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HISTORY SOCIETY**

FOR THE YEAR
1947

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THE LONDON NATURALIST.

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Contents.

	PAGE
Editorial	2
President's Address, December 2nd, 1947: The Story of Our Society—L. G. Payne	3
Ely Place—W. C. Cocksedge	22
Book Review	28
Sectional Chairmen and Secretaries for 1947	28
Middlesex Plant Records for 1947—D. H. Kent	29
The Ferns of Richmond Park—C. L. Collenette	36
Botanical Records for 1947—J. E. Lousley	38
Papers Read to the Society in 1947	43
City Bombed Sites Survey: First Year:—	
Progress Report—P. W. E. Currie	44
Plant Ecology at Cripplegate, 1947—F. E. Wrighton	44
The Survey of Bookham Common: Sixth Year:—	
Progress Report—C. P. Castell	49
Fresh Water Mollusca of Bookham Common—C. J. F. Bensley	51
Land Mollusca of Bookham Common—A. E. Ellis	56
Woodlice of Bookham Common—A. E. Ellis	59
Amphipoda—A. E. Ellis	60
The Coleoptera of Bookham Common: Sternoxia, Terebrilia, Heteromera, Longicornia—A. M. Easton	61
The Epping Forest Survey: Sixth Year:—	
Survey of the Ludgate Plain Area, 1946-7 (with map)	66
The Climate, 1947—H. Hawkins	74
Contributions to the Bibliography of the Natural History of the London Area—R. S. R. Fitter	76
Plant Gall Records for 1947—M. Niblett	78
The Hymenoptera Aculeata of Hampstead Heath (with map)— K. M. Guichard and I. H. H. Yarrow	81
Reading Circles	111
Obituaries: Mr E. B. Bishop, Mr F. J. Johnston, Mrs M. M. Wilson	112
Statement of Accounts, 1947	115
Official Reports for 1947	116
Sectional Reports for 1947	119
List of Members	127

Supplement: Thysanoptera of the London Area, part II—Guy D.
Morison

Editorial.

IT is fitting that this, the writer's first Editorial, should open with a tribute to his predecessor, Mr R. S. R. Fitter, Editor since 1941, whose removal from London has compelled him to relinquish a post which he was particularly well qualified to fill. Having none of his qualifications, the present Editor can only ask for the indulgence of readers, and hope that further experience may enable him in time to approach the high standard set by Mr Fitter.

This number includes the second part of Dr Morison's paper on the "Thysanoptera of the London Area" and another valuable paper in the series of surveys undertaken by the Entomological Section, "The Hymenoptera Aculeata of Hampstead Heath" by our members, Dr I. H. H. Yarrow and K. M. Guichard. The President's Address, "The Story of Our Society," carried down to 1914, will be of interest to all members. Increasing costs have made it necessary to raise the price of *The London Naturalist* to 7s 6d and that of *The London Bird Report* to 2s 6d.

The London Naturalist and its supplement *The London Bird Report* are published yearly, and provide a record of the activities of the members of the London Natural History Society and of other London Naturalists. Contributions are welcome from members of the Society on any natural history subject, and, if space permits, from non-members on any aspect of the natural history of the London Area. The London Area, as defined by the Society, is comprised within a radius of twenty miles from St Paul's Cathedral, and includes the whole of the counties of London and Middlesex, together with parts of Bucks, Herts and Essex to the North of the Thames, and parts of Kent and Surrey to the south of it. A new map of this area has been recently prepared by Mr C. P. Castell, and copies may be obtained from the General Secretary, price 1s. All papers intended for publication in *The London Naturalist* or *The London Bird Report* must be submitted in the first place to the Secretary of the appropriate Section (addresses on p. 28) and not directly to the Editor.

President's Address, December 2, 1947.

By L. G. PAYNE, F.Z.S.

The Story of Our Society.

IT seems to me that the President of a Society such as ours, who has the temerity to make a speech to his Society, has one of three courses open to him:—

(1) To expound some new advance in Natural History knowledge of such obvious and original merit that it shall shake the scientific world—I regret to say I cannot do this.

(2) To deliver a lecture on his own particular interest in Natural History—I could probably do this but only at the expense of completely boring 75% of my audience.

(3) To talk on some subject which he hopes will appeal to *all* the members *all* the time. This I will try to do.

I should say here and now that the sequence of events which has led to your asking me to continue as your President for one more year, and my acceptance of this honour, has decided me to divide my address to you into two parts on the assumption that in a year's time it will be my duty and pleasure to appear before you again in this capacity. The story I have to give you separates somewhat naturally, but unequally, into two parts; and to-night I propose to deal with the period 1858-1914, the latter date being the year our Society assumed its present name.

I have been asked why I have not entitled the subject of my address to-night the *History of our Society* instead of the *Story of our Society*. A History would imply perhaps something cold, official, and complete—which my narrative does not attempt to be—a Story, I hope, suggests something more personal and intimate—yet authoritative within its limits.

My Story of the London Natural History Society has not been easy to piece together. It would have been easier had I been willing to incorporate oral memories and hearsay evidence. I resisted the temptation, that none might feel aggrieved, and I wish to state that the whole is compiled from research into the printed word, much being taken from obscure literature long out of print. Paragraphs, records, and notes, from old papers, books, and journals, have formed a gigantic jig-saw puzzle of dates and facts, which I was eventually able to sort into some semblance of a coherent whole. If I offend any living person by a wrong statement, or by omission, I would ask such person to believe that it is from no personal motive whatsoever. I have asked for no assistance in the compilation nor for personal reminiscence.

I would like to thank Mr Austin for the loan of the *Annual Reports* of The North London Natural History Society and for the *Transactions* of the City of London Entomological and Natural History Society, and Mr Hanson for early copies of *The London Naturalist*.

You will become aware in the course of this paper that I quite frequently wander from the strict title of the Address. It has, however, seemed to me not unhelpful so to do in order the more thoroughly to attune our minds to the times under review, and to help us more sympathetically to appreciate in true perspective the environment in which our natural history forbears lived.

And so to-night I would like to trace the story of our Society from its earliest beginnings, and in order to do this we must turn back the pages of history for a hundred years and take a survey of the social and intellectual scene at that time.

In 1837 commenced the long and prosperous reign of Queen Victoria, to be followed nine years later by the Repeal of the Corn Laws. There was a little more leisure, a little more independence, a little more freedom of thought. Esmé Wingfield Stratford, writing on Victorian England of the middle 1800's, says: "It would not be far short of the truth to say that the history of England at that time was the history of the middle class—the middle class was the brains of England—her policy and standard of civilisation were the realisation of bourgeois ideals. For the working class the time was one of steady and fairly contented progress . . . and after the Repeal of the Corn Laws, and on to the seventies the wealth of the country was increasing at a rate that eclipsed all previous records and the working man was getting some share of the general prosperity." Thus writes an author who has made some study of the times and it was in this atmosphere that a few men not interested in the prevailing sports of bear baiting, cock fighting, bare fist pugilism, or the attractions of Vauxhall Gardens got together to discuss the simpler manifestations of Natural History.

From an authoritative book entitled *The Common People* published in 1938, in the chapter dealing with the 1850 period, I take the following: "There was a new movement afoot following the disastrous times of the Chartists—a revolt in favour of prudence, respectability, temperance and enlightenment. There was a Society for the Diffusion of Useful Knowledge with publications circulating in millions—encyclopedias in penny parts and booklets on biology. There were prizes for essays on the Beauties of Nature."

I give a third quotation, from J. Hampden Jackson's *England since the Industrial Revolution*: "The prosperity of mid-Victorian England was enjoyed by all classes. The workers were better off now, and the voice of working class distress, which had been raised so persistently in the first two quarters of the century, was raised not at all in the third. Factories and foundries were working in full blast. Wages were rising fast. Between 1850 and 1875 real wages rose by one-third."

In a weekly semi-scientific journal of 1856 the Editor wrote an article entitled "Natural History Societies" in which he said: "... many are now in process of formation. What is the proposed object of a Natural History Society? We presume it is," he said, "that persons residing in a district with similar tastes may meet and communicate their ideas to each other and that those in whom such tastes are

only latent may have them developed by the genial fostering of kindred spirits. The Society may hold periodical meetings and at those meetings communications from learned members may be read for the benefit of those who are not so advanced. The Society may proceed to form a collection and . . . hold field days when members meet and ramble over hill and dale, through forest and fen." That was the official conception of the function of an amateur society 90 years ago and it seems to me to run very parallel with our ideals to-day.

The Linnean Society and the Entomological Society were already in existence, but as the membership of these was largely composed of professionals and the leisured classes, they hardly come within my scope to-night.

A curious fact has come to light in the course of my researches into the early history of amateur societies, and that is that nearly all were in their inception largely entomological in interest and outlook. I cannot quite account for this, but we have to remember that the early societies were largely concerned with collecting—with filling cabinets with specimens. Were butterflies and moths more numerous then? Were the resulting drawers of specimens more highly coloured, more attractive than pressed plants or blown birds' eggs?—or was the available literature more plentiful? It is probable that the Lepidoptera were always easier to identify and long and attractive series could be mounted with fairly accurate details. The system of barter was prevalent and exchanges of insects for cabinet purposes with defined duplicates and desiderata became commonplaces of advertisement.

Entomology both from a professional and amateur point of view had been well served up to the middle of the 19th century. The first society in this connection, the Societas Aureliana, originated in 1745, but a fire destroyed the Society's meeting place, its Library and Collections in 1748. This was followed by the Societas Entomologica in 1806, the Entomological Club in 1826, the Entomological Society of London in 1834, while the *Entomological Magazine* appeared in 1832, the *Entomologists' Annual* in 1855, the *Entomologists' Weekly Intelligencer* in 1856 and the *Entomologists' Monthly Magazine* in 1864. Again in Entomology 16 volumes of Curtis' *British Entomology* appeared between 1824 and 1839, Stephens' *Manual of British Coleoptera* in 1839, and Westwood's *Classification of Insects* in the same year. Described on the fly-leaf as the first weekly journal devoted to Entomology, the first number of the *Entomologists' Weekly Intelligencer* appeared on April 5th, 1856, price one penny. The Editor was Mr H. T. Stainton, later to become President of the Entomological Society of London. There is a reference to Mr Curtis having to dispose of his Entomological Library and Collections owing to impaired eyesight consequent on the strain of completing the plates for his volumes on British Entomology. A manual of British Butterflies and Moths is also advertised price 3d, and a book at 3s 6d by J. W. Douglas entitled *The World of Insects—a Guide to its Wonders*.

What was the position of the Botanist in the middle years of the 19th century? In some ways the field study of plants had the advantage over other branches of Natural History owing to the medicinal use of herbs from early times. The old Herbals were still in popular circulation and plant collecting excursions were a regular feature of the instruction given by the Society of Apothecaries.

The author of *British Botanists* in the series *Britain in Pictures* tells us: "... about 1820 the number of Natural History Societies increased rapidly as did the production of local floras." Between 1830 and 1855 we find the publication of Newman's *British Ferns*, the *Botanical Gazette*, *Flora Metropolitana*, Irvine's *London Flora*, the *Phytologist*, Watson's *Cybele Britannica*, while Hooker's *British Flora* had run to six editions by 1850 and J. E. Smith's *English Flora* to 5 volumes by 1833. The ever-popular Rev. C. A. John's *Flowers of the Field*, 1st edition, appeared in 1853, while the *London Catalogue of British Plants*, 1st edition, is dated 1844. The Botanical Society of London was founded in 1836 and it met at the Crown and Anchor in the Strand. Sowerby's *English Botany*, in 36 volumes, had been completed by 1814 and is still a classic and standard work. There are probably few people even amongst botanists who realise that only the illustrations were the work of James Sowerby, the descriptive part being by Sir James Edward Smith.

Now, with regard to Ornithology, James Fisher in his *Birds of Britain*, referring to the period under review, tells us that "Bewick of Newcastle became the first great illustrator of British Birds. Bewick and Gilbert White gave an enormous impetus to the popular study of birds." "The amateur ornithologist," he says, "was now becoming an important consumer of bird books. Montagu's *Ornithological Dictionary* appeared in 1802, McGillivray's *Text Book* in 1837, Yarrell's *History of British Birds* in 1843 and Hancock's edition of Bewick's *British Birds* in 1847."

It is strange that I can find no record of any regular periodic journal solely confined to birds until 1896, when No. 1, Volume I, of *The Ornithologist* appeared. This, however, expired in the following year. In the preface to the single bound volume the Editor states: "It is with regret that I have to announce that with the completion of this first volume, the publication of *The Ornithologist* is suspended—lack of sufficient support being a pre-eminent reason."

When I had written this paragraph anent the apparent lack of a periodical ornithological journal relating to British birds it seemed very desirable, in the interests of accuracy, to obtain authentic confirmation. I therefore wrote to the Librarian of the Edward Grey Institute of Field Ornithology at Oxford, who replied that although *The Ibis* first appeared in 1859 most of the articles referred to foreign birds. He confirmed my statement with regard to *The Ornithologist* but added that even this journal did not deal entirely with native ornithology. He states: "It would seem that *British Birds*, beginning in

June 1907, was the earliest periodical avowedly confined to British birds."

In the early decades of last century the Londoner who might be starting to take an interest in the ornithological side of natural history would not have had far to travel to note birds which to-day have receded far from the metropolis. Mr R. S. R. Fitter in his recent book tells us that the Hen Harrier was no uncommon sight skimming over the fields known as Rolls Meadows by the Kent Road, Bearded Tits were seen by the Surrey Canal and in Bermondsey, and Reed Warblers nested annually in the Thames reeds by Battersea Fields. In those days areas which we now regard as Inner London were happy hunting grounds for the naturalist.

In 1837 the Curator of the Botanical Society of London reported 406 species of British plants in Battersea Fields. And then for the entomologist there were all the attractions of Hammersmith Marshes. These were well known to the naturalist and the literature of the period abounds with references to the various good things seen there. From a magazine of 1858 I take the following quaint extract: "In answer to Mr Bryant's enquiry I beg to say the way to the marshes is this:—Proceed along the Kensington and Hammersmith High Road to the first turning on the right past the Hammersmith turnpike; this turning has the name Blythe Lane written up in large characters. Turning up Blythe Lane you will in a few minutes arrive at a point where the road turns to the left: don't follow it, but pass through an open gate you see before you across to the brickfields that you see to the right of the path to the side of the railway. After continuing your walk for a short time along the side of the railway you will see the marshes to your left. Just before them there is a wide shallow ditch and between the marshes and the ditch a row of old willow stumps."

A short time ago I thought I would attempt to check up on this delightful description. Hammersmith turnpike, alas, is no longer there, but Blythe Lane is now Blythe Road, and in Blythe Road stands a terrace of old cottages bearing a plaque with the inscription, "Blythe Terrace, 1864." The actual site I worked out at about $\frac{1}{4}$ mile west of Addison Road Station, i.e., between Olympia and Shepherd's Bush Green.

There is much evidence that in times past the ground level was considerably lower than it is to-day, which might very reasonably imply a marshy basis. For instance, back gardens in Irving Road are 8 to 10 feet lower than existing road levels. At the corner of Richmond Road and Bolingbroke Road is a large block of flats, again with rough garden area behind, 10 feet lower than the road level. There are old willow trees here. In this fascinating practical way, with a leavening of imagination, we can pick out the old marshland and the scene of that day.

And the romance of Hammersmith Marshes is linked almost up to the present day. The late A. W. Mera, known in his lifetime to some of you here to-night, in the course of his Presidential Address in 1906

used these words: "Hammersmith Marshes was a grand spot in its palmy days. The extent of the marshes as I knew them extended from where now stands Addison Road Station to Shepherd's Bush Road on the west, and Blythe Lane on the south. This space consisted of osier beds, intersected with dikes, full of reeds and bullrushes. There was one large pond thickly surrounded with bullrushes and the insect and pond life was most luxuriant. The lepidopterist was not alone in his happiness as the ponds were alive with every sort of aquatic insect and the dragonflies were in plenty. Bird life was also well represented. A friend of mine had shot on those marshes wild duck, snipe and lesser grebe."

A quaint link with one of our most favoured natural history localities of to-day is provided again by Mr Stainton, who in July 1856 prints: "Mr Stainton will be at Mickleham this evening (Saturday, July 19th), and will proceed up Headley Lane at 7 p.m. If any entomologist wishes to meet him in Headley Lane, he will be happy to meet him there. Mr S. will turn down the same lane on Sunday afternoon at 3.15 p.m. and on Monday evening at 6.30 p.m." It is perhaps amusing to note that on the Saturday he was going *up* the lane, and on Sunday and Monday *down* the lane, though on each occasion he must obviously go in the same direction from the same starting point.

The main article in the *Weekly Intelligencer* of May 2nd, 1857, advocates the formation of general natural history clubs to include entomologists, ornithologists, and botanists, and points out the advantage of mutual interchange of information in lectures and rambles. In April 1858 the *Weekly Intelligencer* was seriously proposing examinations for amateur entomologists, stating that examinations were now all the rage, and citing the Civil Service, the East India Company, and the Society of Arts examinations, and suggesting prizes and certificates of merit.

In the *Gardener's Chronicle* of March 13th, 1858, we find an article advising the amateur to collect plants and form a herbarium for the purpose of study and comparison, while another journal in a spirit of commendable enthusiasm and enterprise goes on to propose what it calls a Circulating Entomologist who shall be a professional travelling up and down the country, presumably by means of the new railways, advising and examining amateurs. It is an interesting commentary on the recognised class distinctions of the period that it was proposed that in order to put the scheme on a financial basis, gentlemen should pay 5s per annum and working men 1s.

A feature of the period was the professional collector working on a subscribed share basis: thus a Mr W. Farren announces in the *Weekly Intelligencer* of January 25th, 1861: "W. Farren at the urgent wish of many of his best friends begs to announce that he will collect insects during the coming season by subscription in the New Forest. W.F. will collect Lepidoptera, Coleoptera, Hemiptera, Diptera, and any other order wished for by any of his subscribers. Shares will be one guinea each. W.F. collected in the above locality in 1858 for subscribers, and

gave perfect satisfaction, having captured many of the greatest rarities."

A few weeks later the egotistic W.F. was obviously getting into his stride for under date April 6th, 1861, we read: "I beg to inform my subscribers that I start for the New Forest on Monday, April 8th. I beg to announce that the total number of shares taken is as follows:—Lepidoptera only, 45; Lepidoptera and Coleoptera, 1; Coleoptera only, 6; Coleoptera and Diptera, 1; Lepidoptera and Phryganidae, 1; Ova and Larvae of Lepidoptera, 1; All Orders, 1; All Orders except Lepidoptera, 1. Total, 58. I only want 2 more subscribers to complete my list, as I cannot take more than 60. All but 2 or 3 have paid their guineas, and those who have not yet done so will, I hope, remit as soon as convenient." 60 guineas was a lot of money in those days, and one wonders why W.F. limited his number of subscribers to 60, and if on this occasion too he gave "perfect satisfaction" in the equable division of his spoils.

A further example of the crude social distinctions and patronising priggishness of literary innuendo of the times is instanced in the following, which I take from a magazine of 1860:

"AN ENTOMOLOGICAL SHOW.

The first annual Show of Butterflies, Moths, Beetles, and all kinds of Insects, will take place at the Working Men's Entomological Society, held at Mr Woodcock's, the Woolpack, Kingsland Road, on Monday evening, November 26th, and two following evenings, at 7 o'clock. Upwards of 60,000 insects in all devices will be exhibited."

"A few days ago," continues the article, "a handbill, of which the above is a copy, was placed in our hands. We instantly determined to see the show. On arriving at the place of exhibition we found a respectable tavern, at the bar of which we paid our 2d and ascended to the first floor, in the front room of which was the Show. True to the promise held forth in the Bill, we found the insects principally arranged in devices, stars of insects, crowns of insects, festoons and all kinds of devices. Now, in all this there was much taste displayed in figures, patterns, and contrasts of colours. These working men learn and study such things in the woods and fields. They love flowers, they admire butterflies. Is it not a great thing that the working man sees the beautiful, that he should acquire habits of enjoyment in collecting, and arranging, even in *his* fashion, his moths and butterflies? These exhibitions should be fostered—they furnish a working man with employment of a healthful character for his leisure hours. This short notice in *The Intelligencer* may serve to teach these working men that their humble efforts are not unregarded—that there are those who, although occupying a *higher* walk in the Science of Entomology, yet sincerely wish them 'God Speed' and success to their undertaking."

.

This, then, is the background, the setting, of the scene, and we must narrow the perspective along the entomological path which leads to the beginnings of our Society, the London Natural History Society, for I must now point out that the Society in its inception was entomological.

And so the Society was born of the times and circumstances I have endeavoured to bring before you as faithfully as may be, and cradled in its environment. I quote the following Letter which appeared in the *Weekly Intelligencer* of April 12th, 1858: "As many entomologists reside in the north of London, I think a local society might be formed for that part of London. From what I can learn of my entomological friends, such a Society would be well supported. I am ready to assist in the construction if anyone will step forward and make a beginning.—(Signed) Henry Aris." I may say in parenthesis that the Aris connection has been maintained with our Society until quite recent years.

That this letter bore fruit is evidenced to-day on the front cover of our syllabus in the words "FOUNDED 1858," and the next reference to it in the literature of that year is in the *Weekly Intelligencer* of December 18th, 1858. It is as follows under the heading "Haggerstone Entomological Society": "Six months since myself and two or three friends started an Entomological Society under the above title. We have 32 members, each member paying one penny per week, 2d for a copy of the Rules, and 1s entrance fee. The Society holds its meetings every Thursday evening from 9 till half-past 10 o'clock at the Carpenters' Arms, Martha Street, Haggerstone; the average attendance of members is about 20. In the 1st quarter (Mr Sayers in the Chair) we expended 19s in books. During the 2nd quarter, myself in the chair, we purchased an uncoloured edition (the 1st) of Wood's *Index Entomologicus* for 30s and have at this moment a balance of £1 3s 7d in hand.—C. HEALY, 4 Bath Place, Haggerstone, N.E. December 10."

May I say here that it is most interesting to note that we still possess in our Library that original purchase in 4 volumes, and Supplement dated 1839.

From another source I have learned that the original convening meeting was held on June 10th, 1858, with 7 gentlemen present. On June 17th the Society was formally inaugurated with 20 members, the officers to be changed every quarter. By September 1858 there were 30 members, and by the end of the year 35, with Edward Newman a prominent member.

On a day in March this year, 1947, I thought I would attempt to locate this first meeting place of our Society, but Martha Street, Haggerstone, at some early period became Queen's Road, and now answers to yet a third name, Queensbridge Road. Much of this road has suffered extensively from bomb damage and I could find no trace of the "Carpenters' Arms."

About 6 months after the Society's birth a number of members felt that it might be more desirable to hold the meetings in a private house, and with this end in view a suitable venue was advertised for but without success. Nine months later, however, on September 15th, 1859, a

move was made to a large room above the Brownlow Arms, Brownlow Street, Dalston, and as this became the home of the Society for nearly 30 years I am pleased to tell you that my search for this was more successful than for the Carpenters' Arms. Brownlow Street, the name still faintly discernible under the present Scriven Street, cuts directly across the former Martha Street. Brownlow Street to-day is composed almost entirely of small houses with front doors opening directly on to the pavement, the front windows all being of that domed small-paned pattern bearing undeniable testimony to their Early Victorian respectability.

In the centre of these stands the Brownlow Arms, a Charrington house in excellent repair with the front rebuilt in glazed brick. The notice which I saw on the door would probably have been quite incomprehensible to its Victorian habitués. Scrawled in chalk it read:—"Open 7 p.m."

Here perhaps I should point out that both the Carpenters' Arms and Brownlow Arms were in Haggerstone with a final E, the present name Haggerston without the E not coming into use until a later period. The advocates of the private house must have had a partial victory as the address was frequently given in Society notices as No. 10 Brownlow Street, this being actually the number of the Public House, though whether there was a private entrance to the room upstairs I cannot say. This change of address was officially notified in the *Entomologists' Weekly Intelligencer* as follows under date October 8th, 1859:—"The Haggerstone Entomological Society having removed from the Carpenters' Arms, its address is now No. 10 Brownlow Street, Haggerstone, where it will continue to meet every Thursday evening.—H. W. Killingback, Secretary."

At one of the meetings held between September and December 1859 an original paper by Mr Miller entitled "Foreigners and Doubtful British Species" was reprinted in *The Zoologist* of January 1860.

On November 19th, 1859, the well-known H. T. Stainton recorded "a vast increase in the number of Local Societies." H.T.S. was not a man who gave praise easily and it is the more gratifying therefore to find him writing:—"The Haggerstone Entomological Society is now well known to all our readers."

I must here record another statement of H. T. Stainton which surely is as strikingly apposite to-day as it was 90 years ago: in answer to a question on good localities, he said, "It is the *person* and not the *place* that makes a good locality."

That some early Natural History Societies took themselves very seriously may be instanced by the following rule of another London Society at this period: "Members dwelling within 2 miles neglecting to attend two successive club nights, shall be fined one penny."

At this period Mr H. J. Harding was President of the Society and Mr W. H. Killingback Secretary, and both these gentlemen were regularly printing in the pages of the *Weekly Intelligencer* reports of their captures at Darenth, Loughton and Woodford.

In the year that our Society was founded the Birmingham Natural History Association was also founded . . . “for the cultivation” says the original notice “of entomology, botany, ornithology and any other subject within the range of natural history.” Further, with true civic pride the Committee add that “for general intelligence Birmingham is equal to, if not in advance of, the other large towns of the kingdom, therefore the new society should be a success.”

The *Weekly Intelligencer* of August 13th, 1859, contained a list of exhibits shown at a meeting of the Haggerstone Entomological Society signed by the Secretary.

On February 4th, 1860, we read the following in the *Weekly Intelligencer*:

“HAGGERSTON ENTOMOLOGICAL SOCIETY.

The first annual supper of the above Society took place on Wednesday, January 25th, 1860, when nearly 40 members and their friends sat down to an excellent repast provided by their worthy host, Mr Finch, and after ample justice was done it, the toasts, etc., usual on such an occasion followed and the meeting broke up, all present expressing themselves much pleased with the pleasant evening they had passed.”

Commenting on this, the magazine continues:—“It is now little more than 18 months since this Society was first established, yet it already numbers more than 60 members. The meetings are well attended. Two papers have lately been read, one of which has appeared in the *Zoologist*. Many rare species have been exhibited and a collection of various Orders is in course of formation.”

And now for a little Society scandal: a printed communication appears from H. J. Harding as follows: “CAUTION. Having lent various sums of money to Peter Bouchard, of Marling Pit Cottage, Sutton, Surrey, for collecting purposes, not one penny of which he has returned, I hereby caution all parties against trusting the said Peter Bouchard in any way.”

The following week this letter appears: “Reply to Mr Harding’s Caution:—I beg to inform readers of *The Intelligencer* that in 1845 I borrowed in various small sums £3 of Mr H. J. Harding and left with him as security 10 cabinet drawers, some of them corked and containing insects which I valued at above the amount borrowed. Two years afterwards I wished for the drawers back, and offered to pay the money, but was told I could not have them as some more drawers had been made, and a case, so as to form a nice cabinet. Under these circumstances I declined to repay the cash.—(Signed) Peter Bouchard, Sutton, March 14th.”

From the *Intelligencer*, June 30th, 1860:—“AN ENTOMOLOGICAL TRIAL. On Wednesday, 13th inst., the cause of Bouchard versus Harding was heard in the Court of Queens Bench before Mr Justice Blackburn. The action was raised to recover damages for the loss which the plaintiff had sustained owing to a communication headed CAUTION which

the defendant had published in the *Intelligencer* of March 17th, 1860. The jury gave a verdict for the plaintiff. Damages, £30."

From the *Weekly Intelligencer* of June 16th, 1860, we learn: "The Society's annual excursion will take place on Monday, June 25th, to Darenth Wood, Kent. Dinner will be on the table at 'The Fox and Hounds' at 3 p.m. precisely. Tickets for the Dinner to be obtained of the Secretary."

In 1860 the Society acquired, amid much acclamation, a 40-drawer cabinet, specimens for which were solicited from all members. This is duly noted in print as follows: "We are glad to hear that this Society is in a flourishing condition. It possesses a valuable library of entomological and botanical works and has lately purchased a cabinet of 40 drawers."

In 1862 a new rule came into effect: officers were to be elected half-yearly, and this rule remained until 1887.

1863. In this year the Epping Forest Enclosures were seriously engaging local opinion and we learn that Society members were most active in arranging a petition and getting it presented to the House of Commons.

By 1867 the Society possessed 200 books and 2000 specimens.

In 1868 a member, Mr Eedle, went on a collecting expedition to Scotland, expenses being in part paid by the Society and his anticipated captures being in part for the Society's Collections. This year also saw the Society's 1st Annual Exhibition.

1869. Mr E. Barlow, President. At the December meeting the Secretary reported that the Society was in a flourishing condition; that Mr E. Newman had presented the Society with a copy of his *British Moths* and each member with a copy of his *Insect Hunter's Year Book*. He reported on the great success of the Annual Exhibition, stating that several leading entomologists had honoured the Society by their presence, and that the Exhibition Room had been crowded on each evening.

The *Weekly Intelligencer* of November 1870 devoted 2 pages to the Annual Exhibition, which again was reported to be so popular that many visitors arrived some time before the hour of opening. Here is a quaint sentence: "Mr Cooke showed some splendid specimens of exotic insects, the extreme beauty of the butterflies putting the lady visitors into quite a flutter of delight. The Exhibition passed off in a most quiet and orderly manner and not an insect received the slightest injury."

1872. We now come to the historically interesting change of spelling from Haggerstone with the final E to the modern Haggerston without E. I have traced this to 1872. The last printed report in the *Entomologist* of 1871 is with the final E and so it appears in the text of the report of the first meeting in 1872 but by the end of the year the change had occurred, and in the index to the volume the name is first shown in its present form—without the E.

By 1874 the Society registered over 100 members. An address was sent to Mr Fawcett thanking him for his opposition to the Epping

Forest enclosures. In this year we learn that at the Annual Exhibition there were 5 microscopes in use in one of the rooms, which, states the report, "were a constant source of amusement and instruction to the visitors."

In 1876 the gifted and energetic Dr J. A. Clark, M.P.S., L.D.S., F.E.S., became President.

The late A. W. Mera in his presidential address in 1908 gave a vivid sidelight on the times: "I remember going as a visitor (about 1878) to one of the meetings of the Haggerston Entomological Society, at the Brownlow Arms in a spacious room over the bar, each member being provided with a long clay pipe, while the necessary refreshments were provided from below, under which soothing influences the science of Entomology was keenly pursued." He went on to say: "Now things have changed, and for many years we have been fortunate in being able to hold our meetings in surroundings more appropriate if less convivial."

In 1879 the Society was instrumental in arranging for the Double-day collection to be presented to the Bethnal Green Museum, where several cases of life histories, the gift of the Society, were on view for very many years.

In 1880 the Annual Dinner was held at the King's Oak Hotel, High Beech.

A good piece of work was done in this year, the benefit of which is still being reaped by nature lovers to-day. The Great Eastern Railway had prepared a scheme for the making of a cutting through one of the prettiest parts of the Forest. The Society obtained 2000 signatures to a petition against this project, and the President was subsequently able to announce that the Company had withdrawn the Bill.

In 1886 the former agitation to remove entirely from licensed premises was renewed under the vigorous leadership of Dr Clark, and on October 6th, 1887, the Society removed to Albion Hall, London Wall, and the Haggerston Entomological Society became the *City of London Entomological and Natural History Society*; Lord Walsingham became Patron, and Messrs Tutt, Newbery and Billup, still names to conjure with, joined the Society.

Through all these years occasional reports of the Society continue to appear in the various specialised journals, an interesting exhibit of 1887 by Dr Clark being a long series of Cicada from the Isle of Wight. I believe this is now only taken in the New Forest.

Now, ladies and gentlemen, having taken the story of the Haggerston Entomological Society from 1858 to 1887, when its new name first appears, a slight digression and explanation become necessary. Our London Natural History Society, in true conformity with all the higher forms of natural life, was born of two parents—though one was considerably older than the other. The City of London Entomological and Natural History Society was one parent, and it is now my duty and pleasure to record the birth of the other, and I think it will be more satisfactory if I continue to record, in chronological order, the various

activities of the two societies, under year dates, notwithstanding that these will naturally be intermixed.

In 1886 a few boys attending the Grocers Company's School at Hackney, who were interested in Natural History, formed a society which they called "The Clapton Naturalists' Field Club." One of those boys was J. A. Simes, and to-day J. A. Simes, O.B.E., F.R.E.S., is still one of our members. A reproduction of a photograph, showing a party of these boys on a day's excursion to Folkestone, forms the frontispiece picture of the *London Naturalist* for 1929. And this was the other parent of the London Natural History Society.

In 1888 the Club became "The Grocers Company's School Science Club" and the first syllabus covers the period January-June 1888, and shows Mr C. B. Smith as Librarian and Curator, with a Committee consisting of Messrs R. W. Robbins, J. A. Simes, and A. C. Smith. Meetings were held fortnightly, and the first meeting on January 6th consisted of three short talks on Thermometry, Bird Architecture, and the Natural History of Epping Forest.

In 1889 some of the subjects under discussion were perhaps a little ambitious for the amateur. There was a debate on "Are the Planets inhabited?" and R. W. Robbins gave a lecture on "The Sun." There were several pocket box exhibitions.

In 1891 Mr G. A. Lewcock, Secretary of the City of London Society, became assistant editor of *The British Naturalist*. At one of the meetings held during that year the members must have felt that their subscription was worth while, for the sensation of the evening was undoubtedly a kitten with 7 legs, 8 feet and 2 tails. In what manner the 7 legs worked the 8 feet we are not told.

The City of London Society was meeting this year at 33 Finsbury Square and had 72 members.

The Grocers Company's School Science Club retained this title until 1891, when it became "The Grocers Company's School Natural History Society." For its Exhibition in this year a 4-page programme was printed. Exhibits of British Lepidoptera were staged by Messrs S. Austin, R. W. Robbins, J. A. Simes, C. B. Smith, and L. J. Tremayne. Indeed, there were exhibits in all branches of natural history, and on the back page of the programme was a detailed separate programme of music, consisting of seven items, of which No. 3 was the "Marche aux Flambeaux," contributed by Mr L. J. Tremayne. This is the first appearance on the scene, so far as I am aware, of Mr Tremayne, and in this year he gave a talk on "The History of Silk."

By the end of 1891 it would appear that so many newcomers who had no connection with the school had been attracted to the Society that it became desirable to change the Society's name and venue. Accordingly, early in 1892 the new name of North London Natural History Society was adopted and the meeting place was North East London Institute, Dalston Lane, and Mr F. J. Hanbury, F.L.S., presided at the first meeting.

In 1892 the death of Mr H. T. Stainton was reported at the age of 70. Mr S. Austin's name appears on the Council of the newly-constituted North London Natural History Society. The City of London Society was meeting at the London Institution, Finsbury Circus, this move being negotiated through the friendly offices of Lord Avebury.

In 1893 Dr J. A. Clark was still President and Mr J. W. Tutt of entomological fame was Vice-President.

Commenting on the first printed Transactions of the Society *The British Naturalist* stated: "We congratulate the officers on the great advance they have made." The same Journal also contained a full page photograph of Dr Clark, president, describing him as "a leading naturalist of the day." The April number devoted 10 pages to Mr J. E. Robson's paper read to the Society, entitled "Is moisture the cause of Melanism?"

1893. N.L.N.H.S. In *The Entomologist* of July 1893 is a vigorous 3-page report of the Society's annual excursion to the New Forest. The report is written by our esteemed member, Mr L. J. Tremayne, and I must pause to honour his 55 years' continuous and *active* membership of this Society. The Forest visit lasted three days and if you could read the story there depicted you would realise the energy and enthusiasm packed into that period.

I can only spare the time to tell you that Mr Tremayne was up at 5 a.m. working the Lyndhurst fences. And then those larvae of the Large Tortoiseshell! After breakfast, we learn, a long piece of string was procured, and a stone tied to the end of it. It was then thrown over a high elm branch. The bough was shaken with force, and the larvae descended rapidly into waiting umbrellas.

The first Annual Exhibition of the North London Society was held on January 7th at the Lecture Hall of the North East London Institution, at which Mr F. J. Hanbury's fine botanical specimens showed to great advantage. A chameleon captured in Clapton was also exhibited mounted. This year is noteworthy if only by reason of the new rule permitting ladies to become members of the Society.

In 1894 the late R. W. Robbins gave a lecture on "Ferns" to the North London Natural History Society, this being a group of plants in which he was keenly interested to the end. The late Arthur Bacot's name appears for the first time, and really long-distance excursions were being made to such places as Polegate, Dover and Wicken Fen. There was a debate: "Does Nature ever Paint for Ornament only?" Affirmative, R. W. Robbins. Negative, C. Nicholson.

The Report of the Annual Exhibition this year occupies a column of a local newspaper and is written up in the somewhat florid and bombastic style of the period. I cannot refrain from quoting one example. To-day we should probably say "Mr Quail and Mr Lewcock were responsible for the Coleoptera exhibits." The enthusiastic reporter of that day, however, wrote: "Mr Quail and Mr Lewcock were masters of the situation in the region of Coleoptera." Truly a breath-taking phrase!

In this year Dr Sequiera, Mr A. W. Bacot, and Mr Louis Prout were frequent exhibitors at the City of London Society meetings.

The Programme of the 1895 Exhibition of the North London Society showed a marked tendency to mix the attractions, thus items 1, 2 and 3 were musical, No. 4 was an entomological lecture, No. 5 musical, 6 a botanical lecture, 7 and 8 musical, 9 ornithological, 10 musical, 11 zoological, and Nos. 12 to 16 musical. Truly a long and varied entertainment which surely required some rapid mental adjustments!

In this year Miss Simmon's name appears. She became the wife of the late R. W. Robbins two years later. The same year, and for the two following years, J. W. Tutt, one of the greatest entomologists of all time, was President of the City of London Society, with F. J. Hanbury Vice-President and L. J. Tremayne Secretary.

In 1896 a North London Society debate was "Do swallows ever hibernate?"

In 1897 Mr H. St J. K. Donisthorpe, then a young man, was Secretary of the City of London Society. To-day Mr Donisthorpe is a leading authority on Beetles and Ants and his books on these subjects are standard works.

1898. I must quote verbatim this year from Mr J. W. Tutt's Presidential Address to the City of London Society, as it appears to throw a curiously accurate forecast of an event which did not in fact materialise until 16 years later. He said: "In 1896 some of our members withdrew their subscriptions from this Society, having become interested in another, the North London Natural History Society, and the district that had previously supplied us with members was now covered by this other Society . . . two Societies are in existence north of the Thames, where there is plainly only room for one, and by weakening one another, each prevents the other from doing scientific work . . . a union between the two societies north of the Thames should be within the bounds of practical politics, and it might be possible for the North London Society to select as officers next year a set of men belonging to both societies, and for the City of London to elect as officers for the year the same members, the two societies uniting forthwith. The present condition," he added, "is scientifically deplorable."

The same year a paper was read to the City of London Society by Mr S. Austin, but Mr Austin was a member of the North London Society. Obviously, again, a case of future events casting their shadows before them. The paper was ornithological, entitled "The British Corvidae."

There was a Whitsun week-end to the New Forest, and in this year and the following the Annual Exhibitions appear to have reached their peak, for they lasted two days, the last day of the old year, and the first day of the new year, with exhibits, lectures and music on both days.

1899. In this year the City of London Society received a letter from the Epping Forest Committee of the City Corporation, stating that, in answer to the representations of the Society, Epping Forest keepers will be instructed not to interfere with entomologists in their pursuits

unless actual damage to trees was done. Mr Donisthorpe gave a paper to the City of London Society on the Coleoptera of Weymouth. There was also a lecture on "Poisonous Plants" by Frank Bonskell.

The North London Society this year formed a Cycling Research Committee. One would imagine that it was the forerunner of the modern bicycle which was envisaged, though the spectacle of the North London Natural History Society turning up on parade, mounted on the old penny farthing, would have been a grand sight.

In 1900 the North London Society arranged a Natural History Cycling excursion under the leadership of Mr Arthur Bacot.

One speculates as to what gave rise this year to the new rule that visitors to meetings were not allowed to speak, except by special invitation of the Chairman.

1901. North London Society. The star lecture of this year was given by the late W. J. Lucas on "Dragonflies." It is here of interest, at least to me personally, to record that in 1918, when I was a Scoutmaster in rural Surrey, Mr Lucas was examiner in Natural History for the Kingston-on-Thames District, and all my boys who took this subject in those years were passed by him.

The *Entomological Record* of 1901, which was an impartial commentator, reviewing the City of London *Transactions* for 1900 stated "an important volume of great scientific value."

1902. The Natural History Cycle Run of the North London Society this year was to Reading, and covered July 26th, 27th, and 28th.

1903. This year the City of London Society devoted one of their evening meetings to an Exchange Evening. I believe at this meeting members brought up various specimens in Natural History, with the object of exchanging these with items brought up by others, to the mutual satisfaction of all concerned.

In this year Oliver Pike comes on the scene to the North London Society with "Pictures in Bird Land." Other well-known names which recur through the programmes are F. A. Edelsten, E. A. Bowles, C. S. Nicholson, E. B. Bishop, and P. J. Hanson.

1904. Extract from North London Society Report: "A valuable type collection of British Plants has been presented to the Society by Mr Philip Scarborough King, through our member Mr F. J. Hanbury. The Council has made arrangements for housing the Collection, which is enclosed in a handsome cabinet."

In 1904 The City of London's Exchange Evening appeared in the syllabus somewhat less euphoniously, and certainly more commercially, as the Annual Barter of Specimens.

In this year the North London Society was meeting at Hackney Technical Institute. There was a lecture on "Experiments with Radium." Oliver Pike gave a lecture on "Home Life in Birdland." Another lecture on a subject which I think might well be repeated, on up-to-date lines, was "Mountaineering Technique for Field Naturalists." In this year the first mention occurs of the 20 mile radius, this being north of the Thames only, and divided into 12 areas.

In 1905 the first commercial advertisements appeared in the printed City of London *Transactions*. The North London Society was meeting at the Amherst Club, Stoke Newington, there was a 3-day excursion at Easter to Selborne, and at Whitsun to the New Forest. I think we must admire the keenness of our members 40 and 50 years ago. Do we not to-day miss something of the natural history camaraderie which those long week-ends must have surely fostered?

1906. In this year the first reproduced photographs appeared in the City of London *Transactions*, and there is a full page Report on the excursion to Clandon Downs, entirely concerned with entomology, except the very last line, which laconically reads: "Plants: *Orchis militaris*, *Orchis morio*, and *Belladonna*." This is the sole botanical item I can find in any of the City of London Reports, and perhaps it is as well, for *Orchis militaris* has not been recorded for the County for 100 years, and C. E. Salmon says "Probably extinct." Moreover, I do not think *Belladonna* could possibly be in flower in May, and in that month could only be recognised in leaf by the expert. It was high time the Society joined up with the North London Society.

1906. North London Society. Rev. P. H. Cooke led an excursion to Hadley. There was an Easter walking tour from Slough, and our late Secretary, Mr A. B. Hornblower, gave a talk on "The Cotswold Hills."

1907. Oliver Pike's lecture this year was "The Breeding Habits of some British Birds of Prey," and it was 40 years ago last Tuesday that Mr C. L. Collenette gave a Lantern Talk on "Observations on Birds in the neighbourhood of Epping Forest."

Interesting Society comparisons can here be made. The City of London Society was meeting on the 1st and 3rd Tuesdays monthly. Annual subscription, 7s 6d. The North London Society was meeting on the 2nd and 4th Tuesdays. Annual subscription, 5s. The stated object of the City of London was "the diffusion of the Science of Natural History, by means of papers, discussions, and exhibitions, and the formation of Collections for reference." The stated object of the North London Society was "to promote the study of Natural History, and to afford to Nature Lovers and students, opportunities of intercourse and mutual assistance." Possibly the wording of the City of London statement was on a slightly higher plane than the North London, and worth the extra half-crown yearly.

1908 brings the first mention of an Ornithological Research Committee under the direction of Mr C. L. Collenette. There was an ornithological ramble round Chingford, "nests of various birds to be pointed out," says the syllabus, by the same gentleman. There was a discussion on the "Botany of Building Sites" with special reference to Aliens and Casuals. One wonders how nearly that paralleled our present Botany of Bombed Sites.

Mr F. P. Bayne gave a talk on "Some Studies in Bird Life" and there was an ornithological excursion led by the whole of the ornitholo-

gical committee. Obviously, ornithology was now beginning to play a large part in the Society's activities.

On September 1st, 1908, the following Resolution was adopted: "That the members of the City of London Ent. and Nat. Hist. Socy. cordially support the Public Rights of Way Bill, and The Access to Mountains Bill, and sincerely hope that in the interests of all naturalists the same may become law." Copies of this Resolution were sent to the Prime Minister, the Leader of the Opposition, and the Promoters of the Bills.

In 1909 a North London Society excursion on February 20th was bluntly and probably truthfully scheduled as "A Winter Tramp," while a novelty would appear to have been a Boxing Day whole-day trip.

Mr L. B. Prout's Presidential Address this year received the signal honour of being published in full in *Nature*—issue dated 31st March 1910.

The Chingford branch was formed in 1910. It was to be, according to the Council's Report for that year, "a centre where members who were not constantly in town could meet near their own homes to discuss papers, compare exhibits, and further the objects of the Society."

The North London Society now had 110 members, and were meeting at Room 20, Salisbury House, London Wall.

In 1911 The North London Society Annual Exhibition was held at the Royal Forest Hotel, Chingford. The Ornithological Section showed, may I whisper it, a complete collection of eggs of Forest species, and specimens of locally shot Stuffed Birds.

In 1912 the Archaeology Research Committee was formed, and, strangely enough, in this year our two parent Societies were both meeting in Hall 20, Salisbury House, though of course on different evenings. Was this just accidental, or connived at, for the benefit of a potential courting couple?

It is interesting to record that up to this year Presidential Addresses had been given early in January. Was this to test the President's mettle at the beginning of his term? Maybe he was occasionally found wanting, for, in subsequent years, as now, the Address was in December at the end of his term of office.

In his Presidential Address in 1913 Mr A. W. Mera, City of London Society, said: "Gentlemen, doubtless the subject which is foremost in our minds at the present time is the amalgamation of our Society with the North London Natural History Society. It is with feelings akin to regret that we have felt it advisable to join hands with another Society . . . As our amalgamation with the North London Society is now an accomplished fact, I can only express my sincere hope that the fusion will be a benefit to us all. My short acquaintance with a few of the members of the other Society gives me confidence that at least we shall be making friends with kindred spirits, and although we shall no longer be a Society almost entirely of Lepidopterists, we shall undoubtedly greatly increase our sphere of knowledge, as many of the members of the North London Society are specialists in other branches of Natural History."

The same year, 1913, the Council's Report of North London Society contains the following:—"The Council face the future with cheerfulness and hope, because, knowing the inherent weakness and difficulties that have had to be faced, at a somewhat critical period of the Society's career, they regard those difficulties as largely overcome by the amalgamation with the City of London Society. The amalgamation should give the new Society, which will be known as the London Natural History Society, better attendances at the central meetings, and should make the proceedings at those meetings more varied. We hope to find strength in union."

And, on the last page of the City of London's *Transactions* for 1913, the following is printed: "The City of London Entomological and Natural History Society ceased to exist as a separate Society on January 1st, 1914, from which date the Society is amalgamated with the North London Natural History Society under the name of The London Natural History Society."

January the first, 1914, is far behind us, and the clouds of the first world war had not, as yet, obscured the horizon, but the quiet enthusiasm of those few men who had met in the dingy room at the Carpenters' Arms more than half-a-century previously, had rooted, thrived, and fructified, probably far beyond their simple expectations.

The picture is yet incomplete, but I have endeavoured, this evening, to trace the earlier period as faithfully as may be, in the double hope that it may have been of interest to you, and of some use as a permanent record.

Ely Place.

By W. C. COCKSEGE.

AMONGST the lesser known antiquities of the City of London must surely be ranked the Chapel of Saint Etheldreda in Ely Place, Holborn. This glorious relic of Decorated Architecture seems to be little known even by those who take a general interest in the historic monuments of the City. It may be that its present forlorn exterior and its built-up situation give little promise of its quality. Fortunately, although the immediate neighbourhood suffered very heavily by enemy action, the chapel escaped vital damage, although it will need extensive repairs. This immunity is strangely in accord with its romantic history. It may truly be said that it is a miracle that this chapel has survived its many vicissitudes.

The chapel of the Bishops of Ely is the sole remaining fragment of their extensive and beautiful seat upon the high ground west of the deep valley of the Fleet river which separated them from the mediaeval City. In the early Middle Ages, all the land west of the Fleet river was open country and this elevated site must have been extremely pleasant, commanding, as it did, a view of the picturesque city and its walls, towers and palaces, across the pleasant little valley with its yet unsullied stream.

It is not surprising therefore to find this site acquired by the Bishops of Ely towards the end of the thirteenth century for the erection of their episcopal palace in London. One may ask why the Bishops of Ely required a palace in London when their modern representative probably stays with a friend or lodges at a modest hotel when he comes to town. But prelates of the Middle Ages lived in much pomp and magnificence and most of the bishops and many abbots possessed inns or hostels in London which they occupied when in attendance at Court or Parliament.

It is generally stated that the Bishops of Ely from the time of the Conquest had enjoyed lodgings in the Temple, but in 1250 Bishop Balsham was denied entrance there by the Master when Hugh Bigod was Justiciar of England. The bishop insisted on his rights, winning his case and laying his damages at £200. No doubt in consequence of the ill-feeling thus engendered, Bishop John de Kirkeby, who died in 1290, left certain property in Holborn to the See with a view of founding a residence for the Bishops of Ely. William de Luda (or Louth) added to this property and is credited with the building of this chapel of Saint Etheldreda, which thus dates from the very end of the thirteenth century, a period which would also be indicated by the style of architecture.

The dedication to Saint Etheldreda was very natural as she was the founder and patron saint of Ely. She was born at Exning, Suffolk, in the middle of the seventh century, being the daughter of Anna, King of the West Angles. She had three saintly sisters, of whom Saint Ethel-

burga has also a church dedicated to herself in London. In the Middle Ages, her name was corrupted or contracted to Audrey, and it is a curious fact that hence we get our adjective "tawdry." It would seem that at Saint Audrey's Fair in Ely much cheap and specious finery was sold which obtained the name of Saint Audrey ware and, finally, tawdry ware.

To return to the palace, subsequent prelates continued its building and embellishment. Bishop John de Hotham, who died 1336, added six messuages, two cellars and forty acres of land. Finally, Thomas Arundell, consecrated in 1373 and, afterwards, the famous Archbishop of Canterbury, built the cloisters and gatehouse. As completed, the palace consisted of a gatehouse facing Holborn, connected by a range of offices to the Great Hall, an enclosed garden being on the left. Views of this hall exist showing four Decorated windows of domestic type, and it had the usual dais and screens within. It was still standing in 1772. To the north-west of the Great Hall, connected by a cloistered quadrangle, was the glorious chapel and beyond were fields and gardens. The property occupied, roughly, the rectangle formed by Holborn, Leather Lane, Hatton Wall and Saffron Hill. Everything seems to indicate that Ely Place was one of the finest and pleasantest seats on the outskirts of the City, and contemporary references to it are uniformly eulogistic. It was occasionally let by its fortunate owners to distinguished personages, and John of Gaunt died here in 1399, his palace of the Savoy having been burnt down by Wat Tyler's mob. It was also in later days the scene of many gorgeous feasts given by those virtuosi—the Sergeants of the Law.

One of the most familiar episodes in the history of Ely Place has been enshrined in Shakespeare's play of Richard III. The Duke of Gloucester and other members of the Council are in the Tower of London on the morning of the execution of Lord Hastings when the duke suddenly remarks to John Morton, the Bishop of Ely:—"My Lord of Ely, when I was last in Holborn I saw good strawberries in your garden there. I do beseech you send for some of them." And the Bishop of Ely replies:—"Marry, I will, my lord, with all my heart." He, thereupon, goes out and, returning shortly, finds Gloucester gone. The bishop notices this and asks:—"Where is my lord, the Duke of Gloucester? I have sent for those strawberries." And Hastings replies:—"His grace looks cheerful and smooth this morning. There's some conceit or other likes him well when that he bids good morrow with such spirit." A few minutes later, the unfortunate Hastings is denounced as a traitor and sent to execution. This episode might be regarded as a flight of fancy on the part of the playwright did we not know that it is taken almost word for word from Holinshed's Chronicle and is, no doubt, therefore, an actual occurrence.

The Bishops of Ely remained in full enjoyment of their pleasant domain until after the Reformation, but in the reign of Elizabeth began that long struggle with the Hatton family which ended in the virtual loss of the greater part of their heritage and the spoliation even of their own palace.

It is a long and confused story, and even historians admit that certain transactions are obscure. It begins with the advent to fame of Christopher Hatton. He was the youngest of three sons of William Hatton of Holdenby, Northamptonshire, a gentleman of good family. After passing through Oxford, he entered the Inner Temple where, in the words of Mr Marryat, the author of the *Romance of Hatton Garden*, he applied himself to everything but the law. In 1561 he was Master of the Game in a grand entertainment given by the students at Court. In this capacity he had the good fortune to attract the notice of the susceptible queen, who rapidly advanced him by several stages from Gentleman Pensioner to Lord High Chancellor of England. It does not appear what qualifications he possessed for this high office beyond a neat leg and skill in dancing, but he seems to have been sufficiently adaptable to acquit himself creditably in his career. His contemporaries were covertly contemptuous at his rapid advancement and, in fact, Queen Elizabeth seems to have made herself slightly ridiculous by her partiality for the handsome upstart. Anyhow, it was fraught with dire consequences for the unfortunate Bishops of Ely.

It would seem that at the height of his success, Hatton desired a London residence and took a fancy to the domain of the bishops, which was in such a pleasant situation and conveniently near the City and Westminster. He first installed himself in the Gatehouse at the polite but possibly reluctant invitation of Bishop Cox. He then petitioned the queen for a lease of the grounds and some part of the house, which Elizabeth seems to have compelled the bishop to grant. Hatton, firmly but perhaps not legally installed, now began building operations, the yearly rent being fixed at £10, ten loads of hay, the product no doubt of the fertile fields, and a rose at midsummer.

In 1577, Hatton having expended large sums on the property, suggested to the queen that it should be made over to him entirely. The unhappy bishop naturally protested vigorously against this irregularity, and Elizabeth then wrote that famous letter:—"Proud prelate, I understand that you are backward in complying with your agreement, but I would have you know that I, who made you what you are, can unmake you and if you do not forthwith fulfil your engagement, by God! I will immediately unfrock you, Elizabeth." Doubt has, however, been thrown upon its authenticity, and it seems almost too good to be genuine.

However, pride goeth before a fall and after some years, the queen demanded speedy repayment of some £40,000 owing to her by her favourite. The shock upset Sir Christopher so badly that he pined and died, although it is said that the queen visited him before the end, and bore him dainties with her own royal hands.

Sir Christopher was succeeded by his nephew, William Newport, who took the name of Hatton, but he died six years later. The house which Sir Christopher had built on the lands of the Bishops of Ely was left by Newport to his widow, who was young, rich and handsome. Her hand was solicited by two great and rival lawyers, Sir Francis Bacon and Sir Edward Coke, but she eventually married the latter and a pretty life

she seems to have led him, but this is not part of our story. It seems clear that she lived in Hatton House as during part of her occupancy Gondomar, the Spanish Ambassador, rented the palace and during his residence the Mass was publicly celebrated in the chapel, protection being afforded by the privileges of the Embassy.

I need not follow closely the fluctuations in the history of Ely Palace, but in 1646 the property passed to another Christopher Hatton who had been made Baron Hatton of Kirby in 1643. He seems to have been a needy individual, which is not surprising as he was a royalist and in the service of the Prince. Even before the Restoration, he began developing the property and the building of Hatton Garden, as we know it, was planned. At the Restoration, however, Bishop Matthew Wren, uncle of Sir Christopher Wren, was released from years of imprisonment under the Commonwealth to find half his house demolished so that he was forced to lead his horses to their stables through the banqueting hall, the chapel crypt turned into a wine-store, and the garden covered with streets of new buildings. In vain the poor bishop protested, obtained injunctions against the builders and tried to assert his rights—the work went on. The houses, which all had small gardens, were fashionably tenanted and many famous people have lived in Hatton Garden and the adjoining streets. The building operations were carried so close to the chapel that the buttresses at the west end were within the garden of a house in Hatton Garden. In fact, the bishop's possessions had shrunk to a small area between the chapel and the gatehouse, not much larger than the present Ely Place. It was small satisfaction to the Bishops to hear Hatton Garden described as a model estate.

The lease of the estate passed from one person to another pretty frequently during the subsequent century. The estate was at length inherited by the Earl of Nottingham, who died soon afterwards, and a horde of claimants swooped down on the property. Thereupon, it inevitably went into Chancery. This Court sat upon the matter for seven years and then pronounced judgment, the claimants faring a little better than in the suit of *Jarndice v. Jarndice*. The estate had to be sold and the admitted claims apportioned and all was ready for the settlement when it was remembered that, nearly one hundred years before, the then Bishop of Ely had consented to relinquish Hatton Garden for a fee farm rent of £100 p.a. This had to be commuted and the Bishop, being approached, demanded £3000, which was paid. The estate was then sold off, house by house, realising a large sum eventually. At the same time, an Act was passed vesting Ely House in the Crown, the See of Ely receiving a house in Great Dover Street and a perpetual annuity of £200. Thus, after five hundred years, its connection with Holborn came to an ignominious end. Altogether, it is a pitiful story.

The chief buildings existing at this date (1772) were the Great Hall and the Chapel, the Gatehouse having been demolished. There are several accounts of the condition of the property, all agreeing as to its state of dilapidation, although the interior of the chapel is described as being neat. The Government of the day made various proposals for the

utilisation of the property but eventually sold it in 1778 to a Mr Cole, who proposed to erect a street of private houses on the site. Most fortunately the Government added a proviso that the chapel was to be retained for the use of the inhabitants on the estate. The great hall and all the rest of the buildings were, however, pulled down. Ely Chapel became a proprietary chapel on Mr Cole's death and was finally leased in 1844 to the Welsh Episcopalians, who used it for services in the Welsh language. At length, in 1874, as the culmination of disputes between rival claimants to the Cole property, Ely Place was ordered by the Court of Chancery to be sold and the sale perforce included the chapel, which was purchased for a very small sum by the Fathers of Charity, who, of course, restored Catholic worship.

So much for a brief history of Ely Place. The chapel now claims our attention. The original entrance to the bishops' demesne was through a gatehouse situated, more or less, where now is the junction between Charterhouse Street and High Holborn. Looking across the now vacant space, we see Ely Place enclosed by iron railings and a watch-house, the cul-de-sac being extra-parochial and a "liberty" similar to Great Saint Helens in Bishopsgate. Until the last century, dubious rights of sanctuary were claimed for it, but the privilege must have been valueless as no malefactor or debtor could have obtained any food or shelter amongst the eminently respectable private houses which comprised it. The end of the street is bounded by a blank wall. Ely Place remains almost unaltered since it was built, but two or three houses beyond the chapel have been demolished to make way for a commonplace commercial building naturally called St Audrey House. The hall stood athwart the street between the entrance and the chapel but it has, of course, entirely disappeared. The chapel stands on the west or left-hand side between the Place and Hatton Garden. There is a small forecourt in front below the level of the street and thus the chapel appears to have a crypt which is actually an undercroft, the street having been raised above the original level of the ground. The architectural purpose of this undercroft was to raise the chapel and render it more imposing. It is doubtful whether it was originally used for religious purposes. There are two aumbries, one at each end of the south wall, but they have a secular appearance and may have been used for the safe disposal of the bishop's plate. In later years, this undercroft was let off as wine-vaults and it is on record that the services in the chapel above were frequently disturbed by sounds of revelry. The undercroft was entered by a plain arched doorway in the south wall, and it has a range of windows in each wall spaced beneath the windows in the chapel above. In existing circumstances, they are almost useless for lighting purposes. The walls are of great thickness, greater even than those of the chapel.

The present exterior of the chapel is dingy and not prepossessing, and a casual glance might relegate it to the Gothic Revival, but it preserves most of its original features, although the window tracery has, no doubt, been renewed. Viewing it, in its present cramped situation, it is difficult to visualise it in its original setting, rising high above the cloisters and surrounded by verdant gardens and fields. The longer

one beholds it, the more astonishing, it seems, that it escaped destruction. Every circumstance would appear to have been against its survival, and, as I have already stated, it owes its present existence merely to a protective clause in the Government conveyance to Mr Cole.

We enter the chapel through a beautiful Decorated doorway at the west end of the south wall and are at once struck by the noble and spacious proportions of the building. The east and west windows are of immense size, with very low cills, and in normal circumstances flood the chapel with glowing light. In the side walls, on either hand, are a range of six tall windows of which the end pair by the altar are blocked. Owing to the great thickness of the walls, the reveals are unusually deep, adding much to the dignity and impressiveness of the structure. Between each window are tall niches with crocketed gables which, doubtless, sheltered images. At the west end of the side walls are corresponding doorways with flat segmental arches, the north door being blocked. Above these doorways are exquisite blank windows recessed in the walls. The tracery throughout the building is strictly geometrical in design, a characteristic of the early Decorated period. The interest and beauty of the chapel are largely due to its unaltered state; it stands in its magnificence even as it left the architect's hands and we may be thankful that it has survived its many perilous adventures. Fortunately, the late bombing, although it has done extensive damage to the roof and glass which will cost a lot of money in repairs, has not injured the structure to any extent.

During the visit of the Archaeological Section on 2nd November 1946, much interest was taken in the ancient stone vessel now used as a holy water stoup which stands at the entrance to the chapel. It was found buried in the centre of the undercroft. It is generally considered to be Romano-British and is too small to have been a font of that period. Probably, it was a piscina or stoup. Where it came from is a problem. An idea has spread abroad that it is a relic of an Early British church which may have stood upon the site and that it was buried in some time of stress to avoid profanation. Some go further and suggest that the former presence of this British church was known to the Bishops of Ely and this prompted them to build their chapel on this exact spot. This seems to me altogether unlikely. We have no hint of it in the historical account of the foundation of the palace and chapel which was governed by the site being available and the situation suitable. Assuming that the vessel was buried there before the chapel was built, it must rank as an extraordinary co-incidence. Another solution occurs to me. The vessel may have been brought to the chapel by the builders and deliberately buried. It is, perhaps, rash to suggest such a piece of mediæval antiquarianism, but it is not impossible.

Amongst the details which lend interest to the episcopal estate are its wealth of Dickensian associations. Only one need be mentioned. Bleeding Heart Yard, now a mere draw-in for vehicles, lies just north of Ely Place but within the ancient precincts of the palace. It is, of course, an emblem of the Mater Dolorosa and the romantic theory of the sentimental tambour-worker (vide *Little Dorrit*) must be discarded.

Book Review.

Gothic England. By John Harvey. London: B. T. Batsford Ltd., 21/- nett.

THE sub-title of this book, "A Survey of National Culture, 1300-1550," conveys a better idea of its purpose than the name "Gothic" which, in the mind of the uninitiated, is associated only with buildings—mostly churches! Mr Harvey's illuminating and scholarly study shows that in the 250 years covered by his survey all branches of art in England grew and flourished, as evidenced not only in architecture but music and poetry, illuminating, painting, carpentry and carving creating thereby a characteristic style of "English" art. This fact is not commonly understood and sufficiently appreciated and the evidence for this makes a fascinating story, fully documented by the author, and the book should appeal to all lovers of beautiful things, particularly "English" things.

There is a most exhaustive Bibliography, and the illustrations, over 150, are beautifully produced, as befits a book emanating from the House of Batsford. It should be added that Mr Harvey is a member of our Society and no mean naturalist, whose family have been associated with us for two generations.

S. A.

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Middlesex Plant Records for 1947.

By DOUGLAS H. KENT.

DESPITE the Arctic spell in the early part of the year and the Indian summer which followed, the season has been an interesting one for Middlesex botanists. Several plants have been recorded in the county for the first time, and a number of old stations rediscovered.

Our president, L. G. Payne, is to be complimented on refinding *Utricularia vulgaris* L. on Hounslow Heath, and with R. M. Payne he also made a number of interesting observations at Syon Park near Brentford. Mrs B. Welch added a new plant to the Middlesex flora with her discovery of *Linum bienne* Mill. at Harefield. She is also to be congratulated on her rediscovery of *Potamogeton acutifolius* Link. at Staines, where it was last collected by the Rev. W. R. Linton in 1885. Miss L. J. Johns has done excellent work at Whitewebbs Park, Enfield, and her record of *Epipactis helleborine* (L.) Crantz., a plant which I have not had the good fortune to meet in Middlesex, is the first to my knowledge since 1909.

My own discoveries include *Potamogeton obtusifolius* Mert. & Koch. at Stanmore, an entirely new station for a plant which has probably not been gathered in this county for over a century, and *Myriophyllum verticillatum* L. near Southall, a new locality for a species with less than half-a-dozen known stations in Middlesex. At Soya Foods, Ltd., Springwell, most of the aliens recorded in my last paper (*London Naturalist*, 1946) appeared again, *Abutilon theophrasti* Med. being particularly fine; a North American species new to Britain was recorded on the discovery of *Ipomoea lacunosa* L., a small white-flowered species of Convolvulaceae.

Grateful thanks are due to the many friends and members of the Society who have contributed records. For records which have no finder's name attached I am alone responsible. I am indebted to the following specialists for much help and assistance in naming critical and alien species, which determinations are followed by their respective initials:—Messrs G. O. Allen (*Charophytes*), G. M. Ash (*Epilobium*), J. E. Dandy and G. Taylor (*Potamogeton*), C. E. Hubbard (*Gramineae*), J. E. Lousley (*Rumex* and Aliens), E. Nemes (*Carex*), N. Y. Sandwith (Aliens), W. Watson (*Rubus*). Grateful thanks are also due to W. Watson for a number of bramble records, several of which are new to the county.

The nomenclature used in this paper is that of Prof. A. R. Clapham's Check List of British Vascular Plants, *Journal of Ecology*, Vol. 33, No. 2, pp. 308-47, and for alien species that of Druce's *British Plant List*, Ed. 2, 1928. The number preceding a record refers to the botanical district given in Trimen and Dyer's *Flora of Middlesex*, 1869. New county records are marked with an asterisk, and alien species with a dagger.

In conclusion, the following notes will, I hope, go further to prove that there is much to reward the diligent botanist in Middlesex, despite the apparent limited scope offered in the immediate vicinity of the metropolis.

- Clematis vitalba* L. I. Stanmore Common. Hillingdon Heath. III. Railway bank, Feltham, near Hounslow Heath. V. West Ealing. Canal bank, Northolt.
- †*C. viticella* L. IV. Scratch Wood, Edgwarebury; L. J. Johns.
- Thalictrum flavum* L. II. Abundant near Walton Bridge.
- Ranunculus circinatus* Sibth. II. Abundant in the lake, Shortwood Common, Staines; B. Welch.
- R. trichophyllus* Chaix. II. Pools on Staines Moor and Shortwood Common, Staines. III. Gravel pit west of Hounslow Heath.
- R. Lingua* L. V. Abundant on verge of a lake at Syon Park; L. G. and R. M. Payne. Probably originally planted, but now quite naturalized.
- Aquilegia vulgaris* L. I. Meadow near Ruislip Common; S. Batko and D. H. Kent. Almost certainly an escape from cultivation.
- †*Meconopsis cambrica* (L.) Vig. I. A small patch on Stanmore Common. Doubtless from a neighbouring garden.
- Fumaria Boraei* Jord. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. VII. Weed in gardens of prefabricated houses, Farant Road, S.W.6.
- Cardamine amara* L. III. Gutteridge Wood, Northolt.
- †*Descurainia Sophia* (L.) Prantl. (*Sisymbrium sophia* L.). V. A large patch on the road verge, Whitton Avenue East, Sudbury Hill. Abundant on a rubbish tip near Greenford. A single large plant on a rubbish tip at Hanwell; B. Welch and D. H. Kent.
- †*Sisymbrium officinale* (L.) Scop. var. *leiocarpum* DC. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. V. Rubbish tip, Hanwell; J. E. Lousley and D. H. Kent. Waste ground by Kew Bridge.
- †*S. Loeselii* L. I. Rubbish tip, Uxbridge Moor. IV. Frequent about Stonebridge. V. Roadside, Osterley Park. VI. Waste ground, Finchley.
- Erysimum cheiranthoides* L. VII. Kensington Gardens. Russell Square.
- †*Camelina sativa* (L.) Crantz. V. A single plant on a rubbish tip at Hanwell.
- Brassica nigra* (L.) Koch. I. Near Harefield. Canal bank, Cowley. II. Thames bank near Walton Bridge. III. Waste land, Dormer's Wells, near Southall. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. IV. Rubbish tip, Stonebridge. VII. Waste land, Willesden Green.
- †*B. juncea* Coss. I. Cultivated land, South Mimms. Canal bank, Cowley. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. V. Rubbish tip, Hanwell, and canal bank, Brentford; N. Y. Sandwith and D. H. Kent. det. N.Y.S. Banks of river Brent, Perivale. Sudbury Hill. Bombed site, West Ealing. VI. Waste land, Arnos Grove. Roadside, Palmers Green. VII. Hyde Park.
- Diplotaxis tenuifolia* (L.) DC. VII. Bombed site, Leaside Road, E.5.
- Lepidium Smithii* Hook. III. Hounslow Heath; H. Banks.
- †*L. sativum* L. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. IV. Rubbish tip, Stonebridge.
- †*L. neglectum* Thell. I. Rubbish tip, Uxbridge Moor.
- †*Rapistrum rugosum* (L.) All. V. Waste land, Horsenden Hill, Greenford.
- Reseda lutea* L. I. Uxbridge Moor. II. Abundant about railway sidings, Staines; B. Welch. V. Rubbish tip, and canal path, Hanwell. VII. Railway waste land, Archway Road, Highgate.
- Viola canina* L. I. Ruislip Common.
- V. canina* L. × *lactea* Sm. III. Hounslow Heath; B. Welch, det. J. E. Lousley and D. H. Kent. There are specimens of *V. canina* L. and *V. lactea* Sm. from Hounslow in Hb. Mus. Brit. (re the latter see A. J. Wilmott, *B.E.C. 1945 Rep.* (1947), 53). The two parents appear to have become extinct but the hybrid plant remains in fair quantity.

- Stellaria palustris* Retz. II. Abundant near Walton Bridge.
S. graminea L. var. *grandiflora* Peterm. I. Copse Wood, Ruislip.
Montia fontana L. II. Staines Moor.
Hypericum Androsaemum L. VI. Whitewebbs Park, Enfield; L. J. Johns.
†*H. calycinum* L. III. A large patch under a hedge bordering Hounslow Heath—known here for nearly twenty years; H. Banks.
H. quadrangulum L. I. Harefield Moor. VI. Whitewebbs Park, Enfield; L. J. Johns.
Malva moschata L. var. *heterophylla* Lej. & Court. III. Near Hounslow Heath. V. Meadows above the canal at Hanwell; F. E. Wrighton and D. H. Kent.
**Linum bienne* Mill. I. Above Harefield Quarry, 1946; B. Welch.
Geranium Robertianum L. var. *album* Dr. V. Roadbank, Edgehill Road, Ealing.
†*Impatiens glandulifera* Royle. VI. Near the river Lea, Tottenham Hale.
Euonymus europaeus L. II. Yeoveney; B. Welch and D. H. Kent.
Rhamnus cathartica L. I. Harefield Moor.
Frangula alnus Mill. I. Copse Wood, Ruislip; F. E. Wrighton.
Genista tinctoria L. V. Abundant on the slopes of Horsenden Hill, Greenford.
Ononis spinosa L. I. Haste Hill, Northwood; F. E. Wrighton.
†*Melilotus indica* (L.) All. V. Railway banks, South Greenford. Rubbish tip, Northolt.
Trifolium medium L. I. South Mimms. V. Horsenden Hill near Greenford.
T. subterraneum L. II. Near Walton Bridge.
Lotus tenuis Willd. V. Waste land between Hanwell and Southall.
†*Coronilla varia* L. IV. Abundant on waste land, the Hyde, Hendon.
Lathyrus montanus Bernh. I. Stanmore Common.
Spiraea ulmaria L. var. *denudata* Boenn. III. Between Northolt and Ickenham.
Rubus foliosus Weihe. I. Old Park Wood, Harefield; W. Watson and C. Avery.
R. hostilis Muell. & Wirtg. I. Abundant south of Bishop's Wood, between Harefield and Northwood; W. Watson and C. Avery.
**R. leptadenes* Sudre I. Park Wood, Ruislip; C. Avery.
**R. Babingtonianus* W. Wats. I. Old Park Wood, and lane east of Harefield Place, Harefield; W. Watson and C. Avery.
*†*R. procerus* P. J. Muell. III. Gravel pit, East Bedfont; J. G. Dony, H. B. Souter and D. H. Kent, det. W. Watson.
Agrimonia Eupatoria L. VII. Hyde Park—three plants near Knightsbridge.
Sanguisorba officinalis L. V. Still plentiful in the wilder parts of Ealing Golf Club Course at Perivale.
Mespilus germanica L. II. Bank of Wyrardisbury river near Staines Moor, two trees; B. Welch. Probably planted.
Saxifraga tridactylites L. II. River Wall, Hampton Court; B. Welch and D. H. Kent.
Sedum telephium L. I. Springwell Lane, north of Harefield; B. Welch.
Myriophyllum verticillatum L. III. Abundant in a backwater of the Paddington Canal north of Southall.
M. spicatum L. I. Pond near Park Wood, Ruislip; H. Banks, H. Spooner, F. E. Wrighton and D. H. Kent. II. Abundant in a lake on Shortwood Common, Staines; B. Welch. Lake at Yeoveney; B. Welch and D. H. Kent. Pools near Walton Bridge. Thames between Walton Bridge and Shepperton. Long Water, Hampton Court.
†*Epilobium adenocaulon* Hausskn. I. Harefield. II. Staines. III. Hounslow Heath. V. Horsenden Hill near Greenford, det. G.M.A. Ealing, det. G.M.A. VI. Finchley Common and Hadley Common, det. G.M.A.
E. montanum L. × *adenocaulon* Hausskn. I. Canal bank, Uxbridge, "this may be *E. adenocaulon* × *obscurum*," G.M.A.
E. lanceolatum Sieb. & Maur. × *montanum* L. VI. Roadside, Edmonton, det. G.M.A.
*†*Tetragonia expansa* Murr. V. Rubbish tip, Hanwell; J. E. Lousley and D. H. Kent, det. J.E.L.

- †*Smyrniium perfoliatum* L. VII. Several large patches still at Burton's Court, Chelsea, where it has been known since 1932 (*B.E.C. 1935 Rep.* (1936), 30).
- †*Aptum graveolens* L. III. Several plants by the Paddington Canal near Southall. Doubtless of horticultural origin.
- †*Petroselinum crispum* (Mill.) Nym. III. A solitary large plant on Hounslow Heath.
- Sium erectum* Huds. I. Bank of river Frays south of Uxbridge. II. Verge of lake, Yeoveney; B. Welch. V. Verge of a lake, Syon Park; L. G. and R. M. Payne.
- Anthriscus scandicina* (Weber) Mansf. I. Ruislip; F. E. Wrighton. III. Hounslow Heath; B. Welch.
- †*Heracleum Mantegazzianum* S. & L. IV-V. Very abundant on both banks of the river Brent for about five miles from Stonebridge, through Park Royal to Perivale, Greenford, Ealing and Hanwell.
- Torilis arvensis* (Huds.) Link. I. Arable land, South Mimms.
- Adoxa Moschatellina* L. I. Very abundant in Park Wood, Ickenham.
- Galium Mollugo* L. I. Banks of river Pinn, Ickenham and Ruislip. V. Banks of river Brent between Park Royal and Perivale.
- †*Erigeron strigosus* Muhl. var. *septentrionalis* (Fernald & Weigand) Fernald. V. Waste land near the river at Chiswick, 1945; B. Welch, det. N.Y.S., 1947.
- †*Ambrosia artemisiifolia* L. I. Waste ground, Church Hill, Harefield; N. Y. Sandwith and D. H. Kent. V. Rubbish tip, Greenford.
- Artemisia Absinthium* L. III. Between Greenford and Yeading; B. Welch, J. E. Lousley, J. E. Woodhead and D. H. Kent. Very abundant on a rubbish tip by the canal, Northolt. VI. Bank of river Lea between Stamford Hill and Tottenham.
- A. Verlotorum* Lam. II. Hampton Court Terrace; B. Welch. Between Sunbury and Halliford. Roadside near Sunbury Clock Tower; B. Welch. III. Roadside between East Bedfont and Hounslow Heath. Railway bank between St Margarets and Twickenham; B. Welch. Hounslow Heath. Canal bank near Norwood Green. IV. Roadbank, Cool Oak Lane, Kingsbury. V. Abundant on a rubbish tip by the Thames at Chiswick; B. Welch. VI. East Finchley; J. E. Lousley.
- Petasites hybridus* (L.) Gaertn., Mey. & Schreb. I. Stanmore Common; H. W. Payton and D. H. Kent. Banks of river Colne, Uxbridge Moor.
- Senecio aquaticus* Hill. var. *discoideus* Dr. V. Canal bank, Greenford Green.
- S. Jacobaea* L. var. *discoideus* L. III. Edge of gravel pit near Hounslow Heath; H. Banks and D. H. Kent.
- S. vulgaris* L. var. *radiatus* Koch. II. River wall, Hampton Court; B. Welch and D. H. Kent.
- Carduus nutans* L. I. Abundant and very fine on Uxbridge Moor. II. Meadows near Shepperton. Staines Moor.
- Cirsium acaulos* (L.) Scop. I. Ruislip Common; F. E. Wrighton and D. H. Kent. II. Meadow (now used as a timber yard) by Chertsey Bridge; B. Welch.
- †*Onopordum Acanthium* L. VII. Bombed site near Minorities, E.C.4; B. Welch.
- Centaurea Scabiosa* L. IV. Near Stonebridge.
- *†*C. moschata* L. V. Rubbish tip, Hanwell, 1946; N. Y. Sandwith and D. H. Kent, det. N.Y.S.
- †*Hieracium brunneo-croceum* Pugsf. III. Railway bank, Eastcote—abundant.
- Leontodon Leysseri* (Wallr.) Beck. V. Ealing Common.
- Campanula rotundifolia* L. VII. University of London lawn.
- C. glomerata* L. II. Meadow near Penton Hook Lock.
- Hottonia palustris* L. II. Pools on Shortwood Common, Staines.
- Lysimachia vulgaris* L. I. Ditches on Harefield Moor. II. Bog at Laleham Park. V. Canal bank near Alperton.
- †*Symphytum tuberosum* L. I. A large well established patch on Stanmore Common.
- Nymphoides peltatum* (S. G. Gmel.) O. Kuntze. V. Abundant in a lake in Syon Park; L. G. and R. M. Payne.

- †*Anchusa sempervirens* L. III. Garden weed, Sudbury Hill: H. W. Payton.
Waste ground near Hounslow Heath; H. Banks and D. H. Kent.
- †*Myosotis sylvatica* (Ehrh.) Hoffm. V. Waste land, Hanwell. A garden outcast.
Lithospermum arvense L. V. Canal bank, Brentford; N. Y. Sandwith and D. H. Kent.
- Calystegia sepium* (L.) R. Br. var. *coloratus* (Lange). II. Near Staines Moor: B. Welch.
- *†*Ipomoea lacunosa* L. I. Forecourt of Soya Foods Ltd., Springwell.
Solanum dulcamara L. var. *villosissimum* Desv. II. Railway bank, West Drayton.
- †*Lycium chinense* Mill. III. Abundant and naturalized on waste land south of Hounslow Heath; N. Y. Sandwith, N. D. Simpson and D. H. Kent.
Atropa Belladonna L. VI. Grounds of Highgate Hospital; J. M. B. King.
- †*Datura Stramonium* L. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. VII. Railway bank, Wood Lane, Shepherds Bush.
- †*Hyoscyamus niger* L. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. VI. Bank of River Lea Navigation Canal, Tottenham Lock.
- †*Verbascum Phlomoides* L. II. Two plants on Shortwood Common, Staines. Meadow near Penton Hook Lock. III. Several plants on Hounslow Heath. V. Very abundant on a rubbish tip by the canal at Northolt.
- †Var. *albiflora* Rouy. V. A few plants on a rubbish tip by the canal at Northolt.
- †*V. Blattaria* L. V. A few plants on a rubbish tip by the canal at Northolt.
- †*Linaria purpurea* (L.) Mill. I. Established on the walls of Pinner church.
- †*L. repens* (L.) Mill. V. Waste ground by the canal near Greenford Green.
L. minor (L.) Desf. I. Abundant and very large near the Cement Works on Uxbridge Moor. II. Railway track, Yeoveney; B. Welch and D. H. Kent. III. South Ruislip; F. E. Wrighton.
- Odontites rubra* Gilib. (*Bartsia odontites* (L.) Huds.). I. Haste Hill, Northwood; F. E. Wrighton. III. Abundant about Yeading and West End. Northolt.
- Utricularia vulgaris* L. II. Long Water, Hampton Court. III. Very abundant in a pond near the railway on Hounslow Heath; L. G. Payne. Pond near the Government Training Centre, Hounslow Heath. Though plentiful at Hampton Court it flowered very sparingly. At Hounslow hundreds of plants were in flower.
- Clinopodium vulgare* L. III. Near Hounslow Heath; H. Banks and D. H. Kent.
Scutellaria minor Huds. I. Bayhurst Wood, Ruislip; F. E. Wrighton.
- Stachys ambigua* Sm. (*S. palustris* × *sylvatica*). V. Canal bank near Alper-ton. VI. Pond verge, Hadley Common, with both parents.
- Ballota nigra* L. With white flowers. V. Disused gravel pit, Hanwell.
- †*Amaranthus chlorostachys* (Willd.) Thell. V. Rubbish tip, Greenford.
- †*A. retroflexus* L. V. Canal path between Hanwell and Southall. Rubbish tip, Northolt; B. Welch. Railway bank, Kew Bridge Station; J. E. Lousley.
- †*A. albus* L. V. Rubbish tip, Northolt; B. Welch, det. N.Y.S.
- †*Salsola pestifer* A. Nelson. V. Profusely abundant on a rubbish tip by the canal near West End, Northolt; B. Welch, J. E. Lousley, J. E. Woodhead and D. H. Kent. VII. Bombed site near High Street, Kensington.
- Polygonum mite* Schrank. I. Abundant in a meadow north of Harefield Moor; N. Y. Sandwith and D. H. Kent. A number of the plants bore white flowers.
- †*P. Baldschuanicum* R.G.L. V. Abundant on a rubbish tip at Northolt.
- Rumex obtusifolius* L. × *crispus* L. V. Rubbish tip, Hanwell; J. E. Lousley and D. H. Kent, det. J.E.L.
- R. obtusifolius* L. ssp. *transiens* (Simonkai) Rechinger fil. V. Rubbish tip, Hanwell; J. E. Lousley and D. H. Kent, det. J.E.L.
- †*Euphorbia virgata* W. & K. I. Pinner churchyard. III. Waste ground, Yeading. Abundant by the Paddington Canal at the rear of Southall gas-works. VI. Waste land. East Finchley. VII. Between allotments and railway track at Dollis Hill Station: R. Graham.

- Parietaria diffusa* Mert. & Koch. I. Walls of Ickenham church. Walls of Pinner church. II. Walls of Sunbury churchyard.
- Salix fragilis* L. × *alba* L. I. Springwell Lane, north of Harefield; H. W. Pugsley and D. H. Kent.
- Hydrocharis Morsus-ranae* L. I. Canal at Uxbridge and Cowley Peachey. II. Pond by Kingston Road, Hampton Court; B. Welch. Colne at West Drayton. Pools near the Thames, Walton Bridge. Ditches on Stanwell Moor. III. Paddington canal and backwaters north of Southall. Canal backwater, Hayes. V. Lake in Syon House Grounds; L. G. and R. M. Payne.
- †*Stratiotes aloides* L. I. Abundant and completely naturalized in two lakes on Little Common, Stanmore.
- Epipactis Helleborine* (L.) Crantz. VI. A solitary plant in Whitewebbs Park, Enfield; L. J. Johns.
- Orchis mascula* L. I. North of Harefield; B. Welch.
- Ruscus aculeatus* L. VI. Whitewebbs Park, Enfield; L. J. Johns.
- Juncus squarrosus* L. I. Harrow Weald Common; B. Welch and D. H. Kent.
- J. compressus* Jacq. II. Shortwood Common, Staines; B. Welch and D. H. Kent. Near Walton Bridge. Stanwell Moor.
- †*J. tenuis* Willd. I. Copse Wood, Ruislip; N. Y. Sandwith.
- Luzula sylvatica* (Huds.) Gaud. VI. Barnet Gate Wood.
- †*Phoenix dactylifera* L. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent. V. Rubbish tips at Hanwell and Greenford. Hundreds of seedlings on all these tips.
- *†*Calla palustris* L. I. Pond on Stanmore Common; B. Welch. Planted, but now naturalized
- Baldellia Ranunculoides* (L.) Parl. (*Alisma ranunculoides* L.). VI. Sparingly in a pond on Finchley Common. A solitary plant in a pond on Hadley Common.
- Triglochin palustris* L. V. Abundant around a lake in Syon Park; L. G. and R. M. Payne.
- Potamogeton acutifolius* Link. II. Abundant in a lake on Shortwood Common, Staines; B. Welch, conf. J.D. and G.T.
- P. obtusifolius* Mert. & Koch. I. Abundant in a pond on Little Common, Stanmore, det. J.D. and G.T.
- P. Berchtoldii* Fieb. II. Wyrardisbury river, Staines; B. Welch, det. J.D. and G.T.
- P. pusillus* L. III. Gravel pit west of Hounslow Heath, det. J.D. and G.T. VII. "Round" Pond, Kensington Gardens, det. J.D. and G.T.
- P. trichoides* Cham. & Schlecht. II. Lake on Shortwood Common, Staines, det. J.D. and G.T. III. Canal backwater north of Southall, det. J.D. and G.T.
- *†*Cyperus longus* L. V. Verge of a lake in Syon Park; L. G. and R. M. Payne. No doubt originally planted, but now naturalized and well established.
- Eleocharis acicularis* (L.) Roem. & Schult. II. Verge of lake on Shortwood Common, Staines; J. E. Lousley, B. Welch, J. E. Woodhead and D. H. Kent.
- Carex panicea* L. I. Stanmore Common.
- C. tumidocarpa* Anderss. I. Stanmore Common and Ickenham; both det. E.N.
- C. caryophylla* Latour. III. Gutteridge Wood, Northolt; det. E.N.
- C. flacca* Schreb. I. Pinner; det. E.N. Near Ruislip Common. Ickenham Green. Abundant in meadows between Uxbridge and Denham. Stanmore Common. II. Staines Moor.
- C. nigra* (L.) Reichard. (*C. Goodenowii* Gay.). I. Ickenham Green. Stanmore Common. II. Abundant on Staines Moor. VI. Finchley Common.
- C. ovalis* Good. VII. Kensington Gardens.
- C. divulsa* Stokes. I. Hedgebanks, Moss Lane, Pinner; det. E.N.
- C. disticha* Huds. I. Bank of the Colne north of Harefield, very large plants; det. E.N.
- C. pulicaris* L. I. Stanmore Common.

- †*Echinochloa crus-gilli* (L.) Beauv. V. Rubbish tips at Greenford and Northolt, conf. C.E.H.
- †*Setaria italica* (L.) Beauv. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent.
- †*S. viridis* (L.) Beauv. V. Rubbish tip, Northolt; B. Welch, conf. C.E.H. Rubbish tip, Hanwell.
- †*S. verticillata* (L.) Beauv. V. Rubbish tip, Northolt; B. Welch, conf. C.E.H.
- †*Sorghum halepense* (L.) Pers. V. Rubbish tip, Northolt; B. Welch, det. C.E.H.
- †*Phalaris canariensis* L. III. Rubbish tip, Hounslow Heath; H. Banks and D. H. Kent.
- Agrotis gigantea* Roth. var. *ramosa* (Gray.) Philipson. V. Meadows near the canal at Hanwell, det. C.E.H. Syon Park.
- Var. *dispar* (Michx.) Philipson. V. Abundant on road verges, Western Avenue, from Park Royal to Perivale, det. C.E.H.
- A. canina* L. I. Harrow Weald Common; B. Welch and D. H. Kent, conf. C.E.H.
- Var. *arida* Schlechtd. III. Hounslow Heath, det. C.E.H. V. Meadows, Castle Bar, Ealing, det. C.E.H.
- Aira caryophyllea* L. I. Mimms Hall Wood, South Mimms.
- Holcus mollis* L. I. Stanmore Heath and Harrow Weald Common. Park and Mad Bess Woods, Ruislip. VI. Abundant in Highgate Wood and Queen's Wood, Highgate.
- Avena fatua* L. var. *pilosa* Syme. III. Waste land, Southall, det. C.E.H. Rubbish tip, Hounslow Heath, det. C.E.H. VI. Bank of river Lea between Stamford Hill and Tottenham, det. C.E.H.
- Var. *glabrata* (Peters.) Peters. VI. Bank of river Lea between Stamford Hill and Tottenham, det. C.E.H.
- Var. *pilosissima* S. F. Gray. IV. Rubbish tip, Stonebridge, det. C.E.H.
- Steglingia decumbens* (L.) Bernh. I. Harrow Weald Common; B. Welch and D. H. Kent.
- Koeleria gracilis* Pers. I. Uxbridge Common. III. Hounslow Heath. V. Horsenden Hill, Greenford.
- Poa pratensis* L. var. *latifolia* Weihe. V. Canal bank, Hanwell, det. C.E.H.
- Glyceria declinata* Bréb. I. Pond on Ruislip Common; N. Y. Sandwith.
- Scleropoa rigida* (L.) Griseb. (*Festuca rigida* (L.) Kunth.). VII. Bombed site, Cripplegate; F. E. Wrighton.
- Festulolium loliaceum* (Huds.) P. Fourn. (*Festuca loliacea* Huds.). I. Harefield Moor; B. Welch, det. C.E.H.
- Festuca rubra* L. var. *dumetorum* (L.) Lej. & Court. I. Harefield Moor, det. C.E.H.
- *†*Bromus carinatus* Hook. & Arn. V. A few plants on the river wall between Kew Bridge and Brentford.
- B. secalinus* L. var. *hirtus* (F. Schultz.) Ascher. & Graeb. ex Hegi. V. Near St Bernard's Hospital, Hanwell; B. Welch, det. C.E.H.
- B. hordaceus* L. var. *leisostachyus* Hartm. V. Waste land, Chiswick, det. C.E.H.
- B. lepidus* Holmb. III. Near Heathrow. Gravel pit, East Bedfont; J. G. Dony, H. B. Souster and D. H. Kent.
- Equisetum telmateia* Ehrh. I. Stanmore Common.
- E. palustre* L. II. Staines Moor. V. Abundant around the verge of a lake at Syon Park; L. G. and R. M. Payne.
- Dryopteris spinulosa* (Müll.) Warr. I. Mad Bess Wood, Ruislip; C. L. Collenette, det. L. G. Payne.
- D. dilatata* (Hoffm.) A. Gray. I. Watt's Common, Harefield; N. Y. Sandwith and D. H. Kent. Mad Bess Wood, Ruislip; F. E. Wrighton, det. L. G. Payne.
- Chara vulgaris* L. II. Pools on Shortwood Common, Staines; B. Welch and D. H. Kent, det. G.O.A. III. Gravel Pit west of Hounslow Heath, det. G.O.A.
- Var. *papillata* Wallr. II. Pool near Yeoveney Halt, Staines Moor; B. Welch and D. H. Kent, det. G.O.A.

The Ferns of Richmond Park.

By C. L. COLLENETTE.

THE flora of the Park is not rich as compared with some surrounding areas, but the ferns are an exception, numbering ten species at the present time, and comparing favourably with any locality of similar size so near London. H. R. Hall, writing in 1923, included a list of over 260 plants in his "Round the Year in Richmond Park," some of which are not now to be found. Among the ferns, he mentions only the Bracken and Male Fern, stating that a few plants of the latter were known to him "up to the last year or two." He was a careful observer, and could hardly have overlooked some of the other species now scattered over the Park, although, as he was primarily an ornithologist, he may have missed some of the less conspicuous colonies, especially as some show every appearance of having been long-established.

Two species at the present time (*Ceterach* and Mountain Buckler Fern) are in very small numbers, and would no doubt be off the list if their exact localities were generally known. The Lady Fern may have arrived during the last seven or eight years, as the writer is reasonably sure that the larger plants were not to be found prior to the last war. As the status of the ferns in the Park appears to be subject to such changes, it is perhaps of interest to put the following on record.

ADDER'S TONGUE. *Ophioglossum vulgatum* L. A tiny colony in one area and a much larger in another, first made known to the writer by Mrs B. Welch. The cattle and sheep at present kept in the Park appear to graze it down with the grass, as it was not easy to find in the spring of 1947.

BRACKEN. *Pteridium aquilinum* (L.) Kuhn. At one time probably covered almost the whole of the Park, but has disappeared entirely from several areas. During the war it became noticeably more luxuriant, but the agricultural programme has since banished it from further ground. It is further discussed in *London Naturalist*, 1936, p. 44.

HART'S-TONGUE. *Phyllitis scolopendrium* (L.) Newm. One plant on an old wall and two in a brick manhole, the latter known for fifteen years. They are smallish specimens, and have hardly increased in size since first found.

[BLACK SPLEENWORT. *Asplenium adiantum-nigrum* L. In about the year 1932 the writer was told that this fern grew on the wall in the south of the Park. A search at the time, and again in 1947, failed to reveal it, and it has not been included in the list.]

WALL RUE. *Asplenium ruta-muraria* L. Well-established and luxuriant on a section of old wall, and increasing. Over 250 plants and small clumps were counted in 1947. Probably an old station.

RUSTY BACK. *Ceterach officinarum* DC. A fine collection of plants was found in 1946 in one of the quietest areas of the Park. Unfortunately the wall has been cleaned up and partly repointed and the ferns carefully prized out by the roots. However, sufficient specimens remain to carry on the colony.

LADY FERN. *Athyrium filix-femina* (L.) Roth. One spot which now contains the species was without ferns of any kind seven or eight years ago, and the Lady Fern was not noticed in the Park until 1947. There are now over 30 plants in four localities. They may have spread from the adjoining Sudbrook Park, where there is a number of fine specimens.

MALE FERN. *Dryopteris filix-mas* (L.) Schott. The commonest and most widespread fern in the Park after the Bracken. One spot contains over 40 fully-grown specimens and many seedlings, and others are found in all the larger plantations and in the open Park. Although plants are dug up from time to time, it must often escape molestation by its likeness to the Bracken amongst which it grows.

BROAD BUCKLER FERN. *Dryopteris dilatata* (Hoffm.) A. Gray.
PRICKLY BUCKLER FERN. *Dryopteris spinulosa* (Müll.) Warr. Typical plants of both these forms occur in the Park, and examples were placed in the Society's herbarium before the war. Specimens are found, however, which would need very critical examination to establish as one form or the other, although *dilatata* predominates. Plants are known in five localities, usually but not invariably under the shade of trees and where there is some moisture in winter. There are over 30 fully-grown specimens, with many seedlings. The number has increased in recent years, but a fine plant which grew on the bank of the Leg of Mutton Pond was dug up in 1945.*

MOUNTAIN BUCKLER FERN. *Thelypteris oreopteris* (Ehrh.) C. Chr. A fine colony of this fern, probably long established, growing amongst moss in the shade of rhododendrons, was photographed in 1934 (*London Naturalist*, 1934, p. 75). A year or two later it was almost exterminated by rabbits, which were more numerous than usual during a period of hard weather. Its existence is precarious, as it grows at the side of a track kept free from seedling rhododendrons by the passage of carts, but it is now increasing again, 16 plants in three spots, some of fair size, being counted in 1947.

*Since writing the above, a considerable quantity of *Dryopteris dilatata* has been found in moist ground at the head of the Upper Pen Pond, amongst a thick growth of *Juncus*, in partial shade. This area was drained in the early part of the war and was left bare. The *Juncus* and the ferns had the appearance of having grown up together, and were perhaps five or six years old. The ferns appeared healthy, but with the readmission of water in January 1948 have now been submerged.

Botanical Records for 1947.

Compiled by J. EDWARD LOUSLEY.

THE botanical records made during 1947 include a number of plants of exceptional interest and the standard of previous years has been well maintained. The system of arranging observations under Watsonian vice-counties which was introduced in 1945 has, however, thrown the gaps in our work into prominence. Whereas the parts of our area included in Kent, Surrey and Middlesex are receiving careful attention, the Essex and small Hertfordshire and Buckinghamshire sections are being almost completely neglected. The records in this paper will make it clear how greatly we need the assistance of members in connection with these counties.

The weather of 1947 was remarkable for the prolonged and severe cold spell early in the year and for the very low rainfall from May until the end of the flowering season. The cold winter no doubt had its effect on many plants in our area, but the most demonstrative was on the Australasian **Juncus pallidus* R. Br. at East Bedfont, Middlesex (see *Botanical Records* for 1945 and 1946). Mr Kent reports that he was unable to find a single plant alive this summer though the dead stems were prominent all round the gravel pit. A few of the other alien Junci here survived. The summer drought had less effect on the native species than one would have expected but the rubbish dumps were so dry that the autumn harvest was poor. The lowering of ponds and warm weather caused *Utricularias* and other aquatics to flower exceptionally well.

Two alien plants have proved especially interesting. The Fig, **Ficus Carica* L., had been found before the recent war on London building sites, on the river wall between Kew and Mortlake, Surrey, and on dumps but during the last three years it has become much more common. I first noticed it in the City in a ruined fireplace near St Olave, Hart Street, in 1945, and the same year found it on three more City bombed sites. In 1946 I saw material from Old Gloucester Street, and from Ebury Street, Victoria. This year I have found it commonly in many places around Holborn and in several spots in the West End. In addition there is an old plant on Northolt rubbish-tip. It is not difficult to explain how it might be introduced to places where household refuse or sewage is dumped but the occurrence of the Fig on bombed sites is puzzling.

Mention of **Calystegia sylvestris* (Willd.) R. & S. in these *Records* has been held up for several years until certain questions of nomenclature could be verified. It is allied to the native Great Bindweed, *C. sepium* (L.) R. Br., from which it is most easily distinguished by the larger flowers (up to 7 cm. in corolla length as compared with 3.5-6 cms.) with broad inflated bracts which completely envelop the calyx segments and even overlap. There are also differences in the leaves. *C. sylvestris* was distributed as a garden plant and since it is as diffi-

cult to eradicate as its native ally it became thoroughly established in places where rubbish is dumped and about houses. Specimens were gathered at Twickenham Park, Middlesex, as long ago as 1867, and it is now abundant in many of the London suburbs. From my own experience here I should say that it is probably commoner than *C. sepium* but its exact distribution throughout our area has yet to be worked out.

The following records are arranged in sequence of vice-counties:—
V.-c. 16, WEST KENT.

Undoubtedly the most important record is Francis Rose's report of *Orchis purpurea* Huds. at a locality within 15 miles of St Paul's. It was first found here by Miss Burnaby-Atkins and on June 1st he saw four plants. This handsome orchid is locally plentiful in more distant parts of Kent but it is especially pleasing to know that it still exists so near to the metropolis.

Mr Rose also noted *Geranium versicolor* L. (*G. striatum* L.) and *G. phaeum* L. as "well naturalised" near Knockholt, *Sorbus torminalis* (L.) Crantz in flower in Darenth Wood, and *Hypochaeris glabra* L. near Farningham Wood. When I went to see the last species on August 31st I noticed *Chenopodium hybridum* L. in abundance in orchards nearby. and was surprised at the quantity of Common Solomon's Seal, *Polygonatum multiflorum* (L.) All., and Lilies-of-the-valley, *Convallaria majalis* L., in Farningham Wood. In one sandy field there was a colony of *Setaria viridis* (L.) Beauv. only two or three inches in height.

On July 5th I saw the rare Pondweed **Potamogeton Lintoni* Fryer (*P. crispus* L. \times *P. Friesii* Rupr.) in the River Darent near Sevenoaks, where it was discovered by J. P. M. Brenan. On the same day I saw *Galium anglicum* Huds. in abundance on a wall at Chelsfield to which I was directed by Dr Cyril West. At a pit at Green Street Green near Farnborough, where I found many interesting aliens before the war, a clover with bright rose flowers attracted attention. Further study showed that this was **Trifolium elegans* Savi, which is sometimes confused with the common Alsike Clover, *T. hybridum* L.

On the Entomological Section ramble to Stone Marshes on September 7th a curious plant which superficially somewhat resembled a *Calceolaria* was found in a neglected field near Dartford. Several members telephoned to enquire about it and I was able to tell them that it was **Digitalis lanata* Ehrh. which I had found there two months earlier when botanising with D. H. Kent and R. Libbey. This Foxglove is a native of the Balkans and eastern Europe and made its appearance on the market as a drug plant rather earlier than 1922. Mr Short was able to establish that a well-known firm of druggists in the neighbourhood has been experimenting with its cultivation for several years and there is little doubt that the plants found were relics of a crop.

V.-c. 17, SURREY.

In September a first-class rediscovery was made by Mrs B. Welch, who found *Polygonum dumetorum* L. on the edge of Wimbledon Com-

mon where it adjoins the remains of Wimbledon Wood. From her directions I was able to see a nice colony scrambling over blackberries and young oaks in what was undoubtedly the old station or very near it. Here the plant was first found in Britain in 1834 and published as an addition to our flora two years later. It had been seen at intervals until 1929, when the late H. W. Pugsley stated that the station was being destroyed by building. Mrs Welch's place was only a few yards from houses which must have been put up about that time. To judge from the behaviour of the species in west Surrey the climatic conditions of 1947 suited this erratic plant exceptionally well. During the year Mrs Welch also sent me a record of *Alchemilla vestita* (Buser) Raunk. (*A. pseudo-minor* Wilmott) which she found in 1946 by the towpath near Kew Gardens. This plant is very rare in Surrey and may have been introduced at this spot.

Specimens of *Centaureum pulchellum* (Swartz) Druce were sent by W. Mackintosh from Epsom Common, and he also records *Verbascum nigrum* L. from a rubbish-dump on Wimbledon Common. There is no other record of this chalk-loving Mullein from the Common and it is probably not native here. This would seem a suitable place to put on record that C. P. Castell has entrusted me with the care of a very full manuscript flora of Wimbledon district which he compiled for several years. Already this manuscript has proved extremely useful in connection with the Society's records as it includes much material not otherwise readily available.

With D. H. Kent in May, I was pleased to see *Cynoglossum germanicum* Jacq. (*C. montanum* auct.) under beeches on the edge of Mickleham Downs in addition to the well-known old station in Norbury Park. Above Headley Lane *Neottia nidus-avis* (L.) Rich. was in greater abundance than I have ever seen it previously. Although a short distance outside our area, mention must also be made of the exceptional flowering of *Eleocharis acicularis* (L.) Br. and *Leersia oryzoides* (L.) Sw. by the Basingstoke Canal near Byfleet. No doubt induced by the fine summer, the very rare grass last mentioned expanded fine panicles some 20 cms. long. In many seasons the cleistogamous flowers remain rolled up in the sheath.

Two very good fern records have been made in Surrey. *Ceterach officinarum* Lam. & DC. was found by D. Pigott in some quantity on a wall at Woldingham, and in September H. Banks detected several small plants of *Osmunda regalis* L. near Oxshott Heath. The Royal Fern was known for that district but had not been seen for very many years.

V.-c. 21, MIDDLESEX.

The continued interest of the records from our most built-up county is chiefly due to the skill and enthusiasm of D. H. Kent, but the most exciting discovery of the year was made by our President, L. G. Payne. *Utricularia vulgaris* L. was last found on Hounslow Heath by William Hudson in 1778. Since then there have been unsuccessful attempts to rediscover the plant. In early August 1947 Mr Payne found it in fine

flower in a small nearly dried-up pond on the Heath and a few days later D. H. Kent discovered it in another similar pond a short distance away.

Two other good aquatics shown to me by Mr Kent were *Myriophyllum verticillatum* L. in a branch of the canal near Southall, and *Potamogeton acutifolius* Link in the pond on Shortwood Common near Staines. The first plant is very much rarer near London now than the old records suggest. *Ceratophyllum submersum* L. is not rare but a curious locality for it in the heart of London is the British Medical Association's ornamental pond at Tavistock Square, whence Dr R. C. L. Burges brought me specimens in August.

From Hampstead Heath, between East Heath Road and Ken Wood, V. E. August brought me material of *Sorbus torminalis* (L.) Crantz and also of *S. latifolia* auct. ("the plant usually cultivated") which was determined by Dr Warburg. Additional localities have been found for *Artemisia Verlotorum* Lamotte both north and south of the Thames and it is evident that it is by no means restricted to the river valley. In September I noticed it at the entrance to allotments between Crichton Avenue and Chandos Road, East Finchley.

Hanwell Tip has been somewhat disappointing this year owing to the drought but *Lepidium neglectum* Thell. persisted throughout the season. A tip near Northolt investigated by Mrs Welch and D. H. Kent produced a number of interesting plants including a Grape Vine, *Vitis vinifera* L., *Setaria verticillata* (L.) Beauv., *Amaranthus albus* L., and *A. retroflexus* L. The last-mentioned species has turned up in recent years in a number of places where it seems likely to have been introduced with horse fodder or manure. Two Middlesex examples I have noticed are Lower Thames Street in the City, and by Kew Bridge Station. A specimen collected by Mrs Moody from a tip near Ruislip which was sent to me for identification proved to be **Veronica austriaca* L. subsp. *Jacquini* (Baumgarten) Watzl.

The aliens at the Soya factory, Harefield, were less varied in 1947 though a number of the species seen in recent years reappeared. *Ambrosia trifida* L. had spread to the chalk down opposite where in September I saw a fine plant over five feet tall. An interesting experiment was the growing of these aliens in gardens from raw material supplied by Mr Kent. My own cultures produced **Pharbitis hederacea* (L.) Choisy, *Ipomoea lacunosa* L., *Setaria viridis* (L.) Beauv. (including var. *majus* (Gaud.) Koch), *Amaranthus chlorostachys* (Willd.) Thell., *A. retroflexus* L., *Datura Stramonium* L. var. *Tatula* (L.) Torrey, *Sida spinosa* L., **Abutilon Theophrasti* Med., and *Glycine Soya* S. & J., in addition to two Chenopods and a few other plants not yet identified. All those named have been found at Harefield in recent years.

The correct name of the plant given as *Solanum villosum* auct. amer. non Lam. in the *Records* for 1946 appears to be *S. nitidibaccatum* Bitter. I had compared this carefully with gatherings labelled *S. villosum* by well-known American botanists but Mr N. Y. Sandwith kindly drew my attention to the fact that the plant of the New World differed from the

European species described by Lamarck. During 1947 I grew the European plant from seed supplied by Nantes Botanic Garden and satisfied myself that it was quite different from the Harefield material which has accrescent calyx segments and berries which turn greenish-black and contain two minute "stone-cells." Correspondence with Swiss and French botanists, to whom I sent specimens, makes it clear that our plant is the one they have called *S. nitidibaccatum* but there are questions of nomenclature still to be cleared up.

My own investigations of the City of London bombed sites have continued but the vegetation has become more stabilised and there is little new to report. In the autumn of 1946 I noticed a Poppy growing plentifully on rubble in the vicinity of Gresham Street and Aldermanbury with capsules very similar to those of our native *P. dubium*. In 1947 it extended its range and is now thoroughly established. It is **Papaver atlanticum* (Ball) Cosson, which is only known as a wild plant from the Great Atlas mountains but is cultivated for the sake of the orange-red flowers. \times *Senecio londinensis* Lousley was seen in many places in the City.

The thanks of the Society are due to those who have contributed notes and records during the year. It is to be hoped that during 1948 the work will be supported by a wider circle of members and all contributors can rest assured that their records are appreciated and used even if they are not always included in the published annual *Records*.

To assist readers who require more information than can be included in a brief annual summary such as this, an asterisk has been placed before those plants on which notes have been sent to the editors of the publications of the *Botanical Society of the British Isles*.

Addresses of Recorders.

THE following Sectional Recorders will be glad to receive records relating to the London Area (20 miles round St Paul's) from members and others:

Mammals, Reptiles and Amphibia: R. S. R. Fitter, Greyhounds, Burford, Oxford.

Birds: *North of the Thames*, W. G. Teagle, 20 Wendover Road, N.W.10;
South of the Thames, H. F. Greenfield, 18 Stuart Road, Warlingham, Surrey.

Insects: P. W. E. Currie, 102 Burdon Lane, Belmont, Sutton, Surrey.

Mollusca: C. P. Castell, 52 Graham Road, S.W.19.

Plant Galls: H. J. Burkill, 3 Newman's Court, Cornhill, E.C.3.

Flowering Plants, Ferns and Charophytes: J. E. Lousley, 7 Penistone Road, S.W.16.

Mosses and Hepatics: J. H. G. Peterken, F.L.S., 73 Forest Drive East, E.11.

Fungi: J. M. B. King, 23 Lyncroft Gardens, W.13.

Papers Read to the Society in 1947.

At General Meetings.

- The Middle East Biological Scheme—E. M. Cawkell, February 18.
 Woodland Ecology—Sir Edward J. Salisbury, C.B.E., F.R.S., March 4.
 The Natural History of London in the Ice Age—Dr A. T. Hopwood, March 18.
 Primitive Insects—J. W. Evans, M.A., D.Sc., F.R.E.S., April 1.
 Wild Flowers of Metropolitan Kent—F. Rose, B.Sc., A.L.S., May 6.
 Bird Sketching in the Field—Dr E. A. R. Ennion, M.A., May 20.
 Ecological Surveys—Capt. C. R. P. Diver, C.B.E., M.A., F.R.G.S., June 3.
 The Identification of Gulls—T. L. Bartlett, B.A., M.B.O.U., June 17.
 Plant-Bugs and Botany—H. K. Airy Shaw, B.A., F.L.S., September 2.
 Fungi—a Popular Survey—J. M. B. King, September 16.
 The Thames Basin in Pleistocene Times—K. P. Oakley, Ph.D., F.G.S., September 30.
 The Physiological Control of Plumage Differences in Birds—B. W. Tucker, M.A., F.Z.S., M.B.O.U., C.F.A.O.U., October 7.
 Some Weather Phenomena and their Place in Nature's Scheme—C. D. Ovey, B.Sc., F.G.S., October 21.
 The Heritage of the People—Lecturer for the National Trust, November 4.
 Marsh and Montagu's Harriers and other Norfolk Birds—Eric J. Hosking, F.R.P.S., M.B.O.U., November 18.
 President's Address, December 2.
 Some Irish and English Antiquities—W. C. Cocksedge, December 16.

At Sectional Meetings.

- Ecology*: The Bookham and Epping Forest Surveys—C. P. Castell, B.Sc., and D. G. Tucker, Ph.D., January 14.
Ornithology: An Ornithologist's Library—C. W. G. Paulson, F.Z.S., M.B.O.U., January 28.
Geology: Fossils and Evolution—C. P. Castell, B.Sc., February 11.
Entomology: Short Papers by Members, February 25.
Ornithology: Visual Aspects of Bird Watching—G. W. Robertson, Ph.D., March 11.
Plant Galls: Midge Galls—M. Niblett, F.R.E.S., March 25.
Ornithology: The Identification of Larks, Pipits, Buntings and Wheat-eaters—P. A. D. Hollom and P. W. E. Currie, April 8.
Ramblers: Some Pictures from North Wales—J. E. S. Dallas, April 15.
Archaeology: Background to an Excavation—a Canterbury Tale—W. G. Teagle, April 22.
Ecology: The Colonisation of Bare Chalk by Plants—G. H. Locket, M.A., M.Sc., May 13.
Entomology: Mosquitoes, Monkeys and Men—J. D. Gillett, F.R.E.S., May 27.

Geology: Dragons of the Past—W. E. Swinton, Ph.D., F.R.S.E., F.G.S., June 10.

Botany: Exhibition and Short Papers by Members, June 24.

Ornithology: Discussion on the Work of the Section, July 15.

Plant Galls: Gall-causing Trypetidae—L. Parmenter, F.R.E.S., and M. Niblett, F.R.E.S., September 9.

Ornithology: Short Papers by Members, September 23.

Botany: Pollination Past and Present—Dr Mary G. Calder, October 14.

Ecology: Field Methods in Bird Ecology—Dr G. Beven, B.Sc., M.B.O.U., and P. W. E. Currie, November 11.

Geology: Fossils and Fashions—H. Dighton Thomas, M.A., Ph.D., F.G.S., November 25.

Entomology: British Mosquitoes—E. W. Classey, F.R.E.S., December 9.

Ornithology: Ringing Duck at Orierton Decoy—C. W. Mackworth-Praed, F.R.G.S., F.Z.S., F.R.E.S., M.B.O.U., December 30.

City Bombed Sites Survey.

Progress Report.

IN 1947 the Ecological Section commenced work on a survey of the extensive bombed area round St Giles, Cripplegate. So far the work done has been of a preliminary nature; the area is described and a preliminary account is given of the plant ecology in the following paper by Mr F. E. Wrighton. In addition, data have been obtained for the bird population, and an account of the breeding of the Black Redstart will be found in the *London Bird Report*, pp. 32-34. Work has also been done on the Spiders, Diptera and Coleoptera. It is hoped to continue and extend this work in 1948. This area in the very heart of London provides a splendid opportunity to members of the Society for recording the colonisation and establishment of a new fauna and flora which, it is to be hoped, will not occur again.

Plant Ecology at Cripplegate, 1947.

By F. E. WRIGHTON.

A certain amount of preliminary botanical work has been carried out on the Cripplegate bombed sites during the past year. The following will be an attempt to summarize and correlate the results, and so to form a basis for more detailed investigations.

The area under survey covers about $\frac{1}{8}$ of a square mile, and is bounded on the north by Barbican, Beech Street and Chiswell Street; on the east by Moorgate Street and Finsbury Pavement; on the south by Falcon Street, Silver Street and a line continued eastwards; and on the west by Aldersgate Street. The area thus contains part of the site of Roman Londinium to the south of London Wall, and part of the mediaeval marsh area of Moorfields to the north of the same.

The subsoil, recently exposed by archaeological trenches, is of Thames gravel, of the middle or Taplow terrace. Exposed sections have shown in places a layer of blackish soil, either humus or alluvium, on top of this. In others the building foundations have been cut direct into the gravel. As nearly all the plant life is supported on artificial habitats, away from the subsoil and not derived from it, its main influence would appear to be on the drainage.

The normal climate of Southern England is likely to be greatly affected by the situation and peculiar topography of the area. Heat gains and losses will be influenced by the large masses of masonry present, and temperature and evaporation by the sheltering effect of the basement dividing walls. Sunlight is modified by the atmospheric pollution, both its intensity and duration being reduced. The normal rainfall of something less than 25 inches is acid in nature due to the aforementioned pollution, and its effect is considerably modified by the peculiar types of habitat.

The basement floors are particularly interesting in this respect, as they form collecting basins with a very large proportion of floor area impervious to water. Some of the rain, therefore, lies about in shallow pools on the concrete or asphalt. The remainder drains away through cracks in the flooring and causes a local condition equivalent to a much heavier fall. Conversely, the evaporation from the cracks is very slight, due to the small surface exposed to the atmosphere.

Apart from the indirect influence of man acting through almost every feature of the habitats, the main biotic factors noted in 1947 were Sparrows and Aphides. The latter seriously attacked *Diplotaxis tenuifolia*, and although spreading to some other plants nearby, obviously preferred the *Diplotaxis*.

In the whole area there are but few buildings standing. Roadways still remain and form solid division walls between the basement areas of the missing buildings. These basements are open, and are about eight feet deep below road level. Further divisions are created by fast crumbling party walls of brick and mortar. Into some of these basements has been tipped rubble, consisting of brick, mortar, plaster, concrete, etc., especially along the sides of some of the roads, where it forms a loose and dusty scree.

For the present purpose I have divided the area into five different types of habitat. They are: (1) basement floors; (2) rubble tips; (3) vertical walls; (4) gardens; and (5) permanent water.

(1) *Basement floors*. These consist of slabs of concrete or asphalt laid down on the subsoil. In hollows the rain forms shallow pools, and dust eroded by wind and water from the rubble tips and crumbling walls is collected in them. An interesting sample taken in December, of a formation probably five years old, showed a layer of mortar particles about $\frac{1}{4}$ inch deep. On this moss had grown, and had so built up a layer of decaying matter about $\frac{1}{4}$ inch thick. From the green moss surface sprang numerous seedlings of *Senecio squalidus*; 15 to the square inch were counted. The roots of these small plants penetrated both

humus and soil, and, on reaching the concrete below, spread out, binding all together in a spongy mass. It is obvious that nearly all the seedlings must soon die, either from frost, overcrowding, or lack of soil depth for mature plants; and, in so doing, will not only deepen the top layer of humus, but will also alter the nature of the under layers by root decomposition. A thin, badly drained soil of raw humus is thus being built up.

A very important habitat is provided by the cracks in the basement floors. These occur mainly at the wall bases and especially where walls have entirely disappeared. Here the brick footings have rapidly eroded and have so opened up cracks to the subsoil. These are well watered as mentioned above, and now support a large proportion of the bigger plants in the area. The dominant plant of the cracks is at present *Senecio squalidus* L., which is holding its own by prolific seeding and an almost evergreen habit. *Epilobium angustifolium* L. occurs as co-dominant in places, aided by its tall growth and underground shoots.

In one area a tall plant of *Erigeron canadensis* L. from the 1946 season was noted. A search for seedlings showed many small plants, two or three to the square foot, growing among the *Senecio* and *Epilobium*. At the end of the season it was observed that the seedlings had grown to only about 12 inches high, and showed little branching. The very dry season is a factor not to be overlooked when considering this, though *Erigeron* thrived on the still open habitats of some of the rubble slopes. Next season's developments in this respect should prove interesting.

Mr J. E. Lousley has shown the manner of arrival and early colonization of the sites by plants (*Geographical Magazine*, February 1946). The fodder plants that he refers to as occupying ground near to roadways are now well established, and are developing in characteristic manner. The basements on the south side of Chiswell Street show an excellent example of this. A visit in December 1947 revealed *Agrostis alba* var. *stolonifera* L. matting over large areas of rubble and definitely taking possession. Nearby were considerable patches of *Poa trivialis* L. and *Lolium perenne* L., with large clumps of *Agrostis nigra* With. and *Dactylis glomerata* L. interspersed. *Poa annua* L. was quite common and *Agropyron repens* Beauv. showed locally. *Hordeum murinum* L. was seen in large patches on the waterlogged soil of a basement floor. Among the old plants of 1947 a mass of seedlings about 4 inches high were growing, and it seemed fairly certain that other plants would find it very difficult to encroach by seeding on to the area so occupied.

Other plants commonly found on the basement floors but which at present have little effect on the communities are *Sonchus oleraceus* L., *Cirsium lanceolatum* Scop., *Cirsium arvense* Scop., and *Lactuca serriola* L. *Salix caprea* L., *Salix cinerea* L., and hybrids are also present, and will probably have considerable influence in the future. Mr C. P. Castell has made a preliminary survey of the Bryophyta present, and reports eight species, with *Bryum argenteum*, *B. caespiticium* and *B. atropurpureum* as the commonest.

(2) *The rubble tips.* These vary in nature from loose, dry screes to smooth consolidated ramps that have probably been used for carting rubble into the basements. Many of the loose banks are still open and colonies of *Erigeron canadensis* L. and *Chenopodium album* L. are to be seen on them. In a series of rubble-filled basements to the west of Wood Street a large colony of *Diplotaxis tenuifolia* DC. flourishes, covering an area of about 800 square yards, to the exclusion of nearly all other plants. A December visit showed this species covered with green shoots (as also was *Senecio squalidus*) and this almost evergreen habit is an important factor in preventing other plants from developing in the same area. The method of seed dispersal in *Diplotaxis* explains the dense and localised growth of the species, as opposed to the free distribution of *Senecio*.

The hard rubble ramps provide a habitat occupied mainly by *Chenopodium rubrum* L. This species appears to withstand a certain amount of treading, and in the centre of a ramp grows only to about 3 inches high before flowering. In the less trodden soil towards the sides it grows higher, and is often in company with *Chenopodium album* and *Artemisia vulgaris* L. The absence of plants with windborne seeds is probably explained by the smooth surfaces of the ramps, on which the seeds will not remain.

Pteris aquilina L. is well distributed throughout the area, and appears to thrive on rubble tips. The best colonies I have seen are in shady places facing north. Many sporelings and young plants are to be seen in places such as coal chutes and cellars, but are in general short-lived, due to lack of soil and root space.

As already stated, fodder plants are common on the rubble banks near to roadways, and here can also be found varying quantities of less important plants. The Spermatophytes counted up to date comprise about 90 species.

(3) *Vertical walls.* Many walls are damp enough for seed germination and seedling plants of *Epilobium* and *Senecio* can be seen clinging to them. In most cases these do not mature due to lack of soil, or lack of moisture in the drier seasons. The outstanding wall plant is *Parietaria officinalis* L., which has been present for many years on the exposed section of London Wall near the church of St Alphage. From there it has now spread over a considerable area, and plants have been noted as far away as the railway bridge in White Cross Street.

(4) *Gardens.* There are several small gardens in the area, of which St Giles churchyard and the one opposite to St Alphage's are typical. From these have spread a certain number of weeds of cultivation and also such plants as *Saponaria officinalis* L.

(5) *Water.* Several small areas of permanent water are present in the form of static water tanks and sumps. No work has yet been done with regard to the presence of algae, and no water plants have yet been recorded, excepting a specimen of *Typha latifolia* L. pointed out by Mr Lousley.

In the foregoing, an attempt has been made to describe the sites and the conditions under which plants live after six years of colonisation. It is evident that certain of the communities are already becoming closed, and that competition is taking place. The usual plants for the next stage in the progression are already on the area, and the recording of their advances, with possible reasons for the same, will form the main work from now on. In addition a detailed plant species list will be attempted. This will include, if possible, the Thallophyta, as well as the groups Bryophyta, Pteridophyta and Spermatophyta, on which work has been started.

Soil analyses. Mr A. H. V. Smith has started an investigation into the structure and properties of the soils on the area, and has supplied the following data and notes:—

Sample No.	Source of Sample				
I.	Shallow deposit from basement floor.				
II.	Top soil from rubble bank.				
III.	Soil deposit from top of wall.				
IV.	Top soil from rubble filled basement.				
V.	Thames gravel from subsoil.				

Sample No.	I.	II.	III.	IV.	V.
Loss on air drying	37.3	19.3	31.6	27.3	14.1
Loss on steam drying	1.0	0.7	2.4	2.6	1.1
Loss on ignition	4.7	2.4	5.0	5.5	0.8
Stones (greater than 2 mm.) ...	18.1	37.1	31.5	20.3	12.2
Coarse sand (0.2 to 2 mm.) ...	32.9	27.0	33.1	35.4	52.3
Fine sand (0.02 to 0.2 mm.)	31.5	20.0	16.2	18.0	27.3
Silt (0.002 to 0.02 mm.)	7.6	8.4	8.5	16.4	0.2
Clay (less than 0.002 mm.)	5.2	5.1	5.7	4.4	7.2
Soil water reaction (pH)	8.2	8.2	8.2	8.0	8.0

All quantity figures are percentages of dry weight.

The samples were collected after heavy rain and each consisted of about 300 grams of soil. Particle size was determined by dry sieving for fractions over 0.2 mm. and by hydrometer methods for those smaller.

The following four factors probably contribute in varying degree to the values given for loss on ignition:—(1) Organic material. (2) Decomposition of CaCO₃ derived from the mortar, into CaO and CO₂. (3) Reduction of charred wood fragments. (4) Removal of chemically combined water of the clay fraction. Of these, organic material was probably present only in samples I and IV, where the soils had a Bryophyte covering. This was removed as far as possible prior to analysis. Mortar debris and charred wood remains were present in all the samples excepting V. Factor (4) is, of course, relatively unimportant as all the samples have a very low clay content.

The Survey of Bookham Common.

SIXTH YEAR.

Progress Report.

A QUESTION frequently asked by members is "What do you do at Bookham?" It is hoped that the following report, longer and more detailed than usual, will, to some extent, answer this question.

Substantial progress can be reported for 1947, in spite of the very severe winter and early spring which, followed by the abnormal drought of the summer and autumn, seriously limited observation and collecting in many phases of the survey. One of the first tasks undertaken in 1947 was the preparation of a preliminary vegetation map of Eastern Plain. Thanks to the collaboration of nearly all the members who happened to be present, the whole area was completed in one visit early in the year. Later, an attempt was made by Messrs Castell, Harrison, Norkett and Steele to produce a belt transect across the plain, showing the approximate percentage cover of the principal plant species. It was intended to map a continuous strip yard by yard but a policy of sampling at regular intervals was imposed by the severe limitation of personnel.

During the summer, a series of quadrats were made of a deturfed area in Central Plain [867] to investigate colonization of bare ground by plants. The abnormally dry summer and autumn, combined with further interference with the area, effectively prevented any extension of, and in some cases eliminated the early stages of colonization; the work will be repeated in 1948.

For the same reasons, Mr Norkett was obliged to confine his work on aquatic algae mainly to the months of April, May and June. The most profitable site was a trench [839] with a large amount of decaying matter and a pH of 5.1 which was higher than that of any of the artificial ponds. Here were found in abundance several species not observed elsewhere on the common, one (*Palmodyctyon viride* Kutz.) appearing to be a new county record.

Col. Bensley has continued his monthly investigation of the molluscan population of the ponds and ditches, and the making of counts from sample dredgings from the Isle of Wight and Upper Eastern Ponds. His collecting likewise ceased in the summer, and the problem of where pond mollusca get to when ponds dry up has yet to be solved. Mr A. E. Ellis has also been studying the mollusca, especially the land species, but from the faunistic point of view. In addition, he has paid some attention to lesser known groups of animals such as Woodlice, False-Scorpions, Harvestmen, Grasshoppers and Ants.

Mr A. E. Le Gros has collected and observed some 65 species of spiders obtained by sweeping vegetation. He notes the great scarcity of the Salticidae or Leaping Spiders, only three specimens being obtained during the year. As this has been noticed in other localities, it seems probable that the group has suffered severely during the severe winter.

He is now extending his observations to spiders living close to the ground, under leaves, in moss tufts, and in the soil around plant roots, and is making some population counts.

Dr A. M. Easton has continued his intensive collecting and observation of the beetle fauna and a further contribution from him, together with papers by Col. Bensley and Mr Ellis, follow this report.

The dipterists have been very active. Mr L. Parmenter has been paying special attention to the inter-relations between Diptera and other insects, animals and plants. The collaboration between Messrs Le Gros and Parmenter promises to throw some interesting light on the somewhat one-sided relationship between spiders and flies. Mr Parmenter has been able to compile an outline calendar of the flight time of some 500 species of Diptera and the dipterous pollinators are known of about thirty species of flowers. Mr C. N. Colyer has been assiduously collecting and making notes of habitat, habits and associations of all species taken, observing particularly the seasonal succession of species and the relative numerical incidence of the commoner species. Mr C. Garrett Jones has made more specialised studies, paying particular attention to the habitats and prey of the carnivorous Empid flies.

Mr P. W. E. Currie has been organising the ornithological observations and the following is based on his report. On the occasion of each visit to the Common, an attempt has been made to carry out a complete census of Eastern Plain before the birds have been disturbed by other members of the survey party. Whilst many birds may escape observation, it is noteworthy that results appear to show that at this time of day (about 10.45 to 11.30 a.m.) the area contains very few birds indeed; two pairs of tree-pipits possibly bred in the area, but other species occurred only casually. Wrens, which might have been expected to occur, appeared to have suffered heavily from the severe winter. An attempt was also made to map the distribution and to estimate the numbers of tree pipits on the Common. Fairly complete data were obtained, and these should provide useful material for a study of the ecology and habitat requirements of this species, although lack of time and the birds' elusive habits prevented any detailed study of their breeding biology. In the course of this study, a fair amount of data was obtained on the numbers and distribution of other species frequenting the open plains of the western part of the Common. This was supplemented by a number of transects along the line of the streams and ditches intersecting the plains. During spring and early summer, counts were made of the singing males of certain resident species, and more particularly of robins, in an area of Eastern Wood in which similar counts were made in 1946. This should provide some data, admittedly very incomplete, for a study of the effect of the severe winter, but it will be necessary to repeat the counts in subsequent years before any reliable conclusions can be drawn. Comparatively little work was done, otherwise, in the wooded parts of the Common during the summer months; but in the early part of the year some transects were taken on standard routes along certain paths and rides.

Major J. L. Harrison mapped and observed the condition of rabbit burrows in the vicinity of Eastern Plain on two occasions, but further observations were prevented by his departure overseas. C. P. C.

Fresh Water Mollusca of Bookham Common.

By C. J. F. BENSLEY.

The following paper carries the observations on the fresh water mollusca in the Isle of Wight and Upper Eastern Ponds made in 1942 and 1944 by J. L. Harrison (*L.N.* for 1944, pp. 22-23, Reprint No. 33) a stage further but is concerned chiefly with the Isle of Wight Pond. It also contains some notes on species and their distribution and a list of the fresh water mollusca to be found on Bookham Common. The ponds and their vegetation and the main ditches and streams have already been described by C. P. Castell and R. M. Payne, and others are marked on the base map of Bookham Common (*loc. cit.*). The period covered by these observations is from March 1946 to the end of November 1947, but for the last five months there was little or no water in most of the ponds and ditches, with the Isle of Wight pond completely dry.

SPECIES AND THEIR DISTRIBUTION.

The tables showing the species and their distribution are a compilation of the observations of Mr A. E. Ellis and myself. I am further indebted to Mr A. E. Ellis for his identification of the species of *Pisidium* and for other valuable assistance. The tables are not complete as regards localities, and probably not for species either, as some species not found by us have been recorded in the past by other observers. It is hoped to clear up the doubtful points for both species and localities in due course.

The differences in the faunas of Upper Eastern and Isle of Wight Ponds are very noticeable. For example, *Planorbis vortex* is very abundant and *Segmentina complanata* fairly frequent in Upper Eastern Pond, but both are apparently absent from Isle of Wight Pond. On the other hand, three species of bivalve molluscs—*Sphaerium corneum*, *S. lacustre* and *Pisidium obtusale*, are found in Isle of Wight Pond but apparently none in Upper Eastern Pond. This seems to suggest that these three species are better able to withstand longer periods of drought than the two gastropod species mentioned, but the apparent absence of the bivalves from Upper Eastern Pond cannot be explained in this way. There are also differences between the individuals of the same species in the two ponds. For example, the average size of adult specimens of *Planorbis planorbis* is noticeably larger in Upper Eastern Pond than in the Isle of Wight Pond. Erosion of adult *Planorbis corneus*, *Planorbis planorbis* and *Lymnaea palustris* is much more severe in the Isle of Wight than in Upper Eastern Pond.

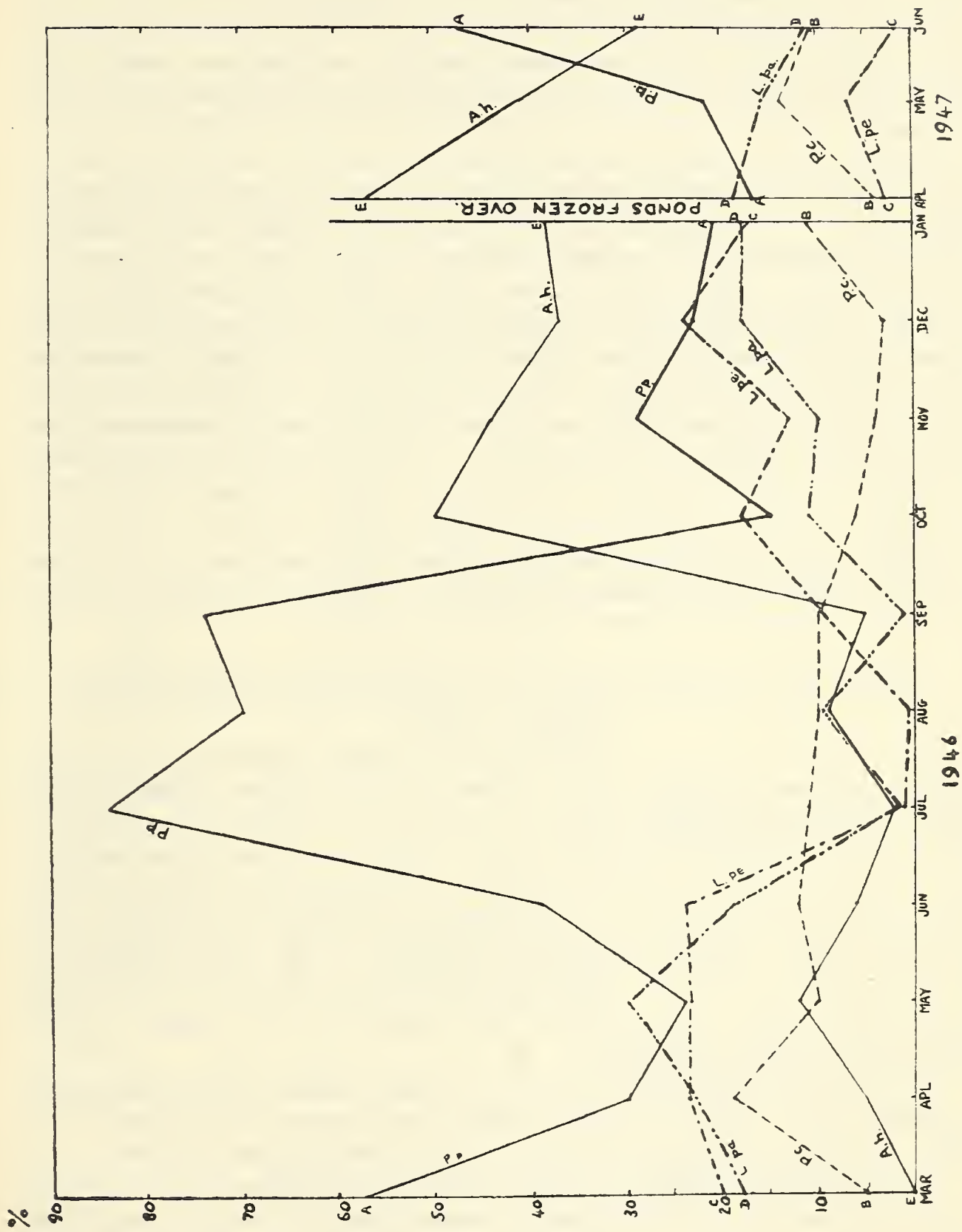
Sheepbell Pond has a remarkable molluscan fauna for its size and unpromising appearance, with four species of *Pisidium* and the Fresh Water Limpet (*Ancylus lacustris*) as well as other gastropods. The other ponds in the table do not call for any special comment for the

	Streams and Ditches.						
Species.	Bank's Stream	Bookham Stream	I. of W. Ditch	Central Ditch	South Ditch	Greendell Ditch	Sheepbell Ditch
<i>Potamopyrgus jenkinsi</i> (Smith)	+	+	+	+	-	+	-
<i>Aplexa hypnorum</i> (L.)	-	+	+	+	-	-	-
<i>Lymnaea truncatula</i> (Müll.)	-	-	-	-	+	+	-
„ <i>palustris</i> (Müll.)	+	+	+	+	+	+	-
„ <i>peregra</i> (Müll.)	-	+	+	-	-	+	-
<i>Planorbarius corneus</i> (L.)	-	-	-	+	-	-	-
<i>Planorbis planorbis</i> (L.)	-	+	-	+	-	-	-
„ <i>vortex</i> (L.)	-	-	-	-	-	-	-
„ <i>leucostoma</i> Millet	-	+	-	+	-	-	-
„ <i>crista</i> (L.)	-	-	-	-	-	-	-
<i>Segmentina complanata</i> (L.)	-	-	-	-	-	-	-
<i>Ancylus lacustris</i> (L.)	-	-	-	-	-	-	+
<i>Sphaerium corneum</i> (L.)	-	-	-	-	-	-	-
„ <i>lacustre</i> (Müll.)	-	-	-	-	-	-	-
<i>Pisidium cinereum</i> Alder	-	+	+	-	-	-	+
„ <i>personatum</i> Malm	+	+	+	+	-	+	+
„ <i>obtusale</i> (Lam.)	-	+	+	+	-	-	+
„ <i>millium</i> Held	-	-	-	-	-	-	-

TABLE 1.

Species.	Ponds.										
	Sheepbell Pond	Bank's Pond	West Pond	Manor Pond	I. of W. Pond	L.E. Pond	U.E. Pond	Bayfield Pond	S.E. Pond	West Hollow	East Hollow
<i>Potamopyrgus jenkinsi</i> (Smith)	-	-	+	-	-	-	-	-	-	-	-
<i>Aplexa hypnorum</i> (L.)	-	-	-	+	+	-	-	-	-	+	-
<i>Lymnaea truncatula</i> (Müll.)	-	-	-	-	-	-	-	-	-	-	-
„ <i>palustris</i> (Müll.)	+	-	+	+	+	+	+	-	-	+	+
„ <i>peregra</i> (Müll.)	-	-	+	+	+	+	+	-	-	+	-
<i>Planorbarius corneus</i> (L.)	+	-	-	+	+	-	+	+	-	-	-
<i>Planorbis planorbis</i> (L.)	-	-	-	+	+	-	+	-	-	-	-
„ <i>vortex</i> (L.)	-	-	-	-	-	-	+	-	-	-	-
„ <i>leucostoma</i> Millet	-	-	+	+	-	-	-	+	+	-	-
„ <i>crista</i> (L.)	-	-	-	-	+	-	-	+	-	-	+
<i>Segmentina complanata</i> (L.)	+	-	-	-	-	-	+	-	-	-	-
<i>Ancylus lacustris</i> (L.)	+	-	-	-	-	-	-	-	-	-	-
<i>Sphaerium corneum</i> (L.)	-	-	-	-	+	-	-	-	-	-	-
„ <i>lacustre</i> (Müll.)	-	-	-	-	+	-	-	+	-	-	-
<i>Pisidium cinereum</i> Alder	+	-	+	-	-	-	-	-	-	-	-
„ <i>personatum</i> Malm	+	-	+	+	-	-	-	-	-	+	-
„ <i>obtusale</i> (Lam.)	+	-	+	-	+	-	-	+	-	-	-
„ <i>millium</i> Held	+	-	-	-	-	-	-	-	-	-	-

TABLE 2.



SEASONAL FLUCTUATIONS OF SPECIES IN ISLE OF WIGHT POND.

time being except for Crater Pond [5447]. This is mentioned in *L.N.* for 1944 (p. 21) and it is interesting to note that it and the other bomb crater in Bayfield Plain [736] have always held some water, and consequently water plants, throughout the long drought of the summer of 1947. This is not a question of mere depth and the explanation probably is that the heat and pressure of the explosion of the bombs made, as it were, a baked clay vessel that is non porous. Both these craters have a flourishing insect population, but the mollusca are confined to Crater Pond [5447] where *Planorbis crista* is well established and fairly abundant.

A table for the species found in the streams and ditches is also included but more work is required on these before it can be considered satisfactory. Two species, however, should be noted—*Potamopyrgus jenkinsi* and *Lymnaea truncatula*. The first is the only known parthenogenetic mollusc. It was first noted in brackish water near Gravesend in 1859. Towards the end of the 19th century it started to spread to canals and waterways further inland. It is now very widely distributed and in some places swarms in incredible numbers. *Lymnaea truncatula* is the host of the Liver Fluke and is less aquatic than its relations, preferring marshy ground to actual water. It is relatively scarce in Greendell Ditch but this is quite characteristic of the species, which either flourishes in great numbers or else hardly holds its own. It will be seen that a total of eighteen species of fresh water molluscs are recorded in the two tables from Bookham Common. Three or four other species have been reported, but their status is doubtful.

SEASONAL FLUCTUATIONS OF SPECIES IN THE ISLE OF WIGHT POND.

Some records have been made of the relative frequency of the five common species of fresh water molluscs in the Isle of Wight Pond. They are of very limited value, for a number of reasons, but may be found useful for comparison later on. Samples were taken with a naturalist's pond scoop (6 ins. \times 3 ins.) from the embankment at the western end of the pond and restricted to a distance of about six feet from the edge. Sampling was done monthly at the field meetings of the Ecological Section and confined to about two hours in the morning during each visit. Table 3 shows the numbers of individuals of each species observed at each visit.

The relative frequencies of the five common species, expressed as percentages of the numbers of individuals of each species in the total population collected, have been plotted in the graph against months.

The interesting feature of the graph is the sudden rise of *Aplexa hypnorum* from nil in March 1946 to round about 50% of the total from October 1946 onwards. It may be a new arrival in the locality as only three specimens were seen by J. L. Harrison. It would be unwise to draw any early conclusions from the graph, as the observations cover only a very short period and a strictly limited portion of the pond, and no attempt to estimate actual densities of population has been made.

The graph has been included in order to suggest lines on which further investigations might be made and also for comparison when the Isle of Wight Pond has had time to recover from the drought of 1947 when it was without water for more than four months.

GENERAL CONSIDERATIONS.

Bookham Common is an excellent area for the ecological study of fresh water mollusca. It contains a sufficient number of species to render their study interesting and not so many as to make it unwieldy. There are sufficient variations of habitat in a small area to make comparisons profitable. We have, for example, running and stagnant water, ponds with permanent water, ponds subject to occasional drying up and ponds in various stages of transition from open water to marshy hollows, as well as ditches of various degrees of permanence. We also have artificial ponds such as the bomb craters, and the gun pits on Eastern Plain where natural colonization can be watched from first beginnings. These studies, however, require the efforts of several people spread over a long period of time and it is to be hoped that they will be forthcoming to carry on work which has only been started on a very small scale.

Date.	<i>Planorbis planorbis.</i>	<i>Planorbis cornutus.</i>	<i>Lymnaea pereg.</i>	<i>Lymnaea palustris.</i>	<i>Aptera hypnorum.</i>	Total.	
Sept.-Dec. 1947.	Pond dry—no live mollusca.						
13th July 1947.	124	10	35	—	3	172	
8th June.	102	23	2	23	61	211	Thousands of minute juveniles of all species among <i>Lemna</i> .
11th May.	71	46	21	51	123	312	
13th April.	33	7	5	35	109	189	
March & Feb.	Ponds frozen over hard.						
12th Jan.	39	21	31	34	62	187	
8th Dec. 1946.	34	4	36	26	49	149	
10th Nov.	71	10	32	23	102	238	
27th Oct.	12	5	14	9	40	80	
8th Sept.	88	14	14	2	7	125	Mostly juvenile, but larger than in August.
11th Aug.	10	1	—	1	1	13	All juvenile except <i>L. palustris</i> .
14th July.	141	4	17	1	5	168	“ “ “ “
9th June.	44	14	28	21	6	113	With many minute <i>A. hypnorum</i> and <i>L. palustris</i> too small to count.
12th May.	62	25	63	78	30	258	
19th April.	70	63	58	58	14	263	
14th April.	58	19	43	42	6	168	
10th March 1946.	88	7	31	28	—	154	
Total ...	1047	273	430	432	618	2800	

TABLE 3.

Land Mollusca of Bookham Common.

By A. E. ELLIS, M.A., F.L.S.

During the months of March to July 1947 ten visits were made to Bookham Common with the principal object of searching for land Mollusca. The following is a summary of my observations, amplified from Colonel Bensley's notes, which he has kindly placed at my disposal. Nothing more than a general faunistic survey of the area was attempted, and even so some parts were neglected or only superficially examined. The weather at times was unfavourable for land Mollusca, and in a wetter season more species would probably have been seen in some of the localities. One of the best days was in March, only twelve days after the last snowfall of the severe winter, when nineteen species were seen; the previous day had been unpleasantly cold, with showers of hail and sleet. Bookham Common is not what a conchologist would consider a remarkably good hunting ground, but 28 species of land Mollusca have been recorded, while an additional one, *Trichia striolata* (C. Pfeiffer), found by Colonel Bensley on the railway embankment, may turn up on the Common itself; I found a dead shell in the Isle of Wight Ditch. Of these more than one-third (10 species) are slugs. The habitats of land Mollusca on the Common may conveniently be classified in three categories, between which there is considerable overlapping of species, namely: 1. Woodland; 2. Marsh; 3. Plains.

1. WOODLAND.—Slugs predominate in the wooded areas, probably because the fungi on which they feed are most abundant amongst trees. The commonest is *Arion subfuscus*, which, together with *A. circumscriptus* and two species of *Limax*, is here almost confined to woodland. Of the snails, *Columella edentula*, *Discus rotundatus* and *Oxychilus alliarius*, which is common, have only been observed in the woods, with the exception of a record by Colonel Bensley of the last species from Bayfield Plain. *D. rotundatus* is nearly always found on fallen branches or rotting logs, and feeds on fungi growing on decaying wood. *Milax gracilis*, recorded by Colonel Bensley from Central Wood, is unexpected, as in this part of the country the species of *Milax* are practically restricted to gardens, but I have found *M. gracilis* in woodland at Mickleham (*J. Conchol.*, xxi, 1942, p. 325). On the other hand, some snails avoid woodland: *Succinea pfeifferi* lives only in wet or marshy places close to water; *Vertigo pygmaea*, *Vallonia pulchella*, *Vitrina pellucida* and *Monacha cantiana* all dwell away from trees at Bookham, and *Cepaea hortensis* strays only into South East Wood. *C. nemoralis* and *Trichia hispida* are scarce in the woods, while *Arion ater* is more frequently encountered on grassy rides than amongst the trees.

The influence of moisture on the distribution of land Mollusca is well illustrated by Central Wood. On March 27th, at the south end of the wood, near Hollow Path, 13 species were found: *Columella edentula*, *Discus rotundatus* (frequent), *Retinella radiatula*, *Oxychilus alliarius*, *Euconulus fulvus*, *Agriolimax reticulatus*, five species of *Arion* and two of *Limax*. In the higher, north part of the wood (square 53), where the

ground is drier with much bracken, only five species were seen: *D. rotundatus*, *R. radiatula*, *O. alliarius*, *Eu. fulvus* and *A. subfuscus*.

2. MARSH.—The ditches, hollows, pond margins and banks of streams constitute a congenial environment for moisture-loving Mollusca. *Succinea pfeifferi* is the only species restricted to such habitats at Bookham, where it occurs in the following localities: Central Ditch, Greendell Ditch, Bookham Stream, Isle of Wight Pond, South East Pond and the marsh near Manor Pond. *Carychium minimum* occurs chiefly in wet places, and *Cochlicopa lubrica* is most frequent in marshy spots. *Agriolimax laevis* is a paludal slug, but at Bookham is also met with in the damper parts of some of the woods. The other Mollusca found in wet places are mostly ubiquitous species, not confined to such habitats.

In very wet marsh the dividing line between paludal and aquatic Mollusca tends to become blurred. For instance, near Manor Pond *Succinea pfeifferi*, *Oxychilus cellarius*, *Arion ater* and *Trichia hispida* were collected on June 20th together with *Aplexa hypnorum* (L.), *Lymnaea palustris* (Müller) and *Planorbis leucostoma* Millet. In West Hollow on May 30th *Carychium minimum*, *Succinea pfeifferi*, *Cochlicopa lubrica* and *Vertigo pygmaea* were found in company with *A. hypnorum*, *L. palustris*, *L. peregra* (Müll.) and *Pisidium personatum* Malm, while *L. palustris* occurred on damp ground near the ditch in East Hollow associated with terrestrial species. In Greendell Ditch *S. pfeifferi*, *Lymnaea truncatula* (Müll.) and *L. palustris* live together on damp mud. This overlap between hygrophilous land snails and certain aquatic species is particularly evident in areas such as the Norfolk Broads, where the open water is constantly being invaded by swamp vegetation, giving rise to a transitional zone where land merges into water (*J. Conchol.*, xxi, 1941, pp. 224-243).

3. PLAINS.—Less attention was paid to the open grassy areas than to the woods and marshes. Of the slugs, the only species habitually occurring in open places at Bookham are *Arion ater*, which is much in evidence on damp evenings, and *Agriolimax reticulatus*. The larger snails, *Monacha cantiana*, *Cepaea hortensis* and *C. nemoralis*, are fond of sheltering in clumps of tall-growing herbage, such as nettles and willowherb. *M. cantiana*, which may have invaded the Common from the railway, occurs on Bayfield and Central Plains and Common Road South. *C. hortensis* has been observed on Central and Bank's Plains, Common Road South, in East Hollow and the Clump. *Trichia hispida* has been found on Isle of Wight, Central and Bank's Plains and Common Road South, being fairly frequent in grass tussocks. *Vallonia pulchella* is probably more frequent in grassy places than the records suggest; *V. excentrica* Sterki, which occurs at Bookham (e.g., west of Central Path, square 81), is now regarded as a form of *V. pulchella* characteristic of drier habitats.

A comparison of the Mollusca of East Hollow with those of the adjacent part of Eastern Plain, just west of Hollow Wood, again exemplifies the controlling effect of water: from the marshy East

	Woodland.						Plains.				Marsh.				
	Stent's Wood.	Hill House Wood.	Central Wood.	Eastern Wood.	Mark Oak Wood.	Hollow Wood.	S.E. Wood.	I. of W. Plain.	Bayfield Plain.	Eastern Plain.	Central Plain.	W. Hollow.	E. Hollow.	U.E. Pond margin.	L.E. Pond margin.
<i>Carychium minimum</i> Müll. ...	-	-	-	-	-	-	+	-	-	-	+	+	+	+	+
<i>Succinea pfeifferi</i> Rossm.	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
<i>Cochlicopa lubrica</i> (Müll.)	-	-	-	-	-	-	+	+	-	+	+	+	+	+	+
<i>Columella edentula</i> (Drap.) ...	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vertigo pygmaea</i> (Drap.)	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
<i>Vallonia pulchella</i> (Müll.)	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
<i>Discus rotundatus</i> (Müll.)	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-
<i>Vitrea crystallina</i> (Müll.)	+	-	+	-	+	-	+	+	+	-	+	-	-	+	+
† <i>Retinella radiatula</i> (Alder)	-	+	+	-	+	-	+	+	-	+	+	-	+	+	+
„ <i>nitidula</i> (Drap.)	+	-	+	-	+	-	+	+	-	-	+	-	+	+	+
<i>Oxychilus alliarius</i> (Miller) ...	+	+	+	-	+	+	+	-	+	-	-	-	-	-	-
„ <i>cellarius</i> (Müll.)	-	+	-	-	-	-	+	+	-	+	+	-	-	-	-
<i>Vitrina pellucida</i> (Müll.)	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
* <i>Arion intermedius</i> Normand ...	-	-	+	-	+	+	+	-	-	-	-	-	+	+	-
* „ <i>ater</i> (L.)	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-
* „ <i>subfuscus</i> (Drap.)	+	+	+	+	+	+	+	-	-	-	-	-	-	-	+
* „ <i>circumscriptus</i> Johnston	+	+	+	-	+	+	+	-	-	-	-	-	+	-	-
* „ <i>hortensis</i> Fér.	+	+	+	+	+	-	+	-	-	-	+	-	+	-	-
* <i>Milax gracilis</i> (Leydig)	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
* <i>Limax maximus</i> L.	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-
* „ <i>marginatus</i> Müll.	+	+	+	-	-	-	+	-	-	-	-	-	-	-	-
* <i>Agriolimax reticulatus</i> (Müll.)	-	+	+	-	+	+	+	+	+	-	+	-	+	+	-
* „ <i>laevis</i> (Müll.)	-	-	-	-	+	+	+	+	-	-	+	-	-	+	-
<i>Euconulus fulvus</i> (Müll.)	+	+	+	+	+	+	+	-	-	+	-	-	+	+	+
<i>Monacha cantiana</i> (Mont.)	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-
<i>Trichia hispida</i> (L.)	-	-	-	-	+	-	+	+	-	-	+	-	-	-	-
<i>Cepaea hortensis</i> (Müll.)	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-
„ <i>nemoralis</i> (L.)	-	-	-	+	+	-	-	-	-	+	+	-	+	+	+

* Slugs.

† Placed by some recent authors in the genus *Zonitoides*.

TABLE 4.

Hollow thirteen species are recorded (see table), while on slightly higher and therefore drier ground a few yards to the south (about the position of number 59 on the base map) only five species were found, namely, *Cochlicopa lubrica*, *Retinella radiatula*, *Oxychilus cellarius*, *Euconulus fulvus* and *Cepaea nemoralis*.

The accompanying table indicates the local distribution of land Mollusca in selected areas of Bookham Common, but it is by no means complete, though it is probable that all or nearly all of the species represented on the Common have been recorded. Certain very small snails, such as *Vertigo* and *Columella*, which are not easy to detect, cannot be assumed to be absent from any particular locus because they have not been noted. Some areas have been less fully investigated than others, and weather conditions determine to a great extent the numbers of Mollusca seen on any occasion; an area which happened to be visited on a bad snailing day will thus show less than its full complement of species. The time available did not permit of the ground being covered more than once, so there must necessarily be gaps in the distributional records of the species. In spite of these imperfections, a tolerably accurate picture of the terrestrial molluscan fauna of Bookham Common is presented.

Woodlice of Bookham Common.

By A. E. ELLIS.

Five species of Woodlice (Oniscoida) occur on Bookham Common, namely: *Trichoniscus pusillus* Brandt, *Oniscus asellus* L., *Philoscia muscorum* (Scopoli), *Porcellio scaber* (Latreille) and *Trachelipus rathkei* (Brandt). The last has been seen only on marshy ground close to the footbridge near Manor Pond (S.W. corner of square 57), and by Central Ditch (81). *O. asellus* and *P. scaber* have been recorded from Stents Wood, Hill House Wood, Central Wood and Mark Oak Wood, and the latter species also from South East Wood; they probably occur in all the woods. Neither species is abundant on the Common, where they are restricted to woodland and occur sparingly under fallen branches and beneath loose bark. The food of *P. scaber* consists principally of bark and rotten wood, the abundant frass or faeces of these woodlice under the bark of logs and dead trees testifying to the part they play in the reduction of lignified vegetable tissue to humus. *Ph. muscorum* and *T. pusillus* are ubiquitous and abundant, the latter being particularly numerous in damp places and absent only from dry spots. *T. pusillus* feeds on dead leaves, and though a small animal its great numbers make it an important factor in the formation of vegetable mould. The statement by Heeley (1941 a, p. 86) that *Ph. muscorum* appears to be present only in woodland is not borne out at Bookham, where it occurs frequently in the open, e.g., Central and Eastern Plains and by Upper and Lower East Ponds. The same applies elsewhere, for instance in Norfolk, where *Ph. muscorum* is common in fen, often

associated with the hygrophilous *Ligidium hypnorum* (Cuvier) (Ellis, 1941).

The most important ecological factor determining the habitats and distribution of woodlice is humidity. Heeley (1941 b) has determined the humidity requirements at 67° F. of four of the above species, as follows:

<i>T. pusillus</i> :	84%	relative humidity.
<i>Ph. muscorum</i> :	80%	„ „
<i>O. asellus</i> :	77%	„ „
<i>P. scaber</i> :	71%	„ „

This order corresponds with experience in the field, *P. scaber* being found in drier situations than the other species, and *T. pusillus* in damp places, or under stones and logs, at the roots of plants, and amongst moss and humus, where the humidity of the micro-climate is high. These varying degrees of dependance on moisture are correlated with morphological differences in the respiratory mechanism of the several species (Unwin, 1932; Mödlinger, 1931; Miller, 1938). Unlike the more successful terrestrial Arthropods (Insects, Arachnids), land Isopods are imperfectly adapted to air-breathing, and present an instructive series of transitional stages in the evolution of terrestrial forms from aquatic ancestors.

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Amphipoda.

By A. E. ELLIS.

Besides the common *Gammarus pulex* L., which inhabits Isle of Wight ditch, another species of Amphipod Crustacean occurs at Bookham. This is *Eucrangonyx gracilis* (S. I. Smith), which occurs in I. of W. Pond, Upper East Pond, and a pond just inside the Isle of Wight boundary hedge, at the extreme south edge of square 57. According to Mr D. M. Reid, who determined the species, *Eu. gracilis* occurs in the Thames area, the river Cherwell at Oxford, Lea Bridge reservoir, and a pond at Harrow (*Nature*, clxi, 1948, p. 609).

The Coleoptera of Bookham Common.

STERNOXIA, TEREDILIA, HETEROMERA, LONGICORNIA.

By ALAN M. EASTON, M.B., B.S., F.R.E.S.

The collecting and listing during the two preceding years of the Rhynchophora, Malacodermata, and Phytophaga of the Bookham Commons has inevitably brought into the bag beetles belonging to several other Sub-orders, prominent amongst which are those four which comprise the subject matter of this paper. The Sternoxia, Teredilia, Heteromera, and Longicornia have therefore been chosen, not by virtue of systematic classification, but rather because they have thrust themselves upon the attention of the collector, and for the convenience of the arrangement together of four such small groups.

The year 1947 started badly for the Coleopterist, or, to be more precise, for the Coleoptera, the whole of February being characterised by continuous frost and snow of almost unprecedented severity. The results were manifest in the first place by the late appearance of the spring flowers. The blackthorn blossom was very poor, and the hawthorn, besides being about two weeks late in flowering, failed to make its usual delightful display. But even more striking was the extraordinary dearth of insect life, normally so abundant on these two shrubs. As specific instances may be quoted *Dasytes aerosus* Kies. (Col. *Cantharidae*) ordinarily so very common on hawthorn and oak, of which but a single example was encountered, and *Tetrops praeusta* L. This little Longicorn during previous years was always to be taken in large numbers by beating hawthorn in blossom, yet during 1947 not one was observed. Even the ubiquitous *Anaspis* spp. were in obviously diminished numbers. It is to be hoped that the set-back to these, and to many other species, may prove to be but temporary, and that *Tetrops* in particular will reappear in 1948.

The representation on the Common of the species of the four Sub-orders under review is found to be appreciably lower than was the case with the Rhynchophora, Malacodermata, and Phytophaga. Whereas with these three the species recorded numbered in each case no fewer than approximately two-fifths of the total for the British Isles, in the Sternoxia, Heteromera, and Longicornia the proportional representation is in the neighbourhood of one-fourth, and in the Teredilia it amounts barely to one-sixth. This paucity is to be explained partly by the restricted range and scarcity of many of the species in these Sub-orders, and partly by the absence from the Common of suitable habitats, as, for example, the stored products so much favoured of many species of the Teredilia, and the quantities of felled or dead timber in which most Longicornia and Sternoxia are wont to breed.

The following lists conform to the plan previously adopted in that months of capture are indicated by Roman figures, mode of capture, and usual habitat are given, and in the case of the rarer or more local species the locality is stated either by name or by bracketed numerals

corresponding with the grid references of the Survey Base Map. The details given refer solely to the personal experience of the writer, except in the case of those species which he has failed to encounter, marked with an asterisk, or double asterisk. The former (*) are quoted, by kind permission, from Mr F. J. Coulson's "Coleoptera of Bookham Common" (*Proc. S. Lond. Ent. and Nat. Hist. Soc.*, 1941-42), and the latter (**) are derived from various sources by personal communication.

Grateful acknowledgment is again expressed to all who have assisted with notes and records, and especially to Dr F. van Emden for determination of larvae, and to Mr F. J. Coulson for his indefatigable efforts in placing his experience at the writer's disposal.

ELATERIDAE.

***Elater elongatulus* F. Mr H. Last took an example from an old oak-stump, Apr. 11, 1942, and Mr Beowulf A. Cooper beat a single female from a tree in the Broadway in the summer of 1946.

E. balteatus L. V. One example by beating gorse (737).

Hypnoidus quadripustulatus F. VII. One taken by general sweeping near Hundred Pound Bridge (188).

Melanotus rufipes Hbst. V, IX. One example by beating elm, and another in decaying poplar. Larvae are not uncommon in decaying oak.

Limonium minutus L. V, VI. By sweeping, and by beating elm and dogwood; not uncommon.

**Athous villosus* Geof. Mr F. J. Coulson has taken the larvae, but has not reared the adult.

**A. vittatus* F. Mr F. J. Coulson took three larvae, determined by Dr K. G. Blair, on Apr. 18, 1942.

A. haemorrhoidalis F. V, VI, VII. Very common; on almost all trees and shrubs, especially hawthorn, hazel, and dogwood.

A. bicolor Goetz. VII. One example by beating sloe (581).

**Prosternon tessellatum* L. Mr F. J. Coulson secured two specimens on May 29, 1929.

Agriotes acuminatus Steph. V, VI, VII. Very common; by beating aspen, oak, hawthorn, and dogwood, and by general sweeping.

A. pallidulus Ill. V, VI, VII. Very common, by sweeping bluebells, and by general sweeping; also by beating hawthorn and dogwood.

A. sputator L. VII. Two examples by sweeping *Galium verum* L. (489).

A. lineatus L. XII. One example in grass refuse.

A. obscurus L. IV, V, VI, VII. By general sweeping; not very common. One taken in a field vole's nest in April.

Dalopius marginatus L. IV, V, VI, VII. Very common, by beating various trees, especially hazel, and hawthorn, and by general sweeping.

Adrastus nitidulus Marsh. VII. One specimen by sweeping *Prunella vulgaris* L. (829).

Denticollis linearis L. V. One example beaten from ash (197).

TRIXAGIDAE.

Trixagus dermestoides L. V, VI, VII. By beating aspen, sallow, birch, and dogwood, and by sweeping herbage; common.

T. carinifrons Bonv. VI, VII. Beaten in some numbers from dogwood. Also on holly, hornbeam, and *Prunella vulgaris* L.

BUPRESTIDAE.

Agrilus laticornis Ill. V, VI, VII, VIII. By general sweeping; also on oak, elderberry, *Rumex*, *Polygonum*, and *Stachys officinalis* Trev.; not very common.

Trachys troglodytes Schoen. VIII. One example by sweeping *Calluna vulgaris* Salisb. (833).

ANOBIIDAE.

- **Hedobia imperialis* L. Included in the Bookham Common list by the late Mr S. R. Ashby.
- Grynobius excavatus* Kug. V, VI, VII. By beating sallow, holly, and a dead oak branch; not common.
- **Dryophilus pusillus* Gyll. Mr F. J. Coulson records a specimen taken on June 16, 1941.
- Ochina ptinoides* Marsh. V, VII. Taken singly by beating elm, and aspen, and by sweeping long grass under an oak.
- Xestobium rufovillosum* Deg. A larva taken in a decaying holly branch in March 1947, determined by Dr F. van Emden.
- Anobium punctatum* Deg. VII. By beating dogwood and elm (458); not common.
- A. fulvicorne* Stm. VI, VII. By beating dogwood, hazel, oak, and elm; not infrequent.
- **Ptilinus pectinicornis* L. A dead specimen found under bark of a fallen tree by Mr F. J. Coulson, Apr. 20, 1935.

OEDEMERIDAE.

- Ischnomera caerulea* L. V. Two examples beaten from a hawthorn bush, May 28, 1946 (188).
- Oedemera lurida* Marsh. VI, VII. Found feeding in buttercups, and other flowers, and by sweeping.

PYTHIDAE.

- Lissodema quadripustulatum* Marsh. VI. By beating elm; not common.
- Rabocerus gabrieli* Gerh. VII. One example by beating *Prunus spinosa* L. (498).
- Vincenzellus viridipennis* Lat. VI, VII, X. By sweeping *Stellaria holostea* L., and *Mercurialis perennis* L.; one under ash bark; not common.
- Rhinosimus planirostris* F. IV, VI, VII. In a squirrel's drey in an oak, by beating elm, hornbeam, sallow, and dogwood; usually singly.

PYROCHROIDAE.

- Pyrochroa serraticornis* Scop. Two larvae taken under bark were determined as this species by Dr F. I. van Emden.

XYLOPHILIDAE.

- Xylophila populnea* Panz. IX. One example taken in a fallen decaying trunk of *Populus alba* L. (769).

ANTHICIDAE.

- Notoxus monoceros* L. V. A single specimen by beating hawthorn (675).
- **Anthicus floralis* L. Mr F. J. Coulson secured a solitary example on Sept. 18, 1940.
- A. antherinus* L. II. One was found hibernating in a *Typha* stem at the edge of Isle of Wight Pond, Feb. 24, 1946.

MORDELLIDAE.

- Mordellistena pumila* Gyll. VI. In some numbers on *Lychnis flos-cuculi* L. (812), June 11, 1944.
- M. abdominalis* F. VI. Two examples by beating *Cornus sanguinea* L. in the evening (76-73).
- M. humeralis* L. VI, VII. Not uncommon by beating dogwood, and on *Heracleum sphondylium* L., and singly from white poplar, and elm.
- M. neuwaldeggiana* Panz. VII. A single specimen taken on *Heracleum sphondylium* L. (576), July 8, 1945.
- Anaspis rufilabris* Gyll. V, VI. On *Prunus spinosa* L. and *Heracleum sphondylium* L.; not common.

- A. frontalis* L. V, VI, VII. Very common, on hawthorn, elderberry, crab apple, holly, bluebells, etc.
- A. garneysi* Fowl. V, VI. By beating hawthorn, elderberry, and dogwood: not common.
- A. pulicaria* Costa. VI, VII. Common on *Heracleum sphondylium* L. and *Spiraea ulmaria* L.
- A. regimbarti* Schils. V, VI, VII. Very common on hawthorn; also on elderberry, dogwood, crab apple, holly, etc.
- A. lurida* Steph. VI. Frequent by beating *Sambucus nigra* L. and *Cornus sanguinea* L., and by sweeping bluebells.
- A. latipalpis* Schils. VI. One example, a male, beaten from *Cornus sanguinea* L. in the evening, June 10, 1947.
- A. humeralis* F. V, VI, VII. Very common, by beating hawthorn, and dogwood, and by general sweeping. The variety without humeral yellow patches, and that with four yellow marks, both occur, but are far from common.
- A. maculata* Geof. IV, V, VI, VII. Extremely common on hawthorn, elder, dogwood, bluebells, *Heracleum sphondylium* L., and birch. Entirely black specimens occur, but rarely.

SERROPALPIDAE.

- Tetratoma desmarestii* Latr. III. One example of this very rare species was encountered whilst stripping fungoid oak bark (377).
- Hallomenus binotatus* Quensel. VI. One example was found crawling on the writer's sleeve after beating various shrubs, especially dogwood (76), June 10, 1947.
- Orchesia undulata* Kr. VI. By beating holly; one example.
- Anisoxya fuscata* Ill. VII. One specimen taken by beating an old crab-apple tree, of which some of the branches were dead (439).
- Abdera biflexuosa* Curt. VII. By beating a dead birch branch; rare (188).
- **Conopalpus testaceus* Ol. Included on the list of the late Mr S. R. Ashby.

LAGRIIDAE.

- Lagria hirta* L. VI, VII. By evening sweeping, and on wild plum, and, in some numbers at the flowers of blackberry (576).

ALLECULIDAE.

- Isomira murina* L. V, VI. By beating white poplar and dogwood; not common.

TENEBRIONIDAE.

- Alphitophagus bifasciatus* Say. VII. Fifteen specimens of this beetle were taken from a rotting *Polyporus squamosus* lying in a ditch beneath an old elm, July 30, 1944 (267). Its more usual habitat is old flour.
- Hypophloeus bicolor* Ol. II, X. Under elm bark (255), in small numbers.
- Cylindronatus laevioctostriatus* Goez. I, III, V, VI. By beating hazel, in rotten oak, and in moss in winter; not uncommon.

CERAMBYCIDAE.

- **Asemum striatum* L. Fowler and Donisthorpe in the Supplement to British Coleoptera, 1913, give Bookham as a locality for this species.
- Grammoptera holomelina* Pool. V, VI. By beating hawthorn, and *Cornus sanguinea* L., and on *Conopodium denudatum* Koch; not common.
- G. ruficornis* F. V, VI. On hawthorn, elderberry, dogwood, *Heracleum sphondylium* L., and *Conopodium denudatum* Koch; very common.
- G. variegata* Germ. V. By beating hawthorn, and gorse; never abundant.
- Alosterna tabacicolor* Deg. V, VI. By beating hazel, hawthorn, and dogwood, by general sweeping, and on *Conopodium denudatum* Koch and *Anthriscus sylvestris* L.; not very common.

- Leptura livida* F. VI, VII. Not uncommon on *Heracleum sphondylium* L. and *Chrysanthemum leucanthemum* L.
- Strangalia maculata* Poda. VII. Prolonged search for this species finally resulted in the taking of a single example on *Heracleum sphondylium* L. (383) on July 13, 1947.
- S. melanura* L. VI. One example on *Rubus fruticosus* L.
- **Molorchus minor* L. Included in the list of Mr S. R. Ashby.
- M. umbellatarum* Schrb. VI. A single specimen was beaten off *Cornus sanguinea* L. (442), June 11, 1940
- Phymatodes alni* L. V. Crawling on oak log. and in some numbers on felled oak branches (513).
- Clytus arietis* L. V, VI. By beating hawthorn, and young aspen; by general sweeping, and on *Stellaria holostea* L., and bluebells; not uncommon.
- Anaclyptus mysticus* L. V. Not uncommon, by beating hawthorn and holly, when in flower.
- Pogonocherus hispidus* L. IV. By beating holly; widespread, but never numerous.
- Leiopus nebulosus* L. VI. By sweeping *Rumex* and grass under oak trees, and by beating hazel; not common.
- Saperda populnea* L. V, VI. Not uncommon, by beating aspen, and white poplar. The galls made by the larvae are to be found in young aspen stems in some numbers.
- Tetrops praeusta* L. V. Usually abundant by beating hawthorn in flower. Not a single specimen was encountered in 1947, following the very severe weather throughout February

ADDITIONS TO PREVIOUS LISTS.

CURCULIONIDAE.

- Polydrosus mollis* Stroem. VI. Two examples by beating oak (655).
- Grypus equiseti* F. VII. One specimen by general sweeping below the Lower East Pond.
- Liosoma oblongulum* Boh. V. One taken by general sweeping (675). May 30, 1947.

CHRYSOMELIDAE.

- Chrysolina staphylaea* L. VI. One example by beating *Cornus sanguinea* L.
- Galerucella griseescens* Joan. (= *sagittariae* Weise). V. A single specimen by sweeping round the Lower East Pond. This is the species, recorded erroneously as *G. sagittariae* Gyll. in the 1946 list, of which Mr F. J. Coulson swept two in 1940.
- Chaetocnema arida* Foud. X. Sweeping in Western Plain; one example.
- Cassida viridis* L. V. A solitary specimen by sweeping *Mentha* near the Lower East Pond, May 30, 1947, and a larva in the same area, July 6, 1947.

CANTHARIDAE.

- Cantharis figurata* Man. VI, VII. By sweeping around the Lower East Pond, and by beating *Cornus sanguinea* L.; not common.

The Epping Forest Survey.

SIXTH YEAR.

Report on the Survey of the Ludgate Plain Area, 1946-7.

Contents.

- | | |
|---------------------------------|-----------------------|
| 1. Introduction. | 4. Other Vertebrates. |
| 2. General Description of Area. | 5. Plant Galls. |
| 3. Birds. | |

1. Introduction.

Ludgate Plain is an open area in the forest surrounded by woodland, and is in what was previously referred to as the "Outer Survey Area," i.e., a circle of one mile diameter centred on the Cuckoo Pits. But whereas the Cuckoo Pits area, surveyed mainly during 1942-4¹, is deep in the forest and has been extensively dug for gravel, ponds being thus formed, the Ludgate Plain area is on the fringe and has no ponds; it is also much more level and liable to become waterlogged. Both areas are named on the 6-inch Ordnance Survey Map. The object in making a survey of Ludgate Plain and its surroundings was mainly to compare it with the Cuckoo Pits area, and it is on the basis of such a comparison that the present report has been prepared. Unfortunately, it has not been possible to study as many aspects of the ecology of the area as was done at Cuckoo Pits, but some effort has been made to work out better techniques for study, as will be evident particularly in the section dealing with birds.

Once again, the survey has been a team-effort, although the team has rather dwindled in numbers. Messrs K. W. Bourne, P. Day, J. H. G. Peterken, J. Ross, E. A. Round, P. F. C. Rumsey, D. G. Tucker, and A. C. Wheeler have been the mainstays of the work, and the responsibilities in preparing the report are as follows:—Sections 2, 3 and 4—D. G. Tucker; Section 5—J. Ross; Map—K. W. Bourne and D. G. Tucker.

2. General Description of Area.

The area chosen for survey extends from the boundary of the Forest, running between Ludgate House and the Cuckoo Brook, eastwards and south-eastwards to beyond the further edge of Ludgate Plain. The south-western boundary is the Cuckoo Brook, and the eastern boundary is not closely defined, being intended to include the eastern forest fringe of Ludgate Plain to a depth of say 50-100 yards. The area is thus approximately triangular, including about 20 acres, of which about 3 acres are Ludgate Plain itself. The map shows the main topographical features of the area. (The well-marked tracks shown by double broken

¹ "Report on the Survey of the Cuckoo Pits Area, 1942-44," *London Nat.* for 1944, pp. 39-65.

lines have been fairly carefully surveyed; those shown by single broken lines are approximate.) The boundaries are in continuous woodland **except that the north-western side is bounded by fields** (once grass, but now cultivated), and the short northern edge is bounded by the garden of Ludgate House, a large cottage with some week-end bungalows in its grounds.

It is not possible to divide the area into many distinct vegetation units, so rather more arbitrary and indistinct divisions have been made for reference purposes. These are indicated on the map by dotted letters, and can be scheduled thus:—

- A. Ludgate Plain (except for B).
 - A1. Southern part by brook.
 - A2. The narrow “neck.”
 - A3. Main part of Plain.
 - A4. The northern “neck.”
- B. Eastern part of Plain, overgrown chiefly with bramble.
- C. Eastern margin of Plain, subdivided to correspond with A.
- D. Western margin of Plain, subdivided to correspond with A.
- E. Eastern woodland:—Subdivided to correspond to slight variations in vegetation, thus:—
 - (EO. Thicket at north, largely blackthorn).
 - E1. Northern part with beech but little hornbeam.
 - E2. Middle part with hornbeam but no beech.
 - E3. Southern part with both beech and hornbeam.
- F. Western woodland, fairly uniform but somewhat thinner along the N.W. boundary, subdivided to correspond with A. The woodland just south-west of the brook is designated FO, although not strictly part of the Survey area.

These divisions are not used much in the present report, but are given so that later reference, if required, will be possible. The width of the margins is to be determined by the vegetation itself—blackthorn, rose, and perhaps also hawthorn, being the typical marginal vegetation co-dominants.

The area as a whole is fairly level, and can get considerably water-logged after rain. In a wet season some years ago, the plain was relieved by driving a plough approximately by the western side of the main track, and blinks, *Montia fontana* L., has occurred there. The soil is somewhat finer than that in the Cuckoo Pits Area, and a sample from 3 inches depth in the centre of A3 gave the following analysis:—

Organic matter	27 %	
Coarse sand	27 %	
Fine sand	26 %	
Silt and clay (mostly silt)	20 %	
<hr/>		
Water lost on air-drying	158 %	Percentage of <i>dry</i> weight.
Water lost on heating over steam	10 %	Percentage of <i>dry</i> weight.

The sample was collected some hours after rain, and it is evident that the waterholding capacity of the soil is high. Pear Tree Plain (area M of the Cuckoo Pits Survey) had only 29% (6 hours after rain) and sand comprised 73% of the dry weight, there being only 4% silt and clay.

The vegetation shows no significant differences from that of the comparable portion (area M) of the Cuckoo Pits Area as far as it is possible to judge without quantitative data. It has not been thought worth while to prepare complete lists of the plant species in these circumstances. In any case, small differences in the vegetation could hardly be regarded as of ecological importance in view of the large factor of chance which must necessarily influence a stationary population of plants—in contrast with the considerable elimination (certainly a very large reduction) of the influence of chance in taking averages of many observations on a mobile population such as the birds.

The distribution of the more important plant species is shown on the map by the use of initial letters which correspond to the following names:—

I = <i>Ilex Aquifolium</i> L.	Ca = <i>Carpinus Betulus</i> L.
Pr = <i>Prunus spinosa</i> L.	Q = <i>Quercus Robur</i> L.
R = <i>Rubus fruticosus</i> L. (agg.).	F = <i>Fagus sylvatica</i> L.
Ro = <i>Rosa canina</i> L. (agg.).	Je = <i>Juncus effusus</i> L.
Cr = <i>Crataegus monogyna</i> Jacq.	D = <i>Deschampsia caespitosa</i> Beauv.
Ep = <i>Epilobium angustifolium</i> L.	Ho = <i>Holcus lanatus</i> L.
Sa = <i>Sambucus nigra</i> L.	Fe = <i>Festuca ovina</i> L. (agg.).
Ga = <i>Galium saxatile</i> L.	Pt = <i>Pteris aquilina</i> L.
Cn = <i>Cnicus</i> spp.	

These are used on the map in approximate order of abundance.

As far as mosses and liverworts are concerned, Mr Peterken reports that these are generally similar to those of the Cuckoo Pits area, and no species have been found at Ludgate Plain which did not appear at Cuckoo Pits, nor are there any significant omissions from the Ludgate Plain list.

Mr Ross reports on Mycetozaa thus:—"The areas of open plain are not productive of Mycetozaa. Searching among brambles was unproductive. In F3 *Leocarpus fragilis* (Dickson) Rostafinski was found; this species was not reported in the survey of Cuckoo Pits. A few years ago *Badhamia utricularis* (Bulliard) Berkeley was found emerging from the bark of hornbeam logs (see *Lond. Nat.* for 1945, p. 71); three such situations were near the Ludgate Plain area, and one perhaps was in E2. The logs lying in the F sections are very often old oaks without bark and yield little except in the most favourable conditions: because of the very restricted rainfall after July, 1947 was a very adverse time for these organisms."

3. Birds.

In the study of the Cuckoo Pits area, 1942-4, the birds were studied by the simple but crude process of noting what was seen while walking

about and, after three years, compiling a list of species in order of abundance according to the judgment of the recorder. Of course, the notes collected were numerous and contain much information, but this was mostly not very important from the point of view of the survey. The species recorded were divided into four abundance groups:—

A = abundant = very common, always to be seen in considerable numbers.

F = frequent = common, generally to be seen in numbers.

O = occasional = definitely not unusual, often to be seen.

R = rare = unusual, of practically no ecological significance.

It was emphasized that O and R were to be interpreted as somewhat more frequent than their literal meaning indicates. The distribution among these groups worked out thus:—A, 3 species; F, 9 species; O, 27 species; R, 19 species. This distribution suggests that the O group was made too large—it comprises nearly half the total number of species. The R group should be larger than the O group to give reasonable results.

When detailed observation was commenced at Ludgate Plain it was found immediately that a comparison of different areas made on the basis of this arbitrary judgment of frequency would be of little value. The judgment of O, for instance, might have changed, different people were involved in the judgment, it was all too vague. Therefore a sample count method was introduced. The observer walked slowly over a fixed route through the area, writing down every bird seen or heard reasonably near at hand. The route was designed to sample the whole area as far as possible without too much risk of counting the same birds twice; the time taken was fixed at 50 minutes approximately. The rule for deciding whether or not to count a bird was—do not record a bird which is so far away that there is no chance of detecting other birds which may be in between. For example, a Jay can be seen or heard a long way off, but there might be small birds such as warblers in between which one has little hope of seeing or hearing. This rule in practice, in woodland, confines recording to about 30 yards on each side of the route. Birds seen at a distance were noted only to complete the list of species. The counts were made by observers working singly. There are discrepancies among the results obtained by the four or five different observers, but these are thought to be only secondary effects.

Having made 20 or 30 counts through the year, we can take the average number of birds of each species seen on one count as the index of its frequency. We can then say that species having an average number per count between two given limits are frequent, or occasional, etc. Once having standardized the method of counting and the numerical range of each frequency class, we can compare different areas on a sound basis, largely independent of the individual ideas of the various different workers.

Various numerical ranges have been tried on available Epping Forest data, and the most satisfactory scheme appears to be

- A, more than 4 per count on average.
- F, 1.75-4 per count on average.
- O, 0.5-1.75 per count on average.
- R, less than 0.5 per count on average.

This, in effect, gives a range of two or three to one to each of the first three groups. It means that a species seen only once every other time is classed as rare. This is probably sound from the ecological point of view, although obviously controversial. An acceptable alternative nomenclature might be "Usual" and "Occasional" in place of "Occasional" and "Rare" respectively.

As regards the number of species in each group, this works out as follows:—

<i>Abundance.</i>	<i>At Ludgate Plain.</i>	<i>At Highams Park.²</i>
A	6 species.	7 species.
F	4	2
O	13	6
R	29	20

This is obviously not unreasonable, and is certainly better than the Cuckoo Pits grouping.

In spite of the difficulties in comparing Cuckoo Pits results with others because of the lack of a numerical basis of assessment of frequency, it is still very striking how closely the more common species agree in their frequency designation—see Table 1.

TABLE 1.

<i>Species.</i>	<i>Ludgate Plain.</i>	<i>Cuckoo Pits.</i>	<i>Highams Park.</i>
Great Tit	A	A	A
Blue Tit	A	A	A
Starling	A	F	A
Chaffinch	A	F	A
Crow	A	F	O*
Blackbird	A	A	A
Wren	F	F	O
Robin	F	F	F
Woodpigeon	F	O	A*
Greenfinch	O	O	A*
House Sparrow	O	Absent	A*

Only four species among these more common ones (they are marked with an asterisk) present inconsistencies. The high figure for Crow at Ludgate Plain may be an effect of the proximity of the open fields. The queer results for Woodpigeon and Greenfinch are to a large extent accounted for by a seasonal unbalance in the number of counts made; these species are of the order of 4 to 8 times more common in winter than in summer, and there is a preponderance of spring and summer counts at Ludgate

²See D. G. Tucker, "The Mammals and Birds of Highams Park." *London Naturalist* for 1946, No. 26, pp. 109-116.

Plain. The results for House Sparrow are easily explained by the proximity or otherwise of houses.

One or two differences among the O and R species which are evidently attributable to the proximity of fields at Ludgate Plain are shown in Table 2:—

TABLE 2.

<i>Species.</i>	<i>Ludgate Plain.</i>	<i>Cuckoo Pits.</i>	<i>Highams Park.</i>
Green Woodpecker	O	R	R
Skylark	R	Absent	R (one record)
Turtle Dove	R	Absent	Absent

For the most part, the results are what would naturally be expected: this is, of course, a satisfactory conclusion. A full statement of the numerical abundance of each species, based on 20 counts during 1946*, with notes where necessary, is given in Tables 3-5, and Table 6 indicates those species which were present at Cuckoo Pits although absent from Ludgate Plain. The total number of species recorded for Ludgate Plain in one year was thus 54, compared with 60 at Cuckoo Pits over the three-year period. Gulls flying over are excluded in both cases.

TABLE 3.

SPECIES "ABUNDANT" AND "FREQUENT" AT LUDGATE PLAIN.

		<i>Average No. per count at</i>		
<i>Species.</i>		<i>Ludgate Plain.</i>	<i>Cuckoo Pits.</i>	<i>Remarks.</i>
A at Ludgate Plain.	Great Tit	9.0	A	
	Blue Tit	5.3	A	
	Starling	5.3	F	High figure for L.P. due to flock on 2.6.46.
	Chaffinch	4.7	F	
	Crow	4.4	F	
	Blackbird	4.2	A	A rather conspicuous bird. This may have caused C.P. assessment to be high.
(6 species)				
F at Ludgate Plain.	Wren	2.9	F	
	Robin	2.6	F	
	Woodpigeon	2.5	O	High figure for L.P. due to flock of 22 on 30.6.46. Would have been 1.3 without this flock.
	Jay	1.9	F	
(4 species)				

*Actual dates of counts:—Jan. 15, Mar. 3, Apr. 28 (3 counts), May 26, June 2 (2 counts), June 30 (3 counts), July 28 (2 counts), Aug. 2, 4, 12, Sept. 8, 27, 29, and Oct. 5. Thus Winter was rather poorly represented. Over half these counts were made by Mr A. C. Wheeler.

TABLE 4.
SPECIES " OCCASIONAL " AT LUDGATE PLAIN.

<i>Species.</i>	<i>Average No. per count at Ludgate Plain.</i>	<i>Cuckoo Pits.</i>	<i>Remarks.</i>
Willow-Warbler	1.6	O	
Jackdaw	1.4	Flying over	Due to open border of
Rook	1.3	only.	L.P.
Coal Tit	1.4	F	
Whitethroat	1.1	O	
Marsh Tit	1.0	F	
House-Sparrow	0.8	Absent	Due to Ludgate House.
Long-tailed Tit	0.8	O	
Greenfinch	0.75	O	
Chiffchaff	0.7	O	
Song Thrush	0.6 (?)	O	Data not certain.
Greater Spotted Woodpecker	0.55	O	
Green Woodpecker	0.5	R	Due to open border of L.P.
Little Owl	0.5	Absent	

(14 species)

TABLE 5.
SPECIES " RARE " AT LUDGATE PLAIN.

<i>Species.</i>	<i>Average No. per count at Ludgate Plain.</i>	<i>Cuckoo Pits.</i>	<i>Remarks.</i>
Hawfinch	0.3	F	
Tree-creeper	0.25	O	
Mistle Thrush	0.25	O	
Turtle Dove	0.2	Absent	Due to open fields at L.P.
Meadow Pipit	0.15	R	
Nuthatch	0.15	R	
Blackcap	0.15	O	
Redstart	0.15	O	
Nightingale	0.15	R	
Swallow	0.15	O	
Swift	0.15	O	
Redwing	0.1	O	Figure for L.P. fails to allow for winter flocks.
Hedge-Sparrow	0.1	O	
Bullfinch	0.05	O	
Tree Pipit	0.05	R	
Pied Wagtail	0.05	R	
Goldcrest	0.05	O	
House Martin	0.05	O	
Nightjar	0.05	R	
Lesser Spotted Woodpecker	0.05	R	
Cuckoo	0.05	O	
Tawny Owl	0.05	O	
Sparrow Hawk	0.05	O	
Common Heron	0.05	R	
Stock Dove	0.05	R	
Goldfinch		Absent	
Yellow Bunting	Recorded, but not on counts.	R	
Skylark		Absent	
Mallard		O	
Woodcock		R	

(30 species)

TABLE 6.
SPECIES "ABSENT" AT LUDGATE PLAIN BUT "PRESENT" AT
CUCKOO PITS.

Linnet.	Lesser Whitethroat.
Reed Bunting.	Fieldfare.
Grey Wagtail—seen only at ponds in C.P.	Kestrel.
Willow-Tit—probably a matter of identification?	Lapwing—regularly seen in fields adjacent to L.P.
Garden Warbler.	Moorhen—due to ponds in C.P.
	Pheasant.

4. Other Vertebrates.

Vertebrates apart from birds were merely recorded as observed, without any special searching or systematic counts. Thus the frequency given below is weighted very heavily by the factor of conspicuousness.

Apart from the wild animals, Ludgate Plain is visited by humans, dogs, cats, horses and cattle, and these form the most numerous group of vertebrate animals, other than birds. Their "abundance" is approximately the same as at Cuckoo Pits, except that cats do not appear there, but is too variable and too low for their effect on the rest of the community to be readily ascertained. During 16 bird counts at various times of the day and week, 185 humans, 18 dogs and 19 horses were observed, with no cats or cattle.

The wild vertebrates observed in 1946 were as follows, with total number observed shown in brackets:—

Grey Squirrel (22), *Sciurus carolinensis* Gmelin.
 Rabbit (13), *Oryctolagus cuniculus* (L.).
 Whiskered Bat (5), *Myotis mystacinus* (Kuhl.).
 Pipistrelle Bat (3), *Pipistrellus pipistrellus* (Schreber).
 Bank or Field Vole (2), *Clethrionomys glareolus britannicus* (Miller) or *Microtus agrestis hirtus* (Bellamy).
 Noctule Bat (1), *Nyctalus noctula* (Schreber).
 Stoat (1), *Mustela erminea stabilis* Barr.-Ham.
 Mole (1), *Talpa europaea* L.
 Grass Snake (1), *Natrix n. natrix* (L.).
 Frog (1), *Rana t. temporaria* L.
 Fallow Deer (1), *Dama dama* (L.).
 In addition, a Hare; *Lepus europaeus* L., was seen in 1947.

The most striking difference between this list and that for Cuckoo Pits is the absence of the red squirrel at Ludgate Plain. Other differences are very unimportant.

5. Plant Galls.

Neither 1946 nor 1947 was a favourable period for the observation of oak galls in the Ludgate Plain area, which because of its exposure to the north is vulnerable to northerly winds. If such winds bring late frosts in May the oaks, or most of them, suffer severely, especially

as regards the male catkins on which many galls occur; this occurred in 1946. In 1947 because of the long and severe winter the occurrence of oak galls seemed to be restricted throughout the area. As the days arranged for members to visit the area in company were often inclement in the matter of weather the time devoted to searching was limited, particularly in 1947. In past times some oaks in the sections C3, FO, F1, F3 and F4 had given much better results than in the past two years. Trees in F1 and C3 bore galls of *Andricus seminationis* Giraud some years ago, but the trees on the eastern margin of B suffered from a fire. In area B there is now a fair growth of *Epilobium angustifolium* L., and on these plants galls of *Perrisia epilobii* F. Löw were found and contained larvae; this gall has not been recorded for the Cuckoo Pits area. *Nepeta hederacea* Trev. grows in some quantity near Cuckoo brook in F2 and F3, and on these plants occurred galls of *Liposthenes latreillei* Kieffer and *Oligotrophus bursarius* Bremi. The Cynipid gall on ground ivy is now usually attributed in Britain to *I. latreillei*, although it cannot be distinguished from that of *Aylar glechomae* L.; attempts to breed flies from the Ludgate Plain galls were unsuccessful. The small galls of *Neuroterus schlechtendali* Mayr (possibly the alternate form of *N. aprilinus* Giraud) were found in F1, and insects bred from them; this gall was not recorded from Cuckoo Pits. The oak-apple gall (*Biorhiza pallida* Olivier) was rare in Epping Forest in 1947; one or two were seen in F4.

The Climate, 1947.

By H. HAWKINS.

(Observed at 119 Beresford Road, Chingford.)

General Remarks.

1947 WAS notable for the prolonged cold spell from January to March, and the unusually fine summer in July, August and September. From January 17th to March 8th ground frosts occurred every night, with two periods of seven and twelve days when the temperature was continuously below freezing point. Normal rainfall fell, mostly as snow, which remained on the ground most of the time.

A heat wave occurred at the end of May, and new temperature records were made for the time of year.

August for once justified its title of holiday month, with plenty of sunshine and almost no rainfall.

With an October nearly as dry, the annual rainfall of 20.22 inches came well below the Chingford average of 24.92 inches.

The table gives a summary of the year's figures. Definitions of terms, and information on the instruments used, may be found in the 1944 Report (*Lond. Nat.*, No. 24, 1945, p. 36).

Month	TEMPERATURE (degrees Fahr.).										RAIN.			THUNDER GALES. STORMS. FOG.			
	BAROMETER.					SCREEN.					GRASS.			No. of No. of			
	Max.		Min.		Avge.	Max.		Min.		Avge.	Max.		Min.		Avge.	Amt. Rain Wet	
	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.		Inches.	Days.	Days.				
Jan.	30.35	29.20	29.84	54	12	39.97	30.10	35.03	46	-2	25.87	1.77	17	12	6	—	6
Feb.	30.10	28.80	29.61	42	12	32.57	26.46	29.50	35	6	25.39	1.39	10	6	1	—	1
Mar.	30.0	28.85	29.44	57	19	46.29	34.42	40.35	45	13	31.00	5.19	24	19	6	—	1
Apr.	30.50	29.25	29.81	71	23	58.03	40.76	49.39	50	22	36.33	1.78	11	10	12	—	1
May.	30.00	29.40	29.69	87	39	67.74	48.00	57.87	53	37	44.80	0.90	14	8	1	—	—
June.	30.05	29.15	29.61	93	42	72.16	53.26	62.71	62	37	49.20	2.38	11	10	3	4	—
July.	30.10	29.20	29.74	89	47	74.42	57.29	65.85	62	43	54.35	1.74	10	10	1	5	—
Aug.	30.30	29.60	30.05	87	48	78.68	56.26	67.47	58	44	51.22	0.05	2	—	1	—	1
Sept.	30.55	29.80	30.06	84	38	71.70	51.33	61.53	59	32	46.23	1.57	11	7	21	1	3
Oct.	30.50	29.80	30.22	69	29	59.26	42.58	53.92	52	23	38.35	0.18	5	9	—	—	6
Nov.	30.45	29.55	29.98	62	24	49.80	38.83	44.31	57	18	35.6	0.90	14	7	3	—	2
Dec.	30.70	29.10	30.07	55	22	44.97	37.35	41.16	43	19	34.61	2.37	20	13	6	1	1
Year.	30.70	28.8	29.84	93	12	57.93	43.05	50.76	62	2	39.41	20.22	149	104	41	11	22

Contributions to the Bibliography of the Natural History of the London Area.

I. Mammals, Reptiles and Amphibia.

By R. S. R. FITTER.

THE present paper is the precursor to a Check-List of the Mammals, Reptiles and Amphibia of the London Area, which it is hoped will appear in a later issue of the *London Naturalist*. The author has conducted a fairly exhaustive search of the literature, and will be grateful for any additions to the list, so that the Check-List, covering the years 1900-1948, may be as complete as possible.

The bibliography covers all works I have been able to trace for the years 1900-1948 with important references to the mammals, reptiles and amphibia of the London Area, defined as a radius of twenty miles from St Paul's Cathedral. General works for the British Isles containing references to the London Area, such as Barrett-Hamilton and Hinton's *A History of British Mammals*, are not included, as this would have extended the list unmanageably. Nor have short notes and letters in periodicals that deal with only one incident been included, as the number of such in *The Field* alone would have similarly overbalanced the work. There remain books and papers concerned mainly or wholly with one or all of the three classes of vertebrates under consideration, together with a few other works dealing primarily with the topography of the London Area, but containing references to the natural history also.

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ABBREVIATIONS: *J.W.N.H.S.* for Journal of the Wimbledon Natural History Society; *L.N.* for London Naturalist; *T.H.N.H.S.* for Transactions of the Herefordshire Natural History Society; *V.C.H.* for Victoria County History. Place of publication is London, except where otherwise stated.

ANALYSIS BY COUNTIES.

London Area: M, R, A—13, 17, 30; M only—15, 16, 44, 48.
 Bucks: M only—7; R, A—18.
 Essex: M, R, A—27, 32; M, R—6; M only—31, 38, 46.
 Herts: M, R, A—9, 11, 20, 34, 36, 37; R only—33.
 Kent: M, R, A—35, 47; M, A—50; M only—1, 45; R, A—4.
 Middlesex: M, R, A—11, 12, 39, 51; M, A—43.
 Surrey: M, R, A—2, 8, 14, 26, 28, 29, 41; M only—5, 10, 21, 22, 24, 25, 40, 42, 45; R, A—3, 19, 23.

Plant Gall Records for 1947.

Compiled by M. NIBLETT, F.R.E.S.

TAKING the year 1947 as a whole, the number of Plant Galls observed has been fairly satisfactory. Some species were noticeably absent, this applying in particular to catkin galls on the oak and also to some of the bud galls. Other galls not usually found in any numbers were often quite plentiful in numerous localities.

The outstanding events of the year have been the confirmation of the discovery of the alternate sexual generation of *Cynips* (*Diplolepis*) *disticha* Hart.; the discovery of galls of *Macrolabis stellariae* Liebel on *Stellaria aquatica* Scop.; of galls of *Rhodites spinosissimae* Gir. on *Rosa canina* L. in a new locality; and the considerable numbers of *Atrichosema aceris* Kieff. and *Putoniella marsupialis* F. Lw. seen.

It has been considered advisable to adopt the nomenclature as set out in *A Check List of British Insects*, by Kloet and Hincks.

Gynipidae:—As previously stated, many oak galls were not seen, others were only found very sparingly. Galls of various species of *Cynips* (*Diplolepis*) were found in considerable numbers. A few *Andricus callidoma* Hart. a.g., *A. inflator* Hart. s.g. and form *globuli* Hart. a.g., also *A. sieboldi* Hart. a.g. were seen; *Trigonaspis megaptera* Panz. s.g. form *renum* Hart. a.g. was found in a few localities. *Andricus ostreus* Hart. a.g. which has been very scarce for several years, was well in evidence in most areas. Spangle galls were generally plentiful. *Neuroterus tricolor* Hart. s.g. form *fumipennis* Hart. a.g. was well distributed on both *Quercus robur* L. and *Q. sessiliflora* Salisb. *N. aprilinus* Gir. was generally rather plentiful.

On Roses, *Rhodites rosae* L. was seen in fair numbers, as were the smooth and spiked pea galls. *R. mayri* Schlecht. was very scarce, but *R. spinosissima* Gir. was found in some numbers on both *Rosa spinosissima* L. and *R. canina* L. *Aulacidea pilosellae* Kieff. and *A. subterminalis* Niblett, were definitely scarce on *Hieracium vulgare* Tausch. *A. tragoponis* Thoms. on *Tragopogon pratense* L. was seen in greater numbers than usual; *A. hypochoeridis* Kieff. on *Hypochoeris radicata* L. was locally plentiful; *A. hieracii* Bouché did not appear to be so plentiful as usual. Both *Xestophanes potentillae* Ratz. on *Potentilla reptans* L. and *X. brevitarsis* Thoms. on *P. erecta* Hampe were found in some numbers in numerous localities. *Diastrophus rubi* Bouché was found at Mickleham Downs. Small numbers of *Isocolus rogenhoferi* Wachtl, *Aylax papaveris* Perris and *Liposthenes latreillei* Kieff. were also seen.

Cecidomyiidae:—Midge galls were generally plentiful, some of the more uncommon species being found in several localities. On *Acer campestre* L., *Atrichosema aceris* Kieff. and *Massalongia aceris* Kieff.; on *Artemisia vulgaris* L., *Dasyneura artemisiae* Rübs. and *Contarinia artemisiae* Rübs.; on *Betula pubescens* Ehrh., *Plemeliella betulicola* Rübs. and *Contarinia betulina* Kieff.; on *Carpinus betulus* L., *Zygiobia carpini* F. Lw.; on *Crataegus monogyna* Jacq., *Dasyneura oxyacanthae* Rübs.; on *Hieracium vulgare* Tausch, *Macrolabis pilosellae* Binn., *Contarinia pilosellae* Kieff. and *Cystiphora pilosellae* Kieff.; on *Lamium galeobdolon* Crantz, *Dasyneura galeobdolonis* Winn.; on *Lathyrus pratensis* L., *Jaapiella volvens* Rübs.; on *Leontodon hispidum* L., *Cystiphora leontodontis* Kieff.; on *Lonicera periclymenum* L., *Contarinia lonicerearum* F. Lw.; on *Lotus uliginosus* Schkuhr., *Jaapiella loticola* Rübs. and *Contarinia barbichei* Kieff.; on *Lychnis alba* Mill. and *L. dioica* Mill., *Contarinia steini* Karsch.; on *Medicago lupulina* L., *Dasyneura ignorata* Karsch.; on *M. sativa* L., *Contarinia medicaginis* Kieff.; on *Nepeta hederacea* Trev., *Dasyneura glechomae* Kieff.; on *Polygonum amphibium* L., *Wachtliella persicariae* L.; on *Prunus spinosa* L., *Puto-niella marsupialis* F. Lw.; on *Sambucus nigra* L., *Plachochela nigripes* F. Lw.; on *Scabiosa arvensis* L., *Contarinia dipsacearum* Rübs.; on *Silene cucubalis* Wibel., *Jaapiella floriperda* F. Lw.; on *Sonchus arvensis* L., *Cystiphora sonchi* F. Lw. and *Contarinia schlechtendaliana* Rübs.; on *Tanacetum vulgare* L., *Rhopalomyia tanaceticola* Karsch.; on *Ulmus montana* Stokes, *Dasyneura ulmicola* Kieff.; on *Vicia cracca* L., *Dasyneura loewiana* Rübs., *D. spadicea* Rübs. and *Anabremia viciae* Kieff.; on *V. sepium* L., *D. spadicea* Rbs.; on *Viola hirta* L., *Dasyneura violae* F. Lw.

Trypetidae:—Galls of *Urophora cardui* L. were exceptionally plentiful on *Unicus arvensis* Hoffm. in many localities; *U. stylata* F. on *U. lanceolatus* Willd. and *U. jaceana* Her. on *Centaurea nigra* L. were also well distributed. Galls of *Myopites blotii* Bréb. on *Pulicaria dysenterica* Gray, were found again in small numbers at Ashted and Epsom Commons, also at Bookham Common, a new locality. *Noeëta pupillata* Fall. did not seem to be quite so plentiful as usual. A few galls of

Oxya flavipennis H. Lw. on roots of *Achillea millefolium* L. were found at Worms Heath in early July; from these the flies emerged on July 15th. *Sphenella marginata* Fall. was found in small numbers on *Senecio vulgaris* L.

Coleoptera:—Few beetle galls were seen. Two galls of *Apion gyllen-hali* Kirby were found on stems of *Vicia cracca* L. at Riddlesdown, from which one beetle emerged.

Psyllidae:—*Livia juncorum* Latr. was found on *Juncus bufonis* L. at Bookham. At Boxhill a number of galls were found on *Aegopodium podagraria* L., which are believed to have been caused by *Trioza aegopodii* F. Lw. Unfortunately, no insects were discovered.

Aphididae:—Few Aphid galls were observed. *Tetraneura ulmi* Deg. appeared to be more plentiful than usual on both *Ulmus campestris* L. and *U. montana*; *Eriosoma ulmi* L. was fairly plentiful in some localities on both elms. On *Polygonum amphibium* a few galls caused by *Sipha polygoni* Schout. were found.

Eriophyidae:—In addition to the usual more common Eriophyid galls, the following were also found. On *Aesculus hippocastanum* L., *Eriophyes hippocastani* Fock.; on *Artemisia vulgaris* L., *E. artemisiae* Can.; on *Betula pubescens* Ehrh., *E. lionotus* Nal. and *E. rudis longisetosus* Nal.; on *Galium cruciata* Scop., *Phyllocoptes psilocranus* Nal.; on *Geum urbanum* L., *Eriophyes nudus* Nal.; on *Malva moschata* L., *E. gymno-proctus* Nal.; on *Poterium sanguisorba* L., *E. sanguisorbae* Can.; on *Solanum dulcamara* L., *E. cladophthirus* Nal.; on *Tanacetum vulgare* L., *E. tuberculatus* Nal.

Fungi:—Fungus galls have not been particularly noticeable, but the following have been seen. On *Anemone nemorosa* L., *Urocytis anemones* Pers.; on *Ranunculus repens* L., *Entyloma microsporum* Ung.; on *Rhamnus cathartica* L., *Puccinia coronifera* Kleb.; on *Taraxacum vulgare*, L., *Protomyces pachydermus* Thün.; on *Tragopogon pratense* L., *Ustilago tragoponis* Wint.; on *Ulmus campestris* L., *Taphrinia ulmi* Johans.

A "Witches' Broom" was also observed on *Quercus sessiliflora*, probably caused by *Exoascus* sp.

In addition, a number of galls have been found whose causers have not yet been determined. Some of those quoted are new additions to our records.

The Hymenoptera aculeata of Hampstead Heath and the Surrounding District, 1832-1947

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F.R.E.S.

Contents.

- I. Introduction.
- II. Acknowledgments.
- III. Historical Survey of the District.
- IV. Subdivisions of Hampstead Heath.
- V. Abbreviations used in the Map and throughout the List.
- VI. List of Species.
- VII. Discussion.
- VIII. References.
- IX. Appendix I. List of Species which used to occur in the district but which have not been recorded since the end of the nineteenth century.
- X. Appendix II. List of Species recorded from Gardens.

I. Introduction.

THERE is no district more suitable than Hampstead Heath for a study of the effects of the encroachment of built-up areas on an aculeate fauna. One hundred years ago the Heath was surrounded by fields, whereas to-day it is isolated in the midst of the suburbs, nowhere connected to open country. In the past, Hampstead Heath and Highgate proved prolific collecting grounds, and over a century ago Shuckard found many little known insects there; later, Smith and Enock collected in the district and added greatly to our knowledge of its fauna. Many of their captures were recorded at the time and some of their insects are still preserved in collections. However, these old records do not represent the entire aculeate fauna of those days, as only the more interesting captures were published. Continued collecting, particularly in the Highgate district, might reveal some of the rarities which were taken by Shuckard and Smith, though colonies of some of the more obvious species could hardly have escaped the notice of all recent collectors.

In this paper the words of the old collectors have been quoted in full because they often give some indication of the relative abundance of a species and of the conditions existing at the time and they may usefully be compared with recent observations. Lengthy notes on the seasonal appearance and disappearance of the species are given because the authors feel that there is still too little information available on the flight periods of British bees and wasps, such details being notably absent from most locality lists. It is hoped that by giving as complete a picture as possible of conditions obtaining on the Heath to-day, some

worker in the future may be encouraged to make a study of the effects of a further hundred years on the fauna and that there may be available to him fuller information than the present authors have been able to obtain from the scattered and often incomplete records of the nineteenth century

With regard to the older records, the authors have examined F. Smith's collection, in the Hope Department of Entomology, Oxford. Unfortunately Smith rarely labelled his insects and it is often impossible to decide if any of a series are from Hampstead, even though there are published records to that effect. Smith's note-books and diary in the library of the British Museum (Natural History) have been carefully searched and many dates and exact localities obtained. Information on the majority of Smith's captures at Hampstead has been obtained from his own publications. Practically nothing is known about Shuckard's collection except that some of his insects are scattered throughout the collection in the British Museum, and for his captures the authors have had to rely upon his own and other authors' publications. Enock's specimens have completely disappeared but he published a number of records from Hampstead in the periodical *Knowledge* during 1898*

II. Acknowledgments.

A large number of the more recent records have been obtained through the kindness of several collectors, and the authors thank the following for providing lists or for allowing their material to be examined:—Dr C. H. Andrewes, Dr K. G. Blair, the late Mr A. E. Bradley, the late Dr F. H. Haines, who also provided records from the collection of Mr F. Whitehead; Mr G. V. Hudson, who from New Zealand answered the authors' appeal in *The Entomologist* for Hampstead records, and Dr O. W. Richards. They are also indebted to the following, whose assistance was invaluable during the writing of this paper:—Professor Hale Carpentér and Dr B. M. Hobby for providing access to Smith's collection at Oxford, Dr O. W. Richards for confirming the identification of *Lindenius armatus*, a crabronid new to the British list, Mr H. St. J. Donisthorpe for providing information on the distribution of certain ants, Mr G. M. Spooner for checking the identification of several critical species, Drs F. Van Emden and H. E. Hinton and Messrs W. E. China and R. C. Coe for identifying the prey of

*(Authors' Note:—This paper was nearly ready for publication in 1940 but the attendant complications of the war at that time made any further interest in it impracticable, and it was not until the end of 1947 that the authors were able to meet and bring it up to date. In the interim many things have happened. Both the authors have left Hampstead and their respective gardens are no longer available; Mr A. E. Bradley and Dr F. H. Haines have passed away, greatly to the sorrow of those who knew the pleasure of their company; Dr C. H. Andrewes has kindly supplied records of insects caught from 1940 to 1947, and has added several species to the list as it originally stood: finally, Mr R. S. R. Fitter's excellent book "London's Natural History" has appeared and contains numerous references to the fauna and flora of Hampstead Heath.)

certain wasps; the Hampstead Public Library for permission to examine the insects in a small collection made by the Rev. F. Walker, and the Parks Department of the London County Council for a permit to enter the areas closed to the public on Hampstead Heath and in Ken Wood.

III. Historical Survey of the District.

Before examining the areas of the Heath as they exist to-day it is interesting to make some historical observations. The whole district was at one time part of the Forest of Middlesex and later it was preserved as a hunting ground belonging to the Palace of Westminster. Small hamlets, such as Belsize, Frognal and North End appeared, and towards the end of the 18th century the forest was reduced to a number of woods, notably Hampstead Wood (now existing only as Ken Wood), Chalcot Wood near the present Chalk Farm, Bishop's Wood and others, rising amidst wide fields. Large private houses sprang up, and by absorption of meadow-land, considerably reduced the size of the farms. Hampstead became noted for its medicinal springs, later for extravagant entertainment and dissipation, and later still, with the expansion of the metropolis, it became a residential district more or less as we know it to-day.

Hampstead Heath was able to survive the expansion of building mainly because of its irregular contours, though the houses in the Vale of Health have probably arisen from a gypsy encampment on the "common". The Heath itself was purchased by the Metropolitan Water Board in 1871; Parliament Hill was bought in 1889, Golders Hill Park in 1898, and the Heath Extension in 1905, and the whole area of over 600 acres is now controlled by the London County Council.

Apparently very little change took place during the 19th century, when Enock, Shuckard and Smith collected there. However, a great change took place in the surrounding districts. Outlying villages increased in size at the expense of open meadow-land, roads were constructed to the metropolis, and by 1907 the tube railway extended under the Heath as far as Golders Green. On all sides open land disappeared under increasing numbers of buildings until to-day Hampstead Heath stands completely isolated, all that remains of a vast area of woodland not so very long ago famous for its hunting and highwaymen.

Although no major changes in its appearance took place during the 19th century, the Heath lost a great deal of its wildness. Bank-holiday crowds became larger; some areas were excavated for brick-making while others were altered for "ornamentation"; wild animals, notably the badger, decreased in numbers, and the ground flora was sadly reduced.* Fred Enock, who collected on the Heath towards the end of the century, was particularly influenced by these changes, and almost all his references to local insects lament the days gone-by.

*It is, however, interesting to note that foxes and badgers are still to be found in Ken Wood: Fitter (1945).

IV. Sub-divisions of Hampstead Heath.

From the accompanying map it will be seen that the Spaniards Road clearly divides the Heath into an east and west area. The east area may be divided into (1) East Heath, (2) The Vale of Health, (3) Parliament Hill Fields, and (4) Ken Wood.

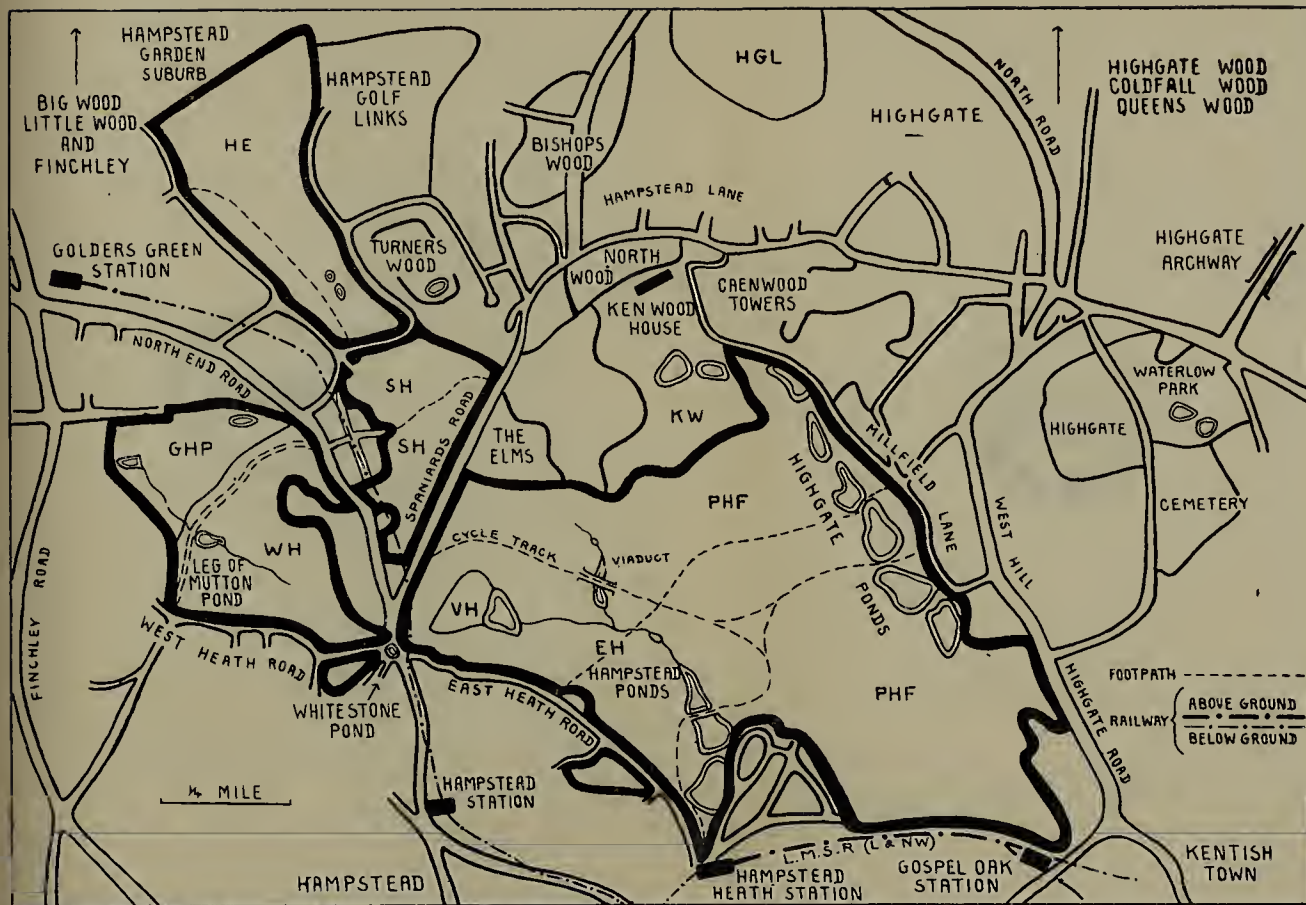
East Heath is represented by the large area lying to the east of Spaniards Road extending down as far as the Hampstead ponds. Its western extremity consists of broken sandy slopes and open spaces. By the removal of sand for A.R.P. purposes two large pits have been formed near the Spaniards Road and if they remain undisturbed for a few years they should provide good breeding areas for aculeates. The remaining part of East Heath and Parliament Hill Fields, except for the west part of both and a small area to the south-east of Viaduct Pond, are open spaces used largely for recreation. There are some ancient willows along East Heath Road which sometimes harbour Sphecids and *Osmia rufa*, and there is a line of old poplars bordering the L.N.W.R. These two areas (except for the north-west part of East Heath) do not possess nearly so rich a fauna as the Vale of Health, although a few sandy paths and plantations have provided records.

The Vale of Health, strictly speaking, is a part of East Heath but it is more convenient to consider these two areas separately. The Vale is situated at the western extremity of East Heath dividing it into two ridges which gradually flatten out towards the Hampstead ponds. With its numerous hollows and bare sandy banks, the Vale of Health is an attractive area for aculeates, the exposed ground offering ideal nesting sites for many burrowing species. Near the Spaniards Road there are luxuriant bramble bushes, which when in flower swarm with bees and wasps. Gorse, also, is abundant on the higher ground and several species of bees regularly visit the flowers in the spring. The white clover which grows in the south part of the Vale of Health probably accounts for the very local distribution of *Melitta leporina*.

Ken Wood is the only natural piece of woodland left on Hampstead Heath and it may be expected to yield several species not in the present list. There are old trees, dead and dying, which provide breeding haunts for wood nesting species and *Chelostoma florissomne*, at present unrecorded, should occur in this neighbourhood. The rhododendrons are particularly fine and they attract numerous bumble-bees; possibly *Eucera longicornis* will be found at these flowers if it still occurs. Ken Wood has not been sufficiently explored, particularly its northern outskirts, and neither has the large open grass area south-west of Ken Wood House nor the environs of the House itself.

The part of Hampstead Heath to the west of Spaniards Road is divided into the following areas:—(1) Sandy Heath, also known as North West Heath, (2) West Heath, (3) Golders Hill Park, and (4) Heath Extension.

Sandy Heath has provided more records than any other area due to its having been left comparatively undisturbed. It is essentially sandy and covered with gorse, bramble and birch, and in the centre, with



HAMPSTEAD HEATH (for abbreviations see page 85).

oak. Sandy Heath is even more broken up into small hollows and ridges than the Vale of Health.

Several enclosures have been formed within the last few years and these have been chosen by aculeates as ideal nesting sites. In 1939 the enclosure near the centre of Sandy Heath swarmed with Sphecids, and it was here that *Astata boops* and *Tachysphex pompiliformis* were re-discovered on the Heath and *Pompilus trivialis* found for the first time.

The south part of West Heath is mainly grass, but some of it is marshy. There are a few patches of *Salix repens* still left and various species of *Andrena* visit them in the spring. Unfortunately, the chance of survival of this plant is small as it is picked and trampled underfoot every year, as are the other species of *Salix* so attractive to bees.

The centre and north-east of West Heath resemble Sandy Heath and hawthorn is more abundant than elsewhere.

Golders Hill Park is uncultivated in parts and is below the level of the Bagshot Sand. It has not been searched for Hymenoptera and it is not likely to prove very interesting. There is, however, a fine enclosed flower garden which probably attracts certain species.

The Heath Extension is largely open grassland and, like Parliament Hill Fields, it is extensively used for recreation. Some of it remains wild and there are a few small ponds.

Most of the areas outside Hampstead Heath which were well known to the old collectors have been reduced in size or built over. Bishop's Wood is marked by clumps of oak left standing in private grounds, and a little of the original woodland remains at the bottom of Winnington Road. Turner's Wood consists of a few acres barred to the public; the oak canopy is dense but sheltered gardens form clearings on the outskirts. Big Wood is open to the public but nothing is known of its insect fauna. The Hampstead Golf-links have never been explored but Dr Andrewes has shown that the Highgate Golf-links provided good collecting in 1921. Going further afield, there is Highgate Wood and Queen's Wood, neither of which has been explored. Although these public places have no natural undergrowth or flowers, the light nature of the soil, particularly in Highgate Wood, should attract some species. Coldfall Wood is possibly better, but has never been visited by the authors.

V. Abbreviations used in the Map and throughout the List.

BPG = Garden of 70 Belsize Park Gardens (O. W. Richards).

BRG = Garden of 174 Belsize Road (F. Whitehead).

EH = East Heath.

FG = Garden of 34 Ossulton Way (C. H. Andrewes).

GHP = Golders Hill Park.

H = Hampstead.

HE = Heath Extension.

HG = Garden of 1 North Grove (C. H. Andrewes).

HGL = Highgate Golf-links.

- HH = Hampstead Heath.
 HT = Highgate.
 KW = Ken Wood.
 LG = Garden of 10 Lyndhurst Gardens (K. M. Guichard).
 NG = Garden of 14 Netherhall Gardens (I. H. H. Yarrow).
 PHF = Parliament Hill Fields.
 SH = Sandy or North West Heath.
 VH = Vale of Health.
 WH = West Heath.

An asterisk appended to Smith's name indicates that there are specimens from Hampstead in his collection.

A double asterisk appended to a date from Smith's diary indicates that the record is not definitely from Hampstead but that the wording suggests this to be so.

VI. List of Species.

Dryinidae.

1. *Dicondylus bicolor* (Hal. in Curt.). Smith, ♀ in the British Museum collection from Hampstead Heath.

Chrysididae.

2. *Omalus auratus* (L.). Andrewes, common, 1942-7, FG, with *Pemphredon shuckardi*, and bred from rose twigs. Richards, 1/7/26, BPG. Yarrow, ♂ bred from a gall of *Cynips Kollari*, 1935, SH: it is presumed that the host of the Chrysid had nested in the exit hole of the *Cynips*; ♀, 17/7/39, NG.
3. *Hedychridium roseum* (Rossi). Shuckard (1837: 224) as *Hedychrum roseum*. "I once found the ♂ of this insect (*Arpactus tumidus*) in abundance on Hampstead Heath, on a spot frequented also by *Nyssus dimidiatus* and *Hedychrum roseum*." Smith(D) as *Hedychrum roseum*, 8/7/1849, five specimens from Hampstead. Yarrow, ♀, 30/7/39, SH; ♀, 17/8/39, SH.
4. *Hedychridium ardens* (Latr. in Coq.). Richards, 9/8/23, SH. Yarrow, ♀, 30/7/39, SH.
5. *Chrysis ignita* (L.). Bradley, 2 ♀ ♀, 1/7/17, HH; 7/34, VH. G. V. Hudson, June 1880, Millfield Lane. Richards, 2/8/23, BPG. Yarrow, ♀, 18/7/37, NG.

Tiphiidae.

6. *Tiphia minuta* V. d. L. Saunders (1880: 230), Hampstead; (1896: 51), Hampstead (Smith). Shuckard (1837: 43), "In the year 1833 I took several on Hampstead Heath, among which were two females, with which sex Vander Linden was not acquainted." Smith (1858: 49), "It has occurred at Hampstead Heath."

Sapygidae.

7. *Sapyga quinquepunctata* (Fab.). Andrewes, ♀, 16/7/18, HG; ♀, 6/37, FG; 1942, HG.

Methocidae.

8. *Methoca ichneumonides* Latr. Saunders (1880: 228), Hampstead; (1896: 49), Hampstead (Smith). Shuckard (1837: 37), "I have taken it frequently on Hampstead Heath, where I captured in June, 1833, also two specimens of the male, which I believe are the first and only instances of its being found in England." *Smith(D), 7/7/1839*; 3 ♀ ♀, 30/6/1844, Hampstead; (1858: 46), "on Hampstead Heath." White (1895: 250), Hampstead Heath (Smith).

Myrmosidae.

9. *Myrmosa atra* Panz. Saunders (1896 : 48), as *M. melanocephala* Fab., Hampstead (Smith). Shuckard (1837 : 34), as *M. melanocephala* Fab., "the ♀ has been taken by myself at Hampstead, Highgate, and . . ." *Smith (1858 : 44), as *M. melanocephala*, "The insect has been taken at Hampstead . . ." (In Smith's Coll., as well as ♀ ♀ from Hampstead, there is a ♂, 7/1856. Hampstead, and ♂ (undated) from Kentish Town). White (1895 : 250), Hampstead (Smith). Guichard, ♀, 25/7/39, VH. Yarrow, ♀, 12/8/39, SH; ♀, 10/7/40, VH.

Formicidae.

10. *Ponera coarctata* (Latr.). Baly (in Smith, 1857 : 34), as *P. contracta* Latr. ♀ flew into a room in Kentish Town.
11. *Ponera punctatissima* Roger. Smith (1861 : 42) records the capture of this species by C. E. Janson in Kentish Town, and in the same note states : "Several specimens were taken by the late Mrs Varley in the kitchen of her house in Robert St., Hampstead Rd." (This is slightly outside the area under consideration.)
12. *Myrmecina graminicola* (Latr.). Curtis (1854 : 219), as *M. latreillei*. Smith (1855 : 133), as *M. latreillei*, "one female at Camden New Town." (In Smith's Coll. there is a ♂ (undated) from Hampstead.)
13. *Monomorium pharaonis* (L.). Bostock (1838 : 66), "I also know that they are in a house at Hampstead."
14. *Myrmica laevinodis* Nyl. Curtis (1854 : 213), ". . . and towards the end of August I captured the male in Caen Wood."
15. *Myrmica ruginodis* Nyl. Richards, HE.
16. *Myrmica scabrinodis* Nyl. There is a specimen from Hampstead in the British Museum Coll. Richards, HE.
17. *Stenamma westwoodii* West. Smith (1863 : 59), as *Myrmica lippula*. "In May last it occurred in some numbers of ants' nests near Highgate": (1865 : 29) as *Tetramorium lippula*, in nests of *Formica fuliginosa* at Highgate.
18. *Tetramorium caespitum* (L.). White (1895 : 95), ". . . and in the middle of Hampstead Heath"; (1895 : 242) Hampstead Heath.
19. *Lasius fuliginosus* (Latr.). Hampstead Sci. Soc., 1913 : 247. "The furze covered North-west Heath lying between the Spaniards Road and North End Hill, is extensively tunnelled by nests of the Black Ant (*Formica fuliginosa*)." Smith (in Janson, 1860 : 101) "Found by Mr Smith, at Hampstead, in company with *Formica fuliginosa*." White (1895 : 18), "I should like to add that in 1852, I myself saw a strong colony of this brilliant ant inhabiting an oak tree on Hampstead Heath . . ."
20. *Lasius niger* (L.). Smith(D), as *Formica niger*, 10/2/1839. Common all over the Heath and in gardens.
21. *Lasius flavus* (Fab.). Janson (1857 : 77), "found by myself at Hampstead, in nests of *Formica flava* and *fusca*, beneath stones on a loamy hedge bank having a Western aspect, in 1848, and again in 1856 . . ." Smith(D), as *Formica flava*, 18/6/1839, Caen Wood; 8/3/1840**. Occurs on the Heath and in gardens but not so commonly as the last species.
22. *Lasius umbratus* (Nyl.). Smith (1855 : 107), as *Formica umbrata*. "I have frequently found the female of this species on Hampstead Heath, but I have never been successful in discovering its *formicarium*." Andrewes, ♀, 15/7/17, HH.
23. *Formica rufa* L. Janson (1857 : 74, 75, 76) records various myrmecophiles from nests of *F. rufa* at Hampstead and Highgate. Smith(D). 11/6/1839, Hampstead and Caen Wood; 8/3/1840**: 31/5/1840, Caen Wood.
24. *Formica fusca* L. Waterhouse (in Janson, 1857 : 75), Hampstead: (vide No. 21). Smith(D), 18/6/1839, Caen Wood; 8/3/1840**. Richards, 30/6/26. EH, SH. Yarrow, 15/6/40, VH.
- 24a. Var. *glebaria* Nyl. Janson (1857a : 87), "We have not, up to the present time, been able to find a colony of *Formica cunicularia* Latr. (the mining ant). Mr F. Smith in his British Museum "Catalogue of British Acu-

leate Hymenoptera" (1851), gives Highgate as a locality for this species: but the spot on which the nest was situate, once so wild and lovely, is now occupied by a square mass of bricks and mortar, ycleped "an eligible family residence" beneath which lies the dust of the last member of that once busy, happy throng." Smith (1858: 9) as *Formica cunicularia*, "but occurring in the vicinity of the metropolis not uncommonly, particularly in the neighbourhood of Highgate and Hampstead." White (1895: 233), as *F. cunicularia*. "I have found it on Hampstead Heath." (Mr Donisthorpe tells us that these records of *F. cunicularia* are almost certainly either *F. fusca* var. *glebaria* or var. *rubescens*, more probably the former, and that *F. rufibarbis*, once thought to be a race of *fusca*, is not likely to have occurred on the Heath.) Donisthorpe (1927: 363, Hampstead (*Brit. Mus. Coll.*). Andrewes, ♂ ♀, 17/6/44, WH, a colony in a sandy bank.

- 24b. Var. *rubescens* For. Guichard, 13/4/38, VH, a colony in hard ground, which has since been destroyed.

— *Pheidole megacephala* Fab. This is a foreign species which has occurred from time to time in this country. Smith (1858a: 283), as *Myrmica pallidula*. "I have also taken three more examples of the worker on a wall at Hampstead." White (1895: 248), as *P. laevigata*, Hampstead.

Pompilidae.

25. *Priocnemis minor* (Zett.). Guichard, ♂ ♀, 10/6/39, on the outskirts of Ken Wood; ♀, 16/9/39, SH.
26. *Priocnemis exaltatus* (Fab.). Andrewes, ♀, 23/9/46, HG, and probably others seen subsequently.
27. *Priocnemis femoralis* (Dahl.). Smith (1858: 68), as *Pompilus* (*Priocnemis*) *notatus*, "in the month of June a locality was discovered near Highgate, where seven males and one female were captured." Guichard, 2 ♂ ♂, 10/6/39, on a sandy spot near Ken Wood.
28. *Calicurgus hyalinatus* (Fab.). Saunders (1880: 244), as *Priocnemis hyalinatus* Fab., Highgate, Hampstead; (1896: 71) Highgate, Hampstead (Smith). Shuckard (1837: 68), as *Pompilus fasciatellus* Spin. "I have caught it at Hampstead and Highgate, but it is rare." Smith (1858: 70), as *Pompilus* (*Priocnemis*) *hyalinatus*. "The species is very local, but has been taken at Highgate, Hampstead Heath, Bishop's Wood, Hampstead, and . . ."
29. *Deuteragenia hircana* (Fab.). Saunders (1880: 244), as *Agenia bifasciata* Fab., Hampstead; (1896: 73) as *Agenia hircana* Fab., Hampstead (Smith). Smith (1858: 72), as *Pompilus* (*Agenia*) *bifasciatus*, ". . . and a female at Hampstead, in August 1858."
30. *Pompilus trivialis* Dahl. Yarrow, ♀, 30/7/39, SH; ♀, 12/8/39, SH.
31. *Pompilus crassicornis* Shuck. Saunders (1880: 238), as *P. pectinipes* V. d. L., Hampstead; (1896: 65) as *P. pectinipes* V. d. L., Hampstead (Shuckard). Shuckard (1837: 64), as *P. crassicornis* n. sp. "I took five specimens in 1832, at Hampstead, since when I have not captured it."
32. *Anoplius* sp. Shuckard (1837: 52) records *Pompilus niger* Fab. from Highgate: "This species I have found at Highgate carrying a small sandy coloured larva." In the light of present knowledge this might have been *Anoplius nigerrimus* (Scop.), *A. concinnus* (Dahl.), or *A. piliventris* (Moraw.). Although both Smith and Shuckard state that *P. niger* preys on lepidopterous larvae, no recent observations have confirmed this aberrant behaviour and these records are not accepted by Richards and Hamm (1939) in their paper on the biology of the British Pompilidae.

Vespidae.

33. *Odynerus spinipes* (L.). Smith(D), as *Epipone spinipes*, 18/6/1839, abundant at Highgate.
34. *Odynerus laevipes* Shuck. Saunders (1896: 162), Hampstead (Smith). Smith (1858: 205), "Since that period (1836) I have obtained two or three specimens from sticks collected at Hampstead."

35. *Ancistrocerus parietum* (L.). Andrewes, 24/7/41, HG. Guichard, ♂ ♀, 20/7/38, VH; ♀, 25/8/38, SH; ♀, 26/7/39, LG. Richards, 4/8/23, BPG. Yarrow, ♀, 27/6/37, NG; ♀, 17/7/37, NG.
36. *Ancistrocerus pictus* (Curt.). Andrewes, ♂, 26/5/17, HG; ♂, 15/5/20, HG; ♀, 24/5/20, HGL; 2 ♂ ♂, 4/6/22, HGL.
37. *Ancistrocerus trimarginatus* (Zett.). Guichard, ♀, 3/8/37, KW. Yarrow, ♀, 19/6/38, NG.
38. *Ancistrocerus parietinus* (L.). Andrewes, ♀, 7/16, HG; ♂, 4/6/22, HGL. Blair, 7/6/19, on a window overlooking the Heath. Yarrow, ♀, 26/6/37, NG.
39. *Vespula vulgaris* (L.) Smith(D), 28/4/1844. Very common and nests frequently on the Heath.
40. *Vespula germanica* (Fab.). Hampstead Sci. Soc., 1913: 247. "Nests of the common wasp (*Vespula germanica*) in the Golders Hill Park furnished Professor Edgeworth with the material for his statistical investigations concerning the time spent by the wasps in each excursion from the nest." Much less common than *V. vulgaris*.
41. *Vespula rufa* (L.). This wasp is uncommon in the district but there are several records between 1918 and 1939, mostly from the Ken Wood area.
42. *Vespula sylvestris* (Scop.). Guichard, ♀, 10/6/39, KW.

Sphecidae.

43. *Astata boops* (Schr.). Saunders (1880: 252), Hampstead. Shuckard (1837: 99) quotes Smith as having taken this insect on Hampstead Heath with *Epeolus variegatus* as prey. *Smith(D), 7/7/1839**: ♂ ♂, 8/7/1839, Hampstead, abundant; ♂ ♂, 30/6/1844, Hampstead, abundant: (1858: 96) "... but it is found on Hampstead Heath, towards the west corner, amongst the sand-pits: here it abounds about the end of July and during August ... Its usual prey appears to be the larva of a Pentatomid Bug, about five is the number usually stored up in a cell: on several occasions I have also captured it conveying a specimen of *Oxybelus uniglumis*. Shuckard has stated, on my authority, that it also preys upon *Epeolus variegatus*; I have little doubt now that I was mistaken in supposing it to be *Epeolus*; probably it was an *Oxybelus*; *Epeolus* does not occur on Hampstead Heath." (There are specimens of *O. uniglumis* in Smith's series of *A. boops*, but this very remarkable observation cannot be accepted until confirmed by similar captures: the confusion between *Oxybelus* and *Epeolus* considerably reduces the possible value of Smith's statement.) Guichard, 6 ♂ ♂, 7/7/39; 3 ♂ ♂, 15/7/39; 2 ♀ ♀, 25/7/39; ♂ ♂ ♀ ♀, 2/8/39. Yarrow, ♂ ♀ ♀, 30/7/39; ♀, 12/8/39; ♀, 17/8/39. This species is extremely local and has been taken only in one area of Sandy Heath, except for a single male seen in the Vale of Health. Yarrow records nymphs of the Pentatomid, *Peizodorus lituratus* Fab., as prey.
44. *Tachysphex pompiliiformis* (Panz.). Shuckard (1837: 90), as *Tachytes pompiliiformis* Panz., "Abundant upon Hampstead Heath." Guichard, ♂, 6 ♀ ♀, 7/7/39; 2 ♀ ♀, 15/7/39; ♀, 25/7/39. Yarrow, ♀ ♀, 30/7/39; ♀ ♀, 12/8/39, one dragging a nymph of the grasshopper *Omocestus viridulus* (L.); 2 ♂ ♂, 15/6/40, SH. Like *A. boops*, it has only been taken recently on Sandy Heath, where it is extremely common in a small area swarming with grasshoppers.
45. *Trypoxylon figulus* (L.). Andrewes, ♀, 1/7/17; ♀, 5/6/22; ♂, 18/6/22; ♂, 21/7/23, all from HG. Blair, 29/7/18, HH, flying round an old willow stump and entering the holes of *Melandrya caraboides* L. Guichard, ♂, 11/7/39, LG. Richards, 2/7/24, BPG.
46. *Trypoxylon clavicerum* Lep. Shuckard (1837: 119), Hampstead. Andrewes, ♀, 14/6/17, HT; 2 ♂ ♂, 19/6/20, HT; ♀, 18/7/20, HGL. Guichard, ♀, 20/7/38, HH; ♀, 15/7/39, SH. Richards, ♀, 2/7/24, 19/8/26, BPG, EH. Yarrow, 2 ♀ ♀, 3/7/37; ♂, 8/7/37; ♀, 16/7/37; 2 ♀ ♀, 20/7/37, all from NG.
47. *Trypoxylon attenuatum* Smith. Andrewes, ♂ ♀, 1/6/42, HG; ♀, 1/8/42, HG.

48. *Spilomena troglodytes* (V. d. L.). Andrewes, ♂, 15/7/20, HG. Guichard, abundant about holes in an old crab-apple tree on Sandy Heath. (*Passaloecus corniger* was taken entering these holes), 2 ♂♂ ♀, 20/7/38; 4 ♂♂ 3 ♀♀, 15/7/39; ♀, 25/7/39. Yarrow, 2 ♂♂ 2 ♀♀, 15/6/40, SH.
49. *Stigmus solskyi* Moraw. Andrewes, ♀, 7/16; ♀, 14/6/17; ♀, 20/6/20; ♂, 5/6/22, all from HG. Guichard, ♀, 15/7/39, LG; 6 ♀♀, 15/7/39, SH, at the old crab-apple tree, some carrying aphides into holes.
50. *Pemphredon lugubris* (Fab.). Andrewes, ♀, 27/8/19; ♂, 7/7/21; ♀, 29/7/21, all from HG. Blair, 29/7/18, HH. Guichard, 2 ♂♂ ♀, 16/6/38, HH; ♀, 6/7/38, HH; 3 ♂♂, 3/6/39, SH; ♂♀♀, 29/6/39, KW; ♂, 11/7/39, LG. Whitehead, 5/7/12, 2/7/16, BRG.
51. *Cemonus shuckardi* Moraw. Andrewes, ♂, 24/5/20, HG; ♂, 19/6/20, HG; ♀, 7/7/21, HGL; 24/5/47, HG, bred from rose prunings. Bradley, ♂, 23/6/18, HH. Guichard, 3 ♂♂ ♀, 14/6/38, HH; ♀, 20/7/38, HH; 2 ♂♂, 8/6/39, LG; ♀, 10/6/39, HH. Richards, 4/8/33, BPG. Yarrow, ♀, 17/7/37, NG.
52. *Cemonus lethifer* Shuck. Guichard, ♀, 2/7/37, VH; 2 ♂♂, 16/6/38, HH; ♀, 20/7/38, VH; ♂, 3/6/39, PHF.
53. *Diodontus minutus* (Fab.). Guichard, ♀, 21/6/36, SH; 3 ♂♂, 2 ♀♀, 7/7/39, SH; ♂♀, 25/7/39, VH. Richards, ♂, SH. Yarrow, ♀, 30/7/39, SH; ♂, 15/6/40, SH.
54. *Diodontus insidiosus* Spooner. Until recently this species has been referred to *D. friesei* Kohl (vide Spooner, 1939). It seems to be as local as *D. minutus* but both species could be easily overlooked. Guichard, 2 ♂♂, 21/6/36, SH; 3 ♂♂, 7/7/39, SH. Richards, 2 ♂♂, 9/7/25, 2/7/26, EH. Yarrow, ♂, 15/6/40, SH.
55. *Diodontus tristis* (V. d. L.). This species occurs at Oxshott, which has a "Bagshot Sand" fauna, but seems to have disappeared from the Hampstead district. Shuckard (1837: 188), "This species . . . is tolerably common at Highgate."
56. *Passaloecus corniger* Shuck. Andrewes, ♂, 14/6/17, HG; ♂, 15/6/19, HG; ♂, 13/6/20, HG; ♀, 17/7/20, HG. Guichard, ♂, 16/6/38, HH; ♂♂ ♀♀, 20/7/38, from crab-apple tree, SH; 2 ♂♂, 29/6/39, KW; ♀, 5/7/39, LG; ♂♂ ♀♀, 15/7/39, SH. Richards, 30/6/26, EH. Yarrow, ♂, 28/6/37, NG; ♀, 18/7/37, NG.
57. *Passaloecus insignis* (V. d. L.). Andrewes, ♂, 7/16, HT. Blair, 19/7/18, HH. Guichard, ♀, 11/7/39, LG. Richards, 2/7/26, EH. Yarrow, ♂, 9/7/39, NG.
58. *Passaloecus gracilis* (Curt.). Shuckard (1837: 191), "I have met with this species not uncommonly in Battersea Fields, and likewise at Highgate." Andrewes, 27/6/42, HG. Guichard, ♀, 10/6/38, LG; ♂, 20/7/38, HH. Richards, 29/6/24, BPG. Yarrow, ♂, 8/7/37, NG.
59. *Mimesa shuckardi* Wesm. The older records of the red-bodied species must be accepted with caution, as Perkins' examination of Smith's *M. equestris* has shown (vide No. 60). Shuckard and Smith recognized two species only, and consequently the third, *M. rufa* (Panz.), is likely to have been confused with either of them. It is considered unlikely, however, that *M. rufa* occurred on Hampstead Heath, since it appears to be scarce in the south-east of England, becoming commoner towards the north and west. Shuckard's statement regarding the solitary habits of *M. equestris* (= *shuckardi*) does not agree with recent observations, this species occurring on the Heath in large numbers, and sometimes nesting close together. Saunders (1880: 262), Hampstead; (1896: 100), Hampstead Heath (Smith). Shuckard (1837: 230), as *M. equestris* Fab., "Apparently solitary in its habits, taken occasionally at Hampstead"; (1866: 306) as *Psen equestris*, "one particular little spot (very near the high-road which leads at the upperpart of Hampstead Heath, to Highgate) was inhabited by *Psen equestris*, rare everywhere else . . ." Smith (1858: 183), as *M. equestris*, "It has occurred . . . on Hampstead Heath." Andrewes, 2 ♀♀, 7/16, HH; ♀, 7/32, HH. Blair, 12/7/29, PHF, carrying mature and immature Homoptera. Bradley, ♂♂, 23/6/18, Sandy Lane; ♂♂ ♀♀, 30/6/18, HH; 7/7/34

- HH. Guichard, ♀♀, 29/6/39, KW; ♀, 7/7/39, HH; ♂♂, 15/7/39, HH; ♀, 25/7/39, SH, with the Homopteron, *Oncopsis flavicollis* L.: ♀♀, 2/8/39, SH. Richards, 15/7/24; 12/7/25, SH. Yarrow, ♀♀, 30/7/39, SH: ♀♀, 12 and 17/8/39, SH.
60. *Mimesa equestris* (Fab.). This is the *M. bicolor* Jur. of Saunders (1880), Shuckard (1837) and Smith (1858). (*M. bicolor* Fab. of Saunders (1896) is presumably an error of writing.) Saunders (1880 : 262), Hampstead Heath; (1896 : 101), Hampstead (Smith). Shuckard (1837 : 231), "It is gregarious, being found in multitudes upon Hampstead Heath." (The species has apparently completely disappeared from the district, and Shuckard's words probably relate to *M. shuckardi*). Smith (1858 : 184), "I have taken it at Hampstead." (Perkins has examined Smith's series of *M. bicolor* and separates the following species:—*M. shuckardi* Wesm., *M. equestris* (Fab.) (= *rufa* (Panz.) and *M. bicolor* (Jur.)). White, ♀ from Hampstead in British Museum Collection.
61. *Mimesa dahlbomi* Wesm. Andrewes, ♀, 4/6/22, HGL.
62. *Psenulus atratus* (Fab.). Andrewes, ♀, 22/7/17, HT; ♂, 20/6/20, HG; ♀, 11/7/20, HH; ♂, 17/7/21, HG. Bradley, 2♀♀, 4/7/39 and 8/7/39, on a window in Hampstead. Guichard, 2♂♂ ♀, 13/6/38, SH. Richards, WH.
63. *Oxybelus uniglumis* (L.). Smith (1858 : 96) mentions this insect as being the prey of *Astata boops* on Hampstead Heath (vide No. 43). Andrewes, ♂, 8/16, HH; ♂, 3/6/17, HH; ♂, 1/7/17, HGL; ♂♀, 17/7/20, HH. Bradley, ♂♂, 7/17, HH; 3 ♂♂, 8/17, near Spaniards Road; ♂, 6/18, HH; ♂♂♀♀, 7/34, HH. Guichard, ♀♀, 21/6/36, WH, carrying dipterous prey; 1938, widely distributed: once taken on *Achillea*: ♀♀, 7/7/39, HH, preying on the fly *Fannia armata* Meig.; ♀♀, 15/7/39, SH, with similar prey. Richards, 15/7/24, SH. Yarrow, ♂♂♀♀, 30/7/39, SH; ♀♀, 12/8/39, SH, common in the enclosures.
64. *Crabro peltarius* (Schreber). Bradley, ♂, 6/16, near the swampy pond, SH; ♂, 7/17, HH; ♂, 6/18, HH. Guichard, 6 and 7/38, ♂♂ very common flying wildly about birch but ♀♀ uncommon and burrowing singly in sand: ♂♂♀, 10/6/39, HH; ♂♂♀♀, 7/7/39, HH: ♂♂♀, 15/7/39, SH; ♂♂♀♀ 25/7/39, SH. Richards, 2/7/26, SH, WH. Yarrow, ♀, 15/6/40, SH; ♂, 4/7/40, VH; ♀♀, 31/7/40, SH.
65. *Coelocrabro leucostomoides* Richards. Guichard, 2♀♀, 16/6/38, HH, ♂♂♀, 29/6/39, KW. Richards, WH.
66. *Coelocrabro cetratus* (Shuck.). Andrewes, ♀, 6/7/46, Finchley.
67. *Coelocrabro capitosus* (Shuck.). Richards, 25/6/25, WH.
68. *Coelocrabro ambiguus* (Dahl.). Andrewes, 2/7/41, HH. Bradley, ♀, 19/8/17, HH. Guichard, 2♂♂♀, 20/7/38, HH; ♀, 11/7/39, LG; ♀, 15/7/39, SH, at crab-apple tree; 2♀♀, 25/7/39, SH, round elm stump: ♀, 26/7/39, LG. Yarrow, ♂, 19/6/40, SH.
69. *Crossocerus tarsatus* (L.). Shuckard (1837 : 134), as *Crabro tarsatus* N. Sp. (♂ only). "I have captured it at Highgate, settling on the leaves of burdock and other plants." Andrewes, ♂, 7/16, HH; ♂, 15/7/20, HGL. Blair, 5/7/18, PHF, a colony found on a sandy path, the insects preying on flies, including *Thereva nobilitata*: two species of Muscidae were found on the ground among the burrows. Guichard, ♂♀, 13/6/38, HH; ♀, 1/9/38, HH: 2♀♀, 13/9/38, SH, burrowing in sand.
70. *Crossocerus varus* Lep. & Brulle. According to Kohl (1915 : 416) this species nests in the ground, but on Hampstead Heath it has been taken by Guichard entering small holes in an old crab-apple tree. Andrewes, ♂, 11/7/20, HH. Guichard, ♀, 1/9/38, HH; 2♀♀, 13/9/38, SH: ♂, 8/6/39, LG; 2♂♂, 8/7/39, KW; ♂, 11/7/39, LG; 5♂♂, 15/7/39, SH, at crab-apple: 2♀♀, 25/7/39, SH. Richards, 9/7/25, EH, WH. Yarrow, 4♀♀, 30/7/39, SH; ♀♀, 17/8/39, SH; 2♀♀, 17/8/39, PHF.
71. *Crossocerus anxius* (Wesm.). Guichard, 6 and 7/38, HH, burrowing in sand; 2♀♀, 10/6/39, HH; ♂♀, 29/6/39, KW; 2♂♂, 15/7/39, SH; ♀, 25/7/39, VH, with the fly *Tachydromia claranda* Coll. as prey. Richards, 25/6/25, WH, with *T. claranda* (vide Hamm & Richards, 1926 : 326). Whitehead, HH. Yarrow, ♀, 30/7/39, SH.

72. *Crossocerus wesmaeli* (V. d. L.). Andrewes, ♀, 27/6/42. HG: ♀, 23/6/46, HH. Richards, 30/6/26, SH.
73. *Crossocerus elongatulus* (V. d. L.). Andrewes, ♀, 7/16, HH: ♂, 3/6/17, HH: ♀, 4/6/17, HG; ♀, 9/9/19, HH. Bradley, ♂, 7/17, HH. Guichard, June to August, HH, common; ♂, 8/6/39, LG: ♂, 27/6/39. LG: ♂♂♀, 29/6/39, KW; ♀, 7/7/39, HH. Richards, 7/22, BPG. Yarrow, ♂♂♀♀, 19/6—18/7/37, NG; ♂, 30/7/39, VH.
74. *Acanthocrabro vagabundus* (Panz.). Andrewes, 9/7/46, HH. Guichard, ♂, 21/6/36, HH; ♂, 6/38, HH; 2 ♂♂, 16/6/38, HH: ♂, 10/6/39, PHF.
75. *Hoplocrabro quadrimaculatus* (Fab.). Andrewes, ♂, 7/16, HH: ♂♀, 11/7/20, HH. Guichard, 1937-8, common burrowing in sand during July, August and September; ♂♂, 26/9/39, KW; ♂♂♀♀, 7/7/39, HH. Richards, 7/22, HH. Yarrow, ♂♂♀♀, 30/7/39, SH; ♂♂♀♀, 17/8/39, PHF. SH, VH.
76. *Clytochrysus zonatus* (Panz.). Shuckard (1837: 139), as *Crabro sexcinctus* Fab. (♂ only). "It appears to be rare; I have hitherto taken only two specimens, and those near Hampstead."
77. *Clytochrysus cavifrons* (Thoms.). Shuckard (1837: 137), as *Crabro cephalotes* Fab. "I have found it near Caenwood near Hampstead . . ." (This might have been *C. planifrons* (Thoms.), but it is more likely to have been *cavifrons*.) Andrewes, ♂, 3/7/20, HG; ♀, 29/7/21, HG; ♀, 13/7/22, HG. Guichard, ♂♀, 29/6/39, KW. Richards, 2/7/24, BPG. Yarrow, ♀, 15/7/37, NG; ♀, 17/7/37, NG; ♂, 15/6/40, SH.
78. *Clytochrysus chrysostomus* (Lep. & Brulle). Andrewes, ♀, 7/16, HH: ♀, 1/7/17, HG; ♂, 27/6/20, HG: ♀, 24/7/21, HG. Blair, 29/6/18, HH.
79. *Solenius continuus* (Fab.). It is strange that this species has never been recorded from the Heath. Andrewes, ♂, 27/5/42, HG: ♂, 13/6/43, Finchley. Yarrow, ♀, 3/7/37, NG: ♂, 9/7/37, NG.
80. *Metacrabro quadricinctus* (Fab.). Andrewes, ♀, 24/5/20, HG. Yarrow, ♀, 4/10/36, NG, found dead in house; ♂, 9/7/37, NG: ♀, 8/7/39, KW.
81. *Corynopus coarctatus* (Scop.). Guichard, 3 ♂♂, 29/6/39, KW.
82. *Rhopalum clavipes* (L.). Andrewes, ♀, 25/6/21, HG. Guichard, ♀, 13/6/38, VH; ♀, 3/6/39, SH; ♂, 8/7/39, KW. Richards, SH.
83. *Lindenius panzeri* (V. d. L.). Blair, 5/7/18, PHF, mixing with a colony of *C. palmipes* and carrying small Chloropids. Bradley, 3 ♀♀, 7/34, HH. Guichard, ♂, 26/7/36, HH: July, August and September 1938, KW, a colony in a hard sandy path; 2 ♂♂, 7/7/39, HH: ♂♂♀♀, 25/7/39, VH. Yarrow, ♂♂♀♀, 30/7/39, SH: ♂♂♀♀, 12/8/39, SH: ♀♀, 17/8/39, PHF. SH; ♀, 15/6/40, SH.
84. *Lindenius albilabris* (Fab.). Andrewes, 3/7/41, HH. Bradley, ♂ 2 ♀♀, 7/17, HH: ♀, 30/6/18, HH. Guichard, ♀, 26/7/36, HH: 2 ♂♂♀, 7/7/39, HH. The chrysid parasite, *Hedychridium coriaceum* Dahlb., has not yet been taken with this crabronid on the Heath.
85. *Lindenius armatus* (V. d. L.) (= *pygmaeus* auctt.). This wasp has never been recorded before from Britain. It occurs on the Continent, and in British collections it may be confused with *L. panzeri*. A description of the male taken by Guichard in the Vale of Health, 25/7/39, and of the female from specimens in the British Museum (6 ♀♀ from Bucharest but no ♂♂), with a key to the three British species of *Lindenius* has been published by Yarrow and Guichard (1941).
86. *Nysson spinosus* (Forst.). Smith (1858: 99), "it (*N. interruptus*) occurs occasionally with the former species (*N. spinosus*) in Bishop's Wood, Hampstead, and also at Highgate."
87. *Nysson interruptus* (Fab.). Saunders (1880: 268), Hampstead and Highgate: (1896: 111) Bishop's Wood, Hampstead; Highgate (Smith). Shuckard (1837: 102), as *N. interruptus* Latr., "I have found it very common at Highgate." Smith (1858: 99), as *N. interruptus* Latr. (vide No. 86). Perkins (1917: 230) states that all except three of Smith's *interruptus* are *spinosus*.
88. *Nysson trimaculatus* (Rossi). Shuckard (1837: 103), "The only place where I take it is Highgate, upon leaves of bramble, where it alights for a moment, turns itself briskly round and flies off again."

89. *Nysson dimidiatus* Jur. Saunders (1880 : 269), Hampstead, Highgate; (1896 : 112) Hampstead, Highgate (Smith). Shuckard (1837 : 105), "I captured this species in abundance at Hampstead in 1833, but neither last year nor this (1835) could I find it in the same locality, but I took a solitary specimen in May last, at Highgate"; (1837 : 223) vide No. 92. Smith* (1858 : 101), "it is taken in the London district at Hampstead and Highgate." (In Smith's Collection there are two specimens from Hampstead, ♂, 8/7/1849; ♀, 7/1852.)
90. *Gorytes mystaceus* (L.). Andrewes, 21/6/46, HH. Guichard, ♀, 21/6/37, WH; 4 ♀ ♀, 16/6/38, SH, flying round a large bramble bush.
91. *Gorytes fargeii* Shuck. Saunders (1880 : 270), as *G. campestris* L., Highgate; (1896 : 107) as *G. campestris* L., Highgate (Smith). Shuckard (1837 : 215), as *G. fargeii* N. Sp., "It is not uncommon on *Umbelliferae*, at Highgate and Battersea, in July." Smith (1858 : 105), "This species is not rare in the neighbourhood of Highgate . . ."
92. *Harpactus tumidus* (Panz.). Saunders (1880 : 266), Hampstead. Shuckard (1837 : 223), as *Arpactus tumidus* Panz., "I once found the ♂ of this insect in abundance on Hampstead Heath, on a spot frequented also by *Nysson dimidiatus* and *Hedychrum roseum*, and the ♀ I have taken at Highgate in sandy situations, in which it burrows." Smith(D) as *A. tumidus*, 8/7/1849, Hampstead; (1858 : 110), "I have taken it on Hampstead Heath in July and August."
93. *Mellinus arvensis* (L.). The lack of previous records of this conspicuous wasp may be because either the older collectors considered it too common to mention or because they did not visit its restricted haunts during August and September. Guichard, 25/8/38, SH, a colony was found on Sandy Heath, and two specimens were caught with *Syrphus ribesii* L. and *Sarcophaga* sp., as prey. This wasp was still abundant in early September. Yarrow, 2 ♀ ♀, 16/9/39, SH, hunting flies on holly tree.
94. *Cerceris rybyensis* (L.). Enock (1898 : 51), as *C. ornata*, "Where there used to be rising sandbanks, the head-quarters of endless bees and sand wasps, there is now an unsightly cinder path crossing the very spot which was once the citadel of these beautiful bees, and where, in July, could be seen dozens of the burrows of the sand wasps, *Cerceris arenaria* and *ornata*. Last year I visited this locality several times, but not a single *Cerceris* did I find." Andrewes, ♀, 7/16, HH; 3 ♂ ♂ ♀, 11/7/20, HH. Blair, 7/7/18, nesting near the Spaniards in a pathway, with *Halictus calceatus* as prey. Bradley, ♀ ♀, August 1916, 17, 18; ♂ ♀, 7/34, HH. Guichard, 3 ♀ ♀, 26/7/36, WH; ♂, 20/7/38, VH; ♂, 25/8/38, VH, on yellow daisies; 2 ♂ ♂, 29/6/39, KW; ♂ ♂ 7/7/39, HH. Yarrow, ♀ ♀, 30/7/39, SH; ♀, 16/9/39, SH, with *Halictus tumulorum* as prey; ♀, 19/6/40, SH.
95. *Cerceris arenaria* (L.). Enock (1898 : 51) vide No. 94. Shuckard (1837 : 235), " . . . is very abundant at Hampstead . . . it makes its burrows on the sandy flat above the Vale of Health, on the spot where a short time before its appearance the *Panurgus ursinus* abounds." Westwood (1836 : 203) records in July a species of *Strophosomus* as prey of *C. arenaria* on Hampstead Heath. Andrewes, 12/7/43, HH. Blair, 12/7/29, nesting in sandy path near the old *C. rybyensis* colony which was then abandoned : mingled with this colony were burrows of *Halictus rubicundus*. Guichard, ♂ ♂, 3/7/37, VH; ♀ ♀, 20/7/38, SH; ♂ ♂ ♀ ♀, 7/7/39, SH. Yarrow, ♂ ♂ ♀ ♀, 30/7/39, SH, with *Otiorrhynchus singularis* L. as prey; ♀ ♀ with similar prey, 12 and 17/8/39, SH; ♂ ♂ ♀ ♀, 15/6/40, SH.

Apidae.

96. *Colletes succincta* (L.). Enock (1898 : 51), "The exceedingly neat looking species, *C. succincta*, I used to find at Hampstead Heath, but, like other things, it has now disappeared from the neighbourhood." Even when Enock wrote this, the ling was probably on the verge of extinction, and to-day both plant and insect have disappeared.

97. *Colletes daviesana* Smith. Yarrow, ♂. 29/6/40, PHF, close to one of the Hampstead ponds, at *Nasturtium sylvestre*. This is an interesting capture because Richards (1937: 97) does not include Middlesex in the distribution of *C. daviesana*. (Both sexes have since been taken commonly in June on chamomile flowers at Teddington, Mdx. by my wife—I.H.H.Y.)
98. *Prosopis communis* (Nyl.). This species is common in gardens, where it has been taken at various flowers. It is much less in evidence on the Heath, where it is found at blackberry flowers. Guichard records ♀♀ nesting in the old crab-apple tree on Sandy Heath. Both sexes occur between 8th June and 18th July.
99. *Prosopis punctulatissima* (Smith). Perkins (1917: 73) records a ♀ in Smith's collection and states "The ♀ referred to is labelled 'Ham' (Hampstead). It is one of the oldest bees in the collection, as is proved by the pin used."
100. *Prosopis hyalinata* (Smith). Andrewes, ♂, 1/7/17, HGL. Guichard, ♀, 17/7/37, LG. Richards, 14/7/24, BPG.
101. *Prosopis brevicornis* (Nyl.). Guichard, ♀. 26/7/36, HH.
102. *Halictus rubicundus* (Christ). This species is widely distributed on the Heath, but never appears common. Guichard records a fine colony near Ken Wood, on 25th July 1939: the males, and females in perfect condition, were flying about the burrows in a patch of bare hard ground. The following dates represent records over a number of years since 1916:—Hibernated ♀♀, 4/4—23/5 (one on 2/6/18): generation of the year, ♂♂, 2/7—17/8, ♀♀, 11/7—2/8. The ♂♂ visit rosebay willow-herb and blackberry, and the ♀♀ visit gorse. Andrewes records a ♀ as prey of *Cerceris rybyensis*, 11/7/20, HGL, and Blair found burrows amongst a colony of *C. arenaria*.
103. *Halictus leucozonius* (Schrank). This usually common species appears to be rare in the district. Guichard, ♀, 7/7/39, VH, on a yellow daisy. Yarrow, ♂♀, 22/7/40, PHF.
104. *Halictus calceatus* (Scop.). Widely distributed on the Heath and taken by Andrewes at Highgate. Blair records it as the prey of *Cerceris rybyensis*. Guichard twice took ♂♂ at *Polygonum persicaria*. Hibernated ♀♀, 1/5—18/5: generation of the year, ♂♂, 15/7—13/9, ♀♀, 7/7—30/7.
105. *Halictus albipes* (Fab.). Apparently less common than the preceding species. Andrewes, ♀, 29/7/21, HT. Guichard, ♀, 7/7/39, VH. Richards, 28/9/23, HE.
106. *Halictus fulvicornis* (Kirby). Bradley, ♂, 28/7/17, EH.
107. *Halictus villosulus* (Kirby). Andrewes, ♀, 7/16, HT; ♂, 17/7/21, HGL. Guichard, ♂♀, 1/9/38, VH; ♂♂♀♀, 25/7/39, VH. Richards, 9/7/25, EH.
108. *Halictus punctatissimus* (Schenck). Guichard, ♀, 3/5/39, SH.
110. *Halictus nitidiusculus* (Kirby). Smith (1855a: 43), "This species is frequently attacked by a *Stylops*: several specimens have been taken on Hampstead Heath thus attacked." Andrewes, ♀, 7/9/19, HGL. Bradley, 7/34, HH. Guichard, ♀, 1/4/38, HH. Richards, 3/9/23, HH.
111. *Halictus minutus* (Schrank). One of the commonest bees on the Heath: it invariably selects the perpendicular face of a sandy bank as a nesting site. Hibernated ♀♀, 1/4—27/5; generation of the year, ♂♂, 5/7—1/9, ♀♀, 26/7—19/8.
112. *Halictus tumulorum* (L.). Andrewes, 30/8/41, HG. Guichard, ♂, 13/9/38, KW. Yarrow, ♀, 16/9/39, SH, as prey of *Cerceris rybyensis*. This ♀ and several others from Middlesex were submitted to Mr G. M. Spooner, who agreed that the ♀♀ of the *tumulorum* group presented rather a problem: he thought Yarrow's specimen represented the extreme to which *tumulorum* goes towards *perkinsi*. The authors cannot with certainty separate the ♀♀ of the two species.
113. *Halictus smeathmanellus* (Kirby). This *Halictus* is abundant in gardens but is not often found on the Heath. The ♀♀ are on the wing from the beginning of April until the end of October: the ♂♂ appear in June

and the latest record is the 28th October. This species almost certainly nests in garden rockeries.

114. *Halictus morio* (Fab.). *H. morio* abounds on the Heath at much the same time as *H. smeachmanellus* is on the wing, but is much less common in gardens than that species. Smith(D), as *H. aeratus*, 29/4/1849**, ♀♀ abundant, no ♂♂.
115. *Halictus leucopus* (Kirby). Andrewes, ♂, 7/16, HH. Guichard, ♂, 15/7/39, VH.
116. *Sphcodes gibbus* (L.). Andrewes, ♀, 7/9/19, HGL; ♀, 22/5/20, HH. Bradley, 5/8/17, HH. Guichard, ♀, 15/7/39, SH; ♀, 2/8/39, VH. Yarrow, ♀, 30/7/39, SH.
117. *Sphcodes monilicornis* (Kirby). Andrewes, ♀, 18/5/19, HGL; ♀, 22/5/20, HH. Bradley 1918, taken commonly with *Halictus calceatus*, HH. Guichard, ♀, 2/8/39, SH.
118. *Sphcodes rubicundus* von Hag. This species is parasitic on *Andrena labialis*. It is single brooded, both sexes appearing together in June. Bradley, ♀, 16/6/18, taken in an open sandy space on Sandy Heath, close to the south portion of the Spaniards Road.
119. *Sphcodes pellucidus* Smith. Saunders (1896: 201), as *S. pilifrons* Thoms., from Hampstead. This species is parasitic on *Andrena barbilabris*. The hibernated ♀♀ appear as early as 3rd May, and probably much earlier as the *Andrena* is out at the beginning of April. Our latest record of the ♀ is the 17th August. ♂♂ have been taken between the 15th July and the 17th August. It is fairly common on Sandy Heath, and Richards has taken it on HE and WH.
120. *Sphcodes ephippius* (L.). Andrewes, ♀, 9/5/19, HH.
121. *Sphcodes niger* von Hag. Guichard, ♂, 13/9/38, HH.
122. *Sphcodes crassus* Thoms. Guichard, ♂♀, 15/6/38, HH; ♂, 26/7/39, WH.
123. *Sphcodes miniatus* von Hag. Andrewes, ♀, 27/5/17, HGL; ♀, 3/6/17, HH; ♀, 13/5/19, HH; ♀, 9/9/19, HH. Guichard, ♂, 26/7/36, WH; ♂, 1/9/38, HH; ♀, 3/6/39, SH; ♀, 10/6/39, SH; ♂, 7/7/39, HH; 3 ♂♂, 25/7/39, VH. Yarrow, ♂♂, 30/7/39, SH.
124. *Specodes fasciatus* von Hag. Andrewes, ♀, 26/5/17, HG; ♀, 27/5/17, HGL. Bradley, 3 ♂♂, 1934. Guichard, ♂, 25/8/38, HH; ♂, 7/7/39, HH.
125. *Andrena haemorrhoa* (Fab.). Widely distributed on the Heath and occurs in gardens. Andrewes dug up a ♀, 25th November; Haines had specimens from the Heath taken in 1870. ♂♂, 13/4—11/5, ♀♀, 24/4—27/5: 1870-1939.
126. *Andrena bimaculata* (Kirby). Blair, 6/5/17, HH. Guichard, ♂, 1/4/38, SH.
127. *Andrena tibialis* (Kirby). This is one of the earliest *Andrenas*, and is abundant all over the Heath, the ♂♂ far outnumbering the ♀♀. Smith(D), 1845, with 3 stylops, Hampstead. Andrewes records it from HGL. ♂♂, 22/3—3/5; ♀♀, 22/3—5/6. Several ♂♂ have been taken styloped. 1845-1939.
128. *Andrena flavipes* Panz. Enock (1898: 52), as *A. fulvicrus*, "... markedly common at Highgate Cemetery."
129. *Andrena florea* Fab. Saunders (1896: 239), Highgate (Smith). Smith (1855a: 54), "This beautiful species used to occur at Highgate, but has not been observed there for some years past"; (1891: 31) Highgate.
130. *Andrena pubescens* Oliv. Widely distributed but not very common. Andrewes took a ♀ in HG, and Bradley found ♀♀ in perfect condition, near East Heath Road, 10/5/39. There is only one record of the male, 4/5/38. ♀♀, 12/4—3/6. 1916-1939.
131. *Andrena cineraria* (L.). Common locally and found chiefly on Sandy Heath. Guichard records ♀♀ entering burrows beneath a layer of dead oak leaves. Andrewes, ♂, 6/5/19, HH; ♀, 9/5/19, HH; ♀, 23/5/20, HGL. Blair, 26/4/18, HH, a colony used to exist in a sandy footpath. Guichard,

- ♂♂, 1/4—20/5; ♀♀, 12/4—20/5, 1938, SH, WH; ♂♂♀♀, 3/5/39, VH. Haines remembers this species in 1870 and 1915, near North End Road. Whitehead, 25/4/20, HH. Yarrow, ♀, 17/4/39, SH, burrowing amongst a colony of *A. armata*; ♀, 20/5/39, SH.
132. *Andrena nigroaenea* (Kirby). Fairly common on the Heath; Guichard took a ♂ in LG. Smith(D), 24/3/1839, Highgate Archway. (No sex given but presumably ♂.) ♂♂, 1/4—3/5; ♀♀, 12/4—20/5. 1839-1939.
133. *Andrena bicolor* (Fab.). The only recent records of this species are from gardens. Smith(D), as *A. gwynana*, 24/3/1839, Highgate Archway; ♂, 4/3/1849, Hampstead; (1891 : 21) as *A. gwynana*, 4/3, Hampstead. Andrewes, ♀, 1/8/20, HG; ♀, 7/36, FG. Guichard, ♀, 2/8/39, LG. Richards, 18/4/24, BPG. Yarrow, ♀, 3/7/37, NG.
134. *Andrena angustior* (Kirby). Smith (1855a : 81), "it is occasionally met with at Highgate"; (1891 : 53) "it occurs sparingly at Hampstead and Highgate, and is found on dandelions (*Leontodon taraxacum*).” Andrewes, ♂, 9/5/20, HGL. Bradley, ♀, 5/18, HH.
135. *Andrena jacobii* Perkins. Not a very common species on the Heath. Whitehead took a ♀ in BRG. Smith (1855a : 73), as *A. trimmerana*, "This bee is very abundant near London, particularly on Hampstead Heath." Bradley records it with *Nomada flava* and *N. marshamella* on the Heath. ♂♂, 12/4—21/5; ♀♀, 12/4—6/6. 1855-1939.
136. *Andrena trimmerana* (Kirby). Saunders (1896 : 238), as *A. rosae* var. *spinigera*, Highgate (Smith). Smith (1855a : 75), as *A. spinigera*, Highgate; (1891 : 29) as *A. spinigera*, Highgate.
137. *Andrena bucephala* Stephens. Enock (1898 : 52), "The neighbourhood of Highgate Archway, too, used to be a noted spot for uncommon *Andrenae*, such as *A. longipes*; but now it sounds like mockery to mention such localities as Copenhagen 'Fields' and Highgate 'Fields'." Saunders (1896 : 254), Hampstead (Smith). *Smith(D), as *A. longipes*, 5-19/5/1850, abundant at Highgate; (1855a : 90) as *A. longipes*, "This very conspicuous and beautiful species is found in plenty on a mound close to Highgate Archway, and occurs occasionally on Hampstead Heath"; (1891 : 61) Highgate Archway.
138. *Andrena fucata* Smith. Guichard, ♂, 10/6/39, KW.
139. *Andrena varians* (Rossi). Smith(D), ♂♀, 29/4/1849**. Andrewes, ♂♀. 9/5/20, HGL. Blair, ♂♀, 29/4/17, HH, dug out of holes. Guichard, ♂♂♀♀, 18/4/36, VH; ♀, 1/4/38, HH, entering burrow among those of *A. armata*, ♀, 26/4/39, VH, at hawthorn; 3 ♀♀, 3/5/39, VH; 2 ♀♀, 3/6/39, PHF, at hawthorn. Richards, 14/4/35, WH, at *Salix repens*.
- 139a. *Andrena varians* var. *mixta* Schenck. Bradley, 5/17, SH, near a big colony of *variens*.
140. *Andrena synadelpha* Perkins. Guichard, 3 ♂♂, 4/5/38, SH, at hawthorn; ♂, 20/5/38, SH; ♀, 13/6/38, VH.
141. *Andrena helvola* (L.). Smith (1855a : 69), "It is plentiful at the upper end of Millfield Lane, by the side of Caen Wood." Guichard, ♂♂♀♀, 10/5/39, PHF.
142. *Andrena armata* (Gmelin). Enock (1898 : 51), Hampstead Heath. Smith(D), pair in cop., 16/4/1840, Hampstead; ♂♀, 29/4/1849**; (1855a : 65) as *A. fulva* Schrank, Hampstead Heath; (1891 : 39) as *A. fulva* Schrank, Hampstead Heath. In 1938, a ♀ was found on 4/3, in a sluggish condition; by 4/4, both sexes were swarming; on 4/5, ♀♀ were still fresh and abundant but only 1 ♂ was seen; on 25/5, there were only a few ♀♀, some of them fresh; by 13/6 the bee had disappeared. The ♀♀ visited fruit blossom, gorse, hawthorn and laurel. Yarrow records numbers of *Nomada panzeri* at the burrows. An interesting intersex was taken by Yarrow, 17/4/39, SH; superficially it appears to be a very small ♀; under close examination it shows the following characters:—

HEAD.		♂ characters.	♀ characters.
Antennae.			Short, 12 segmented, 3rd longer than 4th and 5th together.
Mandibles.		Long and falcate, with basal tooth.	
Clypeus.		White haired.	
Vertex.			Dark haired.
THORAX.			
Colour.			Red haired.
Legs.			Dark haired, front and intermediate metatarsi short and broad.
Hind metatarsus.			Scopa developed and dark haired.
Floccus.			Under-developed, slightly lighter in colour.
ABDOMEN.			
Shape.		Intermediate.	Intermediate.
Dorsal segments.			With red hairs.
Ventral segments.		Dense pale apical bands of appressed hairs.	
Apical segment.			Dark haired, but not so black as in normal ♀.
Genitalia.			Apparently normal in structure, but considerably below average size.

143. *Andrena clarkella* (Kirby). Smith(D), "... I found the nidus of this insect in Caen Wood, April 1st (18)37"; 21/4/1839, "I found a sand bank at Hampstead Heath, at the part called North End, in which this bee's burrows were numerous." ♂ ♀, 1845, Hampstead: 4/3/1849, Hampstead: 1/4/1849**; (1857: 32) "In the month of April we observed a greater number of *A. clarkella* on Hampstead Heath, than we ever remember to have observed on any previous occasion"; (1891: 113) "This sp. (*Nomada borealis*) is the parasite of *Andrena clarkella*. It has been taken with that bee, as early as the 10th April, on Hampstead Heath." Andrewes, ♀, 25/4/47, and ♀, 9/5/47, WH, on *Salix repens*.
144. *Andrena nigriceps* (Kirby). The nearest locality to London where this uncommon species is now found, is probably Oxshott, where it is very local. Andrewes, ♀, 19/7/16, HG, at *Sedum album*: ♀, 28/7/17, HG. at *Eryngium maritimum*.
145. *Andrena barbilabris* (Kirby). A common species; the ♀ ♀ visit gorse and speedwell, and the ♂ ♂ are usually found basking on the sand or flying wildly over the ground. Smith (1855a: 91), "... and is very plentiful on Hampstead Heath." ♂ ♂, 1/4—21/5; ♀ ♀, 12/4—29/6. 1855-1939.
146. *Andrena labialis* (Kirby). Smith(D), 9/6/1845. Hampstead; (1855a: 92), "It is not uncommon to the North of London: about Hampstead and Highgate, but I believe it to be local"; (1855a: 123) "It (*Nomada ochrostoma*) is not uncommon at the side of Bishop's Wood, Hampstead, where it has been observed flying about the burrows of *Andrena labialis*, during the month of May" (vide No. 178). Andrewes, ♀, 23/5/20, HG: 4/6/42, HG. Guichard, ♂, 3/6/39, SH, at hawthorn.
147. *Andrena humilis* Imh. Saunders (1896: 262), Hampstead (Smith). Smith(D), as *A. fulvescens*, 31/5/1840, Caen Wood: 9/6/1845, Hampstead; (1855a: 89) as *A. fulvescens*, "Hampstead Heath is the only spot near London where this bee occurs; it burrows in the hard gravel pathways to the South of the pond in the Vale of Health"; (1891: 60) as *A. fulvescens*. "It used to be plentiful on Hampstead Heath."

148. *Andrena chrysosceles* (Kirby). Saunders (1896 : 258), Hampstead. Andrewes, ♀, 4/16, HH; ♀, 7/16, HH. Bradley, 22/3/18, a large swarm on the Spaniards; all were stylopized and none could fly; a ♂ *stylops* emerged in the killing bottle and was identified by Mr R. C. L. Perkins as *S. hammella*. Guichard, ♂♂, 3/5/36, WH; ♂♂♀♀, 4, 5, 6/38, common, the ♀♀ at hawthorn; ♂♀, 3/5/39, HH. Richards, ♀ with two stylops, 14/4/35, WH, at *Salix repens*. (Walker, ♀, 1889, Cricklewood). Yarrow, ♀♀, 21/5/39, HE, SH.
149. *Andrena labiata* Fab. Perkins (1917 : 160), "As is well known, the same locality (Hampstead) was a well known one for *A. cingulata* . . ." *Smith (1855a : 57), as *A. cingulata*, "During June and July it has occurred for many years at the side of Bishop's Wood, Hampstead, frequenting the flowers of the Germander Speedwell." Andrewes, ♂, 27/5/17; ♀, 10/6/17; ♂♀, 23/5/20, ♀ at *Veronica chamaedrys*, all from HGL.
150. *Andrena saundersella* Perkins. Richards, 18/7/23, Hampstead.
151. *Andrena minutula* (Kirby). Smith (1855a : 96), "For some years past, males and females have been taken on the above flowers (Germander Speedwell) on a bank at the side of Bishop's Wood, Hampstead." Andrewes, ♂, 13/5/17, HGL; ♀, 22/5/20, HH. Bradley, 22/7/17, HH. Guichard, ♀, 12/4/38, KW; ♀, 25/7/39, VH. Richards, 14/4/23, WH.
152. *Andrena subopaca* Nyl. Bradley, 3 ♀♀, 16/6/16, HH; 1/7/17, HH; 22/7/17, HH.
153. *Andrena ovatula* (Kirby). Smith(D), as *A. afzeliella*, ♂♀, 29/4/1849** ; (1855a : 101) as *A. afzeliella*, ". . . abounds on Hampstead Heath, where it burrows in the sandy spots." Bradley, 2 ♂♂♀, 28/7/17, HH.
- 153a. *Andrena ovatula* var. *fuscata* (Kirby). Yarrow, ♀, 17/8/39, PHF.
154. *Andrena similis* Smith. Andrewes, ♂, 9/5/20, HGL; ♀, 21/5/22, HG.
155. *Andrena wilkella* (Kirby). Smith (1855a : 107), as *A. xanthura*, ". . . and abounds in the neighbourhood of Hampstead; it burrows in hard sandy pathways." Bradley, ♂♀, 18/5/18, HH.
156. *Andrena dorsata* (Kirby). Andrewes, ♂♀, 24/7/17, HG. Bradley, ♀, 5/8/17, HH.
157. *Melitta haemorrhoidalis* (Fab.). Andrewes, ♂♀, 29/8/42, HG, on *Campanula rotundifolia*. Woking is the nearest locality to London that the authors know where this bee is found or used to be found, also visiting the harebell.
158. *Melitta leporina* (Panz.). Saunders (1896 : 272), as *Cilissa leporina*, Hampstead (Smith). Smith (1855a : 109), as *Cilissa leporina*, ". . . occurs but rarely in the neighbourhood of London; it burrows in sandy banks; in the month of July, 1852, a small colony was discovered on Hampstead Heath"; (1855a : 111) Hampstead Heath; (1891 : 77) as *Cilissa leporina* Panz. "I once found a small colony burrowing in sandy soil at Hampstead." Andrewes, ♀, 7/16, HH; ♂, 11/7/20, HH; ♂, 25/7/20, HH. Guichard, ♂♂♀♀, 26/7/36, VH, at white clover; ♂♂, 6/7/38, VH, at *Rubus*; ♂♂, 20/6/38, PHF, VH; ♂♂♀♀, 15/7/39, VH, at *Rubus* and white clover, ♀♀ just emerged. Richards, 8/7/25, WH. Yarrow, ♂♂, 19/6/40, EH, PHF, VH. Yarrow (1940) records on EH a curious clustering of ♂♂ on *Achillea* late one dull afternoon in July.
159. *Panurgus calcaratus* (Scop.). Guichard, ♂, 15/7/39, VH, on a yellow daisy head.
160. *Panurgus banksianus* (Kirby). This bee seems to have disappeared from the district, and there are no records of its existence on the Heath since 1898. Previous to this it was very numerous, and the reason for its disappearance is obscure; dandelions are still fairly plentiful in its old haunts. Enock (1898 : 53), ". . . it is fond of making its burrows in hard paths, and in such situations I have found them at Woking and Hampstead, besides having swept them up from flowers of the mouse-ear hawkweed, which used to flourish on Hampstead Heath." Enock does not state to which species of *Panurgus* he refers. Shuckard (1837 : 235), as *P. ursinus* (vide No. 95); (1866 : 229) "I used to find the first species (*banksianus*) upon an elevated plateau, on the south side, overhanging

the Vale of Health and its large pond at Hampstead. Every Dandelion, for a wide circuit in the vicinity, was crowded with individuals—assiduously collecting, in the case of females, but basking in sunny indolence, and revelling in the attractions of the flowers, in the case of males, and, at the same time, their burrowing spot, which was not larger than half-a-dozen square yards, was swarming with them, coming and going, burrowing and provisioning. Very numerous, but not so numerous as themselves, were their pretty parasite, the *Nomada fabriciana*, fine specimens of both sexes of which I have constantly captured; and a remarkable singularity pertaining to the latter is, that some seasons it would totally fail, and another season present itself sparsely, when, after these lapses, it would recur in all its primitive profusion, although the *Panurgus* was every season equally present" (vide No. 184). Smith(D), as *P. ursinus*, 7/7/1839**, abundant; (1855a : 114) ". . . for years such a community has existed on the North side of the Vale of Health, Hampstead Heath, where in spring I have met with the larvae in small cells about six inches beneath the surface, and have reared both sexes: they do not change to nymphs many days before arriving at their perfect condition, usually twenty to twenty-five days"; (1855a : 116) "It abounds on Hampstead Heath"; (1891 : 108) Hampstead Heath.

161. *Dasypoda hirtipes* (Fab.). Enock (1898 : 52-53), "It has only once been recorded from the London district—July 18th, 1878—when I was fortunate in capturing a fine female specimen as it hovered about the face of a sandbank on Hampstead Heath."
162. *Anthophora retusa* (L.). Shuckard (1866 : 240), "I have found the *retusa* Linn., in enormous profusion at Hampstead Heath, indeed, so numerous were they, that late in the afternoon, upon approaching the colony, they, in returning home, would strike as forcibly against me as is often done by *Melolontha vulgaris* or *Geotrupes stercorarius*." Smith(D), as *A. haworthana*, ♂, 11/5/1849**: 3/6/1849**: ♂, 4/5/1850, Hampstead; 10/5/1850, Hampstead; (1855a : 204) "It is found at Hampstead Heath"; (1891 : 25) refers to two specimens dug up on Hampstead Heath. The disappearance of this bee from the Heath is probably due to the absence of sandbanks of the type favoured by it in other localities.
163. *Anthophora acervorum* (L.). Enock (1898 : 99), "At Hampstead there still exists a small colony of *A. acervorum*, and few prettier sights can be seen in April than that of the males sitting with outstretched legs at the entrance of their burrows." This bee is common enough in gardens but it is rarely seen on the Heath. Guichard, ♂, 28/3/38, LG; ♀, 13/4/38, LG; ♂♂, 5/5/38, LG, at *Aubretia*; ♀♀, 10/5/39, Highgate Cemetery, and PHF, at gorse; ♀♀, 24/5/39, LG; ♂, 27/6/39, LG. Whitehead, 1916, BRG. Yarrow, ♂♂♀♀, 6/5—5/6/37, NG; ♂♂, 22/5/38, NG.
164. *Anthophora furcata* Panz. Smith (1855a : 207), "It occurs in . . . and Kentish Town Fields, frequenting the flowers of Red Deadnettle." Andrewes, ♀, 5/7/16, HG. Guichard, 2 ♀♀, 26/7/39, LG, at *Buddleia*.
165. *Anthophora quadrimaculata* (Panz.). Smith(D), as *Sarapoda vulpina*, 15/7/1849, Kentish Town; (1855a : 206) ". . . and Kentish Town Fields, it occurs plentifully during the month of July." Although this bee is found not uncommonly in gardens, there is only a single record of it from the Heath. Andrewes, ♀, 7/34, FG; 1941-7, HG. Guichard, ♂, 23/6/38, LG, at catmint; ♂, 20/7/38, VH; ♂, 27/6/39, LG, at catmint. Yarrow, ♂♂♀♀, 11/7/36, NG, at catmint; ♂♂♀♀, 27/6—3/7/37, NG, at catmint; ♂♂♀♀, 7/38 and 7/39, NG.
166. *Eucera longicornis* Panz. Enock (1898 : 99), "A large colony used to exist in the bank bounding the horse exercise ground near the Vale of Health, at Hampstead. It has long ago disappeared—even before I commenced working this locality." Hampstead Sci. Soc., 1913 : 248, "Many of the sandy banks furnish colonies of *Eucera longicornis*." This statement suggests that the section on the Hymenoptera at any rate, is unreliable! Smith(D), ♂, 29/5/1842, Highgate; ♂, 3/6/1849, Highgate. There are no recent records of it from the district, but it is not uncommon at Mill Hill.

167. *Melecta luctuosa* (Scop.). Enock (1898 : 82), "Last year I was delighted to find that a small colony (of *Anthophora* sp.) had not been quite turned out from Hampstead Heath, though more than half the bank had been cut through for 'improvements.' *M. luctuosa* was then enjoying a sluggish flight in the bright sunshine and quietly alighting on the sandy ground close to an *Anthophora*'s burrow, sat pluming itself, patiently waiting for its mate. It is very easy to capture when so basking, but painful and powerful and far-reaching is its sting." Saunders (1896 : 346), Hampstead Heath (Smith). *Smith(D), as *M. atropos*, 3/6/1849: ♂, 4/5/1850, Highgate; 10/5/1850, Highgate; (1855a : 156) "... and is parasitic on *Anthophora retusa* . . . It has occurred on Hampstead Heath"; (1891 : 136) "It is not uncommon on Hampstead Heath in May, but is a local insect."
168. *Melecta punctata* (Fab.). This species has never been recorded from the Heath, but it occurs from time to time in gardens and in the built up parts of Hampstead. Andrewes, ♂, 13/5/17, HG. Guichard, ♀, 5/5/35, in a garden in St Johns Wood; ♂, 8/6/35, on a pavement near St Johns Wood locality (both outside the area under discussion but included for interest). ♂, 11/4/38, LG; 4 ♂♂, 13/4/38, LG: ♂♀, 5/5/38, LG: ♂, 10/6/38, LG; ♂, 21/4/39, LG, at apple blossom; ♀, 7/6/39, LG. Whitehead, 29/4/20, BRG.
169. *Nomada stigma* Fab. This is a parasite of *Andrena humilis* and Smith took both species on the same day. Smith(D), as *N. ferruginata*, 9/6/1845. Hampstead: (1855a : 135) as *N. germanica*, "... it occurs sparingly on Hampstead Heath during the month of June."
170. *Nomada guttulata* Schenck. This species is parasitic on *Andrena labiata*. Perkins (1917 : 160) states that among Smith's *N. ochrostoma* are specimens of *N. guttulata* (Some of these bear Hampstead labels.)
171. *Nomada flavopicta* (Kirby). Guichard, ♀, 25/7/39, VH. on a yellow daisy. Yarrow, ♂, 3 ♀♀, 29/6/40, PHF, on thistles and flying with *Melitta leporina*, its host.
172. *Nomada sexfasciata* Panz. Saunders (1896 : 288), Highgate (Smith). Smith(D), as *N. scheffrella*, 18/6/1839, "took two specimens of *Nomada scheffrella*, a parasite on *Eucera longicornis*. I think it was rather late, ten days earlier would be better as the males were grey and worn in the wings (Highgate)"; 27/5/1840, "*Nomada scheffrella*—*Nomada connexa* at Highgate—took only three of *connexa*, ♀ numerous": (1891 : 131) "It was formerly very abundant about Highgate Archway, but is now scarce near London."
173. *Nomada goodeniana* (Kirby). Andrewes, ♂, 4/16, HH: ♀, 9/5/19, HH. Bradley, ♀♀, 5/17. Guichard, ♀, 3/5/36, WH. Whitehead, 21/5/16, HH. It is probably parasitic upon *Andrena nigroaenea* and *pubescens*.
174. *Nomada lathburiana* (Kirby). Saunders (1896 : 292), Hampstead, Highgate (Smith). Smith(D), 28/4/1842, Hampstead (as *N. rufiventris*); 9/8/1845. Hampstead: 29/4/1849**; (1855a : 126) "... It is not uncommon at Hampstead"; (1891 : 118) Hampstead and Highgate. Bradley, 2/6/18, HH. Guichard, ♂, 12/4/38, SH, above a colony of its host, *A. cineraria*.
175. *Nomada marshamella* (Kirby). Probably parasitizes *Andrena jacobii*. Andrewes, ♀, 6/16, HH: ♀, 13/5/17, HGL; ♀, 24/5/20, HG. Bradley, 3 ♂♂ ♀, 5/9/17, HH, on thistles. Richards. HE. Walker. ♀, 14/5/01, WH. Yarrow, ♀, 21/5/39, HH.
176. *Nomada lineola* Panz. Smith(D), as *N. cornigera*, 28/4/1844, Hampstead: ♂♀, 11/5/1849**; (1855a : 139) "... but the insect having been plentiful for some years on Hampstead Heath." Andrewes, ♀, 9/5/20, HGL: ♀, 5/6/20, HH. Bradley, ♀, 2/6/18, SH, with *A. tibialis*. Richards. 25/7/23, WH.
177. *Nomada ruficornis* (L.). This species is parasitic upon *Andrena haemorrhoa*. Enock (in Saunders, 1896 : 295), as *N. bifida* from Hampstead. Andrewes, ♂, 4/16, HGL: ♂, 9/5/20, HGL.
178. *Nomada hillana* (Kirby). Smith(D), as *N. ochrostoma*, ♂♀, 3/6/1849, Bishop's Wood; (1855a : 123) as *N. ochrostoma*, "It is not uncommon at

the side of Bishop's Wood, Hampstead, where it has been observed flying about the burrows of *Andrena labialis*, during the month of May." It is uncertain whether Smith took *N. hillana* near Bishop's Wood. Perkins (1917: 160) states that the *ochrostoma* series in Smith's collection contains specimens of *N. guttulata* (a species not known to Smith) some of which bear Hampstead labels. None of the true *hillana*, however, are labelled from Hampstead. Smith's remark about *Andrena labialis* is probably without any host-parasite significance. Smith, it is thought, was not a very reliable observer and many of his curious observations have never been confirmed by later workers. Andrewes, ♀, 4/6/42, HG.

179. *Nomada leucophthalma* (Kirby). Smith (1855a: 124), as *N. borealis*, ". . . it was found on Hampstead Heath some years ago, parasitic on *Andrena clarkella*, and has been once or twice taken since"; (1891: 113) as *N. borealis*, April 10th, as parasite of, and with *Andrena clarkella*, on Hampstead Heath.
180. *Nomada hirtipes* Perez. Saunders (1896: 296), as *N. lateralis* Panz. nec Smith, Hampstead (Smith). *Smith(D), as *N. lateralis*, ♂, 11/5/1849**; ♂ ♂ ♀ ♀, 5-19/5/1850, Highgate: (1855a: 121) as *N. lateralis*, "Formerly I used occasionally to meet with a specimen or two on Hampstead Heath, about a colony of *Andrena albicrus* (= *barbilabris*), but they have long disappeared from that locality; a few years ago a colony of *Andrena longipes* (= *bucephala*) was discovered at Highgate accompanied by this species in abundance, both having been previously scarce. The latter locality is on the London side of Highgate Archway, to the west of the high road"; (1891: 115) as *N. lateralis*. Highgate Archway.
181. *Nomada signata* Jur. Smith(D), 28/4/1844, Hampstead; ♂ ♀, 29/4/1849**; 11/5/1849**; (1855a: 125) "The only localities known for this species are Highgate and Hampstead Heath; it appears in April and is usually abundant"; (1891: 114) "It is said to be parasitic on *Andrena smithella* in Denmark; it cannot be so at Hampstead, that species not having occurred there, whilst the *Nomada* is very plentiful where *A. fulva* is also abundant." Guichard, ♂, 12/4/38, SH. Richards, 5/7/23, WH. Walker, ♀, 14/5/01, WH. If *N. signata* parasitizes *A. fulva* (= *armata*) it is strange that it should be so uncommon on the Heath.
182. *Nomada flava* Panz Bradley, 4 ♀ ♀, 5/17, HH; 2 ♀ ♀, 5/18, HH, taken with *A. jacobi*.
183. *Nomada panzeri* Lep. Smith(D), as *N. ruficornis*, 11/7/1849** (This is almost certainly *panzeri*). Andrewes, ♀, 4/16, HH; 5 ♂ ♂, 9/5/20, HGL. Bradley, 5/17, SH. Guichard, 3/5/36, WH; ♂, 3/5/39, HH; ♂ ♀ ♀, 18/5/39, SH. Yarrow, ♀ ♀, 20/5/39, SH; ♂ ♀ ♀, 21/5/39, SH, at burrows of *A. armata*.
184. *Nomada fabriciana* (L.). Shuckard (1866: 230), vide No. 160. Smith(D), as *N. fabriciella*, 31/5/1840, ? Caen Wood; (1855a: 134) ". . . it is frequently met with on Hampstead Heath"; (1891: 126) "This *Nomada* is the parasite of *Panurgus banksianus* . . . At Hampstead it has occurred in great abundance." Andrewes, ♀, 5/16, HH; ♀, 22/5/20, HH. Bradley, ♀, 18/5/18, HH. According to Perkins (1919), this *Nomada* is parasitic on *Andrena angustior*, *nigroaenea* and *bicolor*.
185. *Nomada flavoguttata* (Kirby). On the Heath this *Nomada* might be parasitic on *Andrena minutula*, *saundersella* and *subopaca*. Andrewes, ♀, 5/16, HH; ♀, 10/6/17, HH; ♀, 22/5/20, HH; ♂, 4/6/22, HGL.
186. *Nomada sheppardana* (Kirby). This insect is exceptional in parasitizing three small species of *Halictus*, *H. nitidiusculus*, *minutus* and *morio* (vide Perkins, 1919: 229) (The authors have occasionally seen this *Nomada* hovering over the burrows of *H. minutus* in Surrey). The species appears in May and parasitizes larvae produced by hibernated female Halicti, giving rise to a generation which does not emerge until the following May; thus the *Nomada* is always single-brooded, irrespective of how many broods the *Halictus* may have. Smith(D), as *N. dalii*, 11/5/1849**.

87. *Megachile maritima* (Kirby). *Smith (1855a : 184) “. . . it has been once taken at Hampstead”; (1891 : 180) “it has occurred at Hampstead but rarely.”
88. *Megachile willughbiella* (Kirby). A very common garden species, taken at various papilionaceous flowers; rare on the Heath. ♂♂, 8/6—26/7: ♀♀, 10/6—26/7. 1916-1939. Yarrow records dahlia petals cut by the ♀♀ in July, NG.
189. *Megachile circumcincta* (Kirby). Smith(D), ♀, 18/6/1839, ? Highgate.
190. *Megachile centuncularis* (L.). Not nearly so common in gardens as *M. willughbiella*. Andrewes, ♀, 7/16, HG; ♂, 1/7/17, HH. Guichard, ♂♂ ♀♀, 7/38, LG, visiting *Lathyrus*. Richards, 4/7/24, BPG. Yarrow, ♂♂ ♀♀, 27/6—15/7/37, NG, at lupins.
191. *Megachile lignisecca* (Kirby). Smith (1855a : 176), “. . . it has been taken at Highgate and Hampstead, on thistle heads in autumn.” Andrewes, 26/8/42, HG, and subsequently. Guichard, ♂, 25/7/39, KW; 4 ♂♂, 27/6/39, LG. Yarrow, ♂, 3/7/37, NG; ♂♀, 15/6/40, SH, at old crab-apple tree.
192. *Megachile versicolor* Smith. This is one of the more uncommon species. Yarrow, ♀, 29/6/40, PHF, on a thistle near Viaduct Pond.
193. *Coelioxys rufescens* Lep. & Serv. It is not known for certain to which *Megachile* this *Coelioxys* is attached as parasite. Andrewes, ♀, 16/8/42, HG. Guichard, ♀, 26/7/36, WH, at *Rubus*.
194. *Coelioxys elongata* Lep. Enock (1898 : 82), as *C. simplex*, “In days gone by it was possible to obtain specimens of *C. simplex* at Hampstead, but those days, like the sand banks there, have passed away.”
195. *Coelioxys inermis* (Kirby). Yarrow, ♀, 3/7/37, NG.
196. *Anthidium manicatum* (L.). Smith(D), 15/6/1849, Kentish Town. Andrewes, ♂, 6/15, HG; ♀, 1/7/17, HG; ♀, 29/7/21, HG, at *Scmpervivum*. Guichard, 7/37, GHP, abundant at catmint; ♀, 8/7/39, LG: ♂, 11/7/39, LG. Yarrow, ♂♂ ♀♀, 18/6—27/7/36, NG; ♂♂ ♀♀, 28/6—3/7/37, NG.
197. *Osmia rufa* (L.). One of the commonest spring bees in Hampstead gardens, and at Highgate. Both sexes visit fruit blossom, rhododendron and wallflowers. Guichard records many females collecting mud beneath a dripping tap in LG. Blair mentions this species sitting on tree trunks on the Heath. Enock (1898 : 82), “. . . going in and out of a small bolt hole in one of the tombs at Highgate Cemetery.” ♂♂, 20/4—17/5: ♀♀, 29/4—24/6. 1898-1939
198. *Osmia coerulescens* (L.). Andrewes, ♂, 20/5/18, HG; ♀, 11/6/19, HG; ♂, 9/5/20, HG: ♀, 30/6/23, HG. Guichard, ♂♂, 21/4/36, WH; ♂♂ ♀♀, 2/6/39, LG, at catmint; ♂♀, 8/6/39, LG, at *Aubretia*. Whitehead, 29/5/16, BRG. Yarrow, ♂♂ ♀♀, 6/6—3/7/37, NG, in rockery; ♂, 3/6/39, NG.
199. *Chelostoma campanularum* (Kirby). Shuckard (1866 : 288), “In abundance on railings of fields that skirt Hampstead Heath, on the right hand side going from London, parallel to the Vale of Health, and thence rising to the holly enclosure of the Earl of Mansfield’s mansion.” Andrewes, ♀, 7/16, HG: ♂, 25/6/17, HG; ♂, 15/7/20, HG; ♀, 16/7/20, HG. Guichard, ♂, 27/6/39, LG, at *Campanula*: ♀, 11/7/39, LG: ♀, 2/8/39, LG.
200. *Bombus terrestris* (L.). Abundant everywhere.
201. *Bombus lucorum* (L.). Common everywhere. In 1938 a nest was found near Ken Wood. In 1939, the first ♂ was taken on June 27th.
202. *Bombus lapidarius* (L.). Common on the Heath and in gardens. A nest was found in a shady bank on Sandy Heath, the entrance being well hidden.
203. *Bombus pratorum* (L.). Common everywhere. Smith (1855a : 221), “. . . its nest frequently occurs on Hampstead Heath, under furze bushes and also on banks.”
204. *Bombus ruderatus* (Fab.). Andrewes, ♀, 7/16, HT: ♀, 2/5/20, HH; ♂ (dark form), 11/7/20, HG.
205. *Bombus hortorum* (L.). Common everywhere.
206. *Bombus subterraneus* (L.). Saunders (1896 : 370), as *B. latreillellus*, from Hampstead (Smith). Andrewes, ♀, 10/6/17, HH. Blair, ♂, 27/8/18, HH, on thistle. Bradley, ♂, 28/7/17, HH.

207. *Bombus distinguendus* Moraw. Smith (1891: 202), as *B. elegans* Seidl., from Hampstead. This uncommon species turns up now and again in various parts of the country and as it has been recorded from Surrey, it may well have occurred at Hampstead, but without seeing the actual specimen one cannot be sure that it was not a form of *B. subterraneus* (L.).
208. *Bombus ruderalis* (Muller). Andrewes, ♂, 10/6/17, HGL. Bradley, ♀, 6/18, HH; ♂ (dark form), 28/7/17, Turners Wood. Richards, WH. Yarrow, ♀, 20/5/39, HE.
209. *Bombus agrorum* (Fab.). Common everywhere.
210. *Bombus humilis* Illiger. Andrewes, ♀, 27/5/17, HGL. Blair, 27/8/18, HH, on thistle. Bradley, 1934, HH.
211. *Psithyrus rupestris* (Fab.). Andrewes, ♂, 7/16, HG; ♀, 7/16, HH. Bradley, ♂, 28/7/17, HH. Guichard, ♀, 10/6/39, PHF; ♂♂, 25/7/39, near KW, common on thistles.
212. *Psithyrus vestalis* (Geoff. in Fourc.). This is the commonest species both on the Heath and in gardens. Andrewes records it from Highgate. ♂♂, 11/7—5/8; ♀♀, 4/4—30/7. 1916-1939.
213. *Psithyrus barbutellus* (Kirby). Blair, ♀, 27/8/18, HH. Guichard, ♀, 1/4/38, SH. Yarrow, ♀, 23/5/37, NG.
214. *Psithyrus campestris* (Panz.). Guichard, ♂, 25/7/39, SH. Yarrow, ♂ (dark form), 30/7/39, SH.
215. *Psithyrus sylvestris* Lep. Andrewes, ♂, 6/16, HG; 17/7/21, HGL. Guichard, ♀, 1/4/38, HH; ♂, 21/6/39, LG, at catmint; ♂♂, 29/6/39, KW; ♀, 25/7/39, SH.
216. *Apis mellifera* L.

VII. Discussion.

Forty per cent of the British Hymenoptera Aculeata (excluding the Dryinidae, Embolemidae and Bethyridae) have been recorded from Hampstead Heath and the surrounding district, and more than one hundred and fifty species have occurred there during the present century.

The possibility of survival of many burrowing species would appear slight in the face of human interference but many species are as abundant to-day as they were when entomology was in its infancy. In 1898, Fred Enock laments the replacement of sandbanks favoured by *Andrenas* and sandwasps by a cinder path and writes as follows, "Last year I visited this locality several times but not a single *Cerceris* did I find. The beautiful bee, *Andrena fulva*, with its bright chestnut-coloured abdomen, has not, I am rejoiced to say, yet been exterminated, though how long it will be able to exist time alone will show. Its bright colour is too tempting to the sharp eyes of Easter Monday Cockneys." Happily Enock's lament was unjustified and his beautiful *Andrena* is still one of the most abundant spring species, forming large colonies in much frequented sandy footpaths and open spaces on the Heath.

If Shuckard or Smith had published an account of all the aculeates occurring on the Heath in their day it would have greatly helped in making a century old history of that fauna and its development or diminution. It is certain that many of the commoner species must have occurred but their presence was never put on record, and, except for some of the rarer species which were noted, it is impossible to know if any species have actually colonized the area in recent years. It is possible, however, to review some of those species which have gone and to explain their disappearance.

Appendix I gives a list of bees and wasps which have not been recorded during the present century. Many of these are large and distinctive insects, some forming colonies, and it is unlikely that they have escaped the notice of all recent collectors. Yet some species now apparently absent may one day reappear, the explanation being that they are really present every year but in numbers so small that they escape notice. Some of the single records in the list strongly suggest this (*Andrena clarkella*, *A. bimaculata*, *Panurgus calcaratus*, etc.).

The highest parts of Hampstead Heath and Highgate consist of Bagshot Sand but London Clay is found in the valleys. Bagshot Sand is perfectly suited to the digging habit of many aculeates and the facility with which they can dig undoubtedly governs their distribution. The nearest open country to Hampstead is at Mill Hill, which is largely on London Clay, and there many of the typical sand loving bees and wasps are replaced by other species. At the time when Hampstead was joined to Mill Hill by uninterrupted country, many species which are now found at Mill Hill apparently then failed to extend their range to the sandy Hampstead area. At Mill Hill, *Andrena marginata* Fab., *Osmia leaiana* (Kirby), *Osmia leucomelana* (Kirby), *Stelis punctulatissima* (Kirby), and *Bombus sylvarum* (L.) all occur, yet not one of these has ever been recorded from Hampstead.

The present day flora of the Heath is considerably poorer than it was twenty-five years ago and probably much poorer than it was earlier still. The disappearance of some insects seems correlated with the slow extermination of their favourite plants. In 1866 Shuckard recorded large numbers of *Panurgus banksianus* above the Vale of Health and some years later Enock recorded the same species on the mouse-ear hawkweed at Hampstead. In vain this old locality has been regularly visited but neither the bee nor the hawkweed (*Hieracium pilosella*) has been found, but children always plucking what few wild flowers there were.

The absence of *Methoca ichneumonides* Latr. is undoubtedly due to the disappearance of its tiger beetle host, *Cicindella campestris* L., and the loss of *Tiphia minuta* V. d. L. may be ascribed to a similar reason.

Considering the abundance of spiders, the Pompilidae are remarkably scarce, only seven specimens representing three species having been captured on the Heath in recent years. A fourth species, probably *Priocnemis perturbator* (Harris), was caught on Sandy Heath but unfortunately escaped when the net was almost torn in half on a bramble. In the outlying parts of Hendon, Pompilids are common in gardens and rockeries, and at Mill Hill there are at least six species of *Pompilus* and *Priocnemis*. In these districts they visit umbellifers which are very scarce in the Hampstead area although they were plentiful there in the days of Shuckard and Smith.

It is strange that the two common species of *Ammophila* are absent from the Heath since they are usually present in Bagshot Sand areas and occur as near London as Wimbledon Common.

The disappearance of all four species of *Nysson* is interesting. *N. spinosus* and *N. interruptus* are parasitic upon *Gorytes mystaceus* and

G. fargeii (= *campestris*). *G. fargeii* occurred at Highgate (Saunders and Shuckard) but has not been taken since, while *G. mystaceus* although not recorded by the older authors, occurs on the Heath to-day. *N. trimaculatus* is a parasite of *Hoplisis quadrifasciatus* which has never been recorded from the Heath although it must have occurred there. *N. dimidiatus* is a parasite of *Harpactus tumidus* neither of which have been seen since Smith's day.

The rediscovery in 1939 of *Astata boops* and *Tachysphex pompiliiformis* demonstrates how easily a species can be overlooked if its distribution is restricted to one small area. Yet where they occurred in an enclosure on Sandy Heath they were common and evidently appreciated the absence of the public from their chosen breeding area.

Two species of *Odynerus* seem to have disappeared; *O. spinipes* has been taken recently at Mill Hill, where there was a large colony in the roots of an upturned elm tree, and *O. laevipes* is quite common in the same locality.

Colletes succincta is a bee normally confined to heather areas and Enock writes, "the exceedingly neat looking species, *C. succincta*, I used to find at Hampstead Heath, but, like other things, it has now disappeared from that neighbourhood." In 1629 and 1632 Thomas Johnson published two accounts of plants found on Hampstead Heath and listed by Fitter (1945), and both *Erica* and *Calluna* are mentioned; their extinction has been due to wild flower "lovers."

The Halicti visit a large number of plants, but the authors have taken most of their Heath specimens either at blackberry or near their burrows. *Halictus minutus* is one of the commonest bees on the Heath and the holes of this species are found in most sandbanks. The early collectors only recorded *H. utidiusculus*, although many others must have been present.

The relationship between species of *Halictus* and *Sphecodes* on the Heath is not altogether clear, but it is thought that the three large species of *Halictus*, *H. calceatus*, *albipes*, and *rubicundus* are the hosts of *Sphecodes gibbus* and *monilicornis*, and *H. leucozonius* is probably the host of *S. ephippius*. Amongst the small species, *S. miniatus*, *crassus* and *fasciatus* may well be the parasites of *H. villosulus*, *minutus* and *nitidiusculus* and possibly *S. niger* is attached to *H. punctatissimus*. *Sphecodes pellucidus* is extremely common on some parts of the Heath flying with its host *Andrena barbilabris*.

The Genus *Andrena* is represented by thirty-two species, five of them (*A. humilis*, *flavipes*, *bucephala*, *florea*, and *trimmerana*) having disappeared within the last fifty years. In April and May the Heath swarms with Andrenas and the authors know of no locality where they have seen so many; indeed, the numbers are so great that frequently the attention of the public is drawn to them and some unusual letters appear in the local press. *A. armata* (*fulva*) is the most abundant species and it is this bee that usually attracts the eye of the layman. *A. cineraria* is very local but small colonies have been found in three or four different places, one of them being mixed with a large colony of

A. armata. *A. cineraria* probably acts as the host of *Meloe proscarabeus*, a beetle not uncommon on the Heath and found by Dr Blair and the authors near colonies of this bee. There is still some uncertainty as to which bees act as the host of the *Meloe* but *Anthophora retusa* is the generally accepted one. On the Heath, however, no burrows of any *Anthophora* have been discovered. The *Meloe* appears regularly each spring and assuming the host to be a large insect the choice seems limited to *Andrena cineraria*, *A. pubescens* and *A. tibialis*; (some observations on the *Meloe* triungulin are to be found in Smith, 1891: 24).

All except one of the *Andrenas* which have disappeared from the district are conspicuous insects; three of them, *A. flavipes*, *bucephala* and *humilis* often form large colonies and are therefore less likely to evade notice. *A. bucephala* is remarkable in having a communal entrance hole and of this bee Perkins (1917a: 199) writes, "It is curious to note that F. Smith and others, who for many years had the large colony of *A. bucephala* that used to exist at Hampstead, under observation, recorded no peculiarity in the habits." It is easy to see how an insect having such a restricted breeding area might be suddenly exterminated.

The rediscovery of *Andrena clarkella* on West Heath by Andrewes in 1947 is of exceptional interest and helps to confirm the remarks made on the survival from year to year in very small numbers of certain species thought to have long disappeared. For several years prior to 1940 the authors searched the West Heath *Salix* clumps and other localities especially for *A. clarkella* and felt that it must have survived somewhere, as it is common at Mill Hill and Stanmore in similar looking places.

Enock's single record of *Dasypoda hirtipes* is inexplicable unless he witnessed the tail end of this species' existence as a regular resident on Hampstead Heath. One might have thought, however, if it was really once a resident that it would have received some notice from Shuckard as in England it is a local and usually coastal species. The nearest locality to Hampstead where it has been found is at Woking, where the authors have never taken it and know of no recent record from that area.

Anthophora retusa one would expect to find, but there are no records of it since 1897 and possibly its favourite sandbanks have disappeared also.

Although a large colony of *Eucera longicornis* used to exist on the Heath, this bee has not been rediscovered. The reference to it in the Hampstead Scientific Society's book on Hampstead Heath cannot be accepted since it implies there were many colonies, years after Enock (who knew of but a single colony) had commented upon its disappearance long before he even commenced collecting there. *E. longicornis* is always local but most conspicuous; it is fairly common at Mill Hill.

The Genus *Nomada* includes eighteen species, six of which have apparently disappeared. In several instances the absence of the host explains the disappearance of the parasite, these being *Nomada stigma*

(parasite of *Andrena humilis*), *N. sexfasciata* (parasite of *Eucera longicornis*), and *N. hirtipes* (parasite of *A. bucephala*). The host of *N. guttulata* (*A. labiata*) has not been taken since 1920.

It is doubtful whether *Nomada hillana* actually occurred in the Hampstead area in the old days (vide list, No. 178) but the now generally accepted host, *A. wilkella*, was abundant at the time when Smith recorded this *Nomada* flying about the burrows of *A. labialis*. *A. wilkella* has not been recorded since 1918 and makes Andrewes' rediscovery of *N. hillana* in his garden all the more interesting.

Nomada sheppardana (better known as *N. furva*) has not been found since 1849, although the supposed hosts, *Halictus nitidiusculus*, *minutus* and *morio* all occur on the Heath, the last two in abundance.

An article on *Andrena* and *Nomada* on Hampstead Heath was published by Yarrow (1941), in which the host-parasite relationships were discussed.

Megachile maritima is a coastal species which occasionally occurs inland and it may turn up again; the same may be said of *M. circumcincta* which is widely distributed but local. *Coelioxys elongata* which Enock used to find at Hampstead is a parasite of *Megachile ligniseca*, *willughbiella* and *circumcincta* and its presence of recent years has probably been overlooked.

The Genus *Bombus* is well represented but it is strange that *B. sylvarum* has never been recorded, the species occurring commonly at Mill Hill. All the species of *Psithyrus*, except the more northern *P. bohemicus*, have been obtained recently, the old collectors presumably not bothering to record them.

The flowers most attractive to aculeates in the non-built-up parts of the area are blackberry, species of *Salix*, hawthorn, gorse and rosebay willow herb, but in the spring when there is practically nothing flowering on the Heath, many species visit flowers in private gardens.

During the summer, the cracks and crannies in old walls and the holes and splits in pergolas and summer-houses provide nesting sites for numerous species, some of which are more common in these gardens than on the Heath itself. Appendix II gives a list of species which have been captured in six gardens, some of them considerably removed from the Heath. Many species are not merely visitors to the gardens but appear regularly year after year, nesting in the same holes and visiting the same plants. Two of these gardens (FG and HG) are in areas considerably less built-up than the other four and it will be seen that the records from the former contain many species which are not found in the urban gardens and which are more closely associated with the Heath fauna. For example, of the six species of *Andrena* found in gardens, *A. bicolor* has been recorded from three urban gardens, and *A. nigroaenea* from one, whereas three of the remaining four species have been recorded from the two rural gardens (FG and HG) and from the Heath itself; the fourth *A. nigriceps* has never been taken from the Heath, but from a rural garden (HG). On the other hand, some species recorded from the urban gardens have never been found on the Heath,

although several of them are recorded from the two rural gardens; these are *Solenius continuus*, *Andrena bicolor*, *Anthophora furcata*, *Melecta punctata*, *Coelioxys mermis*, and *Chelostoma campanularum*.

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Appendix I.

List of 48 species which used to occur in the district but which have not been recorded since the end of the nineteenth century.

TIPHIIDAE.

6. *Tiphia minuta* V. d. L.

METHOCIDAE.

8. *Methoca ichneumonides* Latr.

FORMICIDAE.

10. *Ponera coarctata* (Latr.).
 11. *Ponera punctatissima* Roger.
 12. *Myrmecina graminicola* (Latr.).
 13. *Monomorium pharaonis* (L.).
 14. *Myrmica laevinodis* Nyl.
 17. *Stenamma westwoodii* Westw.
 18. *Tetramorium caespitum* (L.).
 23. *Formica rufa* L.
 24a. *Formica fusca* var. *glebaria* Nyl.

POMPILIDAE.

28. *Calicurgus hyalinatus* (Fab.).
 29. *Deuteraenia hircana* (Fab.).
 31. *Pompilus crassicornis* Shuck.
 32. *Anoplius* sp.

VESPIDAE.

33. *Odynerus spinipes* (L.).
 34. *Odynerus laevipes* Shuck.

SPHECIDAE.

55. *Diodontus tristis* (V. d. L.).
 60. *Mimesa equestris* (Fab.).

76. *Clytochrysus zonatus* (Panz.).
 86. *Nysson spinosus* (Forst.).
 87. *Nysson interruptus* (Fab.).
 88. *Nysson trimaculatus* (Rossi).
 89. *Nysson dimidiatus* Jur.
 91. *Gorytes fargeii* Shuck.
 92. *Harpactus tumidus* (Panz.).

APIDAE.

96. *Colletes succincta* (L.).
 99. *Prosopis punctulatissima* (Smith).
 128. *Andrena flavipes* Panz.
 129. *Andrena florea* Fab.
 136. *Andrena trimmerana* (Kirby).
 137. *Andrena bucephala* Stephens.
 147. *Andrena humilis* Imhoff.
 160. *Panurgus banksianus* (Kirby).
 161. *Dasypoda hirtipes* (Fab.).
 162. *Anthophora retusa* (L.).
 166. *Eucera longicornis* (L.).
 167. *Melecta luctuosa* (Scop.).
 169. *Nomada stigma* Fab.
 170. *Nomada guttulata* Schenck.
 172. *Nomada sexfasciata* Panz.
 179. *Nomada leucophthalma* (Kirby).
 180. *Nomada hirtipes* Perez.
 186. *Nomada sheppardana* (Kirby).
 187. *Megachile maritima* (Kirby).
 189. *Megachile circumcincta* (Kirby).
 194. *Coelioxys elongata* Lep.
 207. *Bombus distinguendus* Moraw.

Appendix II.

List of 72 species recorded from gardens.

CHRYSIDIDAE.

2. *Omalus auratus* (L.). BPG, NG, HG.
 5. *Chrysis ignita* (L.). BPG, NG.

SAPYGIDAE.

7. *Sapyga quinquepunctata* (Fab.). FG, HG.

FORMICIDAE.

20. *Lasius niger* (L.).*
 21. *Lasius flavus* (Fab.).*

POMPILIDAE.

26. *Priocnemis exaltatus* (Fab.). HG.

VESPIDAE.

35. *Ancistrocerus parietum* (L.). BPG, LG, NG, HG.
 36. *Ancistrocerus pictus* (Curt.). HG.
 37. *Ancistrocerus trimarginatus* (Zett.). NG.
 38. *Ancistrocerus parietinus* (L.). HG, NG.
 39. *Vespula vulgaris* (L.).*
 40. *Vespula germanica* (Fab.).*

SPHECIDAE.

45. *Trypoxylon figulus* (L.). BPG, HG, LG.
 46. *Trypoxylon clavicerum* (Lep.). BPG, NG.
 47. *Trypoxylon attenuatum* Smith. HG.
 48. *Spilomena troglodytes* (V. d. L.). HG.
 49. *Stigmaeus solskyi* (Moraw). HG, LG.
 50. *Pemphredon lugubris* (Fab.). BRG, HG, LG.
 51. *Cemonus shuckardi* Mor. BPG, HG, LG, NG.
 56. *Passaloecus corniger* Shuck. HG, LG, NG.
 57. *Passaloecus insignis* (V. d. L.). LG, NG.
 58. *Passaloecus gracilis* (Curt.). BPG, HG, LG, NG.
 62. *Psenulus atratus* (Fab.). HG.
 68. *Coelocrabro ambiguus* (Dahl.). LG.
 70. *Crossocerus varus* Lep. & Brulle. LG.
 72. *Crossocerus wesmaeli* (V. d. L.). HG.
 73. *Crossocerus elongatulus* (V. d. L.). BPG, HG, LG, NG.
 77. *Clytochrysus cavifrons* (Thoms.). BPG, HG, NG.
 78. *Clytochrysus chrysostomus* (Lep. & Brulle). HG.
 79. *Solenius continuus* (Fab.). HG, NG.
 80. *Metacrabro quadricinctus* (Fab.). HG, NG.
 82. *Rhopalum clavipes* (L.). HG.

APIDAE.

98. *Prosopis communis* (Nyl.).*
 100. *Prosopis hyalinata* (Smith). BPG, LG.
 104. *Halictus calceatus* (Scop.). HG.
 112. *Halictus tumulorum* (L.). HG.
 113. *Halictus smeathmanellus* (Kirby).*
 124. *Sphecodes fasciatus* (v. Hag.). HG.
 132. *Andrena nigroaenea* (Kirby). LG.
 133. *Andrena bicolor* (Fab.). BPG, FG, HG, LG, NG.
 144. *Andrena nigriceps* (Kirby). HG.
 146. *Andrena labialis* (Kirby). HG.
 154. *Andrena similis* Smith. HG.
 156. *Andrena dorsata* (Kirby). HG.
 157. *Melitta haemorrhoidalis* (Fab.). HG.
 163. *Anthophora acervorum* (L.). BRG, LG, NG.
 164. *Anthophora furcata* Panz. HG, LG.
 165. *Anthophora quadrimaculata* (Panz.). FG, HG, LG, NG.
 168. *Melecta punctata* (Fab.). BRG, HG, LG.
 175. *Nomada marshamella* (Kirby). HG.
 178. *Nomada hillana* (Kirby). HG.
 188. *Megachile willughbiella* (Kirby).

190. *Megachile centuncularis* (L.). BPG, LG, NG.
191. *Megachile ligniseca* (Kirby). HG, LG, NG.
193. *Coelioxys rufescens* Lep. & Serv. HG.
195. *Coelioxys inermis* (Kirby). NG.
196. *Anthidium manicatum* (L.). HG, LG, NG.
197. *Osmia rufa* (L.).*
198. *Osmia coerulescens* (L.). BRG, HG, LG, NG.
199. *Chelostoma campanularum* (Kirby). HG, LG.
200. *Bombus terrestris* (L.).*
201. *Bombus lucorum* (L.).*
202. *Bombus lapidarius* (L.).*
203. *Bombus pratorum* (L.).*
204. *Bombus ruderalis* (Fab.). HG.
205. *Bombus hortorum* (L.).*
209. *Bombus agrorum* (Fab.).*
211. *Psithyrus rupestris* (Fab.). HG.
212. *Psithyrus vestalis* (Geoff. in Fourc.).*
213. *Psithyrus barbutellus* (Kirby). NG.
215. *Psithyrus sylvestris* Lep. HG, LG.
216. *Apis mellifera* L.*

* Common in all gardens.

Reading Circles.

READING Circles for the following eleven journals are run by various Sections, but may be joined by any member of the Society. Those wishing to join or to obtain further particulars should communicate with the several Reading Circles Secretaries, whose names and addresses are listed below. The annual subscriptions are indicated in brackets.

Antiquity (2s 6d). S. Austin, 43 Darent Road, N.16.

British Birds (2s 6d). W. A. Wright, 23 Gordon Road, E.4.

<i>Entomologist's Monthly Magazine</i>		
<i>Entomologist</i>	}	H. J. Burkill, 3 Newman's Court, Cornhill, E.C.3.
<i>Entomologist's Record</i>		
	(5s)	

<i>Journal of Animal Ecology</i> (2s) ...		
<i>Journal of Ecology</i> (2s)	}	A. H. Norkett, 36 Hemsby Rd., Chessington, Surrey.

Journal of the Commons, Open Spaces and Footpaths Preservation Society (free). Miss L. J. Johns, 87 Morley Hill, Enfield, Middx.

<i>Naturalist</i> (2s 6d)		
<i>North Western Naturalist</i> (4s) ...	}	H. J. Burkill, as above.

Report of the Botanical Society of the British Isles (1s). G. R. A. Short, 36 Parkside Drive, Edgware, Middx.

Obituary.

Edmund Browne Bishop.

WITH the passing, on the 2nd November 1947, of Edmund Browne Bishop, the Society loses one of its oldest members and one who, though practically unknown to the present generation, had been one of its stoutest supporters in the past.

He was elected in 1896, and soon threw himself heartily into the Society's affairs and took an active part in many of its proceedings. He was closely associated with the movement during the 1914-18 war which resulted in the reorganisation of the Society into Sections, instead of the semi-private research committees which had been formed some years earlier by the late Louis Prout. In those days the Society's politics were often stormy, and Bishop was always one of the stoutest fighters for reform of any kind. In 1915 he became President of the combined research section, and in 1921 he was elected President of the Society, an office which he retained until the end of 1924. About this time he retired from the Civil Service, and thereafter, as he lived at Godalming, his attendances at meetings and excursions became gradually fewer, ceasing altogether a few years ago owing to the infirmities of age and domestic bereavement.

He was an all-round naturalist with a good general knowledge of the Lepidoptera, but his principal hobbies were botany and archaeology. In his later years he devoted himself mainly to the former and did a great deal of specialist work on the Genus *Rosa*. He was a well known figure in the Godalming district and prominently connected with several Natural History and Rambling Clubs in the neighbourhood. He was for many years a member of the Botanical Society of the British Isles. The National Trust, the Commons and Footpaths Preservation Society and the Society for the Preservation of Ancient Buildings. In 1943 he was co-opted on the Executive Committee of the West Surrey Society and appointed Honorary Warden of the Hydon Ball Sub-Committee, a work in which he took great personal interest.

By his Will the Society becomes the possessor of all his books relating to Natural History or Archaeology, including a number of valuable County Floras, his lantern slides and his general Botanical Herbarium. The special *Rosa* Herbarium is bequeathed separately to one who had been working with him, and it is understood that this will be deposited in the British Museum as it is considered of national importance.

He was born in 1864, at the village of Bradpole in Dorset, and was always proud of being a West Countryman, and also of being markedly Celtic, both in feature and temperament.

L. J. T.

I am very pleased to have an opportunity of adding a few words of tribute to the botanical work of my friend the late Mr E. B. Bishop. His interest in flowers certainly dated from as far back as the closing

years of the last century—and perhaps earlier—and his observations play an important part in the Society's manuscript botanical records. He was one of the editors of *Botanical Records of the London Area*, 1928-1936. But Bishop's interests ranged wide as is shown by the collection of *London Catalogues* marked for various counties which were found amongst his possessions and the material from many parts of the British Isles he collected during his holidays. One of his best papers dealt with Northamptonshire botany (*B.F.C. 1933 Rep.*, 571-582, 1934).

When Col. A. H. Wolley-Dod found that advancing years made it impossible for him to carry on with his work as the British authority on Rosa he chose Bishop as his successor. For a few years he named material for a wide circle of correspondents but *anno domini* rendered it too much for his strength and our late member asked Captain A. E. A. Dunston to take over the task. It is appropriate that his fine collection of Roses will go to the British Museum (Natural History).

The bequests to the Society will prove of great value. The books form a valuable addition to our library and include Sowerby's *English Botany*, Edition 3, with the rare supplement—an important work of which we are in great need. The herbarium includes vouchers for many important records from our area and other material which will increase the value of our collection for reference. It is a very pleasing thought that one of our oldest members who had lived out of London for about 24 years and had little recent contact with the Society, should have remembered us so generously in his will.

J. E. L.

F. J. Johnston.

F. J. Johnston joined our Society in 1931 when living at Chingford and although an infrequent visitor at our meetings was well known to those members frequenting Epping Forest. His interest in Natural History was both wide and intimate for he had special knowledge of our native mammals, birds and fish. During his residence at Chingford he became particularly interested in the invasion of the Grey Squirrel in Epping Forest and devoted much time and care to a close study of its habits and the effect on our native species and, apart from its generally admitted destructiveness, he became convinced it was driving out our native Red species. Satisfied of this, he persuaded the Forest authorities to institute a vigorous campaign against the Grey, in which he took an active part. The story is told by Johnston in "The Grey Squirrel in Epping Forest," which appeared in the *London Naturalist* for 1937. Johnston was an enthusiastic Bird Watcher, careful and accurate in identification, and supplied many interesting records for our ornithological files.

Leaving Chingford in 1940, his wife and he took up residence at Sidmouth and he became an active member of the "Devon Bird Watching and Preservation Society," contributing records to their Annual Report.

He was a most delightful companion and a walk or day spent in his company left the happiest memories, the writer having enjoyed this privilege both at Chingford and more recently at Sidmouth. His passing at the early age of 63 is a grievous loss and to his widow we can but offer sincere and deep sympathy. S. A.

Mrs M. M. Wilson (nee Hose).

Mrs Wilson, better known to most members by her maiden name as Miss Hose, joined the Society in 1931, and was at that period probably mainly interested in botany and ornithology. But her interest in Natural history was catholic, and her intimate knowledge of North West Kent ensured that the many excursions under her guidance in that area were always of real interest. Members of the Ornithological Section recall with pleasure the happy companionship of longer excursions to Scolt Head and elsewhere, and her contributions to the *London Bird Report* were at all times acceptable.

About 1937 she became seriously interested in the study of Hemiptera, and I recall many excursions on which her supply of specimen tubes was fully utilised before the day was over. She was always interested in the welfare and the teaching of children, and was never happier than when taking a group of young people into the open country, there to expound the simpler mysteries of bird and flower and insect.

The following note from the pen of Mr J. E. Lousley well expresses the quality of her natural history observations: Mr Lousley writes: "An example of her interest was the detection of the alien plant *Trifolium resupinatum* L. . . . she sent this to me for naming because she had noticed that the flowers were reversed, a well-known feature of the species but one which only a very observant person would notice in ignorance of the fact that such a feature occurs."

In 1940 Miss Hose became Mrs Wilson, and her two children were born in the war years. Living as she did in the direct path of the flying bombs and other war missiles, those years were a time of the greatest stress and strain for Mrs Wilson. The whole of her life became subservient to the welfare of her family, and her attendance at Society meetings practically ceased. With the advent of peace, however, Mrs Wilson again essayed to join to a limited degree in the Society's activities, more particularly in the botanical excursions. It was our privilege to be in her company on some of these. I recall her last excursion, on June 29th, 1947, to Leatherhead. With what pleasure she gathered a flower here, an insect there, to show to her children at home. I obtained her promise on that day to be our lady referee on the Natural History Brains Trust for October, but it was not to be. On August 17th the Entomological Section went to Darenth. The train stopped at Bickley. We looked in vain for Mrs Wilson. She passed onwards on that day.

To those of us who knew her, and to the Society of which she was always a loyal supporter, the loss is personal and real. Our deepest sympathy goes out to her husband and to her children. L. G. P.

STATEMENT OF ACCOUNTS, 1947.**GENERAL ACCOUNT.**

Subscriptions and Entrance Fees £480 5 6	Rent £77 16 0
Interest on Post Office Account 6 17 9	Syllabus Expenses (Printing and Postage) 71 12 6
Interest on £75 War Stock ... 2 12 6	Printing and Stationery ... 29 14 9
	Postage (Secretary) 10 6 3
	Postage (Treasurer) 6 9 5
	Insurance 2 16 10
	Gratuities 3 6 0
	Subscriptions 3 4 0
	Sectional Expenses 40 10 0
	Donation — Bookham Common Committee 1 1 0
	Chingford Expenses 5 13 8
	Grant — "Birds of London Area" 2 0 0
	Secretary's Honorarium ... 59 0 0
	Transfer to London Naturalist Account 194 6 5
£489 15 9	£507 16 10
Balance, 1st November 1946 .. 64 13 4	Balance, 31st October 1947 ... 46 12 3
£554 9 1	£554 9 1

LONDON NATURALIST ACCOUNT.

Sales of <i>London Naturalist</i> and <i>London Bird Report</i> , etc. £14 17 10	Printing and Postage, <i>London Naturalist</i> £267 8 3
Donation 2 4 0	
Grant from The Royal Society 56 0 0	
Transfer from General Account 194 6 5	
£267 8 3	£267 8 3

BOTANICAL RECORDS ACCOUNT.

Balance, 1st November 1946 ... £30 0 0	Balance, 31st October 1947 ... £33 0 1
Interest on Post Office Account 3 0 1	
£33 0 1	£33 0 1

LIFE COMPOSITION ACCOUNT.

Balance, 1st November 1946 ... £245 0 0	Balance, 31st October 1947 ... £285 0 0
Received during the year ... 40 0 0	
£285 0 0	£285 0 0

RESERVE ACCOUNT.

Balance, 1st November 1946 ... £90 0 0	Balance, 31st October 1947 ... £90 0 0
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F. G. DELL, *Treasurer.*Audited and found correct,
22nd March 1948.C. L. COLLENETTE, *Auditor.*
J. H. G. PETERKEN, *Auditor.*

Official Reports for 1947.

Council's Report.

A FURTHER increase of over a hundred brings our total membership on 31st October 1947 to 868. This comprises 751 full Members, 3 Affiliated Societies, 47 Branch Associates and 61 Country and School Associates. 169 new members were elected during the year. According to the "Special Interests" recorded on the Nomination Forms of new members, ornithology still remains by far the most popular subject, accounting for nearly 60% of the interests given. Will members please check their present interests against those given in the list on pp. 127-144, and inform Sectional Secretaries of any omission; it is to the interest of members as well as the convenience of Secretaries that this list be kept up to date. It is emphasised, however, that all members, and not only specialists, are welcome at Sectional Meetings.

The two half-yearly Syllabuses list 196 meetings for 1947, comprising 145 Field Meetings and 51 Indoor Meetings. In spite of this ambitious programme, the meetings have, on the whole, been well attended.

The year has been marked by a number of important changes in the Society's officials. The lamented death of our Honorary President, Professor Sir F. Gowland Hopkins, deprived us of a figure of outstanding personality and world-wide reputation, and it was felt that some difficulty would be experienced in finding a successor. It was decided to ask Professor M. Greenwood, F.R.S., to accept this office, and the Council was very gratified to receive his acceptance. Professor Greenwood's association with our Society has been a long one and it is particularly appropriate that his work for the Society should receive this mark of appreciation. Mr F. G. Dell, who has so successfully looked after the Society's finances since 1914, has been succeeded as Treasurer by Mr J. H. G. Peterken. The service which Mr Dell has given to the Society during the past 33 years (a record period of office in the Society's history) calls for more than a passing reference, and it is intended that acknowledgment should be made in the form of a gift subscribed for by the membership. Mr R. W. Hale is Librarian in succession to Mr C. W. G. Paulson, who has had the difficult task of reducing the space occupied by the Library and at the same time of keeping the Library up to date. The success of Mr Paulson's efforts is reflected in the considerable increase in the number of books now being borrowed by members. Our two Editors have also had to relinquish their posts this year. Mr Fitter, who has been Editor or joint Editor of the *London Bird Report* from 1939 to 1945 and Editor of the *London Naturalist* since 1941, found that, since living in Oxfordshire, it had become very difficult to keep in touch with members and to attend evening meetings in London. Mr P. W. E. Currie has succeeded him as Editor of the *London Naturalist*. Mr E. R. Parrinder, who has been joint Editor

of the *London Bird Report* for 1941-5 and Editor of the Report for 1945, has relinquished this post to Mr C. B. Ashby, in order to concentrate on the work connected with the projected *History of the Birds of the London Area, 1900-1950*. The thanks of the Society are due to all these officials.

The Council is pleased to record that a grant of £56 was made by the Royal Society for two of the papers in the *London Naturalist* for 1946, and they regard this as evidence of the scientific value of our publication.

The Nature Reserves Investigation Sub-committee has issued its final Report. Through the work of this sub-committee the Society has been in a position to advise the Ministry of Town and Country Planning and other bodies on a number of matters relating to the development of areas of importance to naturalists. It is proposed that a permanent Committee be formed to continue this work.

In reconstituting the Committee for the regulation of nature reserves in London Parks, the Ministry of Works sought the advice of this Society, and three of our members have been appointed to the Committee. The Society was also asked to suggest the names of watchers for the sanctuaries in these parks.

H. A. TOOMBS, *Hon. General Secretary*.

Librarian's Report.

Unfortunately Mr Paulson, who had already done so much to re-organise the library, had to resign for business reasons before he was able to complete his plans. The library is still in process of re-organisation, but a stage has now been reached at which the revision of the catalogue can be started.

During the year a number of surplus books has been weeded out and the sale of these, together with certain drawings and pictures, brought in a useful sum of money which has been expended on binding and new books. Binding has been almost brought up to date, and the Council's new annual grant for binding will enable us in future to keep abreast of current binding.

The exchange list has been revised. While several journals have had to be deleted there have been a few valuable additions, including the American "Andubon Magazine" and the magazine of the American Museum of Natural History.

A library suggestions book has been circulated from time to time at meetings. The suggestions already made are more than we can afford to buy, but they will be a useful guide to the library committee in choosing books for purchase from the Council's new annual grant for buying additions to the library. An unusually large number of good books has been added by gift and purchase and the Society's thanks are due to those who have presented books.

The new arrangement for the library to be open before every meeting held at Keppel Street has been made use of by many members. In this connection, in particular, the appointment of sectional librarians

has considerably helped the librarian. Increasing use is being made of the library and it is a normal thing for upwards of 20 volumes to be borrowed whenever the library is open.

The librarian would be grateful for the return of the following books which seem to have been borrowed without being recorded and which cannot now be traced:—*British Birds*, Vol. 22; *The Birds of the British Isles and their Eggs*, Coward, Vols. 1, 2 and 3; *The Art of Bird-Watching*, Nicholson; *The Life of the Robin*, Lack.

In conclusion, I should like to pay tribute to the hard work and enthusiasm of Mr Paulson while he was librarian.

R. W. HALE, *Librarian*.

Chingford Branch Report.

This year the Chingford Branch held monthly indoor and field meetings as usual, average attendances being twenty-five and eight respectively. An interesting innovation was the debate last November, when the motion "That the scientific approach to nature study is detrimental to it as a hobby" was narrowly defeated by two votes. At his illustrated talk on "Bird Photography without a Hide," Mr W. H. Spreadbury had a record attendance for the Branch. Other lectures were by Mr E. E. Syms, on "Butterflies"; Mr J. H. G. Peterken, on "Mosses"; Mr J. E. S. Dallas, on "Alpine Flowers", and Dr J. F. Hayward, on "Geology and Radio-active Minerals." Another successful exhibition was held this year, being arranged by Mr E. B. Pinniger and Mr E. A. Round.

It was found necessary to discontinue the Epping Forest Survey from July, the reason being lack of support by members. The recorders hope to finish a few outstanding items.

During the year Dr D. G. Tucker resigned from the post of Survey and Nature Reserves Secretary. Owing to service with H.M. Forces. Mr P. F. E. Rumsey resigned from his position as Deputy Secretary. and Miss B. B. Knott has taken his place.

Four Branch Associates and five full members were enrolled by the Branch this year, and five resignations were received, three from members leaving the district.

E. A. ROUND, *Branch Secretary*.

Curator's Report.

Considerable improvements in the general condition and arrangement of our collections have been made by the sectional curators during 1947, and it is a pleasure to report that the year has been one of steady progress. It should be added that great credit is due to our former Librarian, Mr Paulson, for the much improved conditions in the corridor. The state of the individual sectional collections is as follows:—

Botanical Section: The Herbarium is in good order and specimens have been contributed by Mr R. S. R. Fitter and the Sectional Curator, Mr Kent.

Ecological Section: The collection of land and freshwater Mollusca has been overhauled, and donations of material from the London area would be welcome. Mr Castell in his comments on the section's collections raises the question of the desirability of forming a collection of the skins of British Mammals.

Entomological Section: Mr Weal has taken charge of the section's collections and is making good progress with the rearrangement of specimens. Donations of certain of the rarer Lepidoptera and almost any material from other orders of Insects would be welcome.

Ornithological Section: During the past year the skin collection has been put in order and a card index made, making it possible to find any skin at short notice. Additions during the year have been 13 skins and two eggs.

Plant Galls Section: The general condition of the collection is satisfactory; few additions were made during the year.

I should like to express the Society's thanks to the Sectional Curators for their valuable work. E. B. PINNIGER. *Curator*.

Sectional Reports.

Archaeological Section.

THE year has seen a steady increase in general activities, and also the first healthy signs of a desire to correlate usefully archaeology with the Society's activities in other branches of natural science. Section membership has risen from 71 to 88.

Indoor Meetings. Three were held during the year, two General and one Sectional. On January 21st the Government sound film "The Beginnings of History" was shown. Mr W. G. Teagle's lecture on April 22nd, "Background to an Excavation—A Canterbury Tale," dealt with excavations carried out in the bombed areas of Canterbury. On December 16th, the Chairman of the Section (Mr W. C. Cocksedge) gave a talk on "Some Irish and English Antiquities," illustrated by a series of slides from photographs taken by Mrs Cocksedge.

Field Meetings. Ten were arranged, three jointly with the Geological Section, and one with the Ramblers' Section. On February 15th a visit was paid to the Horniman Museum, Forest Hill; on March 15th. Mr Cocksedge led an excursion to Darwin's house, at Downe, in company with the Geological Section; the geologists were again joined on April 19th in an excursion to the Barnfield Pit, Swanscombe: Mr A. T. Marston, L.D.S., F.G.S., the discoverer of the famous Swanscombe skull, led the party; on June 14th, Verulamium and its adjoining museum were visited; the Ramblers joined in on July 27th, when Mr L. V. Grinsell, F.S.A., led a most interesting tour of some Ightham and Medway megaliths; on September 20th, Mr S. Austin took a party over Ambresbury Banks, in Epping Forest; antiquities in Barking were visited on October 19th, under the leadership of Mr E. Yates, F.S.A.; on November 15th, Mr H. Spooner showed an interested party some-

thing of old Chelsea; on November 29th, the Geological Section was once more joined in an excursion to Kew, where Miss M. S. Johnston exhibited her collection of rocks and fossils; on December 13th, Mr W. C. Cocksedge conducted a party through the Victoria and Albert Museum, and gave a talk on "Christian Art."

Reading Circle. The number of subscribers has increased to 19, and two copies of *Antiquity* are now in circulation.

Records. The extensive collection of MSS. dealing with archaeological matters has been added to. It is proposed to issue a printed list to Section members during the year.

Library. Additions include several volumes by Society members. viz., *Gothic England* and *Henry Yevele*, by John Harvey; *Ancient Burial Mounds of England*, by L. V. Grinsell; and Mrs O'Neil's monograph on her excavation of the Roman villa at Park Street, St Albans. Further additions are contemplated.

W. C. COCKSEGE, *Chairman.* W. G. TEAGLE, *Secretary.*

Botanical Section.

Three general meetings were arranged by the Section this year, each being addressed by one of our members. On February 4th Mr J. E. S. Dallas, owing to the sudden illness of our lecturer for the evening, was of great service by agreeing at very short notice to give a talk on some of his botanical finds, which was illustrated by a selection of excellent slides from his collection. On May 6th Mr F. Rose addressed us on the subject of "Wild Flowers of Metropolitan Kent," and on September 16th Mr J. M. B. King gave a Popular Survey of Fungi. In each case these talks were well illustrated. A summer exhibition of fresh specimens was staged in June, and notes on the exhibits communicated by several members. The second sectional meeting of the year was of a more specialized type, being a lantern lecture by Dr Mary G. Calder entitled "Pollination Past and Present." The interest which was shown in this subject was evident in the lively discussion which followed.

The excursion syllabus included 17 meetings, and we were again fortunate in being able to join in some of these with the Herts Natural History Society, the East Grinstead and District Natural History Society, the British Mycological Society, and the Entomological and Geological Sections. The average attendance at the Field Meetings was 15 and some of the more interesting plants seen were as follows:—

At Coopersale Common—*Thelypteris palustris* Schott. At the Isle of Sheppey—*Ranunculus parviflorus* L. and *Tetragonolobus siliquosus* L. At Esher—*Lepidium ruderales* L., *Mentha pulegium* L., and *Milium effusum* L. In the Leatherhead district—*Iberis amara* L., *Monotropa hypopithys* L., *Cynoglossum germanicum* Jacq. (*C. montanum* auct.) and *Ajuga chamaepitys* L. At the Isle of Grain—*Trifolium squamosum* L., *Trigonella ornithopodioides* L., *Inula crithmoides* L. and *Polypogon monspeliensis* L. At ponds on Little Common, Stanmore—*Stratiotes aloides* L. and *Potamogeton obtusifolius* Mert. and Koch.

The exceptionally dry autumn was unfavourable for the growth of fungi, but at Mad Bess Wood, Ruislip, the following species were seen:—*Polyporus frondosus* Fr., *Clithocybe tabescens*, *Armillaria mellea* Quel. (a ringless form), *Marasmius dryophilus*, *M. androsaceus* Fr., *Collybia radicata* Quel., *C. fusipes* Quel., *Panaeolus campanulatus* Quel., *Stereum hirsutum* Pers., *S. spadiceum* Fr., *Scleroderma vulgare* Hornem. and *Fistulina hepatica* Fr. At Oxshott—*Boletus scaber* Bull., *B. bovinus* L., *B. variegatus* Swartz, *Russula fragilis* Fr., *Polystictus abietinus* Cooke, *P. versicolor* Fr., *Fomes annosus* Cooke, *Polyporus betulinus* Fr., *Daedalia quercina* Pers., *Sparassis crispa* Fr., *Pholiota spectabilis* Gill., *Amanita spissa* Quel., *Lactarius vietus* Fr., *Collybia fusipes* Quel., *Amanitopsis fulva* Wm. G. Sm., and *Hypholoma sublateritium* Quel.

The membership of the Section is now 196, showing an increase of 18 on last year's figure. The Report of the Botanical Society and Exchange Club circulates to 20 members.

C. L. COLLENETTE, *Chairman*. G. R. A. SHORT, *Secretary*.

Ecological Section.

By accepting responsibility for three general and three sectional meetings, the Ecological Section was able to take its full share in the Society's resumption of indoor activities on a pre-war scale. At the general meetings, Sir Edward Salisbury, F.R.S., lectured on "Woodland Ecology," Capt. C. R. P. Diver on "Ecological Surveys," and Mr C. D. Ovey on "Some Weather Phenomena and their Place in Nature's Scheme." At the Sectional Meetings, Dr A. T. Hopwood lectured on "The Natural History of some British Land and Fresh Water Shells," and Mr G. H. Locket on "The Colonization of Bare Chalk by Plants," whilst one evening was devoted to a discussion on the Bookham Common and Epping Forest Surveys.

The very severe and prolonged winter, followed by the extreme summer drought, adversely affected the Section's activities at Bookham Common, reducing the average attendance at the official meetings by 3 to 14. Preliminary investigations were made of the fauna and flora of Eastern Plain; these included bird counts, a vegetation map, and a belt transect, of which further details are given in the Bookham Common Survey Progress Report (see p. 49).

Members of the British Mycological Society and of the Botanical Section again visited the Common in the autumn, and, although fungi were scarce and in poor condition owing to the drought, a number of species new to our records were found.

A most successful joint meeting with the Geological Section was held in the Mole Valley in August, when Messrs C. C. Fagg and G. E. Hutchings, after demonstrating some of the more interesting geological and botanical features of the northern slopes of Boxhill, conducted the party over the Juniper Hall Field Centre and generously provided refreshments.

Mr P. W. E. Currie has been responsible for the organising of an important extension of the Section's activities in the form of a "City of London Bombed Site Survey," where an investigation has been made into the vegetation, the bird population and into some groups of insects. Further details will be found on p. 44.

The continued growth in membership to 176 is most encouraging. Membership of the reading circles has also increased to 39, 21 of whom subscribe to the *Journal of Animal Ecology*, 10 to the *Journal of Ecology* and 8 to both.

L. PARMENTER, *Chairman*. C. P. CASTELL, *Secretary*.

Entomological Section.

This year has been an active one for the Section. Work on the insect survey of the London Area has continued, and we have now been able to publish two parts of Dr Guy D. Morison's paper on the "Thysanoptera of the London Area," and K. M. Guichard and Dr I. H. H. Yarrow's "Hymenoptera Aculeata of Hampstead Heath." These two papers should stimulate further contributions to the survey, and all members are asked to assist in making it a success by sending in to the Recording Secretary records of insects noted in their districts. It is hoped to publish an account of the Odonata, under Miss Longfield's editorship, in the *London Naturalist* for next year.

Two indoor Sectional meetings were held during the year. On 25th February the evening was devoted to an exhibition of specimens and short papers by members, 23 members being present and many of them contributing to the interest of the evening. On 27th May, Mr J. D. Gillett gave an interesting talk on the struggle against Yellow Fever in Uganda, at which 22 members were present.

At a general meeting on 19th November 1946 Mr L. Parmenter read a paper on the habits of the British Asilidae, and another general meeting on 1st April was devoted to a talk on "Primitive Insects" by Dr J. W. Evans.

Nine field meetings have been held during the year. At Bricket Wood, Herts, on 22nd June, over 60 species of Diptera were recognized, including *Tipula maxima* Poda, *Epiphragma ocellaris* L., *Chrysopilus aureus* Mg., *Cordilura pudica* Mg., *Cynomya mortuorum* L., *Gymnopternus brevicornis* Staeg., *G. angustifrons* Staeg, and *Diaphorus oculatus* Flin. A meeting at Benfleet on 6th July produced the local dragonfly, *Lestes dryas* Kirby, several good species of Orthoptera including *Roeseliana roeselii* Mag., and over 100 species of Diptera, including *Nemotelus uliginosus* L., *N. notatus* Zt., *Oxycera trilineata* F., *Pachygaster atra* Pz., *Onocodes pallipes* Latr., *Dioctria linearis* F., *Empis lutea* Mg., *Dolichopus strigipes* Verr., *Macrodolichopus diadema* Hal., *Scellus notatus* F., *Thinophilus flavipalpis* Zt., *Lathyrrophthalmus aeneus* Scop., *Platycheirus fulviventris* Macq., *Chrysotoxum verralli* Collin, *Melieria omissa* Mg., *M. picta* Mg., *Ceroxys urticae* L., *Statinia marginata* F., *Platycephala planifrons* F., *Meromyza saltatrix* L. and *Morinia nana* Mg. At an excursion to Stone Marshes on 7th Septem-

ber the rare earwig, *Apterygida albipennis* Charp., and a specimen of the macropterous form of *Conocephalus dorsalis* Thunb. were taken. In the course of a ramble in the Darenth valley on 17th August an interesting visit was paid to Lullingstone Silk Farm. The average attendance at sectional field meetings has been 10.

Mr E. B. Pinniger resigned the secretaryship at the beginning of the year, his place being taken by Mr R. M. Payne. Messrs L. I. Carrington and L. J. Tremayne left the committee, to which Messrs C. N. Colyer and R. D. Weal were elected for the first time.

The total membership of the Section is now (at time of going to press) 124, a higher figure than at any time previously in the history of the Society, and an increase of 48 since the end of the war. Twenty-three members now belong to the Section's reading circle, which continues to circulate *The Entomologist*, *Entomologist's Monthly Magazine*, and *Entomologist's Record*.

The re-arrangement of the insect collections has been taken in hand by Mr R. D. Weal, and much progress has been made. Re-arrangement of the Lepidoptera has now been completed, but many species are unfortunately still not represented. A start has been made on the collection of Coleoptera, but here again large blank spaces and in some cases empty drawers give the collection a sorry appearance. This lack of specimens is mainly consequent on damp affecting a number of store boxes in which the insects were kept during the war, and which subsequently had to be destroyed.

We are planning to move the Heteroptera, which are at present in store boxes, into the cabinet by the end of 1948, so that use can be made of them by members. It is also intended to proceed with the collection of blown Lepidoptera larvae. Help is badly needed with this, and members who have not the facilities for preserving larvae can forward them to the sectional curator who will arrange for them to be preserved.

All members are invited to help in adding specimens of all orders of insects to the collections.

CYNTHIA LONGFIELD, *Chairman*. R. M. PAYNE, *Secretary*.

Geological Section.

At the close of the first full year of the Section's activities some satisfaction may be felt at the results achieved. Membership has risen to 41, an increase of 10 during the year. The average attendance at field meetings has been 17, and at indoor meetings 39.

Twelve field meetings were held and four indoor meetings. The field meeting to the Isle of Sheppey, in conjunction with the Botanical Section, was perhaps the most ambitious. The geologists in the party on that occasion had a very successful day under the direction of Mr G. F. Elliott and many interesting specimens were collected, including fossil fruits, shells and vertebrae, together with quantities of London Clay adhering to the searchers! Other places visited were:—The Geological Museum; Wimbledon Common; Downe House, Kent; Swanscombe; Bracknell; Elmstead Wood; Box Hill; The City (The Wallbrook); Epp-

ing Forest; Mickleham Downs and Abbey Wood. The following lectures were delivered at Headquarters:—"Fossils and Evolution" (Mr Castell); "The Natural History of London during the Ice Age" (Dr Hopwood); "Dragons of the Past" (Dr Swinton); "The Thames Valley in Pleistocene Times" (Dr Oakley).

The thanks of the Section are due to those geologists who so willingly conducted these meetings and to the owners of quarries and works for permitting the Society to visit their properties.

JOHN F. HAYWOOD, *Chairman*. B. AINSLEY, *Secretary*.

Ornithological Section.

Membership.—The membership of the Section continues to increase, the total reaching 571 on 31st October, including 26 Branch Associates and 25 Country Associates.

Lectures.—Twelve indoor meetings have been held during the year, the Section having arranged lectures for five General meetings. At the latter, Mr David Lack spoke on "Birds' Eggs and Bird Numbers," Mr E. M. Cawkell on "The Middle-East Biological Scheme," Dr E. A. R. Ennion on "Bird Sketching in the Field," Mr T. L. Bartlett on "The Identification of Gulls," and Mr B. W. Tucker on "The Physiological Control of Plumage Differences in Birds." Included in the seven Sectional meetings were two of the popular "Identification" series, on "Birds of Prey," by Messrs R. S. R. Fitter and C. B. Ashby, and on "Larks, Pipits, Buntings and Wheatears," by Messrs P. A. D. Hollom and P. W. E. Currie, and two meetings were devoted to "Short Papers by Members" contributed by Dr D. G. Tucker, Mr E. H. Gillham, Miss C. M. Acland, Mr P. W. E. Currie, Dr G. Beven, and Mr R. W. Hale. Mr C. W. G. Paulson gave us "An Ornithologists' Library" and Dr G. W. Robertson spoke on "The Visual Aspects of Bird-Watching." The average attendance recorded was 68.

Publications.—Two short pamphlets have been issued, and stocks are available of "A letter to new members"—explaining the facilities that are provided—and "Some notes on Binoculars and Telescopes."

Personnel.—During the year Mr H. O. Jones succeeded Mr F. C. Bromley as Field Meeting Secretary, Mr R. W. Hayman became Curator in place of Mr G. E. Manser and Mr P. W. E. Currie joined the Committee.

Field Meetings.—Forty-six field meetings were held with an average attendance of 19 and 130 species were seen, including Montagu's harrier, whooper swan and little gull. On May 4th no less than 70 species were seen on the excursion to the North Kent marshes. Coach trips continued to be popular, a notable one taking place in June to Swyncombe Down for stone curlew.

Reading Circles and Book Fund.—The number of subscribers for the year is now 92 and ten copies of *British Birds* have been circulated. Profits resulting from this activity have been devoted to the Book Fund and five ornithological books added to the library. It is proposed to

increase the number of copies of *British Birds* and new subscribers will be welcomed.

Library.—During the year the reorganisation of the library has been continued and a number of volumes added by purchase and by gift. Arrears of binding have largely been overtaken and the most useful journals and local reports are available in bound form. A position has now been reached at which cataloguing can be undertaken and within a few months there will be in existence a card index of all the ornithological books that are available. The library has been increasingly used by members since the beginning of the year.

Curator's Report.—The skin collection has been put in order and a card index added. Thirteen new skins have been presented, including eight small birds given by the Bird Room of the British Museum. Speakers at Sectional Meetings have made considerable use of the bird skins to illustrate their talks.

Ringling.—Interest in the bird ringing activities of the Section has been maintained and 510 birds, of 57 species, were ringed during the year. These include ring ouzel, long-tailed duck, little ringed plover and storm petrel among others. A number of recoveries have been notified, chiefly by Mr T. L. Bartlett. Special plans for organised ringing are being prepared for next year, including the ringing of sand martins in their colonies.

Royal Parks.—Early this year the Ministry of Works approached the Society for nominations to a new committee to administer the Bird Sanctuaries in the Royal Parks and for official observers. This committee was duly formed on our advice and observers have been appointed from among our members and have commenced the work of recording birds seen in the Royal Parks, from Greenwich in the east to Bushey in the west. The annual report is to be revived and circulated amongst the public.

A particularly welcome feature of the increased activity of the Section has been the many offers of assistance in research and card-indexing for the proposed book on "The Birds of the London Area, 1900-1950." In the field our activities included a repeat census of great crested grebes, as part of the sample census organised by the British Trust for Ornithology, the usual heronry census and an organised watch on gravel pits for little ringed plovers. It is planned to add to these co-operative bird-watching undertakings a survey of four of the gravel pits, which have become so important in London ornithology and an enquiry based on observations made at bird-tables and bird-baths. A monthly winter census of ducks on the reservoirs and larger waters of the area is being made for comparison with results obtained before the war.

London Bird Report.—As the published work of the Section appears under a separate cover we mention here that the *London Bird Report* continues to provide an annual summary of the more notable occur-

rences in the area together with short papers by members and the results of current enquiries.

R. C. HOMES, *Chairman*. W. D. MELLISH, *Secretary*.

Plant Galls Section.

The year 1947 was not a good one for Cecidologists as many of the usual species were not observed. Field meetings were held at Oxshott, Bookham Common, Headley, Norbury Park, Fetcham Downs and Epsom Common, while Mr Niblett furnished papers on Midge Galls and on Trypetid Galls for the indoor meetings and Mr Parmenter dealt with the Gall-causing Trypetidae from the Dipterists' aspect in a most interesting paper.

Mr Niblett has solved the problem of the alternate generation of *Diplolepis disticha* Hart. by breeding both the galls and the flies of a species which seems to have hitherto been unrecognised by other workers in the order.

M. NIBLETT, *Chairman*. H. J. BURKILL, *Secretary*.

Ramblers' Section.

Membership of the Section is now about 70. The number of Indoor Meetings for the year was three, and of Outdoor Meetings thirteen.

The General Meeting on January 7th was poorly attended owing to the very inclement weather. The Sectional Meeting on April 15th was the first since April 25th, 1939, and on this occasion a most interesting lecture, entitled "Some Pictures from North Wales," was given by Mr J. E. S. Dallas, who illustrated his remarks with lantern slides prepared from his own photographs. Thirty-six members and friends were present. The third Indoor Meeting for which the Section was responsible took place on November 4th, when a representative of the National Trust gave a talk, illustrated with slides, on the work of the Trust.

Of the thirteen Outdoor Meetings ten were rambles and three were visits to places of interest in London. The average attendance was seven. The districts visited included Leatherhead, Sevenoaks, the Chess Valley, Hampton Court, Potters Bar, Farnborough, Essenden and Epping Forest. Two visits to museums early in the year were well attended. The visit to Old Battersea House proved interesting since it contains a fine collection of period furniture as well as an extensive collection of William de Morgan pottery.

The Section has suffered a severe loss by the death of Mrs M. M. Wilson, who was to have led the Farnborough excursion on September 7th. In the sad circumstances Miss R. Davis kindly consented to lead on that date.

The Journal for the Commons Open Spaces and Footpaths Preservation Society has been circulated to members together with the Ramblers' Handbook, an annual periodical which commenced its first round in August.

H. SPOONER, *Chairman*. L. J. JOHNS, *Secretary*.

List of Members.

(Corrected up to 1st July 1948).

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

For list of abbreviations, see end.

Honorary President:

PROF. M. GREENWOOD, D.Sc., F.R.S., F.R.C.P.

Honorary Vice-Presidents:

E. A. COCKAYNE, M.A., D.M., F.R.C.P., F.R.E.S. F. G. DELL. A. B. HORNBLOWER.
A. HOLTE MACPHERSON, B.C.L., M.A., F.Z.S. J. ROSS.

Honorary Members:

- 1916 Brown, A., F.Z.S., 64 Sancroft Road, Eastbourne, Sussex. (Arch., Geol., Orn., R.)
1933 Bryce, E. J., Nelson Road, Killara, Sydney, N.S.W. (Zoo.)
1927 Clanchy, Mrs B. L., Westminster Bank, Harrow-on-the-Hill, Middx. (Orn., R.)
1904 Cooke, Rev. P. H., B.A., Church Gates, Old Heathfield, E. Sussex. (Arch., Bot.)
1927 Le Souef, A. S., C.M.Z.S., R.A.O.U., Taronga Zoological Park, Sydney, N.S.W.

Members:

- 1946 Absolon, Miss E. M., 23 Netherlands Road, New Barnet, Herts. (Bot., Ent.)
1929 Acland, Miss C. M., M.B.O.U., 2 Orchard Close, Banstead, Surrey. (Orn.)
1946 Adams, Mrs J. M., B.Sc., F.Z.S., 43 Merchland Road, New Eltham, S.E.9. (Bot., Orn.)
1946 Ainsley, B., 18 Walpole Court, Hampton Road, Strawberry Hill, Twickenham, Middx. (Geol.)
1946 Ainsley, Mrs B., 18 Walpole Court, Hampton Road, Strawberry Hill, Twickenham, Middx. (Bot., Ecol., Geol.)
1947 Aldhous, J. R., 161 South Norwood Hill, S.E.25. (Bot., Geol.)
1944 Allden, Miss B. J., 110 The Ridgeway, Enfield, Middx. (Orn., R.)
1947 Allder, R. C., 32 Preston Road, Wembley, Middx. (Orn.)
1939 *Allen, Miss D. (address not known).
1947 Allen, J., 20 Draycott Avenue, Kenton, Harrow, Middx. (Orn.)
1945 Allison, J. R., 9 Littlecroft, Eltham, S.E.9. (Orn., Pl. G.)
1945 Allison, Mrs R. E., 9 Littlecroft, Eltham, S.E.9. (Orn., Pl. G.)
1947 Almond, Miss G. M., 26 Roy Road, Northwood, Middx. (Bot., Orn.)
1937 Alston, A. H. G., B.A., F.L.S., British Museum (Natural History), Cromwell Road, S.W.7. (Bot.)
1948 Andersen, G. R., 17 Froggnal, Hampstead, N.W.3. (Orn.)
1946 Andrews, H. E., 48 Fanshawe Avenue, Barking, Essex. (Ecol., Orn.)
1932 Angell, Miss K. W., Stockwell College, The Old Palace, Bromley, Kent. (Bot., Ecol., Ent., Orn., Pl. G., R.)
1948 Anscombe, Miss E. M., "Domus," 77 Hillingdon Hill, Hillingdon, Middx. (Bot., Orn.)
1948 Anscombe, Mrs J. M., "Domus," 77 Hillingdon Hill, Hillingdon, Middx. (Bot., Orn.)
1946 Ansell, Mrs E. V., 89 Dorset Road, Merton Park, S.W.19. (Bot.)
1932 Arbon, Mrs J. A., Brookside, Eversley Park Road, N.21. (Arch.)
1946 Archer, E. H., 17 John Islip Street, Westminster, S.W.1. (Bot., Orn.)
1946 Archer, Miss E. M., 95 Church Road, Wimbledon, S.W.19. (Orn.)
1942 Archer, H. A., 76 Endlebury Road, E.4. (Orn.)
1945 Ardley, M., 28 Corbets Avenue, Upminster, Essex. (Orn.)
1947 Arnold, Miss K., 43 The Quadrant, Wimbledon, S.W.20. (Orn.)

- 1947 Arnold, Miss W., 43 The Quadrant, Wimbledon, S.W.20. (Orn.)
 1945 Ashburner, Miss M., 73 Gloucester Street, S.W.1. (Orn.)
 1939 Ashby, C. B., 20 Denmark Road, Carshalton, Surrey. (Ecol., Orn.)
 1946 Ashley, R. S., 32 Warminster Road, South Norwood, S.E.25. (Lep., Orn.)
 1946 Aspden, W., F.Z.S., c/o Ministry of Food (Organisation and Methods Division), Portman Court, Portman Square, W.1. (Bot., Geol., Orn.)
 1892 Austin, S., F.Z.S., 43 Darenth Road, N. 16. (Arch., Bot., Ecol., Orn., R.)
 1931 Back, Dr Marjorie, 10 Great George Street, S.W.1. (Bot., Orn.)
 1929 *Bagnall, R. S., D.Sc., F.R.S.E., 30 Wellesley Road, Chiswick, W.4. (Bot., Ent., Pl. G.)
 1944 Bailey, A. J. M., B.Sc., F.R.I.C., 3 East Road, Maidenhead, Berks. (Bot., Ecol.)
 1946 Bailey, J. A., 40 Ivanhoe Drive, Kenton, Middx. (Ent., Orn.)
 1927 Baily, Miss A. R., F.Z.S., Cressex Lodge, Binfield, Berks. (Arch., Bot., Ent., Orn., Pl. G., R.)
 1944 Bain, Miss P. C., St Boswells, Dene Road, Northwood, Middx. (Bot., Ent., P.L.)
 1946 Bak, F. A., 38 Stoughton Drive North, Leicester. (Orn.)
 1948 Baker, L., 5 Hanger Court, Hanger Green, Ealing, W.5. (Orn.)
 1948 Ballance, Miss E. R., Herringswell, Shaw Crescent, Sanderstead, Surrey. (Orn.)
 1941 Ballingal, N. C., 120 Cranmer Court, S.W.3. (Orn.)
 1947 Balme, Miss O. E., Bedford College, Regent's Park, N.W.1. (Orn.)
 1944 Balter, R. S. D., F.R.E.S., 18 Ferncroft Avenue, N.W.3. (Ent., Micr.)
 1947 Bangerter, E. B., 196 Stroud Green Road, Hornsey, N.4. (Bot.)
 1934 Banks, H., 64 Queenswood Road, Hounslow, Middx. (Bot., Ecol., Orn.)
 1947 Barclay, C. G., Fanshaws, Hertford. (Orn.)
 1927 Barclay-Smith, Miss P., F.Z.S., M.B.O.U., 51 Warwick Avenue, W.9. (Orn.)
 1946 Barker, Miss P. M. W., 232 Cannon Lane, Pinner, Middx.
 1946 Barker, R. J., "Domus," Oatfield Road, Orpington, Kent. (Ent., Orn.)
 1946 Barlow, J. W., 17 Seymour Road, S.W.18. (Bot.)
 1946 Barnacle, J. F., 7 Hartley Old Road, Purley, Surrey. (Mam.)
 1926 Barnes, Mrs E. C., M.B.O.U., Hungerdown, Seagry, Wilts. (Bot., Ecol., Orn.)
 1941 *Barrington, F. J. F., 52 Harley Street, W.1. (Orn.)
 1941 Bartlett, T. L., B.A., M.B.O.U., 91 Woodend Avenue, Roxeth, Harrow, Middx (Ecol., Orn.)
 1946 Bateman, Miss E., 71 Grange Road, Ealing, W.5.
 1903 *Battley, Mrs, 1 Sydney Road, Guildford, Surrey.
 1946 Batts, M. S., 17 Heslop Road, Balham, S.W.12. (Orn.)
 1946 Batts, S. G., 17 Heslop Road, Balham, S.W.12. (Orn.)
 1946 Bawtree, R. F., Studley Priory, Horton-cum-Studley, Oxford. (Orn.)
 1948 Baxter, Miss V. H., 39 Church Vale, East Finchley, N.2. (Orn.)
 1915 Bayne, C. S., Savage Club, 1 Carlton House Terrace, S.W.1. (Ecol., Orn.)
 1946 Beal, N. A. G. H., 1 Auriol Road, W.14. (Orn.)
 1943 Beamish, A. J., Epping House, near Hertford. (Orn.)
 1947 Beattie, Mrs M. G., 86a Portland Place, W.1. (Orn.)
 1947 Beauchamp, D. M. W., Four Winds, Keswick Road, Fetcham, Leatherhead, Surrey. (Orn.)
 1946 Beazley, His Honour Judge Hugh, J.P., Wormley Hill House, Wormley, Broxbourne, Herts. (Orn.)
 1944 Beddington, A., Lily Farm, Princes Risborough, Bucks. (Ent., Mam., Orn.)
 1946 Bedford, W. D., F.R.E.S., The Ferris, Mill Lane, Broxbourne, Herts. (Orn.)
 1943 Beesley, J. S. S., Bushfield, New Barn, Longfield, Kent. (Bot., Ecol., Orn.)
 1947 Bellairs, A. d'A., Department of Anatomy, London Hospital Medical College, Turner Street, E.1. (Amph., Mam., Rep.)
 1947 Bennett, D. A., 73 Ellesmere Avenue, Mill Hill, N.W.7. (Col., Lep.)
 1946 Bennett, Miss E. A., 16 Inchmery Road, Catford, S.E.6. (Ecol., Orn.)
 1948 Bennett, Miss M., 167 Farley Road, Selsdon, South Croydon, Surrey. (Orn.)
 1946 Bensley, Lt.-Col. C. J. F., c/o Lloyds Bank Ltd., Cox's and King's Branch, 6 Pall Mall, S.W.1. (Conch., Ecol., Ent., Geol.)

- 1929 *Benson, R. B., M.A., F.R.E.S., British Museum (Natural History), S.W.7.
(Bot., Ecol., Ent., esp. Sawflies, Orn., Pl. G., R.)
- 1932 Bentham, C. H., Eothen, 11 Epsom Lane South, Tadworth, Surrey. (Orn.)
- 1937 Best, Miss M. G., M.R.C.S., L.R.C.P., 115 Widmore Road, Bromley, Kent.
(Orn.)
- 1947 Betchley, D. W., 37 Warren Road, Chingford, E.4. (Orn.)
- 1940 Beven, G., B.Sc., M.B., B.S., M.R.C.S., M.B.O.U., Cromer Hyde, Central
Road, Morden, Surrey. (Ecol., Orn.)
- 1946 Bilby, H. A., M.B.O.U., 2 Sunnyside Cottages, Harlington, Middx. (Orn.)
- 1932 Binley, Sister E. M. (address not known). (Orn., R.)
- 1946 Bird, Miss B. J., 5 Greenend Road, Bedford Park, W.4. (Orn.)
- 1946 Bird, Miss M. I., 13 Eton Road, Hampstead, N.W.3. (Bot., Geol., Orn.)
- 1946 Bird, Miss P. E., Out Patient Dept., Guys Hospital, S.E.1. (Orn.)
- 1941 Bispham, T., B.Sc., A.I.C., 2 Chestnut Avenue, Wembley, Middlesex. (Orn.)
- 1930 Blair, K. G., D.Sc., F.R.E.S., Pentwyn, Afton Road, Freshwater, I.O.W. (Ent.)
- 1939 Blake, E. A., 16 Lindsay Road, Worcester Park, Surrey. (Orn.)
- 1937 Blake, F. W., 16 Lindsay Road, Worcester Park, Surrey. (Orn.)
- 1946 Boggis, Miss L., 60 Shuttleworth Road, S.W.11. (Orn., R.)
- 1947 Bond, Miss D., 33 Florence Road, Stroud Green, N.4. (Bot., Orn.)
- 1947 Boniface, R. A., 5 Grosvenor Road, Chiswick, W.4. (Bot.)
- 1947 Boorne, Miss A. G., 188 Greenvale Road, Eltham Park, S.E.9. (Orn.)
- 1945 Boucher, F. P. D., 17 Helena Court, Eaton Rise, Ealing, W.5. (Arch., Bot.,
Geol.)
- 1941 Bourne, K. W., 47 West Way, N.W.10. (Ecol.)
- 1946 Boyson, A. T., 4 Rosslyn Hill, Hampstead, N.W.3. (Geol., Orn.)
- 1945 Braby, C., 5 Arundel Street, W.C.2. (Orn.)
- 1946 Brabyn, W. G., 90 Bexhill Road, S.E.4. (Bot.)
- 1946 Bradbrooke, Mrs J., 34 West Hill Court, Millfield Lane, N.6. (Orn.)
- 1948 Bradford, Miss L., 54 Thornby Road, Clapton, E.5. (Bot.)
- 1932 Braithwaite, Miss D. M., 18 Warren Road, E.4. (Orn.)
- 1910 Braithwaite, Miss N. A., 18 Warren Road, E.4.
- 1947 Branscombe, P. J., 20 Alleyn Road, West Dulwich, S.E.21. (Orn.)
- 1946 Brewer, Mrs W., 120 Parkside Avenue, Barnehurst, Kent. (Orn.)
- 1937 Brightwell, L. R., F.Z.S., White Cottage, Chalk Lane, East Horsley, Surrey.
(Marine Life)
- 1946 Britten, R. O., 21 Tollers Lane, Old Coulsdon, Surrey. (Orn.)
- 1942 Bromley, F. C., 93 Wolmer Gardens, Edgware, Middx. (Orn.)
- 1948 Bronner, Miss E., 37a The Gardens, East Dulwich, S.E.22. (Arch.)
- 1946 Brooke, Miss W. M. A., F.L.S., 300 Philip Lane, Tottenham, N.16. (Marine
Biol., Bot., Economic Ent.)
- 1937 Brown, Miss B. E., Gresham Cottage, Granville Road, Limpsfield, Surrey.
(Ecol., Orn.)
- 1947 *Brown, Miss M. M., 27 The Pleasance, Putney, S.W.15.
- 1940 Browne, Miss E. Gore, 3 Claremont House, Lithos Road, N.W.3. (Orn.)
- 1948 Buckell, L. E., The Hatch, Epsom Road, Leatherhead, Surrey. (Bot.,
Lep., R.)
- 1948 Buller, Lt.-Cdr. D. N., D.S.C., 8 Crowland House, 28 Panton Street, W.1.
(Orn.)
- 1947 Bunker, Miss M. K., 105 Campden Hill Road, Kensington, W.8. (Orn.)
- 1944 Bunt, E. F., 34 Buckleigh Road, S.W.16. (Arch., Bot., Geol.)
- 1930 *Burgham, Miss J. E., 2 Nevern Place, S.W.5. (Geol., Orn., R.)
- 1915 Burkill, H. J., M.A., F.R.G.S., 3 Newman's Court, Cornhill, E.C.3. (Bot.,
Ecol., Geol., Lep., Orn., Pl. G., R.)
- 1947 Burnett, P. N., 29 Kelsey Way, Beckenham, Kent.
- 1946 Burra, Miss E. T., 48 Gloucester Place, W.1. (Orn.)
- 1946 Burridge, Miss D., Brook Bank, Godstone, Surrey. (Bot., Orn.)
- 1943 Burt, Miss E. H., 42 Hawthorne Avenue, Palmers Green, N.13.
- 1946 Burton, J. F., 43 Eversley Road, Charlton, S.E.7. (Lep., Orn.)
- 1946 Bussey, G. W., 87 Mount Ararat Road, Richmond, Surrey. (Orn.)
- 1948 Butler, R. E., B.Sc., 100 Lyndhurst Avenue, Twickenham, Middx. (Bot.,
Geol.)

- 1937 Butlin, Major J. H., c/o 90 East Sheen Avenue, S.W.14. (Orn.)
- 1935 Butterworth, Miss M. H., Benrose, King Street, Warminster, Wilts. (Bot., Ecol., Orn.)
- 1947 *Cadbury, J. C., "Beaconwood," Rednal, Birmingham. (Orn.)
- 1932 Caiger-Smith, Miss J., Ibstock Place, Clarence Lane, S.W.15. (Orn.)
- 1938 Calvert, G. W., 97 Abbot's Road, Abbot's Langley, Herts.
- 1928 *Campbell, J. M. H., M.D., 47 Arkwright Road, N.W.3. (Orn.)
- 1912 Capleton, A., Golfer's Club, 2a Whitehall Court, S.W.1. (Bot., Ecol., Mam., Orn., R.)
- 1947 Carpenter, Miss M. I., Salomon's Centre, Guy's Hospital, S.E.1. (Orn.)
- 1947 Carreck, J. N., 10 Palace Grove, Bromley, Kent. (Arch., Ecol., Geol.)
- 1933 Carter, J. S., Ph.D., M.Sc., F.I.C., 26 St John's Road, N.W.11. (Orn.)
- 1932 Castell, C. P., B.Sc., 52 Graham Road, S.W.19. (Arch., Bot., Conch., Ecol., Geol., Orn.)
- 1947 Cattee, Miss M., c/o Miss Kenrick, 11 Pembridge Villas, W.11. (Bot.)
- 1936 Cawell, Major E. M., 6 Canute Road, Hastings, Sussex. (Orn.)
- 1946 Cawood, Miss H. M., Walthamstow Hall, Sevenoaks, Kent. (Orn.)
- 1945 Chalke, Mrs K. I. M., 20 South Drive, Cheam, Surrey. (Orn.)
- 1945 Chalke, S. H., 20 South Drive, Cheam, Surrey. (Orn.)
- 1946 Chambers, Miss R. C., 1 Manor Close, Mill Hill, N.W.7. (Orn.)
- 1930 Chandler, S. E., D.Sc., F.L.S., 59 Anerley Park, Penge, S.E.20. (Bot., Ecol.)
- 1948 Chapman, G. M., Rosehill, Newton Abbot, Devon. (Orn.)
- 1948 Chappell, H. J., 24 Hillcrest Road, Loughton, Essex. (Orn.)
- 1947 Chard, W. E., "Lucerna," 47 Beckenham Road, West Wickham, Kent. (Orn.)
- 1947 Charlton, Miss M. W., 61 Streatham Close, Leigham Court Road, Streatham, S.W.16. (Bot., Ecol.)
- 1946 Chave, S. P. W., 15 Glenhurst Rise, Beulah Hill, S.E.19. (Orn.)
- 1945 Christopher, Mrs C. O. E., 401 Howard House, Dolphin Square, S.W.1. (Bot., Orn.)
- 1947 Christopher, Miss M. C. L., 401 Howard House, Dolphin Square, S.W.1. (Bot., Orn.)
- 1948 Clark, L. L., 80 Castelnau, Barnes, S.W.13. (Orn.)
- 1929 Coates, Miss N. H., Woodhouse, Beaumont Road, S.W.19. (Bot., Orn.)
- 1904 Cockayne, E. A., M.A., D.M., F.R.C.P., F.R.E.S., 8 High Street, Tring, Herts. (Biol., Lep.)
- 1937 Cockburn, T. A., M.D., c/o Bank of Montreal, Edmonton, Alberta, Canada. (Orn.)
- 1945 Cocks, E., 109 Riefield Road, Eltham, S.E.9. (Amph., Mam., Rep.)
- 1925 Cocksedge, W. C., 10 St Mary's Avenue, Shortlands, Bromley, Kent. (Arch., Bot., Ecol., Geol., Orn.)
- 1929 Cocksedge, Mrs, 10 St Mary's Avenue, Shortlands, Bromley, Kent. (Arch., Bot., Ecol., Geol.)
- 1947 Cohen, C. S. M., 48 Keyes Road, Cricklewood, N.W.2. (Orn.)
- 1945 Cole, G. P., 19 Crossway, Bush Hill Park, Enfield, Middx. (Orn., Ecol.)
- 1948 Colinvauz, P. A., 127 Edgwarebury Lane, Edgware, Middx. (Col.)
- 1907 Collenette, C. L., F.R.G.S., F.R.E.S., 15 Warren Avenue, Richmond, Surrey. (Api., Bot., Ecol., Ent., Orn.)
- 1932 Collenette, Mrs C. L., 15 Warren Avenue, Richmond, Surrey. (Orn.)
- 1936 Collett, R. L., 165/20 Abbey Road, N.W.8. (Orn.)
- 1948 Collett, T. C., 6 Kent Avenue, Ealing, W.13. (Orn.)
- 1946 Collins, L. A., 5 Scarth Road, Barnes, S.W.13. (Orn.)
- 1946 Colyer, C. N., F.I.A.C., F.R.E.S., 8 Canning Court, Newnham Road, N.22. (Ecol., Ent., esp. Dipt.)
- 1914 Connoll, Miss E., 40 Ritherdon Road, S.W.17.
- 1946 Connor, R. J., 79 Eastmead Avenue, Greenford, Middx. (Orn.)
- 1946 Conway-Morris, R., 2 Frogna! Way, N.W.3. (Ent., Orn.)
- 1938 Cooper, J. M., Fairview, 48 Higher Drive, Purley, Surrey. (Orn.)
- 1942 Cramp, S., 9 Queen Court, Queen Square, W.C.1. (Ecol., Orn.)
- 1947 Cranston, R. W., B.Sc., c/o Mrs Bowher, 112 Fordbridge Road, Ashford, Middx. (Orn.)

- 1947 Craw, Miss E. A., Hadley, Clareville Road, Caterham, Surrey. (Orn.)
- 1947 Craw, H. A., 30 Cranley Gardens, S.W.7. (Orn.)
- 1937 Crispin, G. H., Meadowcroft, Abbot's Langley, Herts.
- 1947 Croft, Mrs E. G., 1 Spencer House, Albion Avenue, S.W.8. (Orn.)
- 1948 Crook, Mrs V. M., "Wych," Dukes Avenue, Rayners Lane, North Harrow, Middx. (Orn.)
- 1927 Cross-Rose, F., 20 Woolstone Road, S.E.23. (Orn.)
- 1947 Crosthwaite, Miss A., 5 Foxley Hall, Higher Drive, Purley, Surrey. (Orn.)
- 1947 Cullen, J., Durley Lodge, Bickley Park Road, Bickley, Kent. (Orn.)
- 1892 Culpin, M., M.D., F.R.C.S., 17 Hatfield Road, St Albans, Herts. (Biol.)
- 1946 Cunha, Roy da, 2 Grove House, Epsom, Surrey. (Orn.)
- 1928 Cuninghame, Miss D. W. M., c/o Mrs Lingard, Fellside, Windermere, Westmorland. (Bot., Ecol., Ent., Orn., Pl. G.)
- 1930 Cunningham, J., M.B.O.U., Fern Hill, Belfast. (Orn.)
- 1936 Currie, P. W. E., F.R.E.S., 102 Burdon Lane, Belmont, Sutton, Surrey. (Ecol., Ent., Orn.)
- 1946 Curtis, Miss M., 102 Philbeach Gardens, S.W.5. (Orn.)
- 1892 Cyriax, R. C., 23 Aberdare Gardens, N.W.6. (Arch., Aryan question, Indo-European languages.)
- 1947 Dack, Miss Phyllis, 26 The Quadrangle, Herne Hill, S.E.24. (Bot., Orn.)
- 1936 Daffarn, J. D., 20 Woodside Avenue, Highgate, N.6. (Orn.)
- 1947 Dagger, The Rev. J. H. K., National Provincial Bank Ltd., Newport, Shropshire. (Temp. address, c/o Whitton Vicarage, Twickenham, Middx. (Orn.)
- 1946 Dales, R. P., B.Sc., F.R.E.S., 67 Westmorland Avenue, Squirrels Heath, Essex. (Ecol., Ent., Orn.)
- 1920 *Dallas, J. E. S., 29 Clinton Road, Leatherhead, Surrey. (Arch., Bot., Ecol., Orn., Pl. G., R.)
- 1925 *Dallas, Mrs Rosa F., 29 Clinton Road, Leatherhead, Surrey. (Arch., Bot., Ecol., Geol., Orn., R.)
- 1940 Darlington, Miss I., M.A., 39 Craven Avenue, W.5. (Arch., Bot., Orn.)
- 1933 Davies, Miss E. B., Graffham, Petworth, Sussex. (Ent., Orn.)
- 1944 Davies, Mrs I. W., 147 Coleherne Court, Redcliffe Gardens, S.W.5. (Bot., Orn.)
- 1945 Davies, S. H., 8 Crescent Parade, Hillingdon, Middx. (Orn.)
- 1946 Davis, A. G., F.G.S., 75 Croydon Road, Anerley, S.E.20. (Bot., Conch., Ecol., Ent., Geol.)
- 1948 Davis, Miss A. M., 125 Holbein House, S.W.1.
- 1932 Davis, Miss R., 118 College Road, S.E.21. (Orn., R.)
- 1947 Dawson, Miss J. M., 19 Woodbourne Avenue, Streatham, S.W.16. (Orn.)
- 1948 Dawson, R. C., 36 Lancaster Road, Wimbledon, S.W.19. (Orn.)
- 1946 Day, P. R., 36 Templeton Avenue, Chingford, E.4. (Bot.)
- 1946 Deacon, Miss S., 157 Sussex Gardens, Paddington, W.2. (Orn.)
- 1926 Deane, Miss M. B. H., Box 36, B.P.O., Tangier, Morocco. (Orn.)
- 1910 Dell, F. G., 55 Russell Road, Buckhurst Hill, Essex. (Micr., Orn., P.L.)
- 1947 Dermott, L. F., 26 Rockhampton Road, S.E.27. (Bot., esp. Mosses.)
- 1939 Devenish, L. R., 23 Grosvenor Road, East Grinstead, Sussex. (Ecol., Lep.)
- 1946 de Worms, Baron Charles G. M., Milton Park, Egham, Surrey. (Lep., Orn.)
- 1945 Dickson, J. W., The Middlesex Hospital, Mortimer Street, W.1. (Bot., Photogr.)
- 1946 Dobbs, Miss L., 1 Fielding Road, Bedford Park, Chiswick, W.4. (Bot., Geol., Orn.)
- 1933 Doran, F. H., 14 Evelyn Mansions, Westminster, S.W.1. (P.L.)
- 1945 Dorée, Dr Charles, Longroof, Hervines Road, Amersham, Bucks. (Ent., Orn.)
- 1928 Douglas-Smith, Miss K., 19 Thurlow Road, N.W.3. (Arch., Bot., Ecol., Orn.)
- 1946 Down, E. H., 28 Lynton Mead, Totteridge, N.20. (Orn.)
- 1946 Downe, Mrs J. H., Dormers, Challock, near Ashford, Kent.
- 1942 *Duffin, C. J., M.B.O.U., 26 Mount Ephraim Road, Streatham, S.W.16. (Orn.)
- 1946 Dukes, Dr C., 1 Queen Anne Street, Cavendish Square, W.1. (Orn.)
- 1948 Durrant, Miss G. H. T., 96c Westbourne Terrace, W.2. (Bot., Orn.)
- 1946 Eades, T. L., 8 Rosedale Road, Putney, S.W.15. (Arch., Bot., Geol., Orn.)

- 1934 Eales-White, Major J. C., T.D., F.R.E.S., F.Z.S., 88 Mount Ararat Road, Richmond, Surrey. (Arch., Ent., Orn.)
- 1938 Eardley-Wilmot, Mrs M., Ladies' Carlton Club, 5 Grosvenor Place, Hyde Park Corner, S.W.1. (Bot., Orn.)
- 1944 Easton, A. M., M.B., B.S., Roadside Cottage, Lower Road, Great Bookham, Surrey. (Col.)
- 1945 Edwards, V. A., 75 Barn Hill, Wembley Park, Middx. (Ecol., Orn.)
- 1936 Elcome, G. D., 64 Syon Lane, Isleworth, Middx. (Orn.)
- 1936 Ellington, Miss M. L., 1st London Motor Co., Cam House, Campden Hill, W.8. (Orn.)
- 1946 Ellis, A. E., M.A., F.L.S., Epsom College, Surrey. (Bot., Chelifera, Isopoda, Mollusca, Odonata, Opiliones, Orth.)
- 1948 Ellis, S. E., B.Sc., British Museum (Natural History), Cromwell Road, S.W.7. (Geol.)
- 1936 Ellis, W. G., "Crossbank," St David's Road, Penrhyn Bay, Llandudno, N. Wales. (Orn.)
- 1939 Elphinstone, K. V., Artillery Mansions, S.W.1. (Orn.)
- 1946 Elworthy, Miss J. M., 54 Edith Road, W.14. At present abroad. Correspondence to Dr R. Elworthy, 18 St Margaret's Drive, E. Twickenham, Middx. (Bot., Orn.)
- 1928 Emberson, L. M., 68 Reigate Road, Ewell, Surrey. (Ecol., Orn.)
- 1933 England, Mrs B., 2 Langbourne Avenue, Highgate West Hill, N.6. (Orn., R.)
- 1947 England, M. D., Aros, Limpsfield, Surrey. (Orn.)
- 1947 English, A. E., 21 Aultone Way, Sutton, Surrey. (Bot., Orn.)
- 1927 English, Miss F., 8 Dorville Crescent, Ravenscourt Park, W.6. (Arch., Bot., Orn., R.)
- 1944 Eustace, Miss W., Bedford College, N.W.1. (Fr. Water Ecol.)
- 1948 Evans, Rev. F. B., "Chipstone," 60 Selsdon Park Road, South Croydon, Surrey. (Orn.)
- 1937 Evans, H. J., B.Sc., Kenora, Loudham Road, Little Chalfont, Bucks. (Arch., Ecol., Geol., Orn.)
- 1942 Evans, L. R., c/o 35 Champion Grove, S.E.5. (Ecol., Orn.)
- 1946 Evans, Percy, M.A., F.G.S., 21 Grimsdyke Road, Hatch End, Middx. (Geol.)
- 1945 Eyden, Rev. M. J., B.A., Quainton Hall School, Harrow, Middx. (Orn.)
- 1907 Eynon, L., B.Sc., F.I.C., 8 Hall Lane, Upminster, Essex. (Chem.)
- 1946 Farenden, Mrs J., 83 Harewood Road, Isleworth, Middx.
- 1946 Farenden, W., 83 Harewood Road, Isleworth, Middx. (Ecol.)
- 1946 Farmer, S., 80 Ferrymead Avenue, Greenford, Middx. (Orn.)
- 1939 Faulkner, Miss A. M. G., 127 Lower Richmond Road, S.W.14. (Arch., Orn., R.)
- 1947 Fieldhouse, J. R., 52 Sedgcombe Avenue, Kenton, Middx. (Orn.)
- 1947 Fillmore, L. J., 11 Westfield Avenue, Woking, Surrey. (Orn.)
- 1948 Filshie, K., 51 Frognal, Hampstead, N.W.3. (Orn.)
- 1945 Finneron, Miss M., 80 Wavertree Court, Streatham Hill, S.W.2.
- 1944 Firth, F., "Normanhurst," 16 Winchelsey Rise, South Croydon, Surrey. (Orn.)
- 1944 Firth, F. M., "Normanhurst," 16 Winchelsey Rise, South Croydon, Surrey. (Orn.)
- 1948 Fisher, Miss D., 39 Comyn Road, Battersea, S.W.11. (Bot.)
- 1937 Fisher, J. M. McC., M.A., F.L.S., M.B.O.U., Old Rectory, Ashton, Northampton. (Ecol., Orn.)
- 1934 Fitter, R. S. R., B.Sc. (Econ.), F.Z.S., M.B.O.U., Greyhounds, Burford, Oxford. (Ecol., Ent., Orn.)
- 1947 Fitzpatrick, Mrs J. M., 122 Castelnau, Barnes, S.W.13. (Bot., Ecol., Orn.)
- 1948 Fletcher, R., 23 Denbigh Place, S.W.1. (Ent., Orn.)
- 1947 Fookes, Miss U., 71 St Mary's Mansions, Paddington, W.2. (Orn.)
- 1946 Ford, H. K., Medical Superintendent's House, St Stephen's Hospital, Chelsea, S.W.10. (Arch., Ecol., Ichth., P.L.)
- 1936 Forrester, Mrs C. E., Sesame Imperial and Pioneer Club, 49 Grosvenor Street, W.1. (Arch., Orn.)
- 1946 Forster, Miss E., 101 Hawkins House, Dolphin Square, S.W.1. (Bot., Orn.)
- 1937 Fossey, H. B., 13 Abercorn Gardens, Bailey Lane, Romford, Essex. (Orn.)

- 1924 Foster, J. B., B.A., 12 Conway Road, S.W.20. (Orn.)
- 1945 Foster, Miss K. E., 6 Criffel Avenue, Streatham Hill, S.W.2. (Ecol., Bot.)
- 1944 Fox, Prof. H. Munro, F.R.S., 27 Sussex Place, N.W.1. (Bot., Fr. Water Ecol., Geol., Orn.)
- 1948 Foxley, R. H., 5 Beauchamp Road, Twickenham, Middx. (Geol.)
- 1947 Franghiadi, G. P., 6 Link Road, Rayleigh, Essex. (Lep.)
- 1938 Franks, Miss H., 21 Queen Square House, W.C.1. (Arch., Bot., Ecol., Orn., R.)
- 1931 Frederick, Miss L. M., M.Sc., F.Z.S., Whitelands College, West Hill, Putney, S.W.15. (Ecol., Orn., P.L., R.)
- 1948 French, Miss E. M., Queen Alexandra's House, Kensington Gore, S.W.7. (Ent., Orn.)
- 1935 French, W. A., Brook Barns, Chigwell, Essex. (Bot., Orn.)
- 1947 Freshwater, D. V., 25 Princes Court, Shoot-up-Hill, N.W.2. (Orn.)
- 1948 Friedlein, W. A. L., 90 Minories, E.C.3. (Ent., Orn.)
- 1946 Frost, L. B., 55 St Albans Road, Woodford Green, Essex. (Ent.)
- 1945 Fudge, Miss E. M., 6 Pickhurst Rise, West Wickham, Kent. (Ecol.)
- 1946 Fulton, A. W., Little Saddlers, Eynsford, near Dartford, Kent. (Bot.)
- 1939 Garret, V. R., M.A., M.B.O.U., 15 The Pryors, East Heath Road, N.W.3. (Ecol., Orn.)
- 1947 Garrett-Jones, C., Houseboat Hilara, c/o Rye House Farm, Hoddesdon, Herts. (Ecol., Ent.)
- 1932 Garrido, A. S., c/o 763 Rochdale Road, Manchester, 9. (Bot., Ecol., Geol.)
- 1910 Gaze, W. E., 10 The Avenue, Highams Park, E.4. (Bot., Chem., Lep., Orn.)
- 1939 Gibson, Mrs G. M., 26 Gilston Road, S.W.10. (Bot., Orn.)
- 1946 Giles, C. E., 106 Woodstone Avenue, Stoneleigh, Surrey. (Orn.)
- 1931 Gillett, J. D., F.R.E.S., c/o The Medical Department, Entebbe, Uganda, British East Africa. (Tempy. address until July 1949, 1 Beulah Road, Walthamstow, E.17.) (Ent., Rep.)
- 1933 Gillham, E. H., 19 Tennison Road, S.E.25. (Orn.)
- 1937 Gillingham, D. W., c/o 28 Roding Road, Loughton, Essex. (Orn.)
- 1947 Gilmore, J. T., 67 White Hart Lane, Barnes, S.W.13. (Orn.)
- 1945 Gladstone, P., Willowbrook End, Eton, Windsor. (Orn., Zoo.)
- 1948 Gledhill, Miss E. J., 24 Wendover Road, Bromley, Kent. (Orn.)
- 1910 Glegg, W. E., F.Z.S., M.B.O.U., The Zoological Museum, Tring, Herts. (Orn.)
- 1946 Glynn, E. St A., 6a Lancaster Drive, N.W.3. (Mycol.)
- 1947 Godfray, Miss M., 22 King's Road, Walton-on-Thames, Surrey. (Orn.)
- 1934 Godwin, C., 20 Canonbury Park North, N.1. (Orn.)
- 1934 Godwin, Mrs M. L., 20 Canonbury Park North, N.1. (Orn.)
- 1945 Goldney, C. Le B., 30 Hylda Court, St Albans Road, N.W.5.
- 1945 Goldney, Mrs N., 30 Hylda Court, St Albans Road, N.W.5. (Bot., Orn.)
- 1946 Gollop, Charles, 13 Manor Road, Merstham, Surrey. (Ent., Orn.)
- 1929 Goodfellow, Miss L., Flat 3, 7 Lyndhurst Gardens, N.W.3. (Orn.)
- 1947 Goodwin, D., "Toft," Monks Road, Virginia Water, Surrey. (Ecol., Orn.)
- 1939 Goom, Miss E. M., 78 Elmfield Avenue, Teddington, Middx. (Orn.)
- 1946 Goom, Miss N., 78 Elmfield Avenue, Teddington, Middx. (Orn.)
- 1947 Gordon, Miss W. G., 19 Broadlands Road, Highgate, N.6. (Orn.)
- 1948 Gore, G. C., 61 Rutland Gate, S.W.7. (Orn.)
- 1944 Gould, A., 185 New Haw Road, Addlestone, Surrey. (Orn.)
- 1942 Gould, H. G., 35 Bergholt Avenue, Ilford, Essex. (Orn.)
- 1946 Graham, Miss E. D., 1 Beaumanor Mansions, 115 Queensway, W.2. (Bot., Orn.)
- 1947 Gray, C. A. M., 18 St John's Park, Blackheath, S.E.3. (Geol.)
- 1934 Gray, Miss J. W., 10 Canford Road, S.W.11. (Arch., Bot., R.)
- 1934 Gray, Miss J. W., 10 Canford Road, S.W.11. (Arch., Bot., R.)
- 1927 Green, R., Ruskin Studio, 7 New Court, Lincoln's Inn, W.C.2, and 84 Elgin Road, Seven Kings, Essex. (Orn.)
- 1939 Greenfield, Lt. H. F., R.A., 18 Stuart Road, Warlingham, Surrey. (Orn.)
- 1899 *Greenwood, Prof. M., D.Sc., F.R.S., F.R.C.P., Hillcrest, Church Hill, Lough-ton, Essex. (Arch., Biol.)
- 1948 Grenham, R., 40 Elderton Road, Westcliff-on-Sea, Essex. (Bot.)
- 1945 Griffin, Mrs E. M., 1 Park Hall, Crooms Hill, Greenwich, S.E.10.

- 1928 Griffin, Miss M., 22 Addison Way, N.W.11. (Orn.)
- 1947 Griffiths, Miss R. H., 19b Medway Street, S.W.1. (Arch., Bot., Orn.)
- 1947 Grinsell, L. V., Bloomsbury House Club, 34 Cartwright Gardens, W.C.1. (Arch.)
- 1945 Guildhall Library, E.C.2.
- 1927 *Hale, R. W., 6 Grendon Gardens, Wembley Park, Middx. (Arch., Bot., Ecol., Orn.)
- 1947 Hall, D. G., 34 Ellerton Road, Wandsworth Common, S.W.18. (Orn.)
- 1946 Hall, Dr Marjorie K., 16 Pilgrims Lane, Hampstead, N.W.3. (Orn.)
- 1947 Hamilton, M. K., Anton House, Riching's Way, Iver, Bucks. (Orn.)
- 1944 Hammond, Miss Q., G.P.O. Hostel, Oakwood Court, W. Kensington, W.14. (Bot.)
- 1903 Hanbury, F., Capel, Westfield, Hoddesdon, Herts. (Lep.)
- 1946 Hansford, S. H., 29 Brunswick Gardens, Kensington, W.8. (Arch., Bot.)
- 1946 Hansford, Mrs S. H., 29 Brunswick Gardens, Kensington, W.8. (Arch., Bot.)
- 1944 Hardcastle, Miss S. M., Bedford College, N.W.1. (Fr. Water Ecol.)
- 1927 Hardiman, Miss A., Hyron's Cottage, Woodside Road, Amersham, Bucks. (R.)
- 1921 Hardiman, J. P., C.B.E., B.A., Hyron's Cottage, Woodside Road, Amersham, Bucks. (Orn.)
- 1946 Hare, Miss Phylis E. F., 80 Coleman Court, S.W.18. (Bot., Orn.)
- 1942 Harris, L. F., 30 Ellis Avenue, Rainham, Essex. (Orn.)
- 1947 Harris, R. H., 179 Sirdar Road, Wood Green, N.22. (Ecol., Fr. Water Biol.)
- 1947 Harrison, C. J. O., 178 Mantilla Road, Tooting, S.W.17. (Orn.)
- 1943 Harrison, D. L., F.Z.S., Bowerwood House, St Botolph's Road, Sevenoaks, Kent (Biol., Orn.)
- 1946 Harrison, Miss G. M., B.Pharm., Ph.C., 24 Clifton Gardens, W.9. (Orn.)
- 1942 Harrison, Major J. L., A.R.C.S., M.Sc., F.R.E.S., Institute for Medical Research, Kuala Lumpur, Malaya. (Ecol., Ent.)
- 1947 Harrison, R. J., 1 Imber Close, Ember Lane, Esher, Surrey. (Orn.)
- 1945 Hartridge, Miss M. R., 94 Canberra Road, Charlton, S.E.7. (Bot., Orn.)
- 1944 Haskell, G., B.Sc., F.R.H.S., 25 Tring Avenue, W.5. (Bot., Ecol.)
- 1946 Hasler, J. K., 12 Harman Drive, N.W.2. (Bot., Orn.)
- 1935 Hatch, R. S., 65 Marks Road, Hanwell, W.7. (Orn.)
- 1932 Haviland, Miss D. M., c/o Miss Campbell of Kilberry, Tarbert, Loch Fyne, Argyll, Scotland. (Orn.)
- 1930 Haworth, Miss F. M., B.Sc., F.Z.S., Grove House, Roehampton Lane, S.W.15. (Bot., Zoo.)
- 1946 Haworth, Miss M., The Brambles, Massetts Road, Horley, Surrey. (Bot., Orn.)
- 1946 Hawtin, F., Ibstock Place School, Clarence Lane, S.W.15. (Orn.)
- 1947 Hayes, Miss D. L., 103 Knatchbull Road, S.E.5.
- 1947 Hayman, P. J., 120 Trinity Road, Southall, Middx. (Orn.)
- 1946 Hayman, R. W., "Timbers," 32a Hazlewell Road, Putney, S.W.15. (Mam., Orn.)
- 1927 Hayward, John F., Ph.D., M.Sc., F.G.S., 29 Mount Echo Drive, Chingford, E.4. (Biol., Geol.)
- 1946 Hearn, Miss D. B., 56 Meadvale Road, Ealing, W.5.
- 1948 Henderson, Miss E. T., Women's University Settlement, 44 Nelson Square, S.E.1. (Orn.)
- 1946 Hepburn, Miss E. M., Clarence Lodge, Hampton Court, E. Molesey, Surrey. (Orn.)
- 1948 Herbert, E. H., 8 Meadow Close, Sutton, Surrey. (Orn.)
- 1947 Hick, A. E., Sherrards, Cricketfield Lane, Bishop's Stortford, Herts. (Bot., Ent. (esp. Hym.), Photography, Pl. G.)
- 1948 Hicks, Miss E. D., 16 Rochester Way, Blackheath, S.E.3. (Orn.)
- 1946 Hicks, P. Yelverton, M.B., B.S., F.Z.S., Hayes Barton, Totteridge Lane, Totteridge, Herts. (Bot., Ent., Orn.)
- 1946 Hilbert, Miss G., 119 Ealing Village, Hanger Lane, W.5. (Bot.)
- 1946 Hill, F. L., 24 Westland Drive, Hayes, Bromley, Kent. (Bot., Orn., Lep.)
- 1946 Hill, H. M., 71 Ellison Road, Streatham, S.W.16. (Arch.)

- 1948 Hillaby, J. D., F.Z.S., 1 Tanza Road, Hampstead Heath, N.W.3. (Ent., Geol.)
- 1946 Hillman, Miss E. M., 16 Exford Road, Grove Park, S.E.12. (Orn.)
- 1938 Hindson, M. T., 11 Holland Park, W.11. (Ecol., R.)
- 1944 Hobhouse, Miss D., 82 Vincent Square, S.W.1. (Orn.)
- 1946 Hodgson, Rev. R. L., 23 Howitt Road, Belsize Park, N.W.3. (Orn.)
- 1946 Hollings, Miss M., St Katharine's Training College, White Hart Lane, Tottenham, N.17.
- 1929 Hollom, P. A. D., Rolvenden, Hook Heath, Woking, Surrey. (Orn.)
- 1947 Holmes, Miss A. M., Sunnyside, Shelley, Ongar, Essex.
- 1944 Holroyde, F. J., 13 Denbridge Road, Bickley, Kent. (Orn.)
- 1947 Holroyde, R. B., 13 Denbridge Road, Bickley, Kent. (Orn.)
- 1932 Homes, R. C., 62d Albemarle Road, Beckenham, Kent. (Ecol., Orn.)
- 1947 Hope, H. D. N., Highlands, Andover Road, Newbury, Berks. (Bot., Orn.)
And at Guy's Hospital Medical School, S.E.1.
- 1930 Hopkins, Lieut. G., 51 Sandy Lodge Way, Northwood, Middx. (Ecol., Orn.)
- 1944 Horeman, T. J., 104 Kilmore Road, S.E.23. (Ent., Orn.)
- 1905 Hornblower, A. B., 91 Queen's Road, Buckhurst Hill, Essex. (Api., Arch., Ecol., Orn., R.)
- 1945 Howlett, Mrs F. M., 27 Barton Road, W.14. (Arch., Geol.)
- 1945 Howlett, V. G. A., 27 Barton Road, W.14. (Arch., Geol.)
- 1941 Hoy, K. E., 5 Beverley Crescent, Woodford Green, Essex. (Ent., Orn.)
- 1945 Hoyle, Miss D. M., 61 Danescroft, Brent Street, Hendon, N.W.4. (Ecol., Orn.)
- 1947 Hughes, C., 6 St Hilda's Avenue Ashford, Middx. (Orn.)
- 1947 Humphreys, P. N., address not known. (Orn., esp. Wild-fowl.)
- 1948 Hunter, E. N., Ely House, 90 Mount Ararat Road, Richmond, Surrey. (Orn.)
- 1938 Hurcomb, Sir Cyril, K.B.E., C.B., 47 Campden Hill Court, W.8. (Orn.)
- 1939 Hussey, N. W., c/o Penwarne, Stonewall Park Road, Langton, Tunbridge Wells, Kent. (Hym., Orn.)
- 1945 Hutchings, C. E., 38 Lancefield Street, Queen's Park, W.10. (Orn.)
- 1948 Hutchings, G. E., Juniper Hall Field Centre, Mickleham, Surrey.
- 1946 Hutson, Maj.-Gen. H. P. W., M.B.O.U., address not known. (Orn.)
- 1930 Hutton, Miss R. E., 34 Thorneyhedge Road, Gunnersbury, W.4. (Bot., Zoo.)
- 1947 Hyatt, K. H., 50 Heather Road, Grove Park, S.E.12. (Lep., Orn.)
- 1946 Inglis, Mrs G. I., 34 West Hill Court, Millfield Lane, N.6. (Orn.)
- 1948 Ingram, Miss C., 51 Elm Park Gardens, S.W.10. (Bot.)
- 1945 Izzard, W. P., 180 Woodhouse Road, North Finchley, N.12. (Orn.)
- 1948 Janes, Miss E. N., 2 Stone Road, Bromley, Kent. (Orn.)
- 1948 Jarrett, Miss S. M., 28 Dangan Road, Wanstead, E.11. (Ecol.)
- 1927 Jeffery, H. J., A.R.C.S., F.L.S., Tauranga, Cavell Avenue South, Peacehaven, Sussex. (Bot.)
- 1946 Jenkinson, Miss R., Eyot Cottage, Chiswick Mall, W.4. (Orn.)
- 1943 Jephson, Mrs P., 32 Queensberry Mews East, South Kensington, S.W.7. (Orn.)
- 1929 Johns, Miss F. E., 30 Mt. Stewart Avenue, Kenton, Middx. (Bot., Orn., R.)
- 1933 Johns, Miss L. J., 87 Morley Hill, Enfield, Middx. (Arch., Bot., Ecol., Orn., R.)
- 1946 Johnson, Miss E. E., 7 Links Road, Woodford Green, Essex. (R.)
- 1944 Johnson, P., F.Z.S., 53 Ennerdale Road, Richmond, Surrey. (Orn., Zoo.)
- 1947 Jones, D. G., 7 Cambrian Road, Richmond, Surrey. (Orn.)
- 1939 Jones, H. O., Ely House, Mount Ararat Road, Richmond, Surrey. (Ecol., Orn.)
- 1947 Jones, M. W., 138 Francis Close, Ewell, Surrey. (Orn.)
- 1948 Jones, Miss V. B., 15 Friary Road, Friern Barnet, N.12. (Orn.)
- 1899 *Kaye, W. J., F.R.E.S., Chantrey Lodge, Longdown, Guildford, Surrey. (Lep.)
- 1947 Keene, J. A., 138 Mimms Hall Road, Potters Bar, Middx. (Orn.)
- 1945 Kelleway, Mrs D. M., 20 The Pryors, Hampstead, N.W.3. (Orn.)
- 1946 Kemp, D. R., "The Priory," Knowle Green, Staines, Middx. (Bot.)
- 1945 Kennedy, Miss M. E., 62 Lordship Road, Stoke Newington, N.16. (Arch., Bot., Ent., Orn., R.)
- 1946 Kenrick, Miss Alison, 11 Pembridge Villas, W.11. (Orn.)
- 1944 Kent, D. H., 75 Adelaide Road, W. Ealing, W.13. (Bot., Chem., Ecol.)

- 1947 Kerney, M., "Vasconia," Crown Dale, Upper Norwood, S.E.19. (Geol., Palaeontol.)
- 1934 Kerr, Mrs H. M. Rait-, 22 Elm Tree Road, N.W.8. (Arch., Ecol., Orn.)
- 1936 Keywood, K. P., Croft Cottage, Hare Lane, Claygate, Surrey. (Ecol., Ent., Orn.)
- 1929 King, E. L., 11 Downs View, Osterley, Middx. (Arch., Bot., Geol., Orn.)
- 1945 King, J. M. B., 23 Lyncroft Gardens, West Ealing, W.13. (Mycol.)
- 1932 King, Mrs O. T. G., 11 Downs View, Osterley, Middx. (Arch., Bot., Geol., Orn., R.)
- 1946 Knight, John, 74 East Sheen Avenue, East Sheen, S.W.14. (Orn.)
- 1946 Knipe, P. R., 24 Capthorne Avenue, Harrow, Middx. (Orn.)
- 1947 Knott, Miss B. B., 12 Mount Echo Avenue, Chingford, E.4. (Orn.)
- 1945 Koster, D., 19 The Pryors, Hampstead, N.W.3. (Bot., Ichth., Orn.)
- 1947 Lake, Miss K. E., 10 Aschurch Grove, W.12. (Bot., Orn.)
- 1947 Lamb, Mrs M. E., 27 Barton Road, W.14.
- 1946 Landells, Dr J. W., 18 Balmoral Road, Worcester Park, Surrey. (Orn.)
- 1946 Landells, Mrs Norah, 18 Balmoral Road, Worcester Park, Surrey. (Orn.)
- 1947 Lansbury, I., 50a Alston Road, Barnet, Herts. (Ent., Orn.)
- 1944 Larsen, R. T. F., 370, Finchley Road, N.W.3. (Orn.)
- 1945 Leatherdale, Mrs J., "Tasli," Hawks Hill, Leatherhead, Surrey. (R.)
- 1930 Ledlie, R. C. B., M.B., B.Sc., F.R.C.S., 64 Harley Street, W.1. (Bot., Orn.)
- 1946 Lee, H. Boswell, St Macra, Highland Road, Amersham, Bucks. (R.)
- 1928 Lee, Miss M., 22 Addison Way, N.W.11. (Orn.)
- 1946 Le Gros, A. E., 155 Glenfarg Road, Catford, S.E.6. (Arachnida, Ecol., Geol.)
- 1922 Lemon, Mrs M. L., M.B.E., J.P., F.R.G.S., F.R.S.A., F.Z.S., M.B.O.U., Hillcrest, Redhill, Surrey. (Orn.)
- 1947 Letts, J. K., 183 Windmill Lane, Greenford, Middx. (Bot., Fr. Water Biol.)
- 1946 Levy, Miss R. F., 28 New End, Hampstead, N.W.3. (Orn.)
- 1937 Lewer, F. A., Jalna, Cobham Road, E. Horsley, Surrey. (Orn.)
- 1946 Lewis, Miss E., 64 Quarry Park Road, Cheam, Surrey. (Bot., Orn.)
- 1948 Lewis, M., 13 Victoria Grove, W.8. (Orn.)
- 1919 Leyton Public Libraries (E. Sydney, F.L.A.), Central Library, E.10.
- 1946 Lightly, J. M. F., 6 Woodland Croft, New Wanstead, E.11.
- 1944 Lindley, K. A., 9 Old Oak Road, W.3. (Lep., Orn.)
- 1946 Lindop, Miss S. A., 11 Durrington Park Road, Wimbledon, S.W.20. (Arch., Geol.)
- 1927 Lister, Miss G., F.L.S., 871 High Road, E.11. (Bot., Orn.)
- 1926 *Littlejohn, H. A., 55 Ethelbert Gardens, Ilford, Essex. (Bot., Orn., R.)
- 1934 Locket, G. H., M.A., M.Sc., 36 Gayton Road, Harrow, Mx. (Ecol., Ent.)
- 1944 Lockett, J. H., The Pines, Sheath Lane, Oxshott, Surrey. (Orn.)
- 1948 Lockett, Mrs M. E., 69 Norfolk Avenue, Sanderstead, Surrey. (Arch., Bot.)
- 1948 Lockett, T. H., 69 Norfolk Avenue, Sanderstead, Surrey. (Orn.)
- 1926 *Longfield, Miss C. E., F.R.G.S., F.Z.S., F.R.E.S., M.B.O.U., 11 Iverna Gardens, Kensington, W.8. (Bot., Ecol., Ent., Orn., R.)
- 1945 Longley, C. W., Lloyds Bank House, 40a Rosslyn Hill, Hampstead, N.W.3. (Bot., Orn.)
- 1945 Longley, Mrs S. H., Lloyds Bank House, 40a Rosslyn Hill, Hampstead, N.W.3. (Bot.)
- 1936 Lousley, J. E., 7 Penistone Road, S.W.16. (Bot., Ecol., Orn.)
- 1930 *Low, G. Carmichael, M.A., M.D., F.R.C.P., F.Z.S., M.B.O.U., 7 Kent House, Kensington Court, W.8. (Orn., Zoo.)
- 1926 Lutwyche, Mrs A. N., 120 Mildred Avenue, Watford, Herts. (Orn., R.)
- 1946 Lutwyche, Miss V. U., 24 Well Walk, Hampstead, N.W.3. (Orn.)
- 1938 MacAlister, D. A., 10 St Albans Grove, Kensington, W.8. (Orn.)
- 1928 MacAlister, Mrs E., 10 St Albans Grove, Kensington, W.8. (Bot., Orn.)
- 1937 *McClintock, Major D., M.A., A.C.A., Bracken Hill, Platt, near Sevenoaks, Kent. (Bot., Orn.)
- 1935 McCulloch, Capt. G. K., c/o 65 Chester Road, Northwood, Middlesex. (Orn.)
- 1933 MacDonald, Rt. Hon. Malcolm J., c/o Upper Frognal Lodge, Hampstead, N.W.3. (Orn.)

- 1935 McDowell, Miss C. M., 19 Cambridge Park Court, E. Twickenham, Mx.
(Bot., Orn., R.)
- 1939 McEwen, Miss E., 230 Kensington Close, Wrights Lane, W.8. (Orn.)
- 1945 McHoul, J., 76 Princes Court, Brompton Road, S.W.3. (Orn.)
- 1911 MacIntosh, Miss I. S., 3 Mayfield Road, E.4. (Arch., Bot.)
- 1911 MacIntosh, Miss J. D., 3 Mayfield Road, E.4. (Arch., Bot.)
- 1929 Mackay, Helen M. M., M.D., F.R.C.P., 7 Lyndhurst Gardens, N.W.3. (Orn.)
- 1946 Mackie, J. D. H., 13 Southfields, Rochester, Kent. (Orn.)
- 1948 Mackintosh, D. R., Oakwood, Bayley's Hill, Sevenoaks, Kent. (Orn.)
- 1946 Mackintosh, W. H., 6 Enmore Road, S.W.15. (Arch., Biol., Bot., Ecol., P.L.)
- 1932 Mackworth-Praed, C. W., F.R.G.S., F.Z.S., F.R.E.S., M.B.O.U., Castletop, Burley, near Ringwood, Hants. (Ent., Orn.)
- 1943 McNicol, G. F., 38 King's Road, Edmonton, N.18. (Bot., Orn.)
- 1943 McNicol, Mrs J. C., 38 King's Road, Edmonton, N.18. (Bot., Orn.)
- 1923 *Macpherson, A. Holte, B.C.L., M.A., F.Z.S., 12 The Beacon, Exmouth, Devon.
(Orn.)
- 1946 Macpherson, Miss A. Margaret C., M.D., F.R.C.P., 22 Well Walk, Hampstead, N.W.3. (Orn.)
- 1947 Maitland, Mrs M. A., 151 Coleherne Court, S.W.5. (Bot., Orn.)
- 1923 Mann, E., 10 Frankland Road, E.4. (Ecol., Orn., P.L.)
- 1934 Mann, F. R., M.C., Noreena, Ham Common, Surrey. (Orn.)
- 1934 Manser, G. E., 279 Clockhouse Road, Beckenham, Kent. (Bot., Ecol., Orn.)
- 1934 *Marchant, Miss R., 24 Longmeads, Rusthall, Tunbridge Wells, Kent. (Arch., Bot.)
- 1944 Mason, Mrs U. C., 63 King's Road, Richmond, Surrey. (Bot., Mycol.)
- 1948 Mather, D. H., 45 Hawke Road, S.E.19. (Orn.)
- 1940 Mayo, R. W., Inaspinney, Oaklands, Welwyn, Herts. (Orn.)
- 1943 Mears, R. G., 14 Hampton Road, E.4. (Ent.)
- 1947 Melliush, Mrs M. L., 56 Sunnyfield, Mill Hill, N.W.7. (Orn.)
- 1935 Melliush, W. D., 56 Sunnyfield, N.W.7. (Arch., Ecol., Orn.)
- 1947 Melville, K. J., 25 Lyncroft Gardens, N.W.6. (Arch., Orn.)
- 1946 Mercer, G. I., Flat 7, 23 Powis Square, Kensington, W.11. (Orn.)
- 1948 Middleton, Miss G. E., 435a Chertsey Road, Twickenham, Middx. (Ecol., Ent., Orn.)
- 1946 Mildon, Miss E., 77 St James Road, Sutton, Surrey. (Orn.)
- 1948 Miller, O. L., 52a Princes Square, W.2. (Orn.)
- 1944 Mills, T. H. L., A.I.E.E., 82 Madrid Road, S.W.13. (Orn.)
- 1947 Milne-Redhead, E., 7 Ashley Gardens, Petersham, Richmond, Surrey. (Bot., Ent., Orn.)
- 1946 Mitchell, F. J. L., 298 Latymer Court, W.6. (Orn.)
- 1947 Mitchell, K. D. G., 26 Beehive Lane, Ilford, Essex. (Orn.)
- 1932 Mitchell, Miss M. I., 7 Penwerris Avenue, Osterley, Middlesex. (Bot., Orn.)
- 1946 Montgomery, B. K., address not known. (Orn.)
- 1946 Montieth, Mother M., Convent of the Sacred Heart, 28 West Hill, S.W.18.
- 1948 Moody, R. F., 2 Sunnyside Cottages, High Street, Harlington, Middx. (Orn.)
- 1947 Moore, D. R., Sunnyside Cottage, Westcar Lane, Hersham, Surrey. (Ent. (esp. Rhopalocera, Sphinges), Orn.)
- 1948 Moore, G. W., 1 Darby Crescent, Sunbury-on-Thames, Middx.
- 1947 Moore, G. W. R., Sunnyside Cottage, Westcar Lane, Hersham, Surrey.
(Orn.)
- 1948 Moore, Commander H. H. R., R.N., United Service Club, Pall Mall, S.W.1.
(Orn.)
- 1947 Moorman, R. F., 56 Oxford Road, Carshalton, Surrey. (Geol.)
- 1947 Morgan, Miss B. M. C., B.A., Braeside, Horley, Surrey. (Bot.)
- 1934 Morgan, D. A. T., 4 Drayton Gardens, S.W.10. (Ecol., Orn., R.)
- 1946 Morgan, E. W. A., Wandle Cottage, Meadow Road, Sutton, Surrey. (Bot., Orn.)
- 1948 Morgan, H. V., The Dunn Laboratory, St Bartholomew's Hospital, E.C.1.
(Orn.)
- 1946 Morgan, Mrs K. T., 4 Drayton Gardens, S.W.10. (Orn.)

- 1947 Mortimer, T. J., 24 Highfield Drive, West Wickham, Kent. (Ent., Orn.)
- 1937 Morton, Miss G. M., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)
- 1942 Mugele, G. F., 91 The Ridgeway, Chingford, E.4.
- 1945 Muir-Wood, Miss H. M., D.Sc., 40 Rutland Gate, S.W.7. (Bot., Orn.)
- 1934 Munro, Miss M., 50a Hendham Road, Trinity Road, S.W.17. (Ecol., Orn.)
- 1947 Murphy, James, 184 Tottenham Road, N.8. (Orn.)
- 1937 Musselwhite, D. W., Treryn, Frith Hill, Godalming, Surrey. (Orn.)
- 1938 *Myers, A. F., 43 Arkwright Road, N.W.3. (Orn.)
- 1936 Napper, Major R. P., R.A., F.Z.S., 24 Vernon Road, East Sheen, S.W.14. (Orn.)
- 1946 Nash, Miss B. M., 105 Station Road, Hendon, N.W.4. (Bot., Mycol., Orn.)
- 1946 Nattrass, F. A., 50 Swakeleys Road, Ickenham, Middx. (Orn.)
- 1947 Nelmes, Miss E. M., 27 Westbourne Avenue, Acton, W.3. (Ecol.)
- 1946 Newbery, D. A., 41 Courtfield Rise, West Wickham, Kent. (Bot., Ecol., Orn.)
- 1946 Newton, Dr R. G., 102 New Church Road, Hove 3, Sussex. (Ecol., Orn.)
- 1926 Niblett, M., 10 Greenway, Wallington, Surrey. (Ent., Pl. G.)
- 1893 *Nicholson, Miss B., 49 Danecourt Road, Parkstone, Dorset. (Bot.)
- 1934 Nicholson, E. M., C.B., M.B.O.U., 13 Upper Cheyne Row, S.W.3. (Ecol., Orn.)
- 1946 Noel, A. S., 42 Woodcote Road, Wanstead, E.11. (Bot., Ent., Orn.)
- 1946 Noel, Miss D., 32 Parkhill Road, N.W.3.
- 1946 Norkett, A. H., 36 Hemsby Road, Chessington, Surrey. (Bot., Ecol.)
- 1934 Norris, C. A., M.B.O.U., 10 Warwick Road, Stratford-on-Avon, Warwickshire. (Ecol., Orn.)
- 1940 Norsworthy, H. H., 8 Balliol House, Manor Fields, S.W.15. (Orn.)
- 1937 O'Farrell, A. F., B.Sc., A.R.C.S., F.R.E.S., New England University College, Armidale, New South Wales. (Ecol., Ent.)
- 1947 Ogier, R. L., 60 Great Cumberland Place, W.1. (Arch., Geol., R.)
- 1945 O'Neil, Mrs H. E., F.S.A., 32 Blomfield Road, W.9. (Arch., Orn.)
- 1937 Owen, C. E., Haslemere Educational Museum, Haslemere, Surrey. (Orn.)
- 1947 Owen, D. F., 3 Lockmead Road, Lewisham, S.E.13. (Lep., Orn.)
- 1946 Owen, Mrs E. K., 30 Hamilton Road, Harrow, Middx.
- 1938 Paddington Public Libraries (H. J. W. Wilson, A.L.A.), Porchester Road, W.2.
- 1946 Page, W. M., 16 Lansdowne Road, Wimbledon, S.W.20. (Orn.)
- 1946 Page, Mrs W. M., 16 Lansdowne Road, Wimbledon, S.W.20. (Orn.)
- 1944 Panchen, A. L., 21 Rowan Road, S.W.16. (Ent., Rep.)
- 1946 Pannell, Miss D., 37 Cecil Road, Acton, W.3. (Bot.)
- 1947 Parish, E. L., Oak Tree Cottage, Hillcrest Gardens, Hinchley Wood, Esher, Surrey. (Orn.)
- 1946 Park, Mrs J. M. M., 76 Lavender Sweep, S.W.11. (Orn.)
- 1948 Park, V. C., 76 Lavender Sweep, Battersea, S.W.11. (Orn.)
- 1938 Park, W. D., c/o 34 White Horse Drive, Epsom, Surrey. (Ecol., Orn.)
- 1925 *Parmenter, L., F.R.E.S., 94 Fairlands Avenue, Thornton Heath, Surrey. (Bot., Ecol., Ent. (esp. Dipt.), Orn., Pl. G.)
- 1938 Parrinder, E. R., 27 Gwalior House, Chase Road, N.14. (Ecol., Orn.)
- 1938 Parrinder, Mrs E. R., 27 Gwalior House, Chase Road, N.14. (Ecol., Orn.)
- 1947 Parry, P. E., 190 Bickenhall Mansions, Gloucester Place, W.1. (Ent., Orn.)
- 1945 Parsons, C. H. F., 37 Court Farm Road, Northolt, Greenford, Middx. (Orn.)
- 1946 Patey, D. H., 11 Meadway Close, N.W.11. (Orn.)
- 1946 Pattinson, Miss S. V., 140 Forest Hill Road, Honor Oak, S.E.23.
- 1933 Paulson, C. W. G., M.B.O.U., Wyresdale House, Pendleton Road, Redhill, Surrey. (Arch., Orn.)
- 1923 Payne, E. M., Tilgate, Long Lane, Hillingdon, Middlesex. (Bot., Orn.)
- 1923 Payne, L. G., F.Z.S., 23 Minterne Avenue, Norwood Green, Southall, Middx. (Bot., Ecol., Ent.)
- 1942 *Payne, R. M., 46 Florence Road, Sanderstead, Surrey. (Bot., Ecol., Ent.)
- 1943 Payne, R. W., 21 Norfolk Road, St John's Wood, N.W.8. (Orn.)
- 1944 Payton, H. W., Lianda, Hill Close, Harrow, Mx. (Arch., Bot., Orn.)
- 1947 Peacock, Miss J. L., 65 Aylward Road, Merton Park, S.W.20. (Orn.)
- 1937 Pearce, E. W., 3 Berkeley House, Hampton, Mdx. (Orn.)
- 1935 Pearse, B. S. K., 74 Ashgrove Road, Goodmayes, Essex. (Bot., Ent., Orn.)
- 1946 Pearton, J. E., 90 Wentworth Road, Barnet, Herts. (Ent., Mam.)
- 1948 Peck, Miss J. E., 39 Church Vale, East Finchley, N.2. (Orn.)

- 1932 Pedler, E. G., 100 East Sheen Avenue, S.W.14. (Orn., R.)
 1945 Pegram, D. C., 44 Combemartin Road, S.W.18. (Ecol., Orn.)
 1946 Perkins, Mrs V., 53 Rectory Road, E.17. (Orn.)
 1948 Perks, F., 92 Ebury Street, S.W.1.
 1948 Perks, Mrs M. E., 92 Ebury Street, S.W.1.
 1937 Peterken, J. H. G., F.L.S., 73 Forest Drive East, E.11. (Bot., Ecol., Geol., Orn.)
 1935 Pettit, H. A., 61 Park End Road, Romford, Essex. (Ent., Orn.)
 1937 Philipson, W. R., B.A., Ph.D., F.L.S., 33 Park Avenue, Ruislip, Middlesex. (Orn.)
 1947 Phillips, J. D., Selworthy, Springfield Gardens, Upminster, Essex. (Orn.)
 1944 Phillips, R., 1 Scutari Road, S.E.22. (Orn.)
 1937 Piercy, K., Clifton Cottage, Clifton, Beds.
 1943 Pilcher, Miss E. V., 65 Chester Road, Northwood, Middx. (Bot.)
 1947 Pinchin, Miss E. M. S., 10 Iverna Court, Kensington, W.8. (Orn.)
 1931 Pinniger, E. B., F.R.E.S., 5 Endlebury Road, E.4. (Ecol., Ent., Orn., R.)
 1927 Piper, Miss G. E. M., 12 Elms Road, Clapham, S.W.4. (Orn.)
 1941 Pitt, Miss Frances, The Albynes, Bridgnorth, Salop. (Orn.)
 1940 Plumptre, Miss H. M., The Hindles, Atherton, Lancs. (Bot., Orn.)
 1925 Poock, S. G., 65 Milton Road, Harpenden, Herts. (Api., Ecol., Orn.)
 1940 Poore, A. C. G., c/o 17 West Avenue, Wallington, Surrey. (Orn.)
 1933 Popple, Miss W. N., Castle Rise, Castle Hill Avenue, Berkhamsted, Herts. (Ecol., Orn., P.L., R.)
 1946 Porter, Miss B. M. M., Moat Villa, Gt. Oakley, Harwich, Essex. Temporary address—74 Hulse Avenue, Barking. (Bot., Orn.)
 1947 Powell, Miss B. M., Grove House, Roehampton Lane, S.W.15. (Orn.)
 1944 Prall, D. I. F., address not known. (Orn.)
 1943 Priestley, Mrs J. B., O.B.E., B3 Albany, Piccadilly, W.1. (Orn.)
 1946 Proctor, Miss H. G., Bedford College for Women, Regent's Park, N.W.1.
 1946 Pullom, E. N., 34 Victoria Avenue, Surbiton, Surrey. (Arch., Orn.)
 1945 Purdom, Mrs I., 14 Larkshall Crescent, Chingford, E.4.
 1946 Pyle, F/O. M. A., 66 Gracefield Gardens, Streatham, S.W.16. (Orn.)
 1946 Rabbets, A. J., 8 Wickham Road, Beckenham, Kent. (Orn.)
 1947 Radford, Miss O., 3 Acland Crescent, Denmark Hill, S.E.5. (Mycol.)
 1948 Raemaekers, R. L., 769 The White House, Albany Street, N.W.1. (Orn.)
 1946 Raines, R. J., Oakdale Hotel, Nottingham. (Orn.)
 1943 Ralls, C. W., Green Court, 58 Queen's Road, Richmond, Surrey. (Orn.)
 1939 Rammell, Mrs E. M., 18 Fishpool Street, St Albans, Herts. (Orn.)
 1945 Ramsden, Miss D. H., 33a Belfield Road, Didsbury, Manchester. 20.
 1939 Ratcliff, A. G., 39 Howard Road, Dorking, Surrey. (Orn.)
 1934 Ratcliff, P. W., "Redlands," Middle Street, Brockham, Surrey. (Bot., Ecol., Orn.)
 1938 Rawlence, D. A., Hill Top Cottage, Warboys Road, Kingston Hill, Surrey. (Orn.)
 1934 *Ray, Miss T., 24 Longmeads, Rusthall, Tunbridge Wells. (Arch., Bot.)
 1945 Raynham, Miss M., 36 Villiers Avenue, Surbiton, Surrey. (Orn.)
 1947 Reed, J., 41 Freegrove Road, N.7. (Mycol.)
 1948 Reed, Miss M. W., 40 Ringstead Road, Catford, S.E.6. (Orn.)
 1930 Reeve, Miss E. A., The Penn Club, 22 Bedford Place, W.C.1. (Bot., Ecol., Ent., Orn., R.)
 1946 Regan, Miss M. G., 71a Deodar Road, Putney, S.W.15. (Bot., Orn.)
 1943 Richards, B. A., 29b St John's Avenue, S.W.15. (Orn.)
 1925 Richardson, A., 2 Manor Road, Wheathampstead, Herts. (Ent., Orn.)
 1948 Richardson, A. E., 391 Malden Road, Worcester Park, Surrey. (Lep.)
 1946 Ringer, Miss G. M., 193 Holly Lodge Mansions, Highgate, N.6.
 1943 Rivers, Capt. J. S., R.A.M.C., 43 Glenmoor Road, Winton, Bournemouth, Hants. (Orn.)
 1934 Roberts, J. E., B.Sc., Homewood, Kelsall, Cheshire. (Ecol., Orn.)
 1946 Robins, W. A., 27 Spencer Road, Chiswick, W.4. (Orn.)
 1947 Robinson, Miss A., G1 Sloane Avenue Mansions, S.W.3.
 1940 Robinson, T. R., Flat 10, Linton House, Holland Park Avenue, W.11. (Orn.)

- 1948 Rogers, Miss R. M., 65 Ferme Park Road, Crouch End. N.8. (Bot., Ecol., Ent., Orn., R.)
- 1938 Rommel, Miss D., The Orchard House, Bickley, Kent. (Arch., Orn.)
- 1937 Rose, C. C., 18 Draycott Avenue, Kenton, Middx. (Orn.)
- 1944 Rosenberg, R., Flat 103, Whitehall Court, S.W.1. (Mycol.)
- 1910 *Ross, J., 23 College Gardens, E.4. (Pl. G.)
- 1943 Round, E. A., 63 Mayfield Road, E.4. (Geol.)
- 1947 Rudd, H. W., M.Sc., F.R.I.C., 19 Ormonde Rise, Buckhurst Hill, Essex. (Orn.)
- 1947 Rumbold, T. A., 9 Drax Avenue, Wimbledon, S.W.20. (Orn.)
- 1946 Russell, The Hon. Mrs Leo, Park House, Pelham Street, S.W.7. (Orn.)
- 1948 Russell, Capt. S. J. C., 31 Albert Mansions, S.W.11. (Orn.)
- 1941 Rutherford, Mrs P., 82 Southgate Road, Potter's Bar, Middlesex. (Orn.)
- 1942 *Ryall, R. H. M., 24 Stilecroft Gardens, Wembley, Middx. (Orn.)
- 1946 Ryall, Mrs R. H. M., 24 Stilecroft Gardens, Wembley, Middlesex. (Orn.)
- 1948 Sage, B. L., 138 Fitzjohn Avenue, High Barnet, Herts. (Orn.)
- 1929 Sampson, E. S., 60 Alexandra Road, Epsom, Surrey. (Orn.)
- 1946 Sanday, Miss M. G., Guy's Hospital, S.E.1. (Orn.)
- 1946 Sanderson, G. E., 29 Fielding Avenue, Twickenham, Middx. (Ent., Orn.)
- 1947 Saunders, W. H., 18 Herne Hill, S.E.24. (Orn.)
- 1946 Sawyer, Mrs K., 92 Park View, Wembley, Middx. (Bot.)
- 1948 Schofield, Miss G. E., 135 Hainault Road, Leytonstone, E.11.
- 1946 Scholey, Miss M. A. R. S., Flat 29, 20 Stuart Crescent, Wood Green, N.22. (Bot., Ent., Geol., Orn.)
- 1937 Scott, Miss E. M. P., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)
- 1947 Scott, Peter M., M.B.E., D.S.C., M.A., F.Z.S., 8 Edwardes Square, W.8. (Orn.)
- 1947 Sellers, Miss J., 12 Cranes Park Avenue, Surbiton, Surrey.
- 1948 Sellick, G., Highgate School, N.6. (Ent.)
- 1946 Seys, J. A., address not known. (Orn.)
- 1947 Sharland, R. E., 77 Warwick Square, Westminster, S.W.1. (Orn.)
- 1948 Shaw, D., 41 Courtland Avenue, Chingford, E.4. (Arch., Geol.)
- 1945 Shaw, Miss M. B., 5a Old Town, Clapham, S.W.4.
- 1948 Sheppard, Miss J., 63 Priory Road, Kew, Surrey. (Orn.)
- 1948 Shilcock, Miss J. R., Saxby, Ham, Surrey. (Bot., Orn.)
- 1935 Shill, W. A., Barberries, Greenhurst Lane, Oxted, Surrey. (Bot.)
- 1947 Shillito, J. F., B.Sc., 28 Roebuck Lane, Buckhurst Hill, Essex. (Ecol., Ent.)
- 1929 Short, G. R. A., 36 Parkside Drive, Edgware, Middlesex. (Bot., Ecol., Micr., Pharmacognosy.)
- 1943 Siebert, W. F., Lakeside, Appledram, Chichester, Sussex. (Orn.)
- 1892 Simes, J. A., O.B.E., F.R.E.S., 75 Queen's Road, Loughton, Essex. (Ent.)
- 1946 Simister, J. M., 56 Chase Way, Southgate, N.14. (Ecol., Orn.)
- 1946 Simmonds, P. E. L., 30 Westmere Drive, N.W.7. (Ecol., Orn.)
- 1943 Simmons, G. W., Town Close, 14 Millway, Mill Hill, N.W.7.
- 1945 Simons, Mrs N. C. B., 30 Hill Top, Hampstead Garden Suburb, N.W.11. (Orn.)
- 1947 Sinus, C. G., 173a Fulham Road, Chelsea, S.W.3.
- 1945 Singleton, H. G. H., 29 Decoy Avenue, Golders Green, N.W.11. (Arch., Geol., Orn., R.)
- 1945 Singleton, S. H., 56 Harrowes Meade, Edgware, Middx. (Bot., Orn.)
- 1946 Skirving, Miss I. S., Flat 38, 29 Abercorn Place, N.W.8. (Orn.)
- 1933 Skrimshire, E. H. N., F.R.A.I., F.Z.S., 5 Old Well House, N.6. (Arch., Orn., R.)
- 1947 Smart, Miss J. M., 15 Hepworth Road, Streatham, S.W.16. (Bot., Ecol.)
- 1940 Smeed, J. A., 133 Cassiobury Park Avenue, Watford, Herts. (Orn.)
- 1947 Smith, Miss A. C., 6 Ladbroke Road, Bush Hill Park, Enfield, Middx.
- 1946 Smith, A. H. V., 96 Berkshire Gardens, Palmers Green, N.13. (Bot., Ecol., Orn.)
- 1944 Smith, D. C., 20 Carlton Avenue, Kenton, Middx. (Orn.)
- 1944 Smith, Miss E. E., 44 Glenloch Road, N.W.3. (Ecol. Inland Waters)
- 1947 Smith, Frederick W., Boreland of Southwick, by Dumfries. (Lep.)
- 1946 Smith, H. J. F., 42 Queen Anne's Gate, S.W.1. (Orn.)
- 1929 Smith, Mrs H. K., 103 Wood Vale, N.10.

- 1948 Smith, Irvine B., M.A., M.B., West Middlesex County Hospital, Isleworth, Middx. (Orn.)
- 1937 Smith, Malcolm A., M.R.C.S., L.R.C.P., F.Z.S., Branksome, Old Woking Road, Pyrford, Surrey. (Amph., Rep.)
- 1947 Smith, P. R., Sunnyways, Acrefield, Gerrards Cross, Bucks. (Ent.)
- 1946 Smith, W. A., Hatherlow, Raglan Road, Reigate, Surrey. (Orn.)
- 1948 Snow, H. W., 27 Hexham Road, S.E.27.
- 1927 *Solly, Miss B. N., 167 Old Brompton Road, S.W.5. (Orn.)
- 1948 Songhurst, Miss M., 102 Langham Court, S.W.20. (Bot., Orn., R.)
- 1946 Souter, Miss Eileen, 12 Mount Carmel Chambers, Dukes Lane, W.8. (Orn.)
- 1946 Souter, Miss Pamela, 12 Mount Carmel Chambers, Dukes Lane, W.8. (Orn.)
- 1944 Southam, E. V., c/o 12 Cloncurry Street, S.W.6. (Orn.)
- 1938 Sparks, Mrs Peter, 8 Sloane Terrace Mansions, S.W.1. (Orn.)
- 1948 Spencer, K., 101 Gladstone Road, Wimbledon, S.W.19. (Orn.)
- 1946 Spencer, K. J., 74 Sidcup Hill, Sidcup, Kent. (Orn.)
- 1944 Spencer, P. J., 12 The Pryors, E. Heath Road, N.W.3. (Orn.)
- 1922 Spooner, H., 21 Musgrave Crescent, S.W.6. (Arch., Bot., Ecol., Orn., R.)
- 1944 Spreadbury, W. H., 35 Acacia Grove, New Malden, Surrey. (Ecol.)
- 1944 Spurway, Miss H., Ph.D., Department of Biometry, University College, W.C.1. (Herpetology, Zoo.)
- 1946 Stanton, Miss H., 22 Bullingham Mansions, Pitt Street, W.8. (Orn.)
- 1945 Steele, B., 15 Sydney Road, Teddington, Middx. (Bot., Ecol.)
- 1946 Stokes, Miss I. K., 42 Woodcote Road, Wanstead, Essex.
- 1920 *Stowell, H. S., L.R.I.B.A., Pirbright, Torland Road, Hartley, Plymouth. (Arch.)
- 1945 Stronge, R. J. T., 100 The Chase, Wallington, Surrey. (Ent., Mycol.)
- 1945 Sturrock, W. D., 17 Woodside Close, Tolworth, Surbiton, Surrey.
- 1948 Summers, D. J., 71 Rugby Road, Dagenham, Essex. (Orn.)
- 1944 Syms, E. E., F.R.E.S., 22 Woodlands Avenue, E.11. (Ent.)
- 1948 Tabori, P., 14 Stratford Terrace, Kensington, W.8. (Orn.)
- 1948 Tate, P., Sunnyhill, The Clump, Rickmansworth, Herts. (Orn.)
- 1946 Taylor, G., 9 Belsize Crescent, Hampstead, N.W.3. (Orn.)
- 1947 Taylor, Miss H. J., 137 Hook Rise, Tolworth, Surbiton, Surrey. (Bot.)
- 1946 Taylor, J. E., 17 Wentworth Mansions, Keats Grove, Hampstead, N.W.3. (Orn.)
- 1946 Taylor, J. M., 153 Northumberland Road, North Harrow, Middx. (Orn.)
- 1947 Taylor, S. F., 6 Westbourne Road, Hillingdon, Middx. (Orn.)
- 1945 Teagle, W. G., 20 Wendover Road, Harlesden, N.W.10. (Arch., Orn.) Temporary address, c/o Mrs Kariango, 10 Inchview Terrace, Edinburgh, 7.
- 1947 Tearnan, L. C., 7 Greystoke Gardens, Enfield, Middx. (Orn.)
- 1943 Tenison, Lt.-Col. W. P. C., D.S.O., F.L.S., F.Z.S., 2 Wool Road, S.W.20. (Zoo.)
- 1920 Thomas, Mrs G. E., 9 Talbot Road, Isleworth, Middlesex. (Orn., R.)
- 1947 Thompson, A. G. G., 139 Highlands Heath, S.W.15. (Ecol., Orn.)
- 1945 Thompson, A. J. B., 218 The Headlands, Northampton. (Orn.)
- 1948 Thomson, K. D. B., 76 Brondesbury Road, Kilburn, N.W.6. (Orn.)
- 1945 Thomson, W. W., M.B., Ch.B., 51 Norbury Court Road, S.W.16. (Orn.)
- 1946 Thornton, J. O., Draxmont Hotel, Hill Road, Wimbledon, S.W.19. (Orn.)
- 1947 Thorstensen, B. J., 22 Turner Road, New Malden, Surrey. (Arch., Ecol.)
- 1944 Thrupp, Miss B., B.A., P.A.S.I., 39 Mitcham Park, Mitcham, Surrey. (Bot., Orn.)
- 1947 Timson, Mrs M. H., 85 Dollis Hill Avenue, Cricklewood, N.W.2.
- 1947 Timson, P. F., B.Sc., A.R.I.C., 85 Dollis Hill Avenue, Cricklewood, N.W.2.
- 1945 Titmas, Miss M., 479 Kensington Close, Wrights Lane, W.8. (Orn.)
- 1932 Todd, Miss G. E., 1 Orme Court, Bayswater Road, W.2. (Bot., Orn., R.)
- 1945 Toombs, H. A., British Museum (Natural History), Cromwell Road, S.W.7. (Bot., Geol., Orn.)
- 1947 Toombs, Miss M., 14 Creffield Road, Ealing, W.5.
- 1946 Tourelle, Miss M. D., 38 Ismailia Road, Forest Gate, E.7.
- 1934 Tours, H., 7 Briar Road, Kenton, Middx.
- 1947 Towle, Dr D. D., M.B., B.Ch., B.A., 63 Wellmeadow Road, Hither Green, S.E.13. (Arch., Micr., Mycol.)

- 1892 Tremayne, L. J., F.Z.S., Grand Buildings, Trafalgar Square, W.C.2. (Arch., Bot., Lep., Orn., Pl. G., R.)
- 1940 Trouton, Miss E. M., 31 Albert Bridge Road, S.W.11. (Orn.)
- 1940 Tucker, A. V., St Anne's, Bathurst Walk, Iver, Bucks. (Orn.)
- 1935 Tucker, D. G., Ph.D., 47 First Avenue, Amersham, Bucks. (Ecol., Orn.)
- 1946 Tuke, Miss E. M., Goldsmiths' College, New Cross, S.E.14.
- 1947 Turner, C. F., 24 Chesham Road, Anerley, S.E.20. (Orn.)
- 1944 Turner, D. H., Chequers Farm, Five Ashes, near Tunbridge Wells, Sussex. (Orn.)
- 1946 Underhill, G. H. H., A 51 B Du Cane Court, Balham, S.W.17. (Ent., Orn.)
- 1931 Underwood, R. A., Greenways, Shoreham Road, Otford, Kent. (Orn.)
- 1937 Upton, Mrs P. V., Eweland Hall, Margaretting, Essex. (Orn.)
- 1929 Venour, Miss D., Offley Place, Great Offley, Hitchin, Herts. (Ecol., Orn.)
- 1946 Vernon, R. M., 33 Temple Avenue, Shirley, Croydon, Surrey. (Orn.)
- 1948 Versteegh, Miss M. E., 2 Ravenscroft Avenue, N.W.11. (Ent.)
- 1938 Vesey-Fitzgerald, B. S., F.L.S., F.G.S., Murrayfield, Farnham, Surrey. (Ecol., Orn., Zoo.)
- 1933 Vincent, W. G., 154 Winchester Road, Hale End, E.4. (Orn.)
- 1946 Wadley, N. J. P., 23 Beauchamp Place, S.W.3. (Orn.)
- 1948 Wall, G. L., 57 Willow Crescent West, Willowbank, Denham, near Uxbridge. (Ent., Orn.)
- 1947 Wallace, E. C., 2 Stratbearn Road, Sutton, Surrey. (Bot., Bryol., Ecol.)
- 1927 Waller, G., Taunton Dene, 96 Sandhurst Lane, Ashford, Kent. (Ecol., Ent., Orn.)
- 1927 Waller, G., Taunton Dene, Sandhurst Lane, Ashford, Kent. (Ecol., Ent., Orn.)
- 1948 Waller, R. H., The British Council, 3 Hanover Street, W.1. (Orn.)
- 1944 Walshe, Miss B. M., M.Sc., 27 Sussex Place, N.W.1. (Bot., Fr. Water Ecol., Orn.)
- 1946 Walter, C. N., 32 Stanley Avenue, Beckenham, Kent. (Orn.)
- 1946 Walter, Mrs V., 32 Stanley Avenue, Beckenham, Kent. (Orn.)
- 1947 Walton, F., 50 Fletching Road, Clapton, E.5. (Bot.)
- 1938 Warburg, G. O., 1 Woodside, Erskine Hill, N.W.11. (Orn.)
- 1943 Ward, Mrs A., 13 Chatham Road, E.17.
- 1925 Ward, B. T., 24 Long Deacon Road, E.4. (Bot., Ecol., Ent., Orn., Pl. G., R.)
- 1947 Ward, F. A. B., M.A., Ph.D., 11 The Close, Southgate, N.14. (Arch., Orn.)
- 1933 Ward, Miss I. W., 11 The Close, Southgate, N.14.
- 1943 Ward, Miss M., B.Sc., 13 Chatham Road, E.17.
- 1933 Ward, Miss M., M.B., Ch.B., Threeways, Jordans, Beaconsfield, Bucks. (Arch., Orn.)
- 1943 Ward, R. S., 66 Ladbrooke Drive, Potters Bar, Middx. (Bot., Ecol., Orn.)
- 1948 Warmington, Prof. E. H., M.A., F.R.Hist.S., 48 Flower Lane, Mill Hill, N.W.7. (Bot., Orn.)
- 1946 Warren, R. B., 38 Athelstan Road, Harold Wood, Romford, Essex. (Orn.)
- 1947 Waters, F. H., "Korcula," Riverside Close, Staines, Middx. (Orn.)
- 1942 Watt, Mrs E. C., 13 Park Road, N.W.1. (Orn.)
- 1925 *Watt, Mrs W. Boyd, M.B.O.U., Basing Lodge, 9 St Swithin's Road, Bournemouth, Hants. (Arch., Ecol., Orn.)
- 1938 *Watson, Miss A. E., 43 Salisbury Road, Worcester Park, Surrey. (Ent., Orn.)
- 1939 Wattson, R. F., 43 Salisbury Road, Worcester Park, Surrey. (Ent.)
- 1939 Wattson, Mrs R. F., 43 Salisbury Road, Worcester Park, Surrey.
- 1946 Weal, R. D., 124 Marmion Avenue, South Chingford, E.4. (Ent.)
- 1928 Weeks, C., 7 Ashmount Road, Hornsey Lane, N.19. (Ecol., Orn., R.)
- 1945 Weibel, A., "The Ramblers," 19 Berwyn Road, Richmond, Surrey. (Ent., Orn.)
- 1946 Weitzel, D. O., 13 Hereford Road, Ealing, W.5.
- 1944 Welch, Mrs B., 49 Lichfield Court, Richmond, Surrey. (Bot.)
- 1939 Welford, Miss A. M., 13 Clifton Avenue, N.3. (Orn.)
- 1947 Werth, Miss I., Department of Zoology, Queen Mary College, Mile End Road, E.1. (Geol., Orn.)
- 1948 Wheeler, A. W., 156 Bridgewood Road, Worcester Park, Surrey. (Orn.)

- 1947 Whicher, D. S., 25 Towncourt Crescent, Petts Wood, Kent. (Orn.)
 1935 Whitaker, F. O., 51 Grosvenor Avenue, Carshalton. (Bot., Ecol., Pl. G., R.)
 1944 Whitaker, Miss M. B., B.Sc., F.Z.S., 264 Grange Road, S.E.19. (Zoo.)
 1932 Whitbread, Miss W. H. E., 6 Meadow Way, Weald Village, Harrow, Middx.
 1947 White, A. H., 76 Newstead Avenue, Orpington, Kent. (Orn.)
 1937 White, C. A., 18 Townsend Road, Southall, Middx. (Orn.)
 1946 Whittingham D. M., 32 Thornhill Road, Ickenham, Middx. (Orn.)
 1947 Whitton, Mrs J. S., Sandcroft, The Green, Esher, Surrey. (Orn.)
 1934 Wightman, J. S., 2a Laverton Place, S.W.5. (Orn.)
 1938 Wigzell, J. A., 17 Wool Road, S.W.20. (Ecol., Orn.)
 1942 Wilkinson, J. S., B.A., A.C.A., 26 Golders Rise, N.W.4. (Bot.)
 1946 Willett, Miss N. M., 68 College Road, West Dulwich, S.E.21. (Bot., Orn.)
 1948 Williams, A., 80 Troy Court, Kensington High Street, W.8. (Bot., Ent., Orn.)
 1948 Williamson, Miss M. S., 29 Hanover House, Regent's Park, N.W.8. (Arch., Orn.)
 1948 Willoughby, Miss P., 27 Queen's Gate Mews, S.W.7. (Orn.)
 1946 Wilsher, W. G., 30 Harrington Gardens, Kensington, S.W.7. (Arch., Orn.)
 1942 Wilson, D. S., 8a Beulah Hill, S.E.19. (Orn.)
 1938 Wilton, A. R., 262 Kingston Road, S.W.20. (Ecol., Orn., R.)
 1946 Wimble, L. H., 10 Broadoaks Way, Bromley, Kent. (Orn.)
 1938 Winsloe, Mrs C. M., c/o Lloyds Bank Ltd., 18 Wigmore Street, W.1. (Orn.)
 1937 Winters, Miss E. D. M., 7 Broomfield Road, Kew Gardens, Surrey. (Arch., Orn.)
 1948 Wise, A. J., The Maples, Daryngton Drive, Merrow, Guildford, Surrey. (Orn., Zoo.)
 1948 Wolfe-Murray, Lt.-Col. D. K., 239 Ware Road, Hertford, Herts.
 1942 Wood, B., Vincent's Shaw, Chipstead, Surrey. (Orn.)
 1948 Wood, D. N., 5 Oulton Crescent, Potter's Bar, Middx. (Astronomy, Orn.)
 1946 Wood, S. B., 45 Carshalton Park Road, Carshalton, Surrey. (Orn.)
 1944 Woolner, H. C., 6 Cunningham Avenue, St Albans, Herts. (Orn.)
 1946 Wraight, F., Onslow Court Hotel, Queen's Gate, S.W.7. (Orn.)
 1946 Wraight, Mrs W. A., Onslow Court Hotel, Queen's Gate, S.W.7. (Orn.)
 1945 Wright, J. V., 55 Links Road, Ashted, Surrey.
 1922 Wright, W. A., 23 Gordon Road, Chingford, E.4. (Orn.)
 1945 Wrighton, F. E., 108 Manor Way, Ruislip, Middx. (Bot.)
 1937 Yarrow, I. H. H., M.A., Ph.D., D.I.C., F.R.E.S., Agricultural Advisory Offices, 7 Redlands Road, Reading, Berks. (Ecol., Ent.)
 1946 Young, Miss C. M., 19 Woodville Road, Golders Green, N.W.11. (Bot., Orn.)
 1947 Young, H. R. M., 16 Streatham Close, Leigham Court Road, Streatham, S.W.16. (Col., Conch., Geol., Lep.)

Affiliated Societies.

- 1947 Mill Hill School Natural History Society (President, D. M. Hall), Mill Hill School, N.W.7.
 1936 Tiffin Boys' School Scientific Society (Natural Science Section) (D. T. Humphris), Tiffin Boys' School, Kingston-on-Thames, Surrey. (Ecol.)
 1936 Westminster School N.H. Society (L. H. Burd), Westminster School, 17 Dean's Yard, S.W.1. (Ecol., Ent., Orn.)

Branch Associates:

- 1945 Baker, C. E., 25 Spareleaze Hill, Loughton, Essex. (Orn.)
 1945 Barton, Miss P., 3 Howard Road, Church Hill, E.17.
 1943 Beavis, G. H. S., 14 Fairlight Avenue, E.4.
 1943 Beavis, Mrs M. H. W., 14 Fairlight Avenue, E.4.
 1925 Boardman, S., 109 Monkham's Avenue, Woodford Green, Essex. (Mycol., Orn.)
 1943 Boatman, D. J., 7 Hurst Road, Buckhurst Hill, Essex. (Biol., Bot., Ecol., Ent., Orn.)
 1930 Brightman, Miss A., 80 Woodland Road, Chingford, E.4.
 1948 Burling, Mrs M. T., Holy Trinity Vicarage, South Woodford, E.18. (Orn.)

- 1938 Chingford Branch County Library (E. Leyland, Librarian), Hall Lane, E.4.
 1947 Chingford County High School Natural Science Society, County High School, Nevin Drive, Chingford, E.4.
 1946 Day, G., 3 Ingatestone Road, Woodford Green, Essex. (Orn.)
 1943 Dossetter, L. J., 11 York Road, E.17. (Orn.)
 1947 Finch, A. F., 37 Hazelwood Lane, Palmers Green, N.13. (Orn., P.L.)
 1947 Forster, H. W., 76 Station Road, Chingford, E.4. (Col.)
 1943 Gravell, Miss V. E. W., 122 Selwyn Avenue, Highams Park, E.4. (Orn.)
 1946 Harris, A. G. B., 7 The Bramblings, Chingford, Essex. (Orn.)
 1920 Hart, Miss H., 7 Park Hill Road, E.4.
 1944 Hassell, Miss S. M., 75 Derby Road, E.18. (Bot.)
 1933 Hayward, P. D., 2 King's Green, Loughton, Essex. (Orn.)
 1948 Langham, Miss L. B., 7 Oak Hill Crescent, Woodford Green, Essex. (Orn.)
 1942 Mansbridge, J. W., 11 Westbury Lane, Buckhurst Hill, Essex. (Ecol.)
 1911 Mathieson, Miss M. L., 7 Crescent Road, E.4. (Meteorology)
 1934 Nicholson, E. T., 21 Holly Drive, E.4. (Ecol., Orn.)
 1945 Patterson, P. J., 7 Cecil Road, Walthamstow, E.17. (Ent.)
 1930 Penwarden, Miss C., 39 The Avenue, E.4.
 1927 Pettit, Mrs S., 2 Victoria Road, E.4.
 1927 Pettit, S., 2 Victoria Road, E.4.
 1944 Rattenbury, D. C., 9 Ingatestone Road, Woodford Green, Essex. (Lep.)
 1943 Richter, Mrs F. G., 32 Pretoria Road, E.4.
 1942 Rumsey, P. F. C., Park Farm Nursery, Sewardstone Road, E.4. (Orn.)
 1946 St Egbert's College Natural History Society (Secretary, J. S. Keyes), Chantry, The Ridgeway, Chingford, E.4. (Bot., Orn.)
 1925 Saul, H. J. B., 12 Sandringham Court, Ipswich Road, Norwich.
 1943 Spink, H. J., 26 Holly Drive, E.4.
 1903 Stevenson, H. E., F.C.S., 24 Wilton Grove, S.W.19. (Chem.)
 1945 Tucker, Mrs D. G., 47 First Avenue, Amersham, Bucks.
 1942 Tucker, Mrs F., 31 Frederica Road, E.4.
 1942 Tucker, J. F., B.Sc., 31 Frederica Road, E.4. (Bot.)
 1942 Turner, Mrs L., 202 The Avenue, Higham's Park, E.4. (Orn.)
 1944 Vere, D. W., 119 Grosvenor Gardens, Woodford Green, Essex. (Ent.)
 1942 Walker, C. H., St Bartholomew's Hospital, W. Smithfield, E.C.1. (Orn.)
 1944 Watson, Miss L. D., 9 Richmond Avenue, Highams Park, E.4.
 1942 Wheeler, A. C., 17 Neven Drive, E.4.
 1944 Wiles, H., Mapledene, Alderton Hill, Loughton, Essex.

Country and School Associates:

- 1928 Alexander, O. A., Wayside Cottage, Assheton Road, Beaconsfield, Bucks. (Ent.)
 1941 Bale, D. W. D., Marsh Hill, Dulverton, Somerset. (Orn.)
 1946 Bennett, R. J., 64 Mount View, Moneyhill, near Rickmansworth, Herts. (Orn.)
 1931 Benson, Mrs R. B., Dellfield, Featherbed Lane, Felden, Herts. (Bot., Orn., R.)
 1943 Betteridge, H. W. G., 52 Newton Road, Tunbridge Wells, Kent.
 1934 Biddlecombe, P. E., 30 Hill View Road, Orpington, Kent. (Arch.)
 1937 Bond, Mrs M. T., 25 Reedway, Northampton. (Orn.)
 1908 Bostock, E. D., 8 Pelham Gardens, Folkestone, Kent. (Lep.)
 1937 Bunker, H. E., 18 Abingdon Drive, Ashton, Preston, Lancs.
 1933 Collett, G. W., 174 Sheldon Road, Chippenham, Wilts. (Bot., Ecol., Orn., R.)
 1936 Colyer, W. L., Heybrook, Connaught Road, Sidmouth, Devon. (Ecol., Orn.)
 1947 Crawford, J. R., 151 Atkinson Road, Fulwell, Sunderland, Co. Durham. (Orn.)
 1933 Darashah, Mrs E. G., 108 Stephens Road, Tunbridge Wells, Kent. (Arch., Bot., R.)
 1947 Darge, I. H., Thornhill, Balcombe Road, Haywards Heath, Sussex. (Orn.)
 1945 Entrican, Miss M. C., Heatherton House School, Chesham Bois, Bucks. (Orn.)
 1940 Fairbairn, D. C., M.C., M.B., B.Sc., L.R.C.P., M.R.C.S., c/o 48 Addison Avenue, W.11. (Bot.)
 1935 Farquharson, A., Le Play House, Albert Road, Malvern. (Ecol.)

- 1933 Ferrier, Miss J. M., F.Z.S., M.B.O.U., A.A.O.U., Blakeney Downs, Blakeney, Norfolk. (Ecol., Orn.)
- 1947 Fillmore, Mrs N., 11 Westfield Avenue, Woking, Surrey. (Orn.)
- 1933 Gibson, Miss E. M., Ashcroft, Station Road, Petersfield, Hants. (Lep., Orn.)
- 1944 Gladstone, Sir H. S., Capenoch, Penpont, Dumfries. (Orn.)
- 1937 Green, D. B., Church Cottage, Church Hanborough, Oxon. (Orn.)
- 1937 Guichard, K. M., Anti-Locust Research Centre, British Museum (Natural History), Cromwell Road, S.W.7. (Bot., Ecol., Ent., R.)
- 1945 Gurteen, F. M., Honiley, Balcombe Road, Horley, Surrey. (Bot., Orn.)
- 1944 Hager, Miss P. D., Langdale, Ashlyns Road, Berkhamsted, Herts. (Orn.)
- 1948 Harley, B. H., Peterley Corner, Prestwood, Gt. Missenden, Bucks. (Lep., Mam., Orn.)
- 1935 Harris, A. H., "Silton," Loughborough Road, Ruddington, Notts. (Orn.)
- 1944 Harrison, R., Radfield, Kingsland, Shrewsbury. (Mycol., Orn.)
- 1927 Harvey, J. H., Half Moon Cottage, Little Bookham, Surrey. (Bot.)
- 1937 Hayward, H. H. S., Jessamine House, King Street, Tring, Herts. (Orn.)
- 1947 Hearne, T. F. B., 7 Orchard Grove, Maidenhead, Berks. (Orn.)
- 1947 Hebditch, G. A., 92 Rydes Hill Road, Guildford, Surrey. (Orn.)
- 1948 Jermyn, S. T., 45 Highfield Gardens, Westcliff-on-Sea, Essex. (Bot.)
- 1947 Johnson, Miss E. M. C., Wychwood, Eastbourne Rd., Godstone, Surrey. (Orn.)
- 1936 Lamont, Mrs E. H., Marshalls, Chart Sutton, Maidstone, Kent. (Orn.)
- 1942 Law, Miss M. D. L., 19 Fengates Road, Redhill, Surrey. (Arch., Ecol.)
- 1935 Leatherdale, Capt. D., F.R.G.S., M.R.C.A.S., Tasli, Hawks Hill, Leatherhead, Surrey. (Bot., Ent., Geol., Pl. G., R.)
- 1946 Lewis, Miss E. A., M.Sc., Ph.D., c/o Sheepholme, 12 Lower Church Road, Weston-super-Mare, Somerset. (Bot., Ecol.)
- 1936 Lewis, Miss M., Brincliffe, Osney Crescent, Paignton, S. Devon. (Arch., Bot., Ecol., Ent., Orn., R.)
- 1941 Lisney, A. A., M.A., M.D., F.R.E.S., 66 Monmouth Road, Dorchester, Dorset. (Lep.)
- 1938 Lowe, Miss C. B. M., c/o Coutts & Co., 440 Strand, W.C.2. (Arch., Bot., Orn., R.)
- 1943 Lusty, E. J., c/o 83 Snakes Lane, Woodford Green, Essex. (Orn.)
- 1932 Mason, C. T., Mill Cottage, Gt. Shefford, Newbury, Berks. (Arch., Ent.)
- 1945 Maxwell, J. E. H., 78b Clare Road, Maidenhead. (Orn.)
- 1947 Maynard, T. R., 21 South Gardens, Wembley Park, Middx. (Orn.)
- 1902 Miller, Miss M. E., The Croft, Rainsford Lane, Chelmsford, Essex. (Lep.)
- 1947 Moodie, Mrs D. M. F., Ragusa, Blundel Lane, Stoke D'Abernon, Cobham, Surrey. (Orn.)
- 1942 Moorhouse, S., Lyndale, Orchard Avenue, Bolton-le-Sands, Lancs. (Orn.)
- 1938 Muirhead, D., Malvern House, The Baulk, Worksop, Notts. (Ecol., Orn.)
- 1948 Ounsted, J., M.A., 89 Middleton Hall Road, Birmingham, 30. (Bot., esp. vascular flora, Bryol., Mycol., Orn.)
- 1946 Parmenter, Miss B. M., 94 Fairlands Avenue, Thornton Heath, Surrey. (Biol., Bot., Ecol., Ent., Mam., Orn.)
- 1946 Parrott, R. T., 15 Barnfield Avenue, Shirley, Croydon, Surrey. (Orn.)
- 1929 Perry, Mrs M. D., 37 MacAlister Street, Mackay, Queensland. (Orn., R.)
- 1897 Pike, Oliver G., F.Z.S., M.B.O.U., F.R.P.S., The Bungalow, Leighton Buzzard, Beds. (Orn.)
- 1946 Pomeroy, Miss F. A., B.Sc., 110 Pembury Rd., Tonbridge, Kent. (Arch., Bot.)
- 1940 Richardson, R. A., Gordon House, Cromer Road, Aylsham, Norfolk. (Orn.)
- 1941 Robbins, Rev. R. A., Avebury Vicarage, Marlborough, Wilts. (Arch., Bot.)
- 1946 Rose, F., B.Sc., A.L.S., The Forge House, East Malling, Kent. (Bot.)
- 1940 Sladen, W. J. L., M.B., B.S., Medical School, Middlesex Hospital, W.1. (Bot., Ecol., Ent., Orn.)
- 1937 Spicer, A. H., M.C., M.R.C.S., L.R.C.P., Graffham, Petworth, Sussex. (Orn.)
- 1928 Talbot, G., F.R.E.S., 31 York Road, Woking, Surrey. (Lep.)
- 1946 Tarry, Miss J. E., Rosedene, Beet Sugar Factory, Sproughton, Ipswich.
- 1943 Taylor, J. S., M.A., D.I.C., F.R.E.S., P.O. Box 23, Fort Beaufort, C.P., South Africa. (Ent., Orn.)

- 1935 Van Oostveen, Miss M. S., Flatford Mill, East Bergholt, Colchester, Essex.
(Ecol., Ent., Orn.)
- 1942 Wales, Mrs M., Great Garden, Dartington, Totnes, Devon.
- 1947 Weatherhead, Miss L. M., 7 Kingsgate Avenue, Finchley, N.3. (Orn.)
- 1945 Whellan, J. A., 11 Clive Avenue, Lytham St Annes, Lancs. (Bot., Orth.)
- 1933 White, E. I., D.Sc., Ph.D., F.G.S., 140 Westwood Road, Tilehurst, Reading.
Berks. (Orn., Palaeontology)
- 1944 Willcox, Mrs I. G., Huntercombe Manor, near Taplow, Bucks. (Ent., Orn.)
- 1929 Willcox, P. H., M.A., M.B., B.S., M.R.C.P., (Major, R.A.M.C.), Huntercombe
Manor, near Taplow, Bucks. (Bot., Ent.)
- 1932 Williams, S/Ldr. A. R., 75830, Economic Division, Allied Commission for
Austria (British Element), Vienna, C.M.F. (Orn.)
- 1948 Williams, E. D., Christ's College, Cambridge. (Orn.)

The following abbreviations are used in the above list of members:—Amph., Amphibia; Api., Apiculture; Arch., Archaeology; Biol., Biology; Bot., Botany; Bryol., Bryology; Chem., Chemistry; Col., Coleoptera; Conch., Conchology; Dipt., Diptera; Ecol., Ecology; Ent., Entomology; Geol., Geology; Hym., Hymenoptera; Ichth., Ichthyology; Lep., Lepidoptera; Mam., Mammalia; Micr., Microscopy; Mycol., Mycology; Orn., Ornithology; Orth., Orthoptera; Pl. G., Plant Galls; P.L., Pond Life; R., Ramblers' Section; Rep., Reptilia; Zoo., Zoology.

* Signifies a Life Member.

PUBLICATIONS OF THE SOCIETY.

London Naturalist, 1921-25, 1929-31, each 3s; 1932, 1934-35, each 5s; 1936, 1938-46, each 3s 6d; 1947, 7s 6d.

London Bird Report, 1936-37, 1939-42, 1944-46, each 1s 6d; 1947, 2s 6d.

Transactions of the London Natural History Society, 1914, 1916-20, each 3s.

Transactions of the City of London Entomological and Natural History Society, 1891-97, each 2s.

New Bird Record Cards, 6d each (12 copies post-free) (obtainable from D. A. T. Morgan, 4 Drayton Gardens, S.W.10).

Members and Associates may obtain any of the above from the General Secretary at two-thirds of the published price; years not quoted are out of print.

" LONDON NATURALIST " REPRINTS.

9. **British Gall Mites**, by H. J. Burkill (1929), 6d.

10. **Some Diurnal Observations on the Nightjar**, by David Lack (1929) 6d.

19-23, 25, 30. **The Survey of Limpsfield Common**: 1, 1937, 6d; 2, 1938, with map, 9d; 3, 1939, 6d; 4, 1940, 3d; 5, 1941, 6d; 6, 1942, 3d; 7, 1943, 2d.

24. **Randolph William Robbins (1871-1941)**, 6d.

29, 33, 35, 44, 46. **The Survey of Bookham Common**; 2, 1943, with maps, 4d; 3, 1944, with map, 9d; 4, 1945, 6d; 5, 1946, with maps, 9d; 6, 1947, 1s.

31, 34, 36, 45, 47. **The Epping Forest Survey**; 6, 1947, 1s; 2, 1943, 6d; 3, 1944, with maps, 9d; 4, 1945, 6d; 5, 1946, 6d; 6, 1947, with map, 9d.

28. **The Starling Roosts of the London Area**, by R. S. R. Fitter (1942), 6d.

32. **A Check-List of the Birds of the London Area**, by R. S. R. Fitter and E. R. Parrinder (1943), interleaved, 6d.

34a. **Docks and Sorrels of the London Area**, by J. E. Lousley (1944), 6d.

37. **William Curtis (1746-1799)**, by J. E. Lousley (1945), 6d.

38. **The Neuroptera of the Home Counties**, by E. B. Pinniger (1945), 6d.

39. **Cynipid Flies and Galls on Oak**, by J. Ross (1945), 6d.

40. **Nature Conservation in the London Area**, by C. P. Castell (1946), 9d.

41. **Notes on the Flora of Middlesex**, by Douglas H. Kent (1946), 6d.

42. **The Brambles of Middlesex**, by C. Avery and W. C. R. Watson (1946), 6d.

43. **Coenagrion scitulum Rambur, a Dragonfly New to Britain**, by Edward B. Pinniger (1946), 3d.

48. **Hymenoptera Aculeata of Hampstead Heath** (with map), by K. M. Guichard and I. H. H. Yarrow, 1s 6d.

49. **City Bombed Sites Survey**: 1, 1947, 6d.

50. **Middlesex Plant Records**, 1947, by D. H. Kent, 9d.

The Life of A. W. Bacot, by Prof. Major Greenwood (1924) (ex Journal of Hygiene), 6d.

All publications of the Society may be obtained from the General Secretary.

LONDON NATURAL HISTORY SOCIETY.

THE Society is an amalgamation of the City of London Entomological and Natural History Society, founded in 1858, and the North London Natural History Society, founded in 1892.

Meetings are held on Tuesday evenings, either at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.1, or at the Hall of the Art-Workers' Guild, Queen Square, W.C.1. The half-yearly syllabus should be consulted as to the venue of any particular meeting. The room is open from 6 p.m. to 9 p.m., and meetings begin punctually at 6.30 p.m. and end about 8.30 p.m., unless other arrangements are announced. The Library and Collections are available to members after meetings at the School of Hygiene.

The **Chingford Local Branch** meets at the Lecture Room, County High School, Nevin Drive, Chingford, at 2.45 p.m., on the first Saturday in each month during the winter months.

At all indoor meetings specimens of Natural History interest are exhibited, and papers on various subjects are read and discussed. Visitors may be introduced by members of the Society, and are cordially welcome. Frequent field meetings are held at week-ends, particulars of which are contained in the syllabus.

ANNUAL SUBSCRIPTIONS (Minima).—Payable to the Treasurer on 1st January each year and for new Members on election. *Members*, 17/6 (10/- if under 21 years of age). *Associates*, 7/6 (5/- for Branch Associates under 21 years of age), comprising:—*Branch Associates*, who ordinarily attend meetings of the Chingford Branch only; *Country Associates*, residing outside a radius of 20 miles from St Paul's Cathedral and unable to attend the Society's meetings regularly; *School Associates*, i.e. "scholars." Associates receive the Society's publications but may not vote on any matter connected with the business of the Society. *Entrance Fee* for new Members and Associates, 2/6. Members elected after October 1 pay no subscription for the year of election.

Each member and associate is entitled to one copy of *The London Naturalist* and *The London Bird Report* free; extra copies may be purchased by members, if supplies are available, at two-thirds of the published price.

Further information and syllabus may be obtained from the General Secretary:—**H. A. TOOMBS**, Dept. of Geology, British Museum (Natural History), Cromwell Road, S.W.7.



