	1	1	1	—	1	1	—	1	—	1	1	—	1	—	—	—	—	—	—	—	—
Pintail	—	—	1	1	—	—	—	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Shoveler	1	—	1	1	—	1	—	1	1	—	—	—	1	1	—	1	—	—	1	—	—	—	—	—
Red-crested Pochard	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Common Pochard	1	1	2	1	1	1	1	2	1	—	1	—	1	2	—	2	—	—	1	—	—	—	—	—
Tufted Duck	2	1	1	1	1	2	1	2	2	—	1	—	2	2	—	2	2	—	2	—	2	—	—	1
Scaup-Duck	—	—	1	1	—	1	—	1	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—
Goldeneye	—	—	1	1	—	1	—	1	1	—	—	—	1	1	—	1	—	—	—	—	—	—	—	—
Long-tailed Duck	—	—	1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Common Eider	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Common Scoter	—	—	1	1	1	1	—	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
Velvet-Scoter	—	—	1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Goosander	1	—	1	1	1	1	—	1	—	—	—	—	1	1	—	1	—	—	—	—	—	—	—	—
Red-breasted Merganser	—	—	1	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—

1=Recorded.

2=Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Smew	—	—	1	1	—	1	—	1	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—
Cormorant	—	—	1	—	—	1	—	1	—	—	—	1	1	1	—	—	—	—	—	—	1	—	—	—
Shag	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gannet	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Leach's Fork-tailed Petrel	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Manx Shearwater	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Great Crested Grebe	2	1	2	2	2	2	2	2	1	—	2	2	2	2	1	1	2	—	2	2	—	2	—	—
Slavonian Grebe	—	—	1	—	—	—	—	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
Red-necked Grebe	—	—	1	—	—	1	—	1	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—
Black-necked Grebe	—	—	1	1	1	1	—	1	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—
Little Grebe	2	2	2	2	2	2	2	2	2	—	1	1	2	2	2	2	2	—	2	—	2	—	—	1
Great Northern Diver	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Black-throated Diver	—	—	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Red-throated Diver	—	—	1	1	—	—	—	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Wood-Pigeon	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1
Stock-Dove	2	2	2	2	2	2	1	1	2	2	2	1	2	2	1	2	2	1	1	1	1	1	1	1
Turtle-Dove	2	2	2	2	1	2	2	1	1	2	1	—	2	1	2	1	2	2	1	1	1	1	1	1
Pallas's Sand-Grouse	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
Stone-Curlew	—	1	—	—	1	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
British Oyster-Catcher	—	—	1	—	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Ringed Plover	—	—	1	1	—	1	—	2	—	—	—	—	1	1	—	1	—	—	—	—	—	—	—	—
Golden Plover ? sub-species	—	—	1	—	—	1	—	1	1	1	—	—	1	—	—	1	1	1	—	—	—	—	—	—
Asiatic Golden Plover	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Grey Plover	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lapwing	2	2	2	2	2	1	1	1	2	2	2	2	2	1	2	2	2	2	2	2	1	1	1	1
Turnstone	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ruff	—	—	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—

1 = Recorded. 2 = Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sanderling	—	—	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Knot	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dunlin ? sub-species	—	—	1	1	—	1	—	1	—	—	—	1	1	1	—	1	—	—	—	—	—	—	—	—
Curlew-Sandpiper	—	—	1	1	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Little Stint	—	—	—	1	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Common Sandpiper	—	1	1	1	1	1	—	1	1	1	1	1	1	1	1	1	—	1	—	—	—	—	—	—
Wood-Sandpiper	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Green Sandpiper	1	1	1	1	—	1	1	1	1	1	—	1	1	1	—	1	—	—	—	—	—	—	—	—
Common Redshank	1	—	2	2	1	1	2	2	2	2	2	2	2	1	—	2	1	—	—	—	2	—	—	1
Spotted Redshank	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Greenshank	—	—	1	1	—	1	—	1	—	—	—	1	1	1	—	1	—	—	—	—	—	—	—	—
Grey Phalarope	—	—	1	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Avocet	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Bar-tailed Godwit	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Black-tailed Godwit	—	—	1	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Common Curlew	—	—	1	1	1	1	1	1	1	1	—	1	—	1	—	1	—	—	—	1	—	—	—	—
Whimbrel	—	—	1	—	—	1	—	1	—	—	—	1	—	1	—	—	—	—	—	1	—	—	—	—
Common Snipe	2	1	2	2	1	1	1	1	2	1	1	1	1	1	1	1	—	2	—	1	—	—	—	2
Jack Snipe	—	—	1	1	—	1	—	1	1	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—
Woodcock	1	—	1	1	—	1	1	—	1	1	1	1	—	1	—	1	—	—	1	—	—	—	—	—
Black Tern	—	—	1	1	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Sandwich Tern	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Common Tern	—	—	1	—	—	1	—	1	—	—	—	—	1	1	—	1	—	—	—	1	—	—	—	—
Arctic Tern	—	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Little Tern	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—
Little Gull	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
Black-headed Gull	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

1=Recorded.

2=Nesting.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Common Gull	1	—	1	1	1	1	—	1	1	—	—	1	1	1	1	1	1	—	—	1	1	1	—	—	
Herring-Gull	—	1	1	1	—	1	—	1	—	—	—	1	1	1	—	1	—	—	1	—	—	—	—	—	
Scandinavian Lesser Black-backed Gull	—	—	1	—	—	1	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	
Lesser Black-backed Gull ? sub-species	—	—	1	1	—	1	—	1	1	—	—	1	1	1	—	1	1	—	—	1	—	—	—	—	
Great Black-backed Gull	—	—	1	—	—	1	—	—	—	—	—	1	1	1	—	1	—	—	—	—	—	—	—	—	
Glaucous Gull	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	
Kittiwake Gull	—	—	1	—	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	
Great Skua	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Arctic Skua	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	
Razorbill	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	
Guillemot ? sub-species	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	
Little Auk	—	—	1	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	
Southern Puffin	—	—	—	—	—	1	—	1	—	—	—	—	—	1	1	1	1	1	—	—	—	—	—	—	
Land-Rail	—	1	1	1	—	2	2	2	1	1	—	—	—	—	—	—	1	1	—	—	—	—	—	1	
Spotted Crake	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Baillon's Crake	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	
Water-Rail	—	—	1	1	—	1	1	1	1	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	
Moor-Hen	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Coot	2	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	—	2	1	—	—	—	—	1
Pheasant	2	2	2	2	1	1	1	1	2	1	2	1	2	2	1	1	2	1	2	2	—	1	2	1	1
Common Partridge	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1	1	—	—	—	1
Quail	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Red-legged Partridge	—	—	2	2	—	2	2	—	2	2	2	1	1	1	—	1	2	2	2	—	—	—	—	—	2

1=Recorded.

2=Nesting.

A Corner of Essex in the 18th Century.

THE accompanying map published in 1777 has many points of interest both from the archaeological and from the folk-lore points of view.

Beginning at the top left hand corner (the N.W.) we find that what is now known as Waltham Abbey was then more correctly known as Waltham Holy Cross, a name now bestowed upon an area about a mile to the west of it, where the Eleanor Cross was erected, hence the popular belief that the district was named after the Eleanor Cross, whereas the name is much earlier and relates to the legend of the founding of Waltham Abbey in Anglo-Saxon times.

This legend is to the effect that a certain sexton of a parish in Somerset "at a Place called commonly Lutegarsbyry, in French Montague" (now known as Montacute), had a vision or dream, in the reign of King Canute, in which he was told to dig at the top of an adjoining hill when he would find a cross, "the verie signe of Christes passion." He did not pay much heed to this, neither did his wife, to whom he told it; but the vision appeared again and gripped his hand so fiercely that the mark of the nails remained when he awoke! Whereupon he went post haste to the Priest of the Parish and told him of the vision. A procession was formed, with the Sexton at its head and the Priest in full canonicals; and on digging they found a great marble (or marvell) having a flint crucifix in it, while under the right arm was a small image of the same form, a bell, and a black book containing the text of the four Evangelists.

This was all told to the then Lord of the Manor, a certain Tovi le Prude, who was a standard-bearer to King Canute. He had the large cross placed on a wain to which were harnessed twelve red oxen and so many white kine, and tried to drive them to Canterbury; but pull as they might, the oxen could not move the wain. He then tried to drive them toward his house at Reading, but again they could not move. He then thought of a small house he had begun to build at Waltham (Walt=wood, ham=home, or settlement), and began to direct them there, when the wain immediately went of itself! Arrived there, the cross was set up and became well known as containing miraculous properties, so that the devout brought the maimed and the diseased to it; thus a town grew around it, and the Abbey was founded, at Waltham Holy Cross.

Following along Cobbin Brook (still so named), E. from Waltham Holy Cross, we come to Cobbin End, now called Cobbin's End, and it is pleasing to note that the two farms to the north which are still there, are marked upon this map of 1777. To the south, Copped Hall still retains its name. It was at one time the home of the monks who served at the Abbey, and there is a Copped Hall Green and Warleys all unchanged, but no mention of the present village of Upshire nor Upshire Green, so these have apparently come into being within the past 150 years. One might be tempted to wonder how they derived their name,



REPRODUCTION OF MAP " PUBLISHED AS THE ACT DIRECTS OCTOBER 1ST, 1777, BY JOHN CHAPMAN AND PETER ANDRE."

BRITISH
MUSEUM
27 JUN 33
NATURAL
HISTORY.

but when one remembers that the church was made to represent an ancient building and painted with lichens within the memory of the present generation, it seems scarcely worth wondering at anything in connection with it.

Honey Lane remains unchanged, and Woodredon is still sometimes used instead of the more popular corruption, Woodridden Hill. It is worthy of note that the house of Woodredon was charged a higher rent than that of most properties of its size, on account of the abundance of deer in that part of the forest and the special facilities for poaching them, and it still seems to be a popular neighbourhood for the deer; one is more likely to see them on the slope bounded on one side by Woodridden Hill than in almost any other area of the Forest.

At the top of the hill the present Epping Main Road is absent, although there is a boundary line between two "Hundreds," that curiously enough runs along the greater part of its course. There is no trace of Wake Arms, although King's Oak was extant then, and Ambresbury Bank is called simply Ambers Banks. Epping remains almost entirely unchanged, but there is no sign of Ivychinnies—the lane that runs through it now is marked Hawcock Lane; it affords food for speculation when one remembers that at the top of this lane is still the pool (here marked) beside which one may find, almost invariably, one or more pair of hawfinches breeding. Coopersale is printed as one word, so presumably the redoubtable Mr Cooper brewed his celebrated ale considerably earlier than 1777. Ongar Park Wood still has the same name, and so have the three Theydons, although Gernon tends to become Garnon nowadays. Toot Hill still maintains its corner and Wood Hatch seems still to have the same number of cottages; Stapleford Tany has gained a "w"—it is a little puzzling to think how or why. Albyns is unaltered, and Curtiss Green was Curtmill Green—another puzzle.

It is curious to note that the watermill near Passingford Bridge has a cheery picture of a windmill, marked Corn Mill, which, considering its position in a valley, seems rather improbable.

Pirgo has now changed to Pyrgo, and Havering acquired an extra "t" in its "atte" while Rumford nowadays prefers Romford. Collier Row and Hog Hill still persist unchanged, but Henhault has become Hainault, which seems a distinct deterioration, the size of the forest as well as its name seem to have suffered in the passing of time.

Bishops Hall and Lamborn still hold good, as do Abridge, Loughton and Chigwell, but Buckhurst Hill is represented as Bucket Hill, and seeing that there is a Bucket Green at its base, one wonders whether it was not from the bucket-like formation of the land here that it obtained its name, for Bucket Green is quite distinctly hemmed in by hills all round; in which case the more grandiloquent Buckhurst must have been assumed later. The Roe Buck, however, still maintains itself but the Bald-faced Stag was then apparently bald all over!

Woodford remains unchanged, and Woodford Bridge and Claybury; many of us can still remember Ray House. Woodford Wells was there then, but there is no trace of Woodford Green, which is rather re-

markable, and its place seems to have been taken more or less by Woodford Row. Snaresbrook and the Eagle, with its pond depicted opposite, are all here, but one would search in vain for Mobs Hole.

Whipps Cross has gained a "p" and Knotts Green a "t," while Waltham Stow has joined up into one word, perhaps better so, for the "Stow" is entirely redundant, having originally practically the same meaning as "ham." Hoe St. still reminds us of gardening, but Shannal has become Shern Hall, which again is puzzling, especially as there appears to have been a Tom Hall in it. Hale End seems to have been just as healthy then, but it must have been puzzling for its inhabitants to know that their village united Higham Hill at Walthamstow (which we still have) to Higham Hill at Woodford, which now seems to have solved its difficulty by transposing its name to Higham's Park.

What we know now as Lark's Wood was apparently Lark's Hill, and a wood is marked to the south of it. Chingford had crystalised even then from its Shingleford, and its Hatch was also established. It is pleasing to meet Friday Hill, White Hall, and Pimps Hall, and one cannot but think that Merry Hill was a more appropriate name than Chingford Mount. Low Street is still Low, and Hawke Wood even then had its name, but Fairmaid Bottom seems more romantic than Fairmead. Sewardston appears to have been just acquiring its final "e," for it is printed in both ways. Lipped Hill seems more appropriate to the formation here than Leppit Hill, and, finally, one is pleased to find yet another confirmation of the fact that Beech trees did *not* give the name to that High bank of shingly gravel above the Lea valley, in short, High Beach.

A FEEDING HABIT OF *OPHONUS RUFIBARBIS* F. (COL.).

By R. J. SPITTLE.

WHILE searching for Coleoptera at "Greenlands," near Hambleton, Bucks., on 28th August 1932, I noticed several carabids, *Ophonus rufibarbis* F., both on the umbels and running up and down the stems of the Wild Parsnip (*Pastinaca sativa* Linn.).

On closer examination the beetles were seen to be gnawing at the fruits which, at that time of the year, were ripening. As is well known, the fruits of umbelliferous plants contain a certain amount of oil, and it was probably this that attracted the beetles.

British Butterflies in 1932.

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

MY own experience in the past year was so very unfruitful that I have very little beyond negative results to record. Except for "Whites" I saw few insects on those days when I was able to get out—for instance, in a walk of ten and a half hours on 27th August between Leatherhead and Clandon only 52 butterflies were seen. These belonged to 11 species, *Vanessa io* (18) and *Pieris rapae* (10) heading the list. Consequently, when the reports came in from other members I was pleasantly surprised to find that several of my correspondents were able to record that various species were holding their own, though there are many contradictory opinions from different observers, from which one is forced to conclude that a number of species appeared much later than usual, and so were not seen when expected. Several were only reported as being seen in scanty numbers compared with their normal state.

The weather was not helpful—a generally mild winter dragged on into a cold spring and summer, with a belated short period of warmth which ended all too soon in the Home Counties, giving little encouragement to insects and collectors alike. Many broods of larvae no doubt perished under these conditions, or were so thinned out that few reached the perfect state. Still, as I have remarked above, there are bright spots to record.

I have to thank many correspondents for information sent in, especially Misses E. M. Gibson, C. E. Longfield, and E. M. Miller, and Messrs R. Adkin, J. O. Braithwaite, G. F. Crowther, R. C. Cyriax, W. J. Fordham, F. W. Frohawk, W. E. Gaze, J. D. Gillett, F. D. Greenwood, F. J. Hanbury, G. H. Heath, J. B. Hicks, C. Mellows, J. W. Moore, C. Nicholson, C. Oldham, R. W. Robbins, G. B. Routledge, E. F. Studd, G. Talbot, D. G. Underhill, E. H. Wattson, and P. H. Willcox.

Others have reported that they really had nothing worth recording, as insects had been scarce or entirely absent.

The area covered in these notes is much smaller than in previous years. Miss Longfield writes from South West Ireland, Mr Routledge from Cumberland, Dr Fordham from Yorkshire, Messrs Mellows and Moore from the Midlands, and Mr Crowther from South Wales. The others mostly confine their attention to the Home Counties or to the southern coast.

Observation was directed to the immigrant species and some amount of information has been gathered, but it generally points to the absence of large numbers of these species, so that where observed it was only singly or in small parties.

Papilio machaon L. was said to be in large numbers in Norfolk in June, and there were many larvae in early August, but few seemed to have survived (C.M.).

Pieris brassicae L. and *P. rapae* L. were only in small numbers early on, but in August and September appeared in abundance though no larvae had been noticed in many places. Evidently there had been a large immigration from the Continent which covered East Anglia, the Southern Counties, and parts of Wales. *P. napi* L. was about in small numbers throughout the season, becoming more noticeable towards the end of the summer. Mr Gillett was the only one to report an increase generally in the numbers. Mr Wattson states that those specimens seen in his garden at Twickenham seemed to have the veins darker than is usual in the species. *Euchloe cardamines* L. was generally scarce and much later than usual. *Leptosia sinapis* L. not uncommon in Surrey (F.W.F.), but much later than usual in the Midlands (C.M.), while Miss Gibson reports it as abundant in one locality in Herefordshire.

Colias hyale L. has not been recorded by my correspondents. *C. croceus* Fourc. (*edusa* F.) seems to have appeared along the southern coast, and in a few localities was plentiful. Miss Gibson records large numbers—all males—in a field near Petersfield. Mr Mellows reports it plentiful in Cornwall. Messrs Adkin, Greenwood, and Underhill record numbers seen in Sussex. Some specimens of var. *helice* are recorded from Cornwall (C.M. and C.N.) and Sussex (D.G.U.). *Gonepteryx rhamni* L. was not so noticeable as usual in most places, but Mr Hanbury reported it common in Sussex. At the end of June I captured a worn female and in July she laid 7 eggs from which I bred 5 imagines in August.

Mr Frohawk reports a few specimens of *Apatura iris* L. in Sussex. *Limenitis sibylla* L. continues to spread and is now well established in various places round London, and has been seen in Hampstead (R.C.C.). *Polygonia e-album* L. seems to have decreased, being seen less frequently than in the two previous years. For the fifth year in succession Mr E. H. Wattson saw one in his garden at Twickenham. Mr Willcox reports two *Eugonia polychloros* L. seen in Hampshire. *Aglais urticae* L. is perplexing. "Absent" or "hardly any" is the record from many places, while five observers found it common. Miss Longfield says "very plentiful in S.W. Ireland." *Vanessa io* L. was found abundantly by a few correspondents while others report none or hardly any seen. In Surrey I saw a fair number in the autumn, some of them probably of my own rearing as I turned several bred ones out into the garden at Fetcham. Regarding *Euvanessa antiopa* L., Mr Frohawk draws attention to the liberation in this country of a number of specimens imported from abroad which may militate against the value of any records. None of my correspondents, however, report having seen this species on the wing this year. *Pyrameis cardui* L. was not much in evidence, but a number was observed in Cornwall in August (G.H.H.), and near Eastbourne (F.D.G.), and East Grinstead (F.J.H.). A few were noted near Falmouth up to 17th October (C.O.). Mr Studd says fairly common at the end of the summer near Starcross.

Dryas paphia L. was very plentiful in S.W. Ireland (C.E.L.), very common in Hampshire (P.H.W.), common in N. Devon (J.B.H.), and was seen near London, but seems to have escaped the notice of several

observers. *Argynnis cydippe* L. was locally plentiful in Hants (F.W.F. and P.H.W.), with *A. aglaia* L. similarly plentiful in places. *Brenthis euphrosyne* L. and *B. selene* L. both late in appearance and only occasionally in numbers. *Melitaea athalia* Rott. common to plentiful in certain areas (F.W.F., C.M., and E.M.G.). *M. aurinia* Rott. not uncommon (C.M.).

Melanargia galatea L. was frequent in some places and only seen sparingly in others. *Hipparchia semele* L. late in appearance and then fairly plentiful in some places. *Pararge egeria* L. generally plentiful. *P. megaera* L. still more so, and *Epinephele jurtina* L. much more so in most places. *E. tithonus* L. plentiful in most districts. *Aphantopus hyperanthus* L. generally to be seen in the summer, while *Coenonympha pamphilus* L. though common in places did not seem to be up to its usual numbers.

Zephyrus betulae L., whose larvae were recorded a year ago by Miss Gibson as subject to a heavy mortality percentage, was absent from its usual haunt, which seems to bear out the previous observation. *Z. quercus* L. was reported as plentiful in the larval state, but imagines were not common. *Thecla pruni* L. was fairly common in Northamptonshire (C.M.), and *T. w-album* Knoch. was plentiful near Bishops Stortford (C.M.), but the Society failed to find many near Clandon, where several were seen last year. *Callophrys rubi* L. was only seen in a few districts and then only sparingly.

Chrysophanus dispar batavus Oberth. is reported to be doing well in its special location. *C. phlaeas* L. was only observed in very much smaller numbers than usual, except by Mr Hanbury, who found it very common in his garden.

Plebius aegon Schiff. was plentiful in some of its regular haunts. *Aricia medon* Esp. was patchy, while *Polyommatus icarus* Rott. was not noticed by several correspondents though others found it spread over the season, but only common here and there. *Agriades corydon* Pod. was swarming late in the summer in various places, while elsewhere only a few were met with where it had been frequent in other years. *A. bellargus* Rott. was scarce, as was *Celastrina argiolus* L., though the latter was stated to be as usual at Walthamstow (J.D.G.). *Cupido minimus* Fuesl. was common in one spot (E.M.G.), and was also observed by the Society near London.

Nemeobius lucina L., only reported by three observers, seems to be having a poor season just now. *Hesperia malvae* L., *Nisoniades tages* L. and *Adopaea thauwas* Hufn. were late, but then fairly abundant. *Agriades comma* L., not uncommon, while *A. sylvanus* Esp. was generally plentiful, and swarmed on Bookham Common one day. *Cyclopides palaemon* Pall. was also very abundant in places (C.M. and F.D.G.).

Birds in the London Area, 1932.

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

Edited by the Ornithological Records Committee (C. S. BAYNE, H. A. LITTLEJOHN, L. PARMENTER, and C. WEEKS).

ALTHOUGH the interesting visitors to London's artificial lakes and the Great Crested Grebe enquiry have again attracted a considerable number of observers to the reservoirs, the increase of records of land birds is encouraging. The Kentish portion of our area has had more attention paid to it, but there is still a great deal of work to be done there.

SPECIES FOR SPECIAL STUDY.—The most welcome increase of observers gives encouragement to the inauguration of a further special enquiry. To obtain a better knowledge of the status of the birds of our area it is suggested that each year certain species should be chosen for intensive study. Those chosen for 1933 are the following:—Lesser Redpoll, Brambling, Tree-Sparrow, Corn-Bunting, Yellow Wagtail, Reed-Warbler, Sedge-Warbler, Whinchat, Stonechat, Little Grebe and Red-legged Partridge. In order to publish an adequate summary of these species, details are wanted of present and past status, fluctuations in numbers, migration, numbers per area and habitats, etc., differentiating between breeding and non-breeding seasons.

The area is changing so rapidly that it is important to record numbers, breeding data and migration of even the commonest species throughout the area. Good results are being obtained where observers are regularly watching an area, however small, throughout the year, and where definite censuses are taken these results are necessarily of greater value. Records of critical species and races, *e.g.*, Marsh and Willow Tits, and all rarities should be accompanied by descriptions made in the field.

The following lists include only the more interesting records but all received have been entered on the Society's sheets. The annual table of the totals for each division is printed elsewhere (p. 81). The only species new to our list is the Avocet.

All records are for 1932 except where otherwise stated. Observers responsible for the published notes are indicated by initials (*British Birds* magazine = *B.B.*). Where four or more observers have reported the same species at the same locality, the initials of only the first observer are given.

The Committee thank the following 50 observers for their notes:—

W. B. Alexander, per C.W.	H. R. Hall, per C.W.	E. Mann.
H. G. Attlee, per C.W.	P. J. Hanson.	L. Parmenter.
S. Austin.	J. P. Hardiman.	E. G. Pedler.
R. B. Benson.	P. H. T. Hartley.	R. W. Pethen.
H. Bentham.	R. W. Hayman, per C.W.	Miss M. Rew.
Miss D. M. Braithwaite.	P. D. Hayward.	R. W. Robbins.
J. O. Braithwaite.	P. A. D. Hollom.	E. C. Rowberry.
Miss N. A. Braithwaite.	R. C. Homes.	W. N. Rushen.
H. J. Burkill.	G. Hopkins.	J. A. Simes.
S. A. Chambers, per L.P.	A. B. Hornblower.	Miss K. Douglas Smith.
D. H. Clanchy.	Miss M. M. Hose.	R. McKenzie Smith.
C. L. Collenette.	E. L. King.	A. E. Tomlinson.
F. G. Dell.	R. C. B. Ledlie.	Miss P. I. Wallis.
R. Denham.	H. A. Littlejohn.	B. T. Ward.
L. M. Emberson.	Dr G. C. Low.	Miss H. Watkins.
F. R. Finch.	A. Holte Macpherson.	C. Weeks.
E. H. Gillham.	Miss J. E. McLuckie.	W. A. Wright.

RECORDS.

BUCKINGHAMSHIRE.

No reports received.

ESSEX.

CARRION-CROW. *Corvus corone corone* L. A few seen in every month of the year at Walthamstow Reservoirs, 57 roosting in the trees at dusk on 30th January, 14 on 24th September, 50 on 29th October, 91 on 11th November, 78 on 17th December (R.W.P.).

MAGPIE. *Pica p. pica* (L.). Abridge sewage farm on 4th December (R.McK.S.). Nazeing Common on 17th January (E.L.K.). North Weald on 10th January (D.M.B. and R.C.B.L.).

STARLING. *Sturnus v. vulgaris* L. An adult ringed at Woodford Green on 19th October 1930 was recovered where ringed on 22nd May 1931. Two adults ringed at Woodford Green on 16th November 1930 were recovered where ringed, one on 26th May 1931 and the other in November 1931 (*B.B.*, xxv, p. 320). A young bird ringed at Laindon on 16th August 1931 was recovered at Dagenham on 6th March 1932 (*B.B.*, xxvi, p. 209).

HAWFINCH. *Coccothraustes c. coccothraustes* (L.). Chingford Marsh, two on 24th April (E.M.). Epping Forest, one on 29th March (W.A.W.). Larks Wood, South Chingford, one on 3rd April, the first seen during five years watching (E.M.).

COMMON CROSSBILL. *Loxia c. curvirostra* L. Copped Hall Park, Epping, four seen feeding on pine cones on 5th April 1931 (J.A.S.).

CHAFFINCH. *Fringilla c. coelebs* L. An adult ringed at Woodford Green on 2nd February 1930 was recovered where ringed on 1st August 1932 (*B.B.*, xxvi, p. 210).

BRAMBLING. *Fringilla montifringilla* L. Epping Forest, near Loughton, a male seen on 12th (E.M.), 17th and 25th June (P.D.H.).

ROCK-PIBIT. *Anthus spinoletta petrosus* (Mont.). King George V. Reservoir, Chingford, one seen at very close quarters on 31st December (E.M. and W.A.W.).

BRITISH SONG-THRUSH. *Turdus philomelus clarkei* Hart. An adult ringed at Woodford Green on 14th December 1928 was recovered where ringed in July 1931 (*B.B.*, xxv, p. 322).

BLACKBIRD. *Turdus m. merula* L. Birds trapped and retrapped at Woodford Green:—One trapped on 14th April 1929 was retrapped on 13th May 1931. One trapped on 22nd June 1930 was retrapped on 5th July 1930 and 6th July 1931. One trapped on 29th June 1930 was retrapped on 25th June 1931 and 1st July 1931. One trapped on 7th September 1930 was retrapped three times in June 1931. One trapped on 17th September 1930 was retrapped on 14th December 1930 and 16th May 1931 (*B.B.*, xxvi, p. 51). A young bird ringed at Debden Green on 26th May 1932 was recovered at Bushey (Herts.) on 23rd September and an adult ringed at Woodford Green on 6th September 1929 was recovered where ringed on 7th June 1932 (*B.B.*, xxvi, p. 213).

WHINCHAT. *Saxicola r. rubetra* (L.). Chingford Marsh, at least six pairs nested (E.M.).

BRITISH ROBIN. *Erithacus rubecula melophilus* Hart. Birds trapped and retrapped at Woodford Green. One trapped on 25th December 1928 was retrapped on 27th January 1929, 14th June and 26th July 1931. One trapped on 26th July 1930 was retrapped on 27th July 1930, 17th May and 27th June 1931. One trapped on 10th August 1930 was retrapped twice in September and on 21st December 1930, thrice in February and on 10th May 1931. One trapped on 24th August 1930 was retrapped on 23rd November 1930, twice in February and on 9th March and 17th May 1931. One trapped on 19th October 1930 was retrapped on 19th February 1931 (*B.B.*, xxvi, p. 52).

MARTIN. *Delichon u. urbica* (L.). "The most notable feature of 1932 has been the scarcity of Martins in Chingford" (J.O.B.).

COMMON HERON. *Ardea c. cinerea* L. Walthamstow Reservoirs, 52 on 23rd April (E.M.). Wanstead Park, 24 pairs nested (W. H. Feakes per H.A.L.).

MUTE SWAN. *Cygnus olor* (Gm.). Walthamstow Reservoirs, 34 apparently unmated birds on No. 4 Reservoir on 9th July (E.M.)

SHELD-DUCK. *Tadorna tadorna* (L.). King George V. Reservoir, an adult on 10th December (W.A.W.).

SHOVELER. *Spatula clypeata* (L.). King George V. Reservoir, one male on 26th February (W.A.W.).

SCAUP-DUCK. *Nyroca m. marila* (L.). Walthamstow Reservoirs, a female on 30th January, a male on 19th March (R.W.P.), and 19th April (J.P.H. and A.H.M.), six on 17th December (J.P.H. and G.C.L.).

GOLDENEYE. *Bucephala c. clangula* (L.). King George V Reservoir, a female on 14th February (A.H.M.), a pair on 19th March (W.A.W.), one on 20th December (J.P.H.). Walthamstow Reservoirs, one on 8th January, three on 6th April, and one on 18th May (J.P.H.).

LONG-TAILED DUCK. *Clangula hyemalis* (L.). Walthamstow Reservoirs, one on 9th December but not one of those seen at Staines Reservoirs (J.P.H. and A.H.M., *B.B.*, xxvi, p. 258).

VELVET-SCOTER. *Oidemia f. fusca* (L.). Walthamstow Reservoirs, an immature male seen first on 20th February, twice in March, and last

seen on 9th April (E.M., R.W.P., W.A.W., and others, see also *B.B.*, xxv, p. 363).

GOOSANDER. *Mergus m. merganser* L. King George V Reservoir, one on 20th February, and five on 19th March (W.A.W.).

SMEW. *Mergus albellus* L. Walthamstow Reservoirs, five on 8th January, largest number seen, seven including one adult male in December (J.P.H.).

CORMORANT. *Phalacrocorax c. carbo* (L.). King George V Reservoir, two on 15th October (W.A.W.). Walthamstow Reservoirs, an adult flying over 28th May (R.W.P.).

SLAVONIAN GREBE. *Podiceps auritus* (L.). Walthamstow Reservoirs, one on 24th September (E.M., R.W.P. and W.A.W.).

GREAT NORTHERN DIVER. *Colymbus immer* Brünn. Walthamstow Reservoirs, one on 20th February (E.M., R.W.P., W.A.W.), one on 28th February (G.C.L. and A.H.M.).

GOLDEN PLOVER. *Charadrius apricarius* L. Nazeing Common, a "large flock" on 3rd January and a "good number" on 17th January (E.L.K.).

GREEN SANDPIPER. *Tringa ochropus* L. Chigwell sewage farm, one first seen on 6th November and still present on 24th December (R.McK.S.).

COMMON REDSHANK. *Tringa t. totanus* (L.). Chingford Marsh, one on 24th April and two on 1st and 8th May (E.M.). Walthamstow Reservoirs, two on 19th March, and 28th May (R.W.P.).

COMMON TERN. *Sterna h. hirundo* L. Walthamstow Reservoirs, a small flock on 25th September (E.M., R.W.P., W.A.W.), one on 9th October and an adult bird on 9th December (J.P.H., A.H.M., *B.B.*, xxvi, p. 258). This is the third December record for the London area.

LAND-RAIL. *Crex crex* (L.) Chingford, one heard on 5th May (R.W.P.). Lambourne End, one heard on 17th May (A.B.H.).

HERTFORDSHIRE.

BRITISH SONG-THRUSH. *Turdus philomelus clarkei* Hart. A young bird ringed near Ware on 18th May 1930 was recovered near where ringed in May 1932 (*B.B.*, xxvi, p. 211).

BLACKBIRD. *Turdus m. merula* L. A young bird ringed at Debden Green, Essex, on 26th May 1932, was recovered at Bushey on 23rd July 1932 (*B.B.*, xxvi, p. 213).

MARTIN. *Delichon u. urbica* (L.). An adult ringed at Ponsbourne on 12th July 1931 was recovered near Hatfield on 15th June 1932 (*B.B.*, xxvi, p. 215).

COMMON CURLEW. *Numenius a. arquata* (L.). Elstree Reservoir, twelve to fifteen flew over on 17th September (E.L.K.).

KENT.

MAGPIE. *Pica p. pica* (L.). Romney Street, seen during the year (A.E.T.). Westerham, seven on 30th July (M.M.H.).

SISKIN. *Carduelis spinus* (L.). Kelsey Park, Beckenham, on 29th February (T.H.G.) and 18th October (W.N.R.). Westerham, two on 6th March (E.L.K.).

BRITISH BULLFINCH. *Pyrrhula p. nesa* Math. and Ired. Hosey Common, two in July (M.M.H.).

BRAMBLING. *Fringilla montifringilla* L. Beckenham, 25th October (W.N.R.). Romney Street, one on 24th December (A.E.T.)

PIED FLYCATCHER. *Muscicapa h. hypoleuca* (Pall.). Keston, one male on 11th and 13th May (W.N.R.).

NIGHTJAR. *Caprimulgus e. europaeus* L. Romney Street, one on 5th June (A.E.T.).

SHELD-DUCK. *Tadorna tadorna* (L.). Stone Marshes, two on 11th September (R.C.H.).

COMMON REDSHANK. *Tringa t. totanus* (L.). Dartford Marshes, six on 9th October (D.H.C.).

COMMON CURLEW. *Numenius a. arquata* (L.). Dartford Marshes, seen on 9th October (D.H.C.).

MIDDLESEX.

Records of birds seen at the reservoirs in the Lea Valley are dealt with under ESSEX.

HOODED CROW. *Corvus c. cornix* L. Staines Reservoirs, one on 12th February (A.H.M.), one on 13th November (F.R.F.) and 10th December (E.H.G.).

HAWFINCH. *Coccothraustes c. coccothraustes* (L.). Holland House grounds, Kensington, one on May 4th (A.H.M., *B.B.*, xxvi, p. 292), Ken Wood, one in March (K.D.S.).

BRITISH GOLDFINCH. *Carduelis c. britannica* (Hart.). Staines Moor, a flock of 36 on 3rd October (E.C.R.).

SISKIN. *Carduelis spinus* (L.). Near Uxbridge, a "number" on 13th March (F.R.F.). Staines Reservoir, a female on 23rd April (R.D.).

BRAMBLING. *Fringilla montifringilla* L. Kensington Gardens, one on 2nd April and two on 11th April (Mrs E. MacAlister and R. W. Hayman, per A.H.M., *B.B.*, xxvi, p. 293). "Largest number seen since 1923, 500-600, frequented arable land west of Osterley Park for several weeks from 29th December to 15th January attracted by brewery waste used as fertilizer" (E.C.R.).

TREE-SPARROW. *Passer m. montanus* (L.). Staines Reservoirs, 40 on 11th August (A.H.M.).

WOOD-LARK. *Lullula a. arborea* (L.). North-west Middlesex, one on 12th June (P.J.H.).

WHITE WAGTAIL. *Motacilla a. alba* L. Staines Moor, a male on 16th April (F.R.F., G.C.L., A.H.M.). Staines Reservoirs, one on 7th May (F.R.F., G.C.L.). Stanwell, a male on 23rd September (E.C.R.).

PIED FLYCATCHER. *Muscicapa h. hypoleuca* (Pall.). South Kensington, a male in the grounds of the Natural History Museum on 26th April (C.L.C., *B.B.*, xxvi, p. 293).

GRASSHOPPER-WARBLER. *Locustella n. naevia* (Bodd.). Staines Reservoirs, one in a flock of Reed-Warblers on 23rd April (R.D.).

BLACKBIRD. *Turdus m. merula* L. A young bird ringed at Peasmarsh, Sussex, on 18th May 1931, was recovered at Acton on 29th August 1931 (*B.B.*, xxv, p. 323).

WHEATEAR. *Œnanthe œ. œnanthe* (L.). Staines Reservoir, one on 3rd November, a late date (F.R.F.).

GREENLAND WHEATEAR. *Œnanthe œ. leucorrhœa* (Gm.). Wyke sewage farm, three stayed from 5th to 10th May (E.C.R.).

NIGHTJAR. *Caprimulgus e. europæus* L. Stanmore Common, one on 20th June (J.P.H.).

KINGFISHER. *Alcedo atthis ispida* L. One seen in a garden at Darent Road, Stamford Hill, on 19th September (S.A.).

SHELD-DUCK. *Tadorna tadorna* (L.). Staines Reservoirs, three on 29th April (J.P.H.), two on 22nd October (E.H.G.), and an adult male on 15th October to 28th December (J.P.H., A.H.M., and other observers).

GADWALL. *Anas strepera* L. [Staines Reservoirs, one on 22nd October (E.H.G.). There is a possibility of this bird having escaped from St James Park where several full-winged birds were reared.—Eds.]

WIGEON. *Anas penelope* L. Hampton Reservoirs, seven on 12th December (J.P.H.). Littleton Reservoirs, at least seven on 15th January (J.P.H.). Staines Reservoirs, over 100 on 17th January (G.C.L., A.H.M.), over 200 on 4th March (J.P.H.), five on 19th October (A.H.M.), 30 on 24th November, and 150 on 27th December (J.P.H.).

[A male on the Thames by Hammersmith on 21st May and one on the Round Pond, Kensington Gardens, on 30th November (E.G.P.). These may be escaped birds.—Eds.]

PINTAIL. *Anas a. acuta* L. Staines Moor, an adult male (E.H.G.). Staines Reservoirs, a male on 9th, 17th and 24th January, one male and two females on 4th March (J.P.H.), a male on 6th March and 3rd April, two males and two females on 24th November (J.P.H., A.H.M., and other observers).

SHOVELER. *Spatula clypeata* (L.). Highgate Ponds, a male on 28th April (E.H.G.), a pair on 19th November (R.C.H.). Waterlow Park, Highgate, one on 6th December (J.E.McL.). Littleton Reservoirs, five on 15th January (J.P.H.). Staines Reservoirs, ten on 1st, one on 12th, three on 24th and four on 31st January, a male on 13th March, two on 2nd, "several" on 8th, eight on 9th, one on 31st October, three on 17th, two or three on 20th November, five on 5th and one on 27th December (A.H.M. and many observers).

COMMON POCHARD. *Nyroca f. ferina* (L.). Osterley Park, nested, four young seen in June (E.C.R.).

SCAUP-DUCK. *Nyroca m. marila* (L.). Hyde Park, adult male on Serpentine on 8th February for a few days (A.H.M., *B.B.*, xxvi, p. 293) and 2nd March (G.C.L.). Kensington Gardens, a young male on the Round Pond on 29th January (G.C.L., *B.B.*, xxv, p. 304) and 8th March; "here since last November, off and on" (G.C.L.). Staines Reservoirs, two on 2nd, one on 9th, three on 17th January, female on 4th and a male

on 9th March, female on 2nd and 3rd October, one on 9th, two on 27th November (F.R.F., A.H.M. and other observers).

GOLDENEYE. *Bucephala c. clangula* (L.). Staines Reservoirs, a late bird on 1st May (G.C.L.).

LONG-TAILED DUCK. *Clangula hyemalis* (L.). Staines Reservoirs, one on 6th, 11th and 12th, two on 16th, four on 18th, three on 19th, four on 20th November, two on 4th, 11th and 14th and one on 27th December (G.C.L. and other observers, see also D. Gunn in *B.B.*, xxvi, p. 258).

COMMON SCOTER. *Oidemia n. nigra* (L.). Staines Reservoirs, sixteen on 3rd April (W. E. Glegg and G.C.L., *B.B.*, xxv, p. 362, and F.R.F.), two on 10th April (F.R.F., G.C.L.), two females on 5th (E.H.G.), and one on 26th November (F.R.F., E.H.G.).

GOOSANDER. *Mergus m. merganser* L. Maximum numbers. Littleton Reservoirs, four on 15th January (J.P.H.). Staines Reservoirs, over 40 on 14th December (A.H.M.).

SMEW. *Mergus albellus* L. Hampton Reservoirs, two adult males on 14th February (L.M.E.). Staines Reservoirs, adult male on 23rd January (E.H.G.).

CORMORANT. *Phalacrocorax c. carbo* (L.). Chiswick, one roosted nightly in a tree by the Thames during the first two weeks of October (E.H.G.), one flew up the Thames on 28th November (E.L.K.). Staines Reservoir, one on 5th, two on 9th October (F.R.F.). Early in October a wild bird accompanied the two young tame birds back to St James Park (A.H.M., *B.B.*, xxvi, p. 293).

SLAVONIAN GREBE. *Podiceps auritus* (L.). Staines Reservoir, one on 10th January (E.L.K.), one on 15th December (F.R.F.).

BLACK-NECKED GREBE. *Podiceps n. nigricollis* Brehm. Staines Reservoirs, one on 23rd August, one on 17th, 19th, and 20th September, two on 19th and 20th November (A.H.M. and other observers).

GREAT NORTHERN DIVER. *Colymbus immer* Brünn. Staines Reservoirs, one on 1st November (D. Gunn, per A.H.M.).

RED-THROATED DIVER. *Colymbus stellatus* Pontopp. Staines Reservoirs, two on 20th November (G.C.L., A.H.M.).

RINGED PLOVER. *Charadrius h. hiaticula* L. Hyde Park, one seen crossing the Serpentine on 29th April (G.C.L.). Staines Reservoirs, two on 10th May (A.H.M.).

DUNLIN. *Calidris alpina* (L.). ? sub-species. Staines Moor, two on 23rd April (E.H.G.).

COMMON SANDPIPER. *Tringa hypoleucos* L. Hampton Reservoirs, two on 21st August, one on 20th November (L.M.E.), one on 12th December (J.P.H.). Staines Moor, one on 23rd April (E.H.G.). Staines Reservoirs, two on 23rd April, one on 1st May, three on 9th July, three or four on 21st August (E.H.G. and other observers).

GREEN SANDPIPER. *Tringa ochropus* L. Staines Reservoirs, six on 10th August (E.C.R.).

COMMON REDSHANK. *Tringa t. totanus* (L.). Hampton Reservoirs, one on 3rd January (L.M.E.). Harrow sewage farm, three or more on 30th March, and one on 9th May (J.P.H.). Staines Moor, two on 30th

April (E.H.G.). Staines Reservoirs, on 3rd April and 22nd May (G.C.L.), one on 11th (A.H.M.) and 13th August (E.L.K.).

COMMON CURLEW. *Numenius a. arquata* (L.). Staines Reservoirs, heard on 27th August (E.H.G.).

WHIMBREL. *Numenius p. phaeopus* (L.). One flew over Egerton Terrace, Chelsea on 14th August (A. H. Daukes, per A.H.M., *B.B.*, xxvi, p. 294).

JACK SNIPE. *Lymnocyptes minimus* (Brünn). Staines Moor, one on 28th February and 6th March (F.R.F.). Wyke sewage farm, four or five seen on each visit during January (E.C.R.).

WOODCOCK. *Scolopax r. rusticola* L. One was captured in St James Street on 26th January (A.H.M., *B.B.*, xxvi, p. 294). Osterley Park, one on 7th February (E.C.R.).

BLACK TERN. *Chlidonias n. niger* (L.). Staines Reservoirs, two immature birds on 2nd October (G.C.L., E.G.P.).

SANDWICH TERN. *Sterna s. sandvicensis* Lath. Highgate Ponds, one on 25th September (Mrs W. Boyd Watt, *B.B.*, xxvi, p. 232 quoting *Field*, 15/10/32, p. 588).

COMMON TERN. *Sterna h. hirundo* L. Staines Reservoirs, four on 7th (A.H.M.), one on 27th August (E.H.G.), one on 16th, 17th and 28th September (E.H.G., E.L.K., A.H.M.). One flying over the Thames south of Staines bridge on 2nd October (D.H.C.).

COMMON (OR ARCTIC) TERN. *Sterna h. hirundo* L. (*S. macrura* Naumann). One flew south-east over Whiteley's, Bayswater, on 22nd September (E. M. Nicholson, per A.H.M., *B.B.*, xxvi, p. 294), and one over the Round Pond, Kensington Gardens on 23rd September (G. H. Gush, per A.H.M., *B.B.*, xxvi, p. 294, see also *Field*, 14/1/33).

LITTLE GULL. *Larus minutus* Pall. Staines Reservoirs, an immature bird on 21st November (A.H.M.).

SCANDINAVIAN LESSER BLACK-BACKED GULL. *Larus f. fuscus* L. One over the Thames off Millbank on 23rd December (L.P., see A.H.M. in *B.B.*, xxvi, p. 292).

GREAT BLACK-BACKED GULL. *Larus marinus* L. Littleton Reservoir, one on 15th January (J.P.H.). Staines Reservoir, one on 27th August (E.H.G.). One over the Thames off Millbank on 8th November, and two on 9th November (L.P., see A.H.M., *B.B.*, xxvi, p. 294).

KITTIWAKE GULL. *Rissa t. tridactyla* (L.). An immature bird seen at a gravel pit pond, west of Hounslow, in company with Herring and Black-headed Gulls on 14th February (E.C.R.).

LITTLE AUK. *Alle a. alle* (L.). Staines Reservoirs, one on 13th November (E.L.K., G.C.L., A.H.M.).

SOUTHERN PUFFIN. *Fratercula arctica grabae* (Brehm). Finsbury Circus Gardens, E.C., one found on 8th December. One found on the morning of 20th October wandering about in a garden in Hampstead (D. Seth Smith, *B.B.*, xxvi, p. 259).

LAND-RAIL. *Crex crex* (L.). St James Park, one on 1st November (A.H.M., *B.B.*, xxvi, p. 294).

WATER-RAIL. *Rallus a. aquaticus* L. Near Uxbridge, one on 13th March, two on 20th March, one on 30th March, one on 17th December (F.R.F., J.P.H. and A.H.M.).

SURREY.

HOODED CROW. *Corvus c. cornix* L. Beddington Sewage Farm, one on 4th January (P.H.T.H.) and on 28th February (L.P.).

MAGPIE. *Pica p. pica* (L.). Cobham, seven on 20th March (C.W.). Limpsfield nested (R.W.R.). Richmond Park, an occasional visitor (C.L.C. and C.W.). Sutton, two on 10th and 20th December (P.H.T.H.).

HAWFINCH. *Coccothraustes c. coccothraustes* (L.). Addlestone, a pair on 9th May (P.A.D.H.). Beddington Park, one on 2nd February (S.A.C.). East Sheen, one seen from 4th January to 3rd April (P.I.W.). Headley, one on 13th March (L.P.). Mickleham, a flock of about twelve on 24th April and 1st May (C.W.). Richmond Park, one on 2nd April (H.G.A.), two on 21st May (R.W.H.). Wimbledon Common, nested (R.W.H.).

SISKIN. *Carduelis spinus* (L.). Beddington Park, 15 on 23rd February (S.A.C.). Leatherhead, about 30 on 24th January (E.L.K., C.W.), seen on 30th January (H.J.B.), and three on 12th March (P.H.T.H.). Richmond Park, two or three seen between 7th February and 26th March (E.L.K., H.W. and others).

BRITISH BULLFINCH. *Pyrrhula p. nesa* Math. & Ired. East Sheen, one or two pairs all the year, four pairs on 6th September (P.I.W.). Richmond Park, two pairs nested (C.L.C.).

CHAFFINCH. *Fringilla c. coelebs* L. A young bird ringed at Ros-therne, Cheshire, on 30th May 1927, was recovered in Bermondsey on 10th April 1932 (*B.B.*, xxvi, p. 210).

BRAMBLING. *Fringilla montifringilla* L. Beddington, present on 17th January to 3rd April, 70 on latter date (L.P.). Epsom Downs, many on 13th March (L.P.). Tadworth, first arrivals on 10th October (H.B.).

CORN-BUNTING. *Emberiza c. calandra* L. Between Esher and Walton, one on 23rd June, and Molesey, one singing on 23rd June (P.A.D.H.).

CIRL BUNTING. *Emberiza c. cirrus* L. Sutton, one on 15th April (P.H.T.H.). Tadworth, nested 1921 to 1925 (H.B.).

WOOD-LARK. *Lullula a. arborea* (L.). Boxhill, one singing on 24th April and 1st May (C.W.). Oxshott, two on 20th March (D.H.C. and C.W.). Richmond Park, two and probably three pairs nested (C.L.C., C.W. and others).

ROCK PIPIT. *Anthus spinoletta petrosus* (Mont.). Barn Elms Reservoirs, one on 20th February (A.H.M.), and one on 15th October (G.C.L. and A.H.M.).

YELLOW WAGTAIL. *Motacilla flava rayi* (Bp.). Barn Elms Reservoirs, one on 16th October, a late date (G.C.L.).

WHITE WAGTAIL. *Motacilla a. alba* L. Barn Elms Reservoirs, one on various dates between 21st April and 15th May (F.R.F., J.P.H. and others), three on 22nd April (J.P.H.). Island Barn Reservoir, Molesey,

a male on 14th April (J.P.H., A.H.M.). Reigate, a male on 19th March (H.B.).

MISTLE-THRUSH. *Turdus v. viscivorus* L. Beddington sewage farm, none on 29th May, 89 on 26th June, 49 on 21st August, none on 19th September (L.P.).

BRITISH SONG-THRUSH. *Turdus philomelus clarkei* Hart. A young bird ringed near Sutton on 10th May 1931 was recovered at Cheam on 15th May 1932 (B.B., xxvi, p. 211).

BLACKBIRD. *Turdus m. merula* L. A young bird ringed at Addlestone on 29th April 1929 was recovered there on 26th June 1932 (B.B., xxvi, p. 213).

GREENLAND WHEATEAR. *Ænanthe æ. leucorrhœa* (Gm.). Epsom Downs, one on 4th September (H.B.).

WHINCHAT. *Saxicola r. rubetra* (L.). Beddington sewage farm, one on 2nd October (L.P.). Walton Heath, three on 2nd October, late date (H.B.).

BLACK REDSTART. *Phoenicurus ochrurus gibraltariensis* (Gm.). Mortlake, one on various dates, 8th December to end of year (E.L.K., B.B., xxvi, p. 278, and C.W.).

BRITISH ROBIN. *Erithacus rubecula melophilus* Hart. A young bird ringed at Addlestone on 9th June 1930 was recovered there on 25th June 1931 (B.B., xxv, p. 324).

MARTIN. *Delichon u. urbica* (L.). Barn Elms Reservoirs, three on 3rd November (A.H.M.) and two on 5th November (G.C.L.). Late dates.

NIGHTJAR. *Caprimulgus e. europæus* L. Ham Common, a female on 12th May (E.L.K.). Richmond Park, one on 3rd and 5th July (C.L.C.). Nested in division 17 (H.B.).

HOOPOE. *Upupa e. epops* L. Limpsfield, one seen during the spring of 1926 (R. H. Dear, per R.W.R.).

WRYNECK. *Jynx t. torquilla* L. Nested in division 17 (H.B.).

WHITE-BREASTED BARN-OWL. *Tyto a. alba* (Scop.). Motspur Park, one seen on 31st December, the first for several years (L.M.E.). Nested in division 17 (H.B.).

PEREGRINE FALCON. *Falco p. peregrinus* Tunst. Addlestone, one on 9th January (P.A.D.H.).

COMMON BUZZARD. *Buteo b. buteo* (L.). Titsey, one on the Downs about 1928 (W. G. Sheldon, per R.W.R.).

SPARROW-HAWK. *Accipiter n. nisus* (L.). Gatton Park, two on 5th June (L.P.). Headley, one on 13th March (L.P.). Motspur Park, one on 26th November (L.M.E.). Richmond Park, nested but probably robbed (C.W.). Nested in division 17 (H.B.).

COMMON HERON. *Ardea c. cinerea* L. Barn Elms Reservoirs, one seen swimming on 19th January (A.H.M.). Gatton Park, one pair nested (L.P.). Hersham, 15 nests in six trees (P.A.D.H.). Richmond Park, approximately 33 nests (C.L.C.).

SHELD-DUCK. *Tadorna tadorna* (L.). Barn Elms Reservoirs, one young bird, 25th September to 9th October (F.R.F., G.C.L. and A.H.M.). (This species did not breed in St James Park this year.—Eds.)

GADWALL. *Anas strepera* L. [Godstone, a male on 9th October (R.C.H. and E.L.K., and on 27th November (Miss C. M. Acland, *B.B.*, xxvi, p. 279). As 15 full-winged young were reared in, and escaped from, St James Park in 1932 the Godstone bird may not be a wild bird.]

WIGEON. *Anas penelope* L. Barn Elms Reservoirs, five on 19th January (A.H.M.), one on 6th March (L.P.). Richmond Park, a male on 6th February (A.H.M.). [On Thames, off Hammersmith, see under MIDDLESEX.]

SHOVELER. *Spatula clypeata* (L.). Barn Elms Reservoirs, a pair on 24th January, 15th February, 27th March, 14th April, one on 4th June, 11th and 20th August (A.H.M., H.W. and others). Beddington, a pair on 26th March, 22nd April, 4th, 5th and 14th May, the male remaining until mid-June, one on 10th September, five females on 24th September (H.B., E.H.G. and R.S.R. Fitter in *B.B.*, xxvi, p. 232).

COMMON POCHARD. *Nyroca f. ferina* (L.). Beddington, nested (R.S.R. Fitter in *B.B.*, xxvi, p. 230). Richmond Park, nested (C.W.).

TUFTED DUCK. *Nyroca fuligula* (L.). Nested at Barn Elms Reservoirs, four pairs (J.P.H., E.L.K., A.H.M.). Beddington, three pairs (E.H.G.). Gatton Park, three pairs (H.B.). Godstone, two pairs (H.B. and P.H.T.H.). Reigate, a new nesting site, one pair (H.B.). Richmond Park, three pairs (A.H.M., C.W.).

SCAUP-DUCK. *Nyroca m. marila* (L.). Barn Elms Reservoirs, two on 14th March (J.P.H.). Island Barn Reservoir, one on 4th April (F.R.F., J.P.H.). Lonsdale Road Reservoirs, Barnes, a male on 3rd and 24th January (G.C.L., A.H.M., H.W.). Molesey Reservoirs, a male on 3rd, three on 5th January, a female on 3rd, a male on 14th February (J.P.H., P.A.D.H., G.C.L., A.H.M.).

GOLDENEYE. *Bucephala c. clangula* (L.). Barn Elms Reservoirs, one to two during January, one on 15th February, four on 6th March, one on 23rd November (J.P.H. and others). Molesey Reservoirs, one on 3rd, three on 5th, eleven on 23rd January, eight on 3rd, six on 14th February, and fifteen on 5th March (J.P.H., P.A.D.H., A.H.M.).

COMMON SCOTER. *Oidemia n. nigra* (L.). Island Barn Reservoir, a pair on 4th April (F.R.F., J.P.H.).

GOOSANDER. *Mergus m. merganser* L. Maximum numbers seen. Barn Elms Reservoirs, three on 24th January (H.W.). Molesey Reservoirs, 60 on 23rd January (P.A.D.H.). Richmond Park, 14 on 3rd January (R.W.H.).

SMEW. *Mergus albellus* L. Maximum numbers seen. Barn Elms Reservoirs, eight on 14th January (J.P.H.) and on 6th March (L.P.). Lonsdale Road Reservoirs, 15 on 3rd January, 5th and 16th March (J.P.H., G.C.L., A.H.M.). Molesey Reservoirs, three on 5th January (J.P.H.).

CORMORANT. *Phalacrocorax c. carbo* (L.). Barn Elms Reservoirs, one on 11th December. Kew, one on 28th November (E.L.K.).

SLAVONIAN GREBE. *Podiceps auritus* (L.). Molesey Reservoirs, one on 5th January (J.P.H., A.H.M.).

WOOD-PIGEON. *Columba p. palumbus* L. Beddington sewage farm, none on 16th but 153 on 29th May (a very high figure for the farm) (L.P.).

GOLDEN PLOVER. *Charadrius apricarius* L. Beddington sewage farm, ten on 28th February and one on 6th November (L.P.).

GREY PLOVER. *Squatarola s. squatarola* (L.). Barn Elms Reservoirs, two flew over on 23rd November (A.H.M., *B.B.*, xxvi, p. 258).

LAPWING. *Vanellus vanellus* (L.). The maximum at Beddington sewage farm, 1215, on 17th January (L.P.).

DUNLIN. *Calidris alpina* (L.). Barn Elms Reservoirs, two on 22nd April, one on 22nd and 30th July (J.P.H., E.L.K., G.C.L.). Molesey Reservoirs, one on 5th January (J.P.H., A.H.M.).

COMMON SANDPIPER. *Tringa hypoleucos* L. Further notes have now been received and the dates of the wintering birds for 1931 are:—Barn Elms Reservoirs, one seen on 11th, 24th January, 2nd, 22nd and 27th February, and 22nd March (G.C.L. and others). Molesey Reservoirs, one seen on 5th and 7th January, 18th and 28th March, 6th April, and 12th December (A.H.M. and others).

In 1932 at Molesey Reservoirs, one on 5th and 10th January (F.G.D., J.P.H., A.H.M.).

GREEN SANDPIPER. *Tringa ochropus* L. Beddington sewage farm, two on 11th August (L.P.), one on 3rd September (E.H.G.).

COMMON REDSHANK. *Tringa t. totanus* (L.). Beddington sewage farm, two pairs nested, twelve seen on 22nd April (E.H.G.), last seen 24th July (L.P.). Molesey sewage farm, four on 4th and six on 14th April (J.P.H.). Wimbledon Common, three on 19th June (R.W.H.).

GREENSHANK. *Tringa nebularia* (Gunn.). Barn Elms Reservoirs, one on 3rd April (G.C.L., *B.B.*, xxv, p. 363).

AVOCET. *Recurvirostra avosetta* L. Brooklands sewage farm, one from 13th to 16th June (P.A.D.H., *B.B.*, xxvi, p. 56).

COMMON CURLEW. *Numenius a. arquata* (L.). Beddington sewage farm, nine flew over on 7th August at 7.30 a.m. (B.S.T.). Thornton Heath, heard, flying south, at 7.30 a.m. on 16th, at 11.15 p.m. on 21st September, and at 10.45 p.m. on 31st October (L.P.).

WOODCOCK. *Scolopax r. rusticola* L. Bookham, on 9th April (E.H.G.). Richmond Park, one on 5th March, one on 4th, two on 18th, one on 27th and 28th December (C.W.).

BLACK TERN. *Chlidonias n. niger* (L.). Barn Elms Reservoirs, two on 26th August (J.P.H.).

COMMON TERN. *Sterna h. hirundo* L. Barn Elms Reservoirs, eight on 15th May (J.P.H.), from one to five in August, up to four in September, and one on 2nd October (various observers).

LITTLE TERN. *Sterna a. albifrons* Pall. Barn Elms Reservoirs, one on 1st October (H.W.).

SCANDINAVIAN LESSER BLACK-BACKED GULL. *Larus f. fuscus* L. Over the Thames, see under MIDDLESEX.

LESSER BLACK-BACKED GULL. *Larus fuscus* L. Barn Elms Reservoirs, greatest number seen, 250 on 25th October (J.P.H.), 168 of which the adults were of the British form were seen on 20th August (L.P.). Bed-

dington sewage farm, one, not quite mature, flew south-west on 29th May (L.P.).

GREAT BLACK-BACKED GULL. *Larus marinus* L. Barn Elms Reservoirs, one on 16th April (G.C.L., A.H.M.). Over the Thames, see under MIDDLESEX.

WATER-RAIL. *Rallus a. aquaticus* L. Beddington, one on 20th November (E.H.G.), one on 25th December (L.P.).

RED- LEGGED PARTRIDGE. *Alectoris r. rufa* (L.). Beddington sewage farm, one on 14th February and 17th July (L.P.). Island Barn Reservoir, one on 4th and two on 14th April (J.P.H.). Nested in division 17 (H.B.).

CORRECTIONS.

“Ornithological Records of the London Area” in *London Naturalist*, 1931:—p. 89, line 28, **LITTLE STINT.** *Calidris minuta* (Leisl.) for “(G.C.L., B.B., vol. 25, p. 167)” read “(F.R.F., B.B., vol. 25, p. 167, and G.C.L.)”

“Arrival of Migrants, 1931,” p. 90, omit “**COMMON SANDPIPER,**” as the true arrival of the species is doubtful (see new records in this year’s report).

ARRIVAL OF MIGRANTS, 1932.

The order is that of the earliest recorded date for each species. The table gives only the earliest date for each county. Counties are indicated by their initial letter:—B.=Bucks, E.=Essex, H.=Herts, K.=Kent, M.=Middlesex, S.=Surrey.

COMMON REDSHANK.

Mar. 19—E. Walthamstow Res. R.W.P.
 „ 20—S. Beddington L.P.
 April 3—M. Staines Res. G.C.L.

WHITE WAGTAIL.

Mar. 19—S. Reigate. H.B.
 April 16 M. Staines Moor.
 F.R.F., G.C.L., A.H.M.

CHIFFCHAFF.

Mar. 27—H. Rickmansworth. D.H.C.
 „ 28—M. Staines Res. E.H.G.
 „ 28—S. Richmond Park. H.G.A.
 April 3—E. Epping Forest. W.A.W.

WHEATEAR.

Mar. 27—E. South Chingford. E.M.
 „ 28—S. Richmond Park. H.R.H.
 „ 31—M. Regents Park. M.R.

SAND-MARTIN.

April 1—S. Fetcham. H.J.B.
 „ 30—E. Chingford Marsh. E.M.
 „ 30—E. King George V Res.
 W.A.W.

SWALLOW.

April 3—S. Bookham. E.H.G.
 „ 3—S. Richmond Park. P.I.W.
 „ 15—E. Loughton. P.D.H.
 „ 17—H. Cheshunt. H.A.L.
 „ 21—M. Regents Park. M.R.

GREENSHANK.

April 3—S. Barn Elms Res. G.C.L.

WILLOW-WARBLER.

April 4—E. Buckhurst Hill. A.B.H.
 „ 4—S. Island Barn Res.
 F.R.F., J.P.H.
 „ 5—M. Ken Wood. J.E.McL.
 „ 5—M. Regents Park. M.R.

MARTIN.

April 4—S. Fetcham. H.J.B.
 „ 23—E. Walthamstow Res.
 E.M., B.T.W.
 „ 23—M. Staines Moor. ... E.H.G.

TREE-PIBIT.

April 5—S. Richmond Park. C.L.C.
 „ 17—E. Chingford Marsh. E.M.

YELLOW WAGTAIL.
 April 6—E. Walthamstow Res. J.P.H.
 „ 14—S. Molesey Res. J.P.H.

WRYNECK.
 April 14—S. Tadworth. H.B.

COMMON SANDPIPER.
 April 14—S. Island Barn Res. J.P.H., A.H.M.
 „ 14—S. West Molesey. ... J.P.H.
 „ 23—M. Staines Res. R.D., E.H.G.
 „ 27—K. Kelsey Park. ... W.N.R.

CUCKOO.
 April 15—S. Richmond Park. C.L.C.
 „ 23—M. Staines Moor. ... E.H.G.
 „ 24—E. Chingford Marsh. E.M.
 „ 24—E. Epping Forest. D.M.B., N.A.B.
 „ 26—H. Rickmansworth. J.P.H.

BLACKCAP.
 April 18—K. Kelsey Park. E.H.G.
 „ 22—S. Sutton. P.H.T.H.
 „ 26—M. Ken Wood. J.E.McL.
 „ 30—E. Epping Forest. W.A.W.

WHITETHROAT.
 April 18—E. Loughton. P.D.H.
 „ 29—S. Barn Elms Res. J.P.H.

REDSTART.
 April 19—S. Richmond Park. H.G.A.
 „ 25—M. Kensington Gardens. R.B.B.
 „ 26—H. Rickmansworth. J.P.H.

SWIFT.
 April 19—E. Walthamstow Res. J.P.H., A.H.M.
 „ 22—S. Beddington. E.H.G.

GRASSHOPPER-WARBLE.
 April 23—M. Staines Res. R.D.
 „ 30—S. Bookham. E.H.G.

REED-WARBLE.
 April 23—M. Staines Res. R.D.
 „ 23—M. Staines Moor. ... E.H.G.
 May 2—E. Walthamstow Res. J.P.H.
 „ 8—S. Godstone. L.P.

WHINCHAT.
 April 24—E. Chingford Marsh. E.M.
 „ 25—S. Beddington. E.H.G.
 „ 26—H. Rickmansworth. J.P.H.
 „ 26—M. Regents Park. M.R.

PIED FLYCATCHER.
 April 26—M. South Kensington. C.L.C.
 May 11—K. Kelsey Park. ... W.N.R.

SEDGE-WARBLE.
 April 29—S. Barn Elms Res. J.P.H.
 „ 30—E. Sewardstone E.M.
 May 9—M. South Harrow sewage farm J.P.H.

SPOTTED FLYCATCHER.
 April 30—S. Godstone. P.H.T.H.
 May 8—E. Epping Forest. ... H.A.L.
 „ 15—M. Regents Park. M.R.

WOOD-WARBLE.
 April 30—S. Godstone. P.H.T.H.
 May 7—E. Epping Forest. G.H.

NIGHTINGALE.
 April 30—E. Waltham Lock. ... E.M.
 „ 30—S. Oxshott. L.M.E.
 „ 30—S. Purley. G.H.
 May 1—M. Staines Res. G.C.L.
 „ 7—K. Downe. M.M.H.

GARDEN-WARBLE.
 May 1—E. Larks Wood, Chingford. E.M.
 „ 8—S. Gatton Park. L.P.

LESSER WHITETHROAT.
 May 1—E. Larks Wood, Chingford. E.M.
 „ 8—S. Godstone. L.P.

TURTLE-DOVE.
 May 1—E. Larks Wood, Chingford. E.M.
 „ 1—S. Purley. G.H.
 „ 1—S. Tadworth. H.B.
 „ 7—K. Cudham. M.M.H.

GREENLAND WHEATEAR.
 May 5—M. Wyke sewage farm. E.C.R.

LAND-RAIL.
 May 5—E. Chingford. R.W.P.

NIGHTJAR.
 May 12—S. Ham Common. ... E.L.K.

COMMON TERN.
 May 15—S. Barn Elms Res. J.P.H.

RED-BACKED SHRIKE.
 May 17—S. Purley. G.H.
 „ 22—M. Staines Res. G.C.L.

COMMON GULL.

Aug. 17—S. Barn Elms Res. A.H.M.

REDWING.

Oct. 2—S. Sutton. P.H.T.H.
 „ 5—K. Kelsey Park. ... W.N.R.
 „ 8—E. South Chingford. E.M.

SCAUP-DUCK.

Oct. 2—M. Staines Res.
 E.H.G., E.L.K.

HERRING GULL.

Oct. 2—S. Barn Elms Res. J.P.H.

BRAMBLING.

Oct. 10—S. Tadworth. H.B.
 „ 25—K. Kelsey Park. ... W.N.R.

SISKIN.

Oct. 18—K. Kelsey Park. ... W.N.R.

FIELDFARE.

Oct. 19—S. Richmond Park. H.G.A.
 „ 25—K. Kelsey Park. ... W.N.R.
 „ 30—E. Epping Forest. W.A.W.
 Nov. 1—H. Elstree Res. E.L.K.

WIGEON.

Oct. 19—M. Staines Res. A.H.M.

GOLDENEYE.

Oct. 19—M. Staines Res. A.H.M.

GOOSANDER.

Nov. 2—M. Staines Res. A.H.M.
 „ 11—S. Molesey Res. J.P.H.

GOLDEN PLOVER.

Nov. 6—S. Beddington. L.P.

PINTAIL.

Nov. 24—M. Staines Res. J.P.H.

BLACK REDSTART.

Dec. 8—S. Mortlake. E.L.K.

SMEW.

Dec. 9—E. Walthamstow Res.
 J.P.H., A.H.M.
 „ 17—S. Lonsdale Road Res.,
 Barnes. E.L.K.

Bird Ringing, 1932.

By R. W. HALE.

THE Ornithological Section has, for some years, co-operated in the *British Birds Marking Scheme* organised by the Editor of *British Birds*. The members who take part in this work are supplied with rings and the schedules on which are recorded particulars of each bird ringed. At the end of each season the completed schedules are collected and forwarded to headquarters in the Society's name.

Nestlings offer the easiest opportunity for ringing, but many perish before reaching maturity and an increasing number of adults is ringed by harmless trapping. Trapping has the advantage of low mortality immediately after ringing and valuable results can be obtained by re-trapping the same bird. Nine members took part in the work in 1932, and the following table shows the year's results:—

Name of Ringer.	Nestlings.	Trapped.
Mr Stuart Boardman	116	127
Mr C. L. Collenette	—	68
Rev. C. L. Dunkerley	3	—
Mr P. A. D. Hollom	8	4
Mr Rodney M. Jones	83	2
Mr G. Nicholson	7	34
Mr W. D. Northway	24	4
Mr L. Parmenter	22	1
Mr G. Waller	—	1
	263	241
Total	504	

Thirty-one different species were ringed, of which the following were the most numerous:—

Starling	88	Blackbird	66	Lesser Whitethroat ..	8
Chaffinch	18	Robin	36	Blue Tit	63
Whitethroat	9	Hedge Sparrow	9	Great Tit	63
Song Thrush	36	Swallow	50	Yellowhammer	7

It is interesting to note that among other species ringed were Yellow Wagtail, Grey Wagtail, Red-backed Shrike, Stonechat, Kingfisher, Great Spotted Woodpecker, and Sheld-Duck.

These results compare with 562 birds of 35 species in 1931.

We welcome two new ringers, Messrs G. Nicholson and Rodney M. Jones. The Bird Ringing Secretary, Mr R. W. Hale, 6 Grendon Gardens, Barn Hill, Wembley Park, Middlesex, will be glad to hear from any interested member who would like to take up ringing.

RECOVERIES OF RINGED BIRDS.

The percentage of ringed birds recovered is not very large, but valuable facts are gradually being accumulated. Some of our members have already had birds reported from abroad, but it does not follow that a recovery showing no evidence of movement is the less interesting.

The following recoveries of birds ringed by our members have been reported since the publication of the last list:—

- (1) A Starling ringed as an adult at Woodford Green (Essex) by Mr C. L. Collenette, 19th October 1930, and recovered where ringed 22nd May 1931 by Rev. F. Guardian.
- (2) A Starling ringed as an adult at Bruton (Somerset) by Mr P. A. D. Hollom, 17th December 1928, and recovered where ringed 15th January 1932 by Mr R. Francis.
- (3) A Starling ringed as an adult at Woodford Green (Essex) by Mr C. L. Collenette, 16th November 1930, and recovered where ringed in November 1931 by Mrs Scott.
- (4) A Song Thrush ringed as an adult at Woodford Green (Essex) by Mr C. L. Collenette, 14th December 1928, and recovered near where ringed in July 1931 by Mr E. G. Fairholme.
- (5) A Starling ringed as an adult at Woodford Green (Essex) by Mr C. L. Collenette, 16th November 1930, and recovered where ringed 26th May 1931 by Mr N. Whittingham.
- (6) A Robin ringed as a young bird at Addlestone (Surrey) by Mr P. A. D. Hollom, 9th June 1930, and recovered where ringed 25th June 1931 by Mr Pizey.
- (7) Five Robins ringed as adults at Woodford Green (Essex) by Mr C. L. Collenette, and recovered where ringed:—
 - (a) Ringed 25th December 1928, and recovered 27th January 1929, 14th June 1931, and 26th July 1931.
 - (b) Ringed 26th July 1930, and recovered 27th July 1930, 17th May 1931, and 27th June 1931.
 - (c) Ringed 10th August 1930, and recovered twice in September 1930, 21st December 1930, 14th January 1931, three times in February 1931, and 10th May 1931.
 - (d) Ringed 24th August 1930, and recovered 23rd November 1930, twice in February 1931, 9th March 1931, and 17th May 1931.
 - (e) Ringed 19th October 1930, and recovered 19th February 1931.
- (8) Five Blackbirds ringed as adults at Woodford Green (Essex) by Mr C. L. Collenette, and recovered where ringed:—
 - (a) Ringed 14th April 1929, and recovered 13th May 1931.
 - (b) Ringed 22nd June 1930, and recovered 5th July 1930 and 6th July 1931.
 - (c) Ringed 29th June 1930, and recovered 25th June 1931 and 1st July 1931.
 - (d) Ringed 7th September 1930, and recovered three times in June 1931.
 - (e) Ringed 17th September 1930, and recovered 14th December 1930 and 16th May 1931.

Bird Sanctuaries in the London Parks.

ORNITHOLOGISTS have watched with considerable interest the result of the formation of Bird Sanctuaries in the Royal Parks in and near London, but it would appear that numbers of bird lovers in this area are still unaware of their existence and to them a short account of their formation and location may be welcome.

While a Bird Sanctuary had been established in Richmond Park as early as 1913, the pioneer of the present scheme was the late Mr Harold Russell, who took the matter up enthusiastically in 1921 and, as a result, a Committee was appointed by the First Commissioner of Works in 1922, under the Chairmanship of Sir Lionel Earle, to consider their formation in the Royal Parks.

As a result of their deliberations these have now been established in all the Royal Parks in the London Area and a competent observer appointed to each park to report annually on the bird life observed therein.

A list of the Sanctuaries is as follows:—

- (1). Hyde Park and Kensington Gardens.
- (2). St James's and Green Parks.
- (3). Regents' Park.
- (4). Greenwich Park.
- (5). Richmond Park.
- (6). Bushy and Hampton Court Parks.

It will be of interest to our members to know that all the observers but one are active members of our Society.

The scheme has proved a great success and the Annual Reports of the Committee, which are to be obtained from H.M. Stationery Office (price 6d), have become a valuable contribution to Ornithological literature, and none interested in the bird life of the London area can afford to overlook their publication.

It is greatly to be hoped that the example given by the Office of Works will be followed by the London County Council with a similar scheme for those parks under their jurisdiction, each with a duly appointed Recorder. The published Reports of these observations, in conjunction with those of the Royal Parks, could hardly fail to stimulate and encourage the preservation of bird life and study and ultimately to advance the science of Ornithology.

S. AUSTIN.

A FEEDING HABIT OF *VESPA VULGARIS* LINN.

By R. J. SPITTLE.

DURING the afternoon of 6th August 1932 at Temple Park, near Hurley, Berks., I noticed a number of Wasps (*Vespa vulgaris* Linn.) flying around the thistle *Carduus arvensis* Curt., which was growing plentifully in the vicinity.

On closer observation a wasp was seen to gnaw off a flower-head, allowing it to fall to the ground, and suck the juices exuding from the peduncle.

Whether this juice was used for any purpose in connection with the nest or whether it was just an acquired taste of the individuals concerned I was not able to establish.

Judging from the number of flower-heads found on the ground I should say that the habit had existed for some time, but it must not be forgotten that a large number of wasps—there were at least two nests in the vicinity—would soon cause this damage.

Entomological Notes, 1932.

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

THE records of the occurrence of British Butterflies for the year are dealt with in a separate article. The following notes of a somewhat mixed nature may also be of interest.

BUTTERFLIES AND BIRDS.

Mr J. B. Hicks writes:—On July 23rd, at Hartland, North Devon, while sitting in the garden of the house where I was staying, I watched a gathering of House Martins, parents and young, to the number of perhaps a score, feeding on butterflies.

The birds were lined up at the edge of the roof, and on several occasions left together, swooping down on the butterflies below, which consisted of *Aphantophus hyperanthus* L. and a few *Epinephele janira* L., both of which seemed to be taken indiscriminately. They were caught in flight, and I saw no other insects taken. The less successful young birds were fed by their parents. I was not close enough to say definitely how the butterflies were caught, but I think by the body. The whole insect, including the wings, was swallowed.

I watched the performance for about half an hour, and it was still going on when I had to leave.

LARVAL NOTES.

I bred up a few *Gonepteryx rhamni* L. from the egg, and found the larvae almost invisible in their early instars when resting, as they chose the groove up the middle of the upper surface of the leaves in which to conceal themselves, and they could frequently only be found with the aid of a pocket lens.

They were in a tin box of which a portion of the lid had been cut away and muslin stretched across. Fresh twigs of *Rhamnus frangula* L. were given them each day, these twigs being about four inches long resting loosely in the box. When the pupation time was approaching one larva fastened the lower end of a twig to the side of the box with a stout pad of silk so that the pupa would have a stable resting place. It then proceeded to fasten its tail to the twig one and a half inches further up, fixed its girdle and pupated.

I found a colony of the larvae of *Vanessa io* L. by the pond at Fet-cham and took some of them to breed up. I had the rest of the larvae under observation each day as I passed on my way to or from the station. The nettles they were on adjoined some plants of the Reed Poa (*Poa aquatica* L.), and I noticed that the larvae moved from their food plants to the grass for their moults. The leaves of the latter were thick with cast skins of two different sizes, while I was not able to discover any skins on the nettles. The larvae certainly would find the broader flat surfaces of the *Poa* leaves more suitable anchorages for the moulting process than they would the nettle stems, and they all seemed to be taking the opportunity to use the strange plant.

MOTHS.

Few correspondents have sent in notes on these, but various people have emphasised the unsatisfactory run of the season. Mr Heath states it was especially bad for *Micros*, which appeared long after their normal date. Oviposition in many species, possibly due to late emergences, must have been prolonged, as larvae of *Cucullia verbasci* L. and other species were seen on the same day in very different stages of growth. Few nights were favourable for sugaring.

Mr C. Nicholson bred up *Acherontia atropos* L. in Cornwall, while Mr Robbins obtained a fine *Sphinx convolvuli* L. at Limpsfield, and Miss Gibson found *S. ligustri* L. again common in South Hampshire. Otherwise correspondents have not mentioned the Sphingidae. Dr Fordham reports *Arctia caja* L. as being more frequent than usual near York, a cheering note, as this insect seems to have been comparatively scarce the last few seasons where it used to be plentiful some forty years ago.

Some *Plusias* were very abundant in places, and *P. moneta* F. was reported from Sunderland by Dr Fordham, and was also taken by Miss Gibson in Hampshire. In the South some species of common Geometers were often in large numbers but the rarer ones were not in evidence as a rule. Mr E. H. Wattson obtained a larva of *Pachys strataria* Hufn. on Tamarisk in his garden at Twickenham, rather an unexpected food

plant. Mr Studd, writing from South Devon, states that from ova obtained on 14th October 1931 from a female he bred male and female *Camptogramma fluvialata* Hb., the first record he has had for the species in over fifty years collecting in that district.

He reports that the migrant *Nemophila noctuella* Schiff. was scarce.

I found *Tortrix viridana* L. abundant on 3rd July near Westcott, but the insect does not seem to have been a pest this year.

PARASITES.

Mr Nicholson sent up for exhibition at the Society's meeting on 6th December a portion of the pupal skin of *Saturnia pavonia* L. from near Beaulieu, containing a nest of cocoons of *Spilocryptus saturniae* Boie., an Ichneumon fly which had only a short time before been recognised as British, having previously been confused with two allied species.

Miss Longfield remarked that the large numbers of *Pieris brassicae* L. in Ireland were heavily parasitised.

On 20th September some larvae of the Beetle *Rhipiphorus paradoxus* L. in a portion of a wasp's nest dug up at Fetcham were shown to the Society.

PARANEUROPTERA.

Mr Nicholson records *Cordulegaster annulatus* Latr. from Tresillian, Cornwall.

APHIDIDAE.

Little work was done on these insects, but colonies of *Callipterus juglandis* Frisch. were noticed on three Walnut trees at Fetcham in July.

DIPTERA.

The interesting little miner *Dizygomyza iridis* Hendel, in the leaves of *Iris foetidissima* L. was found in some numbers in the neighbourhood of Leatherhead and Dorking.

Plant Gall Records for 1932.

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

COLEOPTERA.

Gentiana amarella L. was again attacked by a Weevil on Fetcham Downs but I once more failed to breed the insect.

CYNIPIDAE.

Rhodites mayri Schl. was obtained in another locality in West Kent near to where we have known it for some years. These galls were on *Rosa micrantha* Sm. *Rh. spinosissimae* Giraud and *Rh. eglanteriae* Hartig were plentiful on *Rosa spinosissima* L. in its London locality. *Rh. nervosus* Curt. was seen several times on *Rosa canina* L., and was apparently in greater numbers than usually happens.

Centaurea scabiosa L. yielded several galls of *Isocolus (Aylax) rogenhoferi* Wachtl. in Surrey. I have been growing some of the plants in my garden, and on 2nd October I examined the old flower heads. All were ungalled until I got to the last root and here I secured 19 galls, which may be possibly taken to show that the insect or insects responsible had been very particular in their choice of flower buds for oviposition. *I. scabiosae* Gir. was again found on one of these roots.

Tragopogon pratense L. galled by *Aulacidea pigeoti* Kieff. was found by Mr B. T. Ward near Eynsford, Kent.

Nepeta hederacea Trev. galled by *Liposthenes latreillei* Kieff. was only recorded once, when several specimens were seen near Westcott.

Rubus spp. were found by Mr Niblett galled by *Diastrophus rubi* Bouché.

Oak galls were not up to the usual numbers. In the spring *Andricus furunculus* Bjck. was very abundant, and in the autumn its alternate *A. ostreus* Gir. was plentiful. *A. fecundator* Htg. was not nearly so much in evidence as usual (M. Niblett). *A. sieboldi* Htg. has vanished from some of its old haunts, but it has been found elsewhere, though it does not seem to be as frequently seen as it was some twenty years ago. *A. rhizomae* Htg. was discovered on *Quercus Robur* L. on Bookham Common, possibly the first record for the south of England, as we only knew of it previously from the North (Bagnall and Harrison). *Cynips corruptrix* Schl. was found on *Q. sessiliflora* Salis. in Abbey Wood, Kent, and on *Q. Robur* L. on Barnes Common and near Horsley. *Neuroterus tricolor* Htg. was frequent in Epping Forest where fresh specimens were found for more than six weeks (J. Ross). Its alternate *N. fumipennis* Htg. was abundant in various places.

For the first time I bred wingless females of *Biorrhiza pallida* Oliv., as one gall provided me with two of these out of thirty females and twenty-one males. In other years all specimens have been winged.

TENTHREDINIDAE.

Pontania proxima Lepel was abundant, and *P. salicis* Christ. plentiful in places, but *P. pedunculi* Htg. does not seem to have been noticed. *Cryptocampus venustus* Zadd. was found on *Salix caprea* L. on Epsom Downs on the occasion of the Section's outing there. Mr R. B. Benson brought back from Scotland specimens of *Salix herbacea* L. galled by *Pontania herbaceae* Cam., *S. phylicifolia* L. by *P. femoralis* Cam., and *S. arbuscula* L. by *Pontania* sp.

CECIDOMYIDAE.

Crataegus monogyna Jacq. Flower buds swollen, unopened, containing light yellow larvae. Kenley.

Epilobium angustifolium L. Flower buds enlarged and elongated (not globular as with *Perrisia epilobii*), each containing one white Cecidomyid larva. Fetcham.

Pimpinella Saxifraga L. *Contarinia traili* Kieff. Chipstead.

Silva flavescens Bernh. *Lasioptera carophila* F. Loew. Colley Hill, Reigate. This may be a new host plant record for Britain.

Cornus sanguinea L. (1) *Craneobia corni* Gir. which was so abundant in 1930 has hardly been seen on the trees it then attacked. (2) Flower buds swollen and unopened. White larvae. Shoreham, Kent.

Viburnum Lantana L. *Contarinia lonicerearum* F. Loew.

Serratula tinctoria L. Flower heads aborted, containing pale yellow larvae. Plentiful in Gason Wood, Horsley.

Centaurea nigra L. *Perrisia miki* Kieff. (M. Niblett).

Hypochaeris radicata L. Head distorted containing white or pink larvae. Abinger.

Sonchus arvensis L. *Cystiphora sonchi* F. Loew. These galls have been most abundant in Surrey this year.

Solanum Dulcamara L. *Contarinia solani* Rubs. Near Tring, Herts.

Carpinus Betulus L. *Perrisia carpinii* F. Loew. A number of galls were observed in Epping Forest near Loughton in September.

Brachypodium sylvaticum Roem. and Schult. *Poomyia hellwigi* Rubs. Near Ranmore Common. Mr L. B. Hall has reported this gall from Corfe, Dorset.

Pteris aquilina L. *Perrisia pteridicola* Kieff. Abrook Common, Surrey.

MUSCIDAE.

Senecio vulgaris L. *Sphenella (Tephritis) marginata* Fallen. Mr Niblett says this gall was rather plentiful. I found it abundant in one place near Horsley.

Arctium majus Bernh. *Trypeta bardanae* Schrank. Rather plentiful (M. Niblett).

Cnicus arvensis Hoffm. *Urophora stylata* Fabr. Headley.

Serratula tinctoria L. Flower heads aborted, containing white larvae. Gason Wood, Horsley.

Hieracium umbellatum L. *Noëta pupillata* Fallen. Rather plentiful (M. Niblett).

Hypochaeris radicata L. Trypetid. Heads slightly aborted. Abinger.
Populus tremula L. *Melanagromyza simplicoides* Hendel. Abrook
 Common.

ERIOPHYIDAE.

Acer campestre L. *Eriophyes macrochelus* Nal. has hardly been seen, though *E. macrorrhynchus* Nal. was as plentiful as usual. Some galls of the latter were as large as those of the other species and microscopical examination had to be made to determine the character of the internal hairs before identification was settled.

Pyrus Malus L. *E. malinus* Nal. Leatherhead.

Tanacetum vulgare L. *E. tuberculatus* Nal. Wisley.

Hieracium vulgare (Tausch). *E. pilosellae* Nal. Holwood Park, Kent.

Quercus Ilex L. *E. ilicis* Can. A colony was found in February near Ockham. When visited in December it was noticed that the galls had spread considerably on the lower branches of the tree. Galls from an old locality near Leatherhead examined in October were seen to contain two species of *Eriophyes*.

NEMATODA.

Eelworms were found galling various plants, amongst which were:—

Cheiranthus allioni. Base of the stem much swollen and covered with large masses of small leaves. Eelworms seen in the stem. Fetcham.

Picris hieracioides L. Flower heads aborted, covered with greyish hairs. Park Downs, Chipstead.

Hypochaeris radicata L. Flower stalk twisted and swollen. Shoreham.

Leontodon autumnale L. Stems and flower heads twisted and malformed. Wisley Common.

Phleum pratense L. Globular and elongated swellings at the base of the stems. Duke's Meadows, Chiswick.

FUNGI.

Prunus spinosa L. Leaves swollen and coloured pink. Large masses of these leaves seen near East Harting, Sussex, by Mr E. B. Bishop. Mr A. W. Bartlett, of Armstrong College, Newcastle-on-Tyne, kindly identified the fungus as *Taphrina insititiae*.

Sorbus aucuparia L. *Gymnosporangium juniperi* Link. Friday Street, Surrey.

SCANDIX Linn. 167.

813. **S. Pecten-Veneris** Linn. *Shepherd's Needle*.

Divisions 1, 2, 4, 5, 7, 10, 12, 15, 17, 18, 21 and 22. Seldom common in the area.

ANTHRISCUS Bernh. 168.

814. **A. vulgaris** Bernh.

3. Hayes. 8. Broxbourne. 10. Ilford. 12. Frequent in division. 13. Weybridge. 20. Well Hall. Southend by Bromley. 21. Dartford Marshes. 22. Stone. Darenth to Dartford.

815. **A. sylvestris** Hoffm. *Burr Chervil, Cow-Parsley*.
Abundant in all divisions.816. **A. Cerefolium** Hoffm. *Garden Chervil*.

19. Limpsfield. A garden escape.

FŒNICULUM Hill. 170.

818. **F. vulgare** Mill. *Fennel*.

15. By the river, Hampton Court. 21. Swanscombe Marshes and the River bank.

ŒNANTHE Linn. 172.

820. **Œ. fistulosa** Linn. *Water Dropwort*.

Divisions 1, 3, 4, 5, 8, 11, 12, 13 and 17 (at Headley Heath). Most frequent in 13.

823. **Œ. Lachenalii** C. Gmel.

21. Littlebrook Marshes.

824. **Œ. crocata** Linn. *Hemlock Water Dropwort*.

Divisions 1, 2, 3, 4, 6, 8, 13, 14, 19 and 21.

825. **Œ. aquatica** Poir. (**Phellandrium** Lam.).

3. Hampton Court Park. 9. Theydon Garnon. Abridge. Epping. 11. Childerditch. Hare Street. Little Warley. 13. Weybridge. 14. Richmond.

Frequent in Essex.

826. **Œ. fluviatilis** Coleman.

1. Canal near Iver. Colne Brook near Horton. 4. River Colne, Rickmansworth. 8. River Lea at Broxbourne and Waltham Abbey.

ÆTHUSA Linn. 173.

827. **Æ. Cynapium** Linn. *Fool's Parsley*.

In all divisions except 16, 18 and 21. Probably in all.

SILAUS Bernh. 175.

829. **S. flavescens** Bernh. *Pepper Saxifrage*.

Divisions 1, 4, 5, 7, 8, 9, 10, 11, 13, 14, 15, 17 and 19. No records from the Kent divisions.

(52) **BOTANICAL RECORDS OF THE LONDON AREA.**

ANGELICA Linn. 179.

833. **A. sylvestris** Linn. *Wild Angelica*.

In all northern divisions. Not recorded from 18, 21, 22 and 23.

ARCHANGELICA, Hoffm. 180.

834. **A. officinalis** Hoffm. *Angelica*.

14. Along the banks of the Thames between Barnes and Kingston. Native of N. and E. Europe. Cultivated for confectionery.

PEUCEDANUM Linn. 181.

838. **P. sativum** Benth. & Hook. *Wild Parsnip*.

All divisions except 1, 6, 9, 10, 22 and 24. Most plentiful on the chalk.

HERACLEUM Linn. 182.

† **H. villosum** Fisch. (**H. giganteum**).

3. Abundant in Hampton Court Park. Native of Caucasus.

839. **H. Sphondylium** Linn. *Hogweed*.

Common in all divisions.

CORIANDRUM Linn. 184.

841. **C. sativum** Linn. *Coriander*.

12. Rainham. Native of S.E. Europe.

DAUCUS Linn. 185.

842. **D. Carota**, Linn. *Carrot*.

In every division.

CAUCALIS Linn. 186.

845. **C. daucoides** Linn.

3. Near Hayes. 7. Hadley Common.

846. **C. arvensis** Huds.

Scattered records in divisions 1, 2, 4, 5, 7, 9, 11, 17, 18, 19 and 21.

847. **C. Anthriscus** Huds. *Hedge Parsley*.

Recorded in all divisions except 20 and 22.

848. **C. nodosa** Scop. *Knotted Hedge Parsley*.

1. Colnbrook. 12. Purfleet. 21. Northfleet. Littlebrook Marshes. And as a casual in 7 and 9.

35. ARALIACEAE.

HEDERA Linn. 187.

849. **H. Helix** Linn. *Ivy*.

Abundant in all divisions.

36. CORNACEAE.

CORNUS Linn. 188.

851. **C. sanguinea** Linn. *Dogwood*.

No records in divisions 8, 12, 16 and 21. Generally common.

37. CAPRIFOLIACEAE.

ADOXA Linn. 189.

852. **A. Moschatellina** Linn. *Moschatel*.

2. Chalfont St Peter. Bricket Wood. 4. Oxhey Woods. Harefield. Bayhurst Wood. 5. Napsbury. Park Street. 9. Many localities in Epping Forest district. 11. Navestock Side. 17. Several stations. 18. Woldingham. Chelsham. 19. Bletchingley. Limpsfield. 20. Abbey Wood. 22. Between Chelsfield and Shoreham. 23. Otford. Kingsdown. 24. Near Westerham.

SAMBUCUS Linn. 190.853. **S. nigra** Linn. *Elder*.

Very common. In all divisions.

† **S. racemosa** Linn. *Red-berried Elder*.

9. Copy Wood near Nazing. 22. Between Chelsfield and Shoreham. Not native. European.

VIBURNUM Linn. 191.

855. **V. Opulus** Linn. *Guelder Rose*.

No records in divisions 10, 11, 12, 14, 16 and 21. Apparently most frequent in 4, 5, 6, 7 and 13.

856. **V. Lantana** Linn. *Mealy Guelder Rose*.

Plentiful in divisions 12, 17 to 20, 22, 23 and 24, especially on the chalk. Single records in 2, 4, 5, 7, 9, 14 and 21.

LONICERA Linn. 193.

859. **L. Periclymenum** Linn. *Honeysuckle*.

Single records in divisions 1, 8 and 16. Frequent in all others except 21, where it has not yet been recorded.

SYMPHORICARPUS Linn.

† **S. racemosus** Michx. *Snowberry*.

This North American shrub, common in gardens, often escapes into hedgerows and shrubberies. It has been recorded in divisions 2, 3, 4, 11, and all the southern divisions (13 to 24).

38. RUBIACEAE.

GALIUM Linn. 195.

863. **G. Cruciata** Scop. *Crosswort*.

1. Near Rowley Farm, Iver. 5. South Mimms. 15. Between Ashstead and Bookham Common. 17. Headley. 18. Downs above Oxted.

(54) BOTANICAL RECORDS OF THE LONDON AREA.

Kenley. 19. Near Titsey. Near Oxted. 21. Northfleet. 22. Between Chelsfield and Shoreham. 23. Eynsford. Otford. Kingsdown.

864. **G. verum** Linn. *Ladies' Bedstraw*.

In all divisions except 24. Probably there also, but there are few records in divisions 10, 11, 12 and 18 to 23.

865. **G. erectum** Huds.

2. Chalfont. 9. Chingford, railway bank (evidently as a casual). 17. Colley Hill, Reigate. Buckland Hills (fide C.E.S.). 18. Caterham Valley. 22. Goddington, S.E. of Orpington (W.W.). 23. Downe (W.W.).

866. **G. Mollugo** Linn. *Hedge Bedstraw*.

In all divisions except 6 and 13. Generally common.

867. **G. saxatile** Linn. *Heath Bedstraw*.

No records for divisions 1, 8, 12 and 21. It may be absent from the three latter.

868. **G. sylvestre** Poll.

17. Colley Hill, Reigate (C.E.S.). 18. Worms Heath. Outlying stations of a northern species.

869. **G. palustre** Linn. *Marsh Bedstraw*.

In all divisions except 12, 14, 16, 18 and 24, in most of which it is probably present, but records are few in the southern area.

870. **G. uliginosum** Linn.

9. Coopersale Common. Epping Forest near Woodford. 12. Cranham. 14. Wimbledon Common. 15. Great Bookham Common. 17. Tadworth. 19. Limpsfield. 22. Between Eynsford and Shoreham.

871. **G. anglicum** Huds.

23. Farningham (*teste* W.W.).

872. **G. Vaillantii** DC.

19. Allotments at Limpsfield, 1924, 1930 (*teste* C.E.S.).

873. **G. Aparine** Linn. *Goosegrass, Cleavers*.

Plentiful in all divisions.

874. **G. tricornis** Stokes.

9. Stapleford Tawney. 11. Hart Street, Romford. 17. Cornfield on downs above Betchworth. 20. Chislehurst (as casual). 23. N. of Downe.

ASPERULA Linn. 196.

875. **A. odorata** Linn. *Woodruff*.

Several stations in each of the following divisions: 2, 4, 5, 7, 17, 18, 19, 22 and 23; also 20. Near St Paul's Cray. None elsewhere. Strangely absent from the Essex woodlands.

877. **A. cynanchica** Linn. *Squinancy Wort*.

17. Many records in this division. 18. Riddlesdown. Downs above Oxted. 23. Downs above Eynsford.

878. **A. arvensis** Linn.

9. Monkams Estate, Woodford. A casual. European.

SHERARDIA Linn. 197.

879. **S. arvensis** Linn. *Field Madder*.

No records in divisions 6, 10, 12 to 16, 21 and 23. Most frequent in 17.

39. VALERIANACEAE.

VALERIANA Linn. 198.

880. **V. dioica** Linn. *Marsh Valerian*.

4. Harefield. 9. Coopersale Common, Epping Forest. 20. Holwood Park. 23. Sepham Farm, Shoreham.

881. **V. officinalis** Linn. (**Mikanii** Syme). *True Valerian*.

18. Farthing Down, Coulsdon. 23. E. of Downe.
In woods on the chalk.

882. **V. sambucifolia** Mikan. *Valerian*.

Frequent in divisions 1, 2, 3, 4, 8, 13 and 14, especially near the rivers Colne, Thames and Lea. Also 5. Park Street, St Albans. 7. Rye House. 9. Nazeing. 18. Near Oxted. 19. Limpsfield. 20. Petts Wood, Chislehurst. Hayes. Holwood Park.

KENTRANTHUS Neck. 199.

884. **K. ruber** DC. *Red Spur Valerian*.

21. Northfleet. Stone Marshes. 22. Near Northfleet. Between Chelsfield and Shoreham. 23. Between Shoreham and Otford.
Often abundant on chalk cuttings in the lower Darent valley.

VALERIANELLA Hill. 200.

886. **V. olitoria** Poll. *Corn Salad, Lamb's Lettuce*.

In divisions 1, 2, 3, 4, 5, 11 and 19.

888. **V. carinata** Lois.

13. Thorpe. 19. Limpsfield.

890. **V. dentata** Poll.

4. Hendon. 15. Edge of a wood by Banks Common. 18. E. of Crohamhurst.

40. DIPSACEAE.

DIPSACUS Linn. 201.

891. **D. sylvestris** Huds. *Common Teazel*.

Records in all divisions except 20 (Blackheath).

(56) **BOTANICAL RECORDS OF THE LONDON AREA.**

The cultivated form with the scales of the receptacle hooked (*D. ful-
lonum*, Linn., the Fullers' Teazle) has been found at 1. Iver Grove. 12.
Dagenham Dock.

892. **D. pilosus** Linn. *Small Teazel.*

3. Canal N. of Uxbridge. 4. By the canal, N. of Denham. 8.
Stanstead Street. 19. Field near "The Bogs," Oxted.

SCABIOSA Linn. 202.

893. **S. Succisa** Linn. *Devils-bit Scabious.*

In all divisions except 3, 12, 16, 21 and 22.

894. **S. Columbaria** Linn.

14. Between Richmond and Kingston. 17. and 18. Many localities
on the chalk downs. 19. Railway bank, Oxted. 23. Downs near
Knockholt, Eynsford, etc.

895. **S. arvensis** Linn. *Field Scabious.*

All divisions except 6, 10, 14, 15 and 16. Likely to be in these also.

41. COMPOSITAE.

EUPATORIUM Linn. 203.

897. **E. cannabinum** Linn. *Hemp Agrimony.*

1. Colnbrook. 2. West Hyde. 3. Harlington. 4. Harefield.
Denham. Uxbridge. 8. St Margaret's. 9. Roydon. 14. By the R.
Wandle at Merton. 18. N. of Limpsfield. 19. Near Oxted. 22.
Springhead near Southfleet.

SOLIDAGO Linn. 204.

898. **S. Virgaurea** Linn. *Golden Rod.*

1. Fulmer. 6. Bishops Wood. Highgate Woods. Coldfall Wood.
7. Hoddesdon. 11. Brentwood. 13. Oxshott Heath. Esher. 16.
Shirley. 17. Walton-on-the-Hill. 19. Limpsfield. 20. Shooters Hill.
Forest Hill railway banks. 22. Chelsfield. Dartford Heath. 24.
Westerham. Between Sundridge and Chevening.

BELLIS Linn. 205.

899. **B. perennis** Linn. *Daisy.*

Abundant in all divisions.

ASTER Linn. 206.

901. **A. Novi-Belgii** Linn. *Michaelmas Daisy.*

20. Waste near Bromley.

This and other species of Michaelmas Daisy, natives of North
America, are not infrequent in waste places as garden escapes.

902. **A. Tripolium** Linn. *Sea Aster*.

10. Bank of R. Roding near Ilford. 12. Near Eastbury, Barking. Grays. West Thurrock. 21. Swanscombe Marshes. River bank, near Crossness, and near Littlebrook.

ERIGERON Linn. 207.

904. **E. canadense** Linn. *Canadian Fleabane*.

This colonist from North America is recorded in many stations, in the following divisions: 3, 6, 7, 8, 9, 12, 13 to 17, 19 to 22.

905. **E. acre** Linn. *Blue Fleabane*.

1. Near Iver. 2. Chandlers Cross. Croxley Moor. Rickmansworth. 4. Harefield. 7. Hoddesdon. 12. Several stations near Grays. 15. Leatherhead. 17. and 18. Frequent in both divisions. 19. Between Limpsfield and Moorhouse. 20. Chislehurst. Southborough. 22. Dartford Heath.

FILAGO Linn. 208.

907. **F. germanica** Linn. *Cudweed*.

2. West Hyde. 4. Harefield. 6. Palmers Green. 7. Broxbourne. Haileybury. 19. Oxted. Limpsfield.

Remarkably few records for this common plant.

908. **F. apiculata** G. E. Smith.

13. Little Heath, near Oxshott (*teste* C.E.S.).

909. **F. spathulata** Presl.

12. Grays.

910. **F. minima** Fr.

1. Gravel pit, Alderbourne, near Fulmer. 4. Gravel pit, Harefield. 7. Broxbourne. Near Essendon. 8. Rye House. 13. Near Little Heath. 19. Oxted.

GNAPHALIUM Linn. 211.

914. **G. uliginosum** Linn. *Marsh Cudweed*.

All divisions except 16, 18, 21 and 23.

Apparently much commoner on the northern side of the Thames.

917. **G. sylvaticum** Linn.

1. Alderbourne Farm, Fulmer. Black Park. 4. Harrow Weald Common. 9. Near Ambresbury Banks, Epping Forest. 18. Woods above Titsey. 19. Near Limpsfield Common. 20. Chislehurst. Addington Woods. Abbey Wood.

INULA Linn. 212.

921. **I. squarrosa** Bernh. (**Gonyza** DC.). *Ploughman's Spikenard*.
 2. Croxley Mills. 4. Harefield. Pinner (a casual). 12. Grays.
 Thurrocks. 17. Many stations. 18. Downs above Oxted. 20. Chislehurst.

Probably elsewhere on the chalk.

PULICARIA Gært. 213.

925. **P. dysenterica** Gray. *Fleabane*.

In all divisions except 12, 18 and 23.

AMBROSIA Linn.

- † **A. artemisifolia** Linn.

13. Near Egham. 20. West Heath Road, Abbey Wood.
 North American. Sometimes a garden weed.

BIDENS Linn. 214.

927. **B. cernua** Linn. *Nodding Bur-marigold*.

No records from divisions 2, 10, 12, 16, 18, 21 to 24.

928. **B. tripartita** Linn. *Bur-marigold*.

Not recorded from divisions 7, 16, 17, 18, 21 to 24.

Both species of *Bidens* appear to be much commoner on the northern side; frequently both are recorded from the same locality.

GALINSOGA Ruiz & Pavon. 215.

929. **G. parviflora** Cav.

6. Pimlico. Highgate. 9. Woodford. 12. Barking. 14. Ham.
 Sheen. Mortlake. 16. Southwark. 20. Abbey Wood. Bromley. 21.
 Near Crossness Sewage Works.

This modern colonist, native of South America, is thought to have spread from Kew Gardens. It is usually found as a weed of gardens or highly cultivated land.

ACHILLEA Linn. 216.

930. **A. Millefolium** Linn. *Yarrow*.

Plentiful in all divisions.

931. **A. Ptarmica** Linn. *Sneezewort*.

Frequent in divisions 4, 5, 6, 7, 9. Also the following records: 1. Fulmer. 10. Hainault Forest. 11. Bentley. 13. Little Heath, Oxshott. 14. Wimbledon Common. 15. Banks Common. 19. Itchingwood Common, Limpsfield. 20. Paul's Cray Common. Chislehurst. Keston Bog.

ANTHEMIS Linn. 218.

933. **A. tinctoria** Linn. *Yellow Camomile*.
2. Rickmansworth. 6. Golders Green.

934. **A. Cotula** Linn. *Stinking Camomile*.
11. Great Warley. 19. Oxted. 24. Force Green, near Westerham.

935. **A. arvensis** Linn. *Corn Camomile*.
1. Rowley Farm, near Iver. 9. Ongar. 20. Chislehurst.

936. **A. nobilis** Linn. *True Camomile*.
9. Snaresbrook Heath. Woodford Golf Links. Cobbin End. 11. Brentwood. 19. Limpsfield Chart. 22. Dartford Heath.

CHRYSANTHEMUM Linn. 219.

937. **C. segetum** Linn. *Corn Marigold*.
2. Chorley Wood. 7. Broxbourne. Wormley. 8. Broxbourne.
13. Thorpe. Weybridge. 19. Oxted. Tandridge.
Often in plenty where it occurs.

938. **C. Leucanthemum** Linn. *Ox-eye Daisy, Marguerite*.
Recorded from all divisions. Not generally common on the northern side, except in division 4.

939. **C. Parthenium** Bernh. *Feverfew*.
Scarce in the north, divisions 3, 4, 7 and 12 only. In all the southern divisions except 14. Generally near gardens.

MATRICARIA Linn. 220.

940. **M. inodora** Linn. *Scentless Mayweed*.
All divisions except 3, 9 and 17. Probably in all.

941. **M. Chamomilla** Linn. *Wild Chamomile*.
1. Langley. New Denham. 4. Hendon. Ickenham. 7. Essendon.
8. Rye House. Edmonton. 9. Woodford Green. 12. Grays. 13. Thorpe. Walton. 14. Merton. Sheen. Near Kingston. 15. Epsom.
17. Between Chipstead and Tadworth. 19. Moorhouse. Redhill. 20. Frequent. 21. Dartford.

942. † **M. suaveolens** Buchenau. (**discoidea** DC.).
No records from divisions 1, 2, 3, 10, 11 and 17. Elsewhere frequent by roadsides, around farms, etc. A modern introduction from North America, which has spread rapidly of late years.

TANACETUM Linn. 222.

944. **T. vulgare** Linn. *Tansy*.
Scattered localities in divisions 1, 3, 4, 8, 11, 12, 13, 14, 15, 17, 18, 19, 20 and 22. Most records in divisions 3 and 13.

(60) BOTANICAL RECORDS OF THE LONDON AREA.

ARTEMISIA Linn. 223.

945. **A. Absinthium** Linn. *Wormwood*.

8. Amwell Bury. 12. Tilbury Docks.

946. **A. vulgaris** Linn. *Mugwort*.

In all divisions except 6 and 18, from which, possibly, it may be absent.

948. **A. maritima** Linn. *Sea Wormwood*.

12. Grays. 21. Swanscombe Marshes. In both cases along the Thames shore.

TUSSILAGO Linn. 224.

950. **T. Farfara** Linn. *Coltsfoot*.

Abundant in all divisions.

PETASITES Hill. 225.

951. **P. fragrans** Presl. *Winter Heliotrope*.

2. Rickmansworth. 4. Pinner. Harefield. 5. and 6. Hatfield. 8. Railway banks near Clapton. 17. Mickleham. 18. Woldingham. 20. Pickhurst Mead, Hayes.

A South European species escaping and establishing itself from gardens.

952. **P. ovatus** Hill. (**officinalis** Mœnch). *Butter-bur*.

2. Cassio Bridge. Watford. 3. River Colne, S. of Uxbridge. 4. Harefield to Rickmansworth by the canal. Sandy Lodge. River Ver near Frogmore. 5. Park Street. 7. Broxbourne. 8. Several places along the River Lea. 13. East Molesey. 14. By the Thames, between Kew and Richmond. 19. Oxted Mill. Brook at Limpsfield. 20. Near Shortlands. 22. River Darent near Darent.

The female plant, with tall lax spikes (f. *hybrida* Linn.) is common between Harefield and Rickmansworth.

SENECIO Linn. 227.

956. **S. vulgaris** Linn. *Groundsel*.

Common in all divisions.

958. **S. sylvaticus** Linn. *Heath Groundsel*.

In all divisions except 12, 15, 16, 21 and 24.

959. **S. viscosus** Linn.

Recorded in all divisions except 2, 5, 7, 15, 17, 18, 22 and 23. Most frequently in 4, 6, 9 and 20. Often temporary.

960. **S. squalidus** Linn.

1. Sandpit near Colnbrook. 3. West Drayton. Hayes. 12. Grays. 14. Between Richmond and Kingston. 16. Lordship Lane Station. 19. Reigate. 20. Hayes Common. Abbey Wood. 21. Greenhithe. Dartford Marsh.

961. **S. erucifolius** Linn. *Hoary Ragwort*.

Frequent in divisions 6, 7, 17 and 18. Not recorded from divisions 2, 3, 8, 13, 14, 16, 20, 23 and 24.

962. **S. Jacobæa** Linn. *Ragwort*.

Found in all divisions but noticeably more frequent on the south side.

963. **S. aquaticus** Hill. *Marsh Ragwort*.

No records in divisions 3, 6 and 12 on the north side. Much scarcer on the south side:—13. Little Heath, Oxshott. Chertsey Mead. 14. Between Kew and Richmond. 19. Limpsfield. 23. Shoreham.

† CALENDULA Linn.

† **C. officinalis** Linn. *Marigold*.

Is established on railway banks at 6. Near Grosvenor Bridge. 18. Near Selsdon Road. Alien. European.

CARLINA Linn. 228.

970. **C. vulgaris** Linn. *Carlina Thistle*.

5. Warren Gate. 6. Finchley Common. 17. Many localities on the Downs. 18. Downs above Oxted. Caterham. 19. Oxted. Limpsfield Common. 22. Between Chelsfield and Shoreham. 23. Eynsford. Otford.

ARCTIUM Linn. 229.

971. **A. majus** Bernh. *Great Burdock*.

4. Hedge between Bayhurst Wood and Harefield. 7. Near Broxbournebury. 18. Above Barrow Green, Oxted. 19. Oxted, near Hurst Green. 21. Near Crossness.

974. **A. minus** Bernh. *Burdock*.

Recorded in divisions 3, 4, 6, 7, 11, 13, 14 and 18 to 24. As aggregate only.

CARDUUS Linn. 230.

975. **C. pycnocephalus** Linn.

Var. *tenuiflorus* Curt.

12. Grays. 21. Swanscombe Marshes. Northfleet. Sea wall near Littlebrook.

976. **C. nutans** Linn. *Musk Thistle*.

Recorded in the following divisions, sometimes stray plants only:—1 to 4, 6 to 9, 12, 14, 17, 19 and 23. Most frequent in division 2 (Rickmansworth).

977. **C. crispus** Linn. *Wetted Thistle*.

Recorded in every division except 6, although frequently single stations. Plentiful in divisions 7, 17 and 18. The form *acanthoides* Syme has been found at 17. Headley Lane.

CNICUS Linn. 231.

978. **C. lanceolatus** Willd. *Spear Thistle*.
Freely recorded in all divisions.

980. **C. palustris** Willd. *Marsh Thistle*.
In all divisions except 21 (Kent Marshes).

982. **C. pratensis** Willd. *Meadow Thistle*.
13. Oxshott Heath. 15. Epsom Common. Great Bookham Common.
16. Wet places on Mitcham Common. 19. Itchingwood Common, Limps-
field. 20. Keston.

984. **C. acaulis** Willd. *Stemless Thistle*.
2. Cassiobury Park. Croxley Green. 4. Harefield Chalk pits. 5.
Colney Heath. 10. Hainault. 12. Grays. 17, 18 and 23. Abundant
on the chalk. 19. Reigate. Limpsfield Chart. 20. Hayes. Chisle-
hurst. Abbey Wood. 22. Chelsfield. 24. Force Green.

985. **C. arvensis** Hoffm. *Field Thistle*.
Only too abundant in every division.

Var. *mitis* Koch.

3. Hampton Court. 17. Near Headley. 20. Crofton (by Chisle-
hurst).

Var. *setosus* Bess.

3. East Bedfont. 4. Pinner. 6. Hampstead Heath. 8. Silver
Street. 11. Warley Wood. 17. Wallington. 20. Locks Bottom.
Chislehurst. Near Orpington. Near Bromley.

ONOPORDUM Linn. 232.

986. **O. Acanthium** Linn. *Cotton Thistle*.
2. Bricket Wood. Rickmansworth Station. Denham. 8. Stan-
stead. 12. Purfleet. 19. Oxted. 21. Dartford Marsh. Between
Dartford and Littlebrook.

Well established in divisions 2 and 21, but status doubtful.

SILYBUM Vaill. 233.

987. **S. Marianum** Gært. *Milk Thistle, Blessed Thistle*.
3. West Drayton. 4. Harefield Canal. 6. Highgate. 7. Great
Anwell. 12. Purfleet. 21. Northfleet.
An introduced plant. European.

SERRATULA Linn. 235.

989. **S. tinctoria** Linn. *Saw-wort*.
5. Potters Bar. 6. Bishops Wood, Highgate. 18. Crohamhurst,
near Croydon.

CENTAUREA Linn. 236.

996. **C. nigra** Linn. (aggregate). *Knapweed, Hardhead.*

The Common Knapweed has been recorded freely in all divisions, but none of our members has tackled the modern segregates. Radiate forms are very rare in the area, but occur regularly at Woldingham (division 18).

1001. **C. Scabiosa** Linn. *Great Knapweed.*

Has been found in all the southern divisions (13 to 24), and there are scattered records in divisions 2, 4, 5, 7, 8, 10 and 12. Most frequent in 17 and 23.

1002. **C. Cyanus** Linn. *Cornflower.*

4. Harefield. 5. Aldenham. 6. Crouch End. 7. Broxbourne sandpit. 8. Rye House. 9. Chingford. 12. Grays. 22. Near Dartford.

Mostly as a casual. The Dartford record is the only one since 1913.

1005. **C. Calcitrapa** Linn. *Star-thistle.*

21. Northfleet (*teste* W.W.).

CICHORIUM Linn. 237.

1007. **C. Intybus** Linn. *Chicory.*

Records in divisions 1 to 5, 7, 8, 9, 12, 13, 14, 17, 18 and 21. Frequent in 17.

LAPSANA Linn. 239.

1009. **L. communis** Linn. *Nipplewort.*

In all divisions.

PICRIS Linn. 240.

1010. **P. hieracioides** Linn.

4. Harefield. 12. Stifford. 17. Frequent in the division. 18. Downs above Limpsfield. 19. Oxted. 21. Plumstead Marshes. Greenhithe.

1011. **P. echioides** Linn. *Ox-tongue.*

Frequently on clay soils, in divisions 7, 9, 17, 19 and 21. Also found in 4, 8, 11, 12, 15, 16, 20, 22 and 24.

CREPIS Linn. 241.

1013. **C. taraxacifolia** Thuill.

Recorded in divisions 2, 3, 4, 7, 8 and 9 (northern) and all the southern (13 to 24). Abundant and increasing in many districts.

1015. **C. capillaris** Wallr. (**C. virens** Linn.). *Hawksbeard.*

Recorded in divisions 2, 4, 7 and 9 (northern) and all the southern divisions except 23.

1017. **C. biennis** Linn.

Has been confused with *C. taraxacifolia*. The only reliable records are in division 12. Stifford Bridge and near Dagenham.

HIERACIUM Linn. 242.

The Hieracia are a group for specialists, and our recorders have made no attempt to deal with them on modern lines. The records that follow are of the aggregate species (in a Benthamian sense) and are not numbered, for it is not possible to fit them accurately into the 248 species enumerated in the *London Catalogue*, XI edition.

H. murorum Linn.

4. Mill Hill. 14. Between Claygate and Esher. Wimbledon. 19. Oxted.

H. vulgatum Fr.

10. Chigwell.

H. sabaudum Linn.

Var. *boreale* Fr.

4. Harrow Weald Common. Harefield. 5. Barnet Gate. 9. Epping Forest. 13. Oxshott Heath. 14. Wimbledon. 16. Shirley. 17. Between Headley and Chipstead. 19. Limpsfield. 20. Bromley. Eltham. 22. Joydens Wood. 24. Between Sundridge and Chevening.

H. umbellatum Linn.

4. Harefield. 13. Oxshott Heath. Weybridge Heath. 14. Wimbledon. 15. Banks Common. 19. Limpsfield.

H. pilosella Linn.

Common in all divisions.

H. aurantiacum Linn. *Orange Hawkweed*.

13. Walton Hill.

A garden escape. European.

HYPOCHÆRIS Linn. 243.

1269. **H. radicata** Linn. *Cat's-ear*.

In all divisions except 1, 2, 5 and 12. One would expect it in all.

LEONTODON Linn. 244.

1271. **L. taraxacoides** Lacaita (**L. hirtum** auct.).

4. Whitchurch Common. 6. North Hill, Highgate.

1272. **L. hispidum** Linn. *Rough Hawksbit*.

Single records in divisions 3, 5, 6, 7, 8, 9, 14, more common in Nos. 15 to 23. Very plentiful on the downs in 17 and 18.

1273. **L. autumnale** Linn. *Autumnal Hawksbit*.

Recorded in divisions 2 to 5, 7 to 10, 12, 14, 15, 17 to 20 and 24. It is probably in all.

TARAXACUM Hall. 245.

1274. **T. vulgare** Schrank. *Dandelion*.

Universal in all divisions.

1275. **T. lævigatum** DC. (**erythrospermum** Bab.).

Red-fruited Dandelion.

13. Thorpe (on a wall). 14. Merton. Towpath near Richmond.
17. Norbury Park. Headley Heath. 18. Riddlesdown. Warlingham.
19. Between Titsey and Moorhouse. Limpsfield village. 22. Dartford
Heath. 23. Biggin Hill. Maplescombe. 24. Crockham Hill.

LACTUCA Linn.

1279. **L. virosa** Linn. *Wild Lettuce*.

1. Iver. 3. Hayes. West Drayton. 4. Harefield chalk-pit.
Swakeleys, Ickenham. 5. South Mimms. Near Potters Bar. 9. Gal-
ley Wood. Between Hale End and Chingford. 12. Grays. Bulphan.
Stifford. 20. Lesness Abbey Wood. 21. Northfleet. Near Stone.
22. Near Southfleet.

1280. **L. Serriola** Linn. (**Scariola** Linn.). *Prickly Lettuce*.

12. Purfleet. 21. Sea wall near Stone and Littlebrook, in great
quantity.

1281. **L. saligna** Linn.

In the same stations as *L. Serriola* but much less plentiful.

1282. **L. muralis** Gærtn. *Wall Lettuce*.

2. Denham. Rickmansworth. Rousebarn Lane. 4. Harefield. Be-
tween Pinner and Eastcote. 9. Epping Lower Forest. Cobbins.
Hunsdon Mill. 10. Lambourne. Hainault Forest. 17 and 18. Seve-
ral stations. 19. Oxted. 20. Keston Mark. 23. Near Otford.
Shoreham. 24. Between Sundridge and Chevening.

SONCHUS Linn. 247.

1284. **S. oleraceus** Linn. *Sow-thistle*.

In all divisions.

1285. **S. asper** Hill. *Sow-thistle*.

All divisions except 2, 5, 6, 12 and 15.

1286. **S. arvensis** Linn. *Corn Sow-thistle*.

Not recorded in divisions 13, 16, 20, 22 and 24.

TRAGOPOGON Linn. 248.

1288. **T. pratense** Linn. *Goat's-beard*.

17. Colley Hill, Reigate. 18. Waste ground near South Croydon railway station.

The above are *T. pratense*, *sensu stricto*.

1289. **T. minus** Mill. *Goat's-beard*.

Recorded as *T. minus* or *T. pratense* (agg.) in all divisions except 2, 10, 11 and 12.

42. CAMPANULACEAE.

JASIONE Linn. 251.

1294. **J. montana** Linn. *Sheep's-bit*.

4. Between Harefield and Rickmansworth. 7. Hoddesdon, gravel pit. 12. Near Romford. 13. Between Weybridge and New Ham. 17. Between Headley and Chipstead. 19. Limpsfield sand pit.

WAHLENBERGIA Schrad. 252.

1295. **W. hederacea** Reichb. *Ivy-leaved Bellflower*.

9. Epping Forest, between Loughton and the Wake Arms.

PHYTEUMA Linn. 253.

1296. **P. orbiculare** Linn. *Round-headed Rampion*.

17. Chipstead. Headley Heath, near High Ashurst. Epsom Downs. 18. Near Worms Heath. S. of Kenley. Farthing Downs. Near Sandrstead.

This rare and charming species is still fairly plentiful at certain stations.

CAMPANULA Linn. 254.

1298. **C. glomerata** Linn. *Clustered Bellflower*.

1. Wraysbury. 13. Roadside near Thorpe. Near Weybridge. 17. Box Hill. Buckland Hills. Headley Heath. Norbury Park. Mickleham Downs. 18. Downs above Oxted. Titsey. Near Worms Heath. 24. Near Westerham.

1299. **C. Trachelium** Linn. *Nettle-leaved Bellflower*.

17. Buckland Hills. Headley. Near Mickleham. Downs Lane, Leatherhead. Near Chipstead. 18. Crohamhurst. Downs above Limpsfield. Caterham. Tandridge Hill Lane. 19. Near Betchworth. Oxted. 23. Magpie Bottom. 24. Near Force Green.

1300. **C. latifolia** Linn. *Throatwort*.

2. Chorley Wood. 5. Near North Mimms, in a small coppice (in Herts). Apparently native.

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Meetings are held on the First Four Tuesdays in each month, 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, unless other arrangements are announced.

The CHINGFORD LOCAL BRANCH meets at the Avenue Café, opposite Chingford Station, at 8 p.m., on the Second Monday in each month during the winter months.

At these meetings specimens in various branches of Natural History are exhibited, and papers on various subjects are read and discussed. Visitors are cordially welcomed on the introduction of a member of the Society.

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