

S. 216.

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REPORT

OF THE

SOUTH LONDON

ENTOMOLOGICAL SOCIETY,

FOR THE YEAR 1879,

TOGETHER WITH THE

LIST OF MEMBERS,

RULES,

AND

PRESIDENT'S ADDRESS.



London:

MARTIN BURGESS, & Co., PRINTERS, CROWN PRINTING WORKS,
ASHBY ROAD, BROCKLEY ROAD, S.E.

1879.



83 Brayards Road
Beckham SE

7th Nov 1888

Dear Sir

I have great pleasure
in forwarding you as complete
a series ^{as possible} of the Reports of The
South London Entomological
& Natural History Society. It
appears that nothing was
published prior to 1879 and
that for 1881 is out of print.

Yrs truly
H W Barker

B. B. Woodward Esq
Librarian

Natural History Museum
Cromwell Rd
SW

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1879.



The South London Entomological Society,

(ESTABLISHED 1872),

SOUTH LONDON TEMPERANCE HALL,
BLACKFRIARS ROAD, S.E.

(Near the Surrey Theatre.)

Patrons.

SIR JOHN LUBBOCK, Bart., M.P., F.R.S., &c.

R. McLACHLAN, Esq., F.L.S., &c.

E. C. RYE, Esq.

HENRY T. STANTON, Esq., F.R.S., &c.

OFFICERS AND COUNCIL,

Elected December 18, 1879.

President.

A. FICKLIN.

Vice-President.

V. PERKINS.

Council.

W. C. CHANEY.

G. ELISHA.

G. H. HICKLING.

F. STEWART.

R. STANDEN.

J. R. WELLMAN.

W. WEST (Brixton).

Hon. Curator.

W. WEST (Greenwich).

Hon. Librarian.

A. J. ROSE.

Hon. Treasurer

T. R. BILLUPS, 4, Swiss Villas, Copleston Road, Peckham.

Hon. Secretary.

ARTHUR BLISS, 249, Brockley Road, Brockley, S.E.

The Society has for its objects the diffusion of Entomological Science, by means of papers and discussions, and the formation of a typical collection of insects. A Library for the use of the Members is being formed. Meetings of the Members are held every alternate Thursday evening, from Eight to Ten p.m., at the above address. The Society's room is easy of access from all parts of London, and the Committee cordially invite the co-operation of all Entomologists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their captures.

SUBSCRIPTION :

Six Shillings per Annum, with an Entrance Fee of One Shilling.

All Communications should be addressed to the Hon. Sec.,

A. BLISS,
249, Brockley Road, Brockley, S.E.

R E P O R T.

SOUTH LONDON TEMPERANCE HALL,
BLACKFRIARS ROAD.

YOUR Council in presenting the Report and Balance Sheet for the year 1879, have to congratulate the Members that they still hold their own among the Entomological Societies of London; and, notwithstanding the very unpropitious weather they have had this season, from an entomological point of view, much practical work has been done.

It is a pleasing fact to have to record that the Society is still increasing. This year the number of new Members elected amounts to twelve, against thirteen in 1878. The Members who have resigned being one in 1879, against four in 1878. The total number of Members now on the Society's books is ninety-four; but it is to be regretted that this figure cannot be taken as the proper strength of the Society, as many Members do not come to the Meetings of the Society, and further, do not pay their subscriptions, and the Council have felt it their duty to strike several of these off the Society's books, in order to begin the new year without any bad debts.

It has been thought desirable to publish a list of the Members with their addresses at the end of this Report.

The publication of the Fauna List of Kent and Surrey has had, in consequence of the heavy expense incurred in the publishing of a work of this kind, to be abandoned for a time, but it is hoped that at no very distant period the Society will have all the material ready, and begin its publication in parts.

Great addition has been made to the Library this year by donations as well as by purchase. In consequence of the publica-

tion of the Fauna list being deferred, a part of the funds set aside for this purpose were devoted to the Library.

The donations for this year are as follows:—

The President, Mr. STANDEN, Two Guineas to Library Fund.

The Vice-President, Mr. FICKLIN, "British Butterflies" by *Noel Humphreys*.

Mr. GOSS, "The Insect Fauna of the Secondary Period" by *H. Goss, F.L.S.*

Mr. WEST (Greenwich), "Insect Hunters" by *Edward Newman*.

Mr. BILLUPS, "The Universe" by *Bouché*.

Mr. NEWMAN, "The Entomologist" and "The Zoologist" for the current year.

The books purchased by the Society are as follows:—

"The Entomologist," monthly magazine, 1879.

"Guide to the Study of Insects" by *G. A. Packard, Jun.*

"Pinacographia, or Figures of Ichneumons" by *Vollenhoven*.

"Our Woodlands, Heaths and Hedges." by *Coleman*.

"North-West European Ichneumoindæ."

"British Bees" by *Smith*.

"The World of Insects" by *Douglas*.

"Elementary Lessons and Botany" by *Oliver*.

"Flora of Surrey" by *Brewer*.

"Science Gossip" years 1865—70. (6 vols.)

"Letters of Rusticus" by *Newman*.

"Synopsis of Trichoptera" by *McLachlan*.

"Entomologist" monthly magazine.

As a catalogue of the Society's books has never been printed, the Council have decided to include a list with the Report, for the use of the Members.

The exhibitions of the year have been, in spite of the bad season, quite up to former years; many very rare species being brought for the inspection of the Members. Mr. Billup's name especially coming before the Members, for his numerous exhibits of rare Coleoptera, &c. Those especially worthy of further record

being specimens of *Pyslliodes chrysocephala*, and rare varieties; three *Carabus auratus*, *Hydrous caraboides*, showing position of eggs in nest; females of *Sperchus emarginatus* carrying egg bags, and a single specimen of *Pentodon punctatus*, a South European beetle, captured in Spitalfields Market, not recorded before in England; *Euplecta ambigiuis*, and the new variety *Minutissimus aube*; also *Trichopteryx ambigua*, of which only six or seven named specimens exist, besides many specimens of other orders, including *Quedius quadripunctatus* and *Puncticollis* of Thompson.

Mr. Wellman with a single *Boletobia fuliginaria*, *Leucania*, *Albipuncta*, *Dianthœcia*, *Albumacula*, bred specimens of *Acidalia contigua*, and many other species, also living larvæ, among them, *Acidalia contiguaria*.

Mr. Ficklin, a specimen of *Eupethecia*, which is at present supposed to be a species new to Britain, living larvæ, and many bred species.

Mr. Elisha, male and female specimens of *Pachetra lencophea*, taken on Box Hill, and many bred species, especially *Tortrices* and *Tinea*.

Mr. Williams, a single specimen of *Boletobia fuliginaria*, and bred species.

Mr. West, numerous *Coleoptera*, bred *Acherontia atropos*, varieties of *Eupethecia retangulata*, &c.

Mr. Bliss, series of *Apamea opheagramma*, taken at Brockley by himself, also preserved larvæ of different species.

Mr. Perkins, a specimen of *Plusia orichalcea*, and also of *Cantharis versicatorius*.

Mr. West (Brixton), many preserved larvæ.

Mr. A. J. Rose, an hermaphrodite specimen of *Lycœna alexis*, taken in the Isle of Wight.

Mr. Chaney, specimens of *Coleoptera* from Gosport and Rochester.

Mr. Ryder, specimens of *Coleoptera*.

Bred and captured foreign *Lepidoptera* and *Coleoptera* were also shown at some of the Meetings of the Society by various Members.

In consequence of having to go abroad on business, in February last, Mr. Champion, who has been the Honorary Secretary of the Society since its commencement, was obliged to resign this post, Mr. Bliss being elected by the Members to fill that office. Mr. Step, from unavoidable circumstances, was also obliged to give up his post as Librarian, Mr. Stewart being elected to occupy this position.

From the accompanying Balance Sheet, will be seen the statement of the Society's financial position, which, notwithstanding the large amount of outstanding subscriptions, £20 15s., must be considered the most satisfactory the Society has ever published. The cash balance in hand is £13 12s. 7d., against £6 13s. 1d. in 1878. The amount expended on books for the Library for 1879 is £7 12s., against £1 16s. 8d. in 1878, which must also be considered very favourable.

In conclusion, the Council hope that in the coming year, Members will make still greater headway in the science of entomology, by the reading of papers—which has been rather neglected this year—more exhibitions in the way of life histories, and that they will endeavour to attend oftener at the Meetings of the Society.

A. BLISS,

Hon. Sec.

December 18, 1879.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

BALANCE SHEET, 16th DECEMBER, 1879.

RECEIPTS.		EXPENDITURE.	
To Balance from last Audit	£ 6 13 1	By Rent of Society's Rooms	£ 3 5 0
„ Subscriptions paid during the year, 1879	20 17 6	„ Society's Share in Cabinet Club	2 4 0
„ Book Fines	0 9 2	„ Purchase of Books	7 12 0
„ Donation to the Library, R. Stan- den, Esq.	2 2 0	„ Printing	1 9 5
		„ Stationery and Postage...	1 13 9
		„ Hall Keeper	0 2 6
		„ Insurance to September, 1880...	0 2 6
		„ Balance in hand	13 12 7
	<u>£30 1 9</u>		<u>£30 1 9</u>
To Balance	13 12 7		

Audited 16th December, 1879. }
V. R. PERKINS.
T. R. BILLUPS.

LIST OF MEMBERS.

- Argent, W. J., Fern Cottage, Wanstead, Essex.
Ackery, J., Crespigney Park, Camberwell.
Barron, H. E., Claremont Villa, Lyndhurst Road, Peckham.
Bliss, A., *Hon. Sec.*, 249, Brockley Road, New Cross, S.E.
Bisshopp, E. F., Lower Brook Street, Ipswich.
Bolger, H. L., 4, Rose Terrace, High Road, Lee, S.E.
Bond, F., F.L.S., F.Z.S., M.E.S.L., 5, Fairfield Avenue, Staines,
Middlesex.
Bull, R. C., M.E.S.L., 85, Milton Street, Dorset Square, W.C.
Briggs, W. F., 16, Rosemary Road, Peckham, S.E.
Billups, T. R., M.E.S.L., *Hon. Treasurer*, 4, Swiss Villas, Cople-
stone Road, Peckham, S.E.
Champion, C., M.E.S.L., 274, Walworth Road, S.E.
Chaney, W., 39, Peplar Road, Old Kent Road, S.E.
Channon, G. C., Burnham Woodlands, Hither Green, Lewisham.
Channon, H. J., Burnham Woodlands, Hither Green, Lewisham.
Cole, B. J., M.E.S.L., Laurel Cottage, Buckhurst Hill, Essex.
Cole, W., M.E.S.L., Laurel Cottage, Buckhurst Hill, Essex.
Cowley, A. F., 1, Rectory Villas, Crystal Palace Road, Goose
Green, S.E.
Curtis, C. H. O., 3, Crawshay Road North, Brixton.
Carpenter, N. J., Reigate Villas, Highland Park Road, Leather-
head.
Carrington, J., M.E.S.L., Royal Aquarium, Westminster, S.W.
Clode, W., 47, Phillimore Gardens, Campden Hill, W. (*Life Mem-
ber*).
Etheridge, R. D., 59, The Park, Sydenham.
Elisha, G., 122, Shepherdess Walk, City Road.
Edmunds, T., 17, Bedford Row, W.C.

- Farn, A. B., 13, The Dartons,[£]Dartford, Kent.
- Ficklin, A., *President*, Kingston-on-Thames.
- Forbes, W. A., F.Z.S., M.E.S.L., West Wickham, Kent.
- Foord, C., '21, Rosemary Road, Peckham.
- Finza, J. A., 105, Gower Street, W.C.
- Goss, H., F.L.S., M.E.S.L.,[£]The Avenue, Surbiton Hill,[£]Surrey.
- Goldthwaite, O., Church Hill, Walthamstow.
- Gill, G.
- Hickling, G. H., 38, Museum Street, Oxford Street.
- Jackson, H. J., 312, Mare Street, Hackney, E.
- Janson, O. E., M.E.S.L., Little Russell Street, W.C.
- Lockyer, B., 27, King Street, Covent Garden, W.C.
- Low, Dr. W. H., Woodcote Lodge, Inner Park, Wimbledon.
- Lavers, C. G., 33, Lyndhurst Road, Peckham.
- Loy, W. T., 11, Garrick Chambers, Garrick Street, W.
- Marsh, J. G., M.E.S.L., 8, Hanover Street, Rye Lane, Peckham.
- Mera, A. W., 15, Verulam Terrace, The Grove, Hammersmith.
- Moncreiffe, H., 30, Ratcliff Villas, Shakespeare Road, Dulwich.
- Miller, H., jun., Ipswich.
- Morley, W. A., 1, Stockwell Crescent, Clapham Road.
- Oldham, C., 2, Warwick Villas, Chelmsford Road, Woodford.
- Owen, Dr., Leatherhead, Surrey.
- Peters, J., 79, Albany Road, Camberwell.
- Perkins, V. R., M.E.S.L., *Vice-President*, 54, Gloucester Street, Pimlico.
- Ponsford, J. T., 73, Loughborough Park, Brixton, S.E.
- Richards, W., 152, Camberwell Road, S.E.
- Reeves, G. M., 172, High Street, Deptford.
- Ryder, E. H., 33, Guildford Road, Greenwich.
- Reston, A., Park Lane, Stratford.
- Rose, A. J., *Hon. Librarian*, Muttah Lodge, College Avenue, Hackney.
- Rippon, R. F. H., M.E.S.L., Linden House, Rokeby Road, Brockley.
- Reed, H. A., The Ferns, Laurie Park, Sydenham.
- Spiers, E. G., 31, Bernard Street, Russell Square, W.

- Sabel, E. E., 30, Clarendon Gardens, Maida Hill, W.
 Standen, R., M.E.S.L., Grove Crescent, Surbiton.
 Step, E., 7, Farford Grove, Lower Kennington Lane, S.E.
 Stevens, S., F.L.S., M.E.S.L., Loanda, Beulah Hill, Upper Nor-
 wood.
 Stewart, F., 25, Lime Villas, Foxberry Road, Brockley, S.E.
 Shearwood, G., 99, Belvedere Road, Upper Norwood.
 Tugwell, W. H., 3, Lewisham Road, Greenwich, S.E.
 Vaughan, H., M.E.S.L., Ospringe Road, Brecknock Road, N.W.
 Watson, Rev. J., Vicarage, Upper Norwood.
 Weir, J. J., F.L.S., M.E.S.L., 6, Haddow Villas, Blackheath.
 Weston, W., M.E.S.L., 1, Duncan Terrace, Islington.
 Wellman, J. R., 14, Portland Place, North Clapham Road.
 Walker, J., Sheerness.
 West, W., *Hon. Curator*, 6, Green Lane, Greenwich.
 Whittle, G. T., 20, Cambridge Terrace, Lupus Street, Pimlico, S.W.
 Williams, J., 23, Old Kent Road, S.E.
 Wiflick, H., 38, Chestnut Terrace, Forest Gate.
 Wood, T. W., 4, Kempsford Gardens, Brompton.
 West, W. A., 9, Akerman Road, Brixton.
 York, W. B., 75, Cook's Road, Kennington Park, S.E.
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LIBRARY CATALOGUE.

Name of Work.	Author.
British Hemiptera	<i>Douglas and Scott.</i>
British Lepidoptera, accentuated List of	—
British Tortrices	<i>Wilkinson.</i>
British Hymenoptera (2 vols.)	<i>F. Smith.</i>
British Butterflies	<i>Newman.</i>
British Butterflies	<i>Humphreys.</i>
British Moths	<i>Newman.</i>
British Moths (4 vols.)	<i>Morris.</i>
British Beetles, Manual of	<i>Stephens.</i>
British Beetles	<i>Rye.</i>
Botany, Elementary, Lessons in... ..	<i>Oliver.</i>
British Wild Flowers in Relation to Insects	<i>Sir John Lubbock, Bt.</i>
British Hemiptera, Synopsis of	<i>Saunders.</i>
Coleoptera, Handbook of... ..	<i>Cox.</i>
Coleopterès, Species General de	<i>Dejeans.</i>
Coleopterès, Genera des	<i>Lacordaire.</i>
Coleopterists' Manual (Part 2)	<i>Hope.</i>
Coleopterès, Catalogue des	<i>Dejeans.</i>
Catalogue of E. India Co. Lepidoptera (vol. 1.)	<i>Horsfield.</i>
Catalogue of European Lepidoptera	<i>Staudinger.</i>
Entomologists Annual (1855 to 1867)	
Entomology	<i>Kirby and Spence.</i>
Entomology, Burmeister's	<i>Shuckard.</i>
Entomologists' Monthly Magazine (1865, 1866, and 1872 to 1879)... ..	—
Entomologist (from vol. 2 to present date)	—
Flora of Surrey	<i>Brewer.</i>
Fossorial Hymenoptera	<i>Shuckard.</i>
Flowering Plants of Great Britain (6 vols)	<i>Anne Pratt.</i>

Name of Work.	Author.
Geodephaga of Great Britain	<i>Dawson.</i>
Histoire Naturelle (2 vols.)	<i>Chenu.</i>
Insecta Britannica (Tineina)	<i>Stainton.</i>
Insecta Britannica (Diptera, 3 vols.)	<i>Walker.</i>
Intelligencer (1856 to 1861)	
Insects, Guide to the Study of	<i>Packard.</i>
Insects, History of	<i>Newman.</i>
Lepidopterists' Calendar (2 copies)	<i>Merrin.</i>
Lepidopterists' Guide (2 copies)	<i>Knaggs.</i>
Letters of Rusticus	—
Malay Archipelago	<i>Wallace.</i>
Monograph of Thysanura	<i>Sir John Lubbock, Bt.</i>
Notes on Collecting and Preserving Natu- ral History Objects	<i>J. E. Taylor.</i>
New London Flora	<i>De Crespigny.</i>
Naturalist of the Amazons	<i>Bates.</i>
Natural History of Wasps	<i>Ormerod.</i>
Our Woodlands, Heaths and Hedges	<i>Coleman.</i>
Origin and Metamorphoses of Insects	<i>Sir John Lubbock, Bt.</i>
Ordnance Maps (several)	
Pinacographia	<i>Vollenhoven.</i>
Science Gossip (1865 to 1870, also 1870, 1872 and 1873)	—
Scottish Naturalist (1871 to 1872, and 1874 to 1878)	—
Stainton's Manual	—
The Insect Hunters	<i>Newman.</i>
The Insect Hunters' Companion... ..	<i>Rev. Jos. Greene.</i>
The Universe (2 vols.)	<i>Pouchet.</i>
The World of Insects	—
Zoologist (1872 to 1879)... ..	—

In addition to the above books, there are numerous pamphlets containing interesting information on scientific subjects ; papers read before Natural History Societies, &c., &c., which are too numerous to mention.

RULES.

I. The South London Entomological Society has for its object the diffusion of Entomological Science by means of papers, discussions, and exhibitions ; the formation of a typical collection of insects, and a library for the use of its Members.

II. The officers the Society shall consist of President, Vice-President, Treasurer, Secretary, Curator and Librarian, who together with Seven other Members, shall form the Committee of Management. The whole of the officers shall be eligible for re-election except the President, who shall not be elected for two consecutive years.

III. The Meetings of the Society shall be held every alternate Thursday evening, the chair to be taken punctually at Eight o'clock, when the order of business shall be as follows: 1—The minutes of the previous Meeting shall be read by the Secretary, and, if confirmed, signed by the Chairman ; 2—Donations announced ; 3—New Members proposed and elected ; 4—Business of the Society transacted ; 5—Exhibitions made ; 6—Papers read and discussed ; 7—Subscriptions received. The Meeting shall then resolve into a Conversation Meeting.

IV. The Annual Meeting shall be held on the night of Meeting previous to Christmas Day, for the purpose of electing officers for the year ensuing ; passing the Accounts and transacting any other business that may be brought before it. At this Meeting, the retiring President be requested to deliver a short (written) address upon the progress the Society has made during his term of office, together with such other observations as he may deem conducive to the welfare and improvement of the Society, and the promotion of its objects.

V. The Treasurer shall receive all moneys and keep the accounts of the Society, and the Secretary shall conduct the correspondence, take minutes of the Meetings in a book kept for the purpose, and have charge of all papers read before the Society.

VI. The Librarian shall take charge of the books of the Society, keep a catalogue of the same, and see that the regulations of the Council respecting the circulation of the books are strictly carried out.

VII. All books in the possession of the Society shall circulate among the Members under such regulations as the Council may deem necessary, a copy of which shall be affixed to each book.

VIII. All notices, propositions and business appertaining to the Society, shall be posted up in the Library, where every Member may see them one fortnight (Meeting) prior to discussion. Such notices to be signed by Members introducing them.

IX. Every candidate for admission into the Society, shall be proposed and seconded at one Meeting and balloted for at the next, when two thirds of the Members present are in favour of the candidate, he shall be duly elected.

X. Entomologists residing upwards of twenty miles from London, may be elected Corresponding Members of the Society, and shall pay a subscription of Two Shillings and Sixpence per annum.

XI. Members shall have the right to be present and to vote at all Meetings of the Society ; to join in the discussions, to propose candidates for admission, and to introduce visitors at the Meetings. They shall also be eligible to hold any office in the Society.

XII. The entrance fee for a Member shall be one shilling, and the subscription six shillings per annum. Every person elected as a Member shall within one month after his election, and before he act as a Member, pay to the Treasurer the entrance fee and his subscription for six months, and in default thereof his election shall be void. The Treasurer shall at the annual meeting state the names of any Members whose election is rendered void by non-compliance with this rule. The subscription shall be payable half-yearly, and shall become due the first Meeting in each half year.

XIII. No Member shall have the right of voting, or be entitled to any of the advantages of the Society, if his subscription be six months in arrear; and should any Member be one year in arrear, the Council shall have power to erase his name from the list of Members.

XIV. Life Members may be elected on payment of three guineas, and shall be entitled to all the privileges of the Society.

XV. The Council shall have power to nominate gentlemen as Honorary Members.

XVI. A book shall be kept in the Library containing a copy of the rules and regulations of the Society, and the names and addresses of every Member. Every Member upon admission to the Society shall sign his name in this book, as conforming to the rules.

XVII. That the Treasurer's accounts with the Society be printed, together with the names and addresses of the Members, and be distributed with the card of the Meetings for the ensuing year.

XVIII. A Special Meeting may be called at any time, provided one month's notice in writing be given to the President or Secretary. Such notice shall be signed by four Members at least, and shall specify the purpose for which the Meeting shall be called.

XIX. Two Auditors shall be appointed at the Meeting preceding the Annual Meeting. They shall audit the Treasurer's accounts and produce their report at the Annual Meeting. Should the Treasurer at any time resign his office, the accounts shall be audited on his resignation.

XX. No alteration shall be made in the rules, except at the Annual Meeting or a Special Meeting called for the purpose.

PRESIDENT'S ADDRESS.

GENTLEMEN,

On an anniversary of this kind, it is both fitting and customary to turn our thoughts first to those who have passed away from us during the current year. Happily, in our own Society, there has been, so far as we are aware, no removal by death; although the long-continued silence of our former esteemed librarian, Mr. Hoey, who went out to South Africa last year, gives us cause for serious anxiety on his account.

Outside the pale of our own Society, although in the same field of labour, death has been very busy, and has selected for his victims many whom the foremost amongst us would esteem it an honour to have known. In the first rank of these stands the name of Frederick Smith—that simple-minded, kind-hearted, and, withal, largely gifted senior assistant in the Zoological Department of the British Museum. It is said by those best able to judge that he was more at home in the field than in the study—there are many of us, I think, who can sympathise with him in this respect—and yet the number of entomological papers produced by him in various scientific journals amounted, at the time of his death, to little short of 150. Some of these were illustrated by plates drawn and engraved by himself (for in his early years he followed the profession of an engraver), and this fact naturally enhances greatly the value of them. It is as a hymenopterist that his name will live, and no one who visited the Exhibition at the Aquarium, in 1877, can forget his complete and most interesting collection of British bees, nor the gentle courtesy of his manner to those who manifested an interest in them. As an example of his good nature, I shall never forget the wonderful patience with which I saw him accompany two simple old ladies round the Exhibition, with the sole intention apparently of convincing them that the large sphingidæ were not all death's-heads,

nor big bees all the familiar bumble. He was also a coleopterist of no mean attainments, and for two successive years he filled the honoured post of President of the Entomological Society of London.

The next name of consequence in the obituary is that of William Wilson Saunders, whose work in the field of natural science, both as a close observer and as a contributor to scientific journals, rivals even that of Mr. Smith. A busy city man, and for many years Chairman of the Committee at Lloyds, it will readily be supposed that he had but scant leisure for his favourite pursuits of botany and entomology, and yet during the intervals of business he contrived to accumulate in both these departments collections of unprecedented extent. He was, no doubt, largely assisted in this by collectors abroad, many of whom, in their turn, were only enabled to continue their researches by the powerful arguments of his purse and of his individual encouragement. Unhappily the year 1873, so disastrous to all engaged in marine insurance, saw the failure of his firm, and his vast collections were dispersed—most of the insects being fortunately secured by the British Museum and the Hope Museum at Oxford. He also, like Mr. Smith, was one of the earliest members of the Entomological Society of London, and four times its President.

Sir Thomas Moncreiffe, who died in August, was an entomologist of only ten years' standing. He had all his life been a keen observer of natural objects, but he is, probably, an unique instance of a man who, in his forty-eighth year, could throw himself into a new pursuit with all the animation of his earlier sporting career, and continue it with unabated ardour to the close of his life. He contributed to the Aquarium exhibition a most interesting collection of the lepidoptera of his native county of Perth, one of the richest in this order of the whole of Scotland, as may be readily imagined from the fact that he produced in the "Scottish Naturalist" a list of more than six hundred species captured within a mile radius of Moncreiffe Hill. His innate modesty and natural courtesy of behaviour endeared him to all who knew him, and his early death leaves a blank in Scotland not easily filled up. Other

serious blanks are created by the deaths of Mr. E. C. Buxton, formerly of Daresbury Hall, near Warrington, where he amassed a large and comprehensive collection of British Lepidoptera, but devoted the later years of his life to his favourite pursuits—entomology and ornithology—in foreign countries, chiefly on the east coast of Africa, where he finally succumbed to an acute attack of fever; also of Mr. Tuely, of Wimbledon, whose interesting exhibition at the Aquarium of lepidoptera taken in his own garden everyone will remember; of Thomas West, of Liverpool, Noah Greening and James Cooper, both of Warrington, and others of equal industry though of lesser fame.

To turn to matters more directly affecting the immediate objects and progress of the Society, you will have seen by the report of the Council that there is a marked evidence of increased prosperity during the past year. When we consider the number of valuable books that we have been able to add to our library, and the purchase of a cabinet, I think we may fairly say that our exchequer is in an exceedingly healthy condition.

Thanks to the infusion of new blood, there has been a decided improvement in the conduct of our business, a readier dispatch of necessary work, more animated discussions, and, gentlemen (I announce it with bated breath), *an occasional paper*. Those who have for a long time past deplored with me the monotony of our meetings, and the absence of anything of an instructive or interesting character in our discussions, will quite appreciate the pleasure with which I mention the names of Mr. Perkins and Mr. Billups as the gentlemen who have thus entertained us. The first of Mr. Billups' papers gave a short account of the capture, in the Borough Market, of that lovely insect, *Carabus Auratus*. It would seem at first sight a strange place to find so rare a British beetle; but Mr. Billups goes on to tell us that, in his opinion, the specimens which were being so ruthlessly trodden under foot by the frequenters of the market had doubtless come over in the pads of lettuce and salads from the South of France, where the insect is common enough, and is appropriately known by the name of *le Jardinier*.

The obvious question arises as to whether it is indigenous to Britain at all, and whether the few recorded captures may not be accounted for in some similar fashion to the above. As this is not the place, however, for a discussion, I will at once assume that it *is* a genuine British species, and will honestly avow that it answers my present purpose to do so.

If you will permit me, gentlemen, I will read a short extract from Mr. Bates' address at the beginning of this year to the Entomological Society of London. After lamenting "the too exclusive devotion of our native entomologists to the formation of purely British collections," he goes on to say, "the exhaustion of our limited insular fauna, and the extreme unlikelihood of the discovery of new species, seem to teach no lesson to the purely British collector, and he goes on collecting, observing, and recording what has been collected, observed, and recorded over and over again. Some, it is satisfactory to notice, break through the artificial limits imposed by the majority, and extend the range of their excursions and observation to the continent. The ice once broken this way, a boundless field of interesting study lies before them; for by exchange, and a trifling outlay of pocket-money, large collections can be formed, and the mind expanded by the study of the whole Palæartic Fauna, of which that of the British isles is only a half-starved fragment. Even if it were only for the pleasure of tracing the wonderful local variations, the formation of sub-races and races of our common English insects—some of them of surprising beauty—over the wider continental area, one would think that every intelligent entomologist with us would be eager thus to extend his studies. And it could be done with no more expenditure of time, and very little more of money, than the present exclusive pursuit of home productions." Now, it appears to me, that when a man so universally respected as Mr. Bates, has the courage to formulate and give expression to an idea which many have entertained, but have feared to publish, it is at least becoming in a young Society like ours to look into it.

I will freely confess that, for my own part, I should be extremely glad to see the adoption of broader views as to the

position our fauna should occupy in this quarter of the globe. It is, of course, perfectly natural that our interest should first centre upon insects indigenious to our own country ; but that we should rest satisfied with this, and refuse to extend our researches into other European countries, savours to me too much of the “insular prejudices,” which are so often and so justly attacked by foreigners, and which, in most other departments of science, have long since been abandoned. I do not mean to say, with Mr. Bates, that I think it practicable for any one man either to study or to make large collections of the whole of the Palæarctic Fauna—(Mr. Bates means, of course, the insect fauna)—nor do I consider that it might be done with a “trifling outlay of pocket money ;” but I do not see why each of us should not, in his own favourite order or orders, acquire continental types for purposes of comparison, and for the observation of the results of varying climatic and geological conditions ; or even to place them side by side in his cabinet with purely British species, which, be it remembered, contain frequently Scotch, Welsh, Manx and Irish insects, differing from English quite as much as continental forms of the same species. It is true that the adoption of such a system might involve the curtailment of those whole row series in which so many collectors delight, but would it not at the same time, in most cases, render the somewhat monotonous file of unvarying ones more interesting. In the case of such inconstant insects as the *Cidarias*—*russata* and *immanata*—it is obviously an advantage to have at least a whole row of each ; but where the varieties, or the aberrations from the normal type, are rare—as for instance, in the *Lucanidæ*—it would surely add to the interest of a collection to import into it whatever little variation the foreign types could afford. The dealer would no longer find it so easy to get twenty shillings for an insect whose prototype—varying perhaps infinitely—might be had for half a franc on the other side of the channel. But then the greater demand for foreign specimens would soon compensate him for any loss he might sustain in this way. And what a new interest and incentive it would give to a holiday trip abroad, if continental forms of English species were

once admitted to our cabinets, and acknowledged to be of equal interest with Scotch or Manx, or any other local forms. I know that I am treading on tender ground. It is an attack, so to speak, on vested interests, and your vested interest—as Bottom would say—is a fearful wild fowl. Nevertheless, I am obliged to my friend, Mr. Billups, for affording me this text, and I trust that he has boldly placed his little Gallic friend side by side with its more aristocratic English neighbour (if he possess one), and that they are neither of them the worse for it.

Another interesting subject which has been carefully investigated by both Mr. Perkins and Mr. Billups, is that of the so-called *granary weevils*, and the havoc created by them in stored cereals all over the world. Mr. Billups mentioned that out of three and a half ounces of corn-dust swept into a box from one Mr. Fitch's storehouses, he collected no less than 1,554 living insects; add to this the great number of artful ones that escaped, the dead, and a large quantity of larvæ, and one can only feel too thankful, on Mr. Fitch's account, that they did not eat up barn and all. Nor is this feeling at all lessened when we are told by De Geer that a single pair of the true corn-weevil (*Calandra granaria*), will produce (among themselves and their descendants), in one year 23,600 individuals. In the sweepings examined by Mr. Billups there were only seventeen of this insect—*C. oryzae*, the rice-weevil, numbering 650. In addition to these there were eleven different species of small beetles—*Hypophlœus depressus* swelling up to a total of 791. I think we must all envy, and should endeavour to emulate, the patient industry with which Mr. Billups separated these 1,554 tiny insects into species, named them, and counted them up, and we shall look forward with interest to the supplementary note that he promises us on the same subject.

Mr. Perkins, in a subsequent paper, stated that in an old record he had discovered the names of two other small beetles commonly attendant upon *C. granaria*, and not mentioned either by Mr. Billups or Mr. Fitch, viz., *Cucujus monilicornis* and *C. testaceus*. These, added to those named by the above two gentlemen, make a total of no less than nineteen different species

of coleoptera known to be frequenters of granaries, in addition to the two Calandras, and many of them doubtless little less voracious than the weevils themselves. Mr. Perkins also stated it as his opinion that the damage to the grain was quite as much due to the heat and fermentation generated by the immense numbers of larvæ and their frass, as to the actual consumption of the insects; the more so, as it has invariably been noticed that the corn is more injured in and near the centre of the pile, where the heat is greatest, than at the outside.

The result of collective observations appears to show that nearly half the grain in the country is either destroyed or rendered unfit for human food by these little pests, and it is by such patient investigation as I have briefly described that we may hope eventually to discover a remedy for this really awful scourge, and have an answer for those unsympathetic friends who want to know what is the end of all this catching, and setting, and breeding, and putting away into cabinets, and who is any the better for it.

It may be well, perhaps, just to mention here the most interesting exhibitions of the year :—

Mr. Ficklin, an unnamed *Eupithecia*, taken by his brother in Devonshire; probably new to Britain.

Mr. Wellman, *Boletobia fuliginaria*, one specimen of this rare geometer taken in a warehouse near the Thames. *Acidalia contiguaria*, and some fine bred specimens of *Agrotis Ashworthii*, and *Eupithecia togata*.

Mr. Williams, also a specimen of *B. Fuliginaria*, one of two taken on a wharf.

Mr. Elisha, a pair of the rare *Noctua Pachetra leucophœa*, taken *in copulâ* on a fir tree at Box Hill, and with the ultimate results of which I am not acquainted. Several species of *Tineina*, including both larvæ and imagines of the scarce and pretty *Nemotois Schiffermillerella*.

Mr. Billups, several examples (170 species) of *Ichneumonidæ*, Also the water beetles, *Hydrous caraboides* with nest, showing position of ova, and female *Spercheus emarginatus* carrying egg-bags. *Pentodon punctatus*, a fine

coleopterous insect, taken in Spitalfields' Market, and not previously recorded as British. Two specimens of *Trichopteryx ambigua*, taken by Mr. Ryder, of which only six or seven examples are known to exist.

Mr. Perkins, a *Plusia orichalcea*, taken at Wotton-under-Edge. Various Hymenoptera and Diptera from the New Forest; *Cantharis vesicatorius*—the Spanish blister beetle—from Freshwater Bay.

The less common orders that have been so industriously worked by the two last-named gentlemen induces the hope that their example may be followed by an ever-increasing number of our Members—that Entomology may be looked upon more as a whole, and not confined to one or two interesting but well nigh exhausted groups—I mean, of course, exhausted only so far as Great Britain is concerned. This will not only improve the annals of our Society, but will present additional inducements to outsiders to join us, by the variety of entertainment and the larger scope for exchange of ideas and information that we shall have to offer.

And when all other topics are exhausted, there will still be one, if we may judge from the past, that will never fail to evoke a lively interest. I need scarcely say that I allude to the publication of an Insect Fauna List of Kent and Surrey. I will not here dive into the intricate windings of this mazy topic, lest I should lose my way and never emerge. Personally I was disappointed at the result of our deliberations, but I gave in cheerfully, as we always should do, to the ruling of the majority, feeling that "it's an ill wind that blows nobody any good," and what I and those who thought with me lost in one way was gained in another, as the noble list of works added to our library will testify. I have reason to believe also that the subject of the Fauna List will ere long be presented to you in a new and probably more acceptable light.

It only remains for me now, gentlemen, to thank you for the patience with which you have listened to this address, and for the great kindness and courtesy I have received from one and all of you, and notably from the officers of the Society, in the discharge of my duties.

Presented
13 NOV 1888





REPORT

OF THE

SOUTH LONDON

ENTOMOLOGICAL SOCIETY,

FOR THE YEAR 1880,

TOGETHER WITH

LIST OF MEMBERS,

AND

PRESIDENT'S ADDRESS.

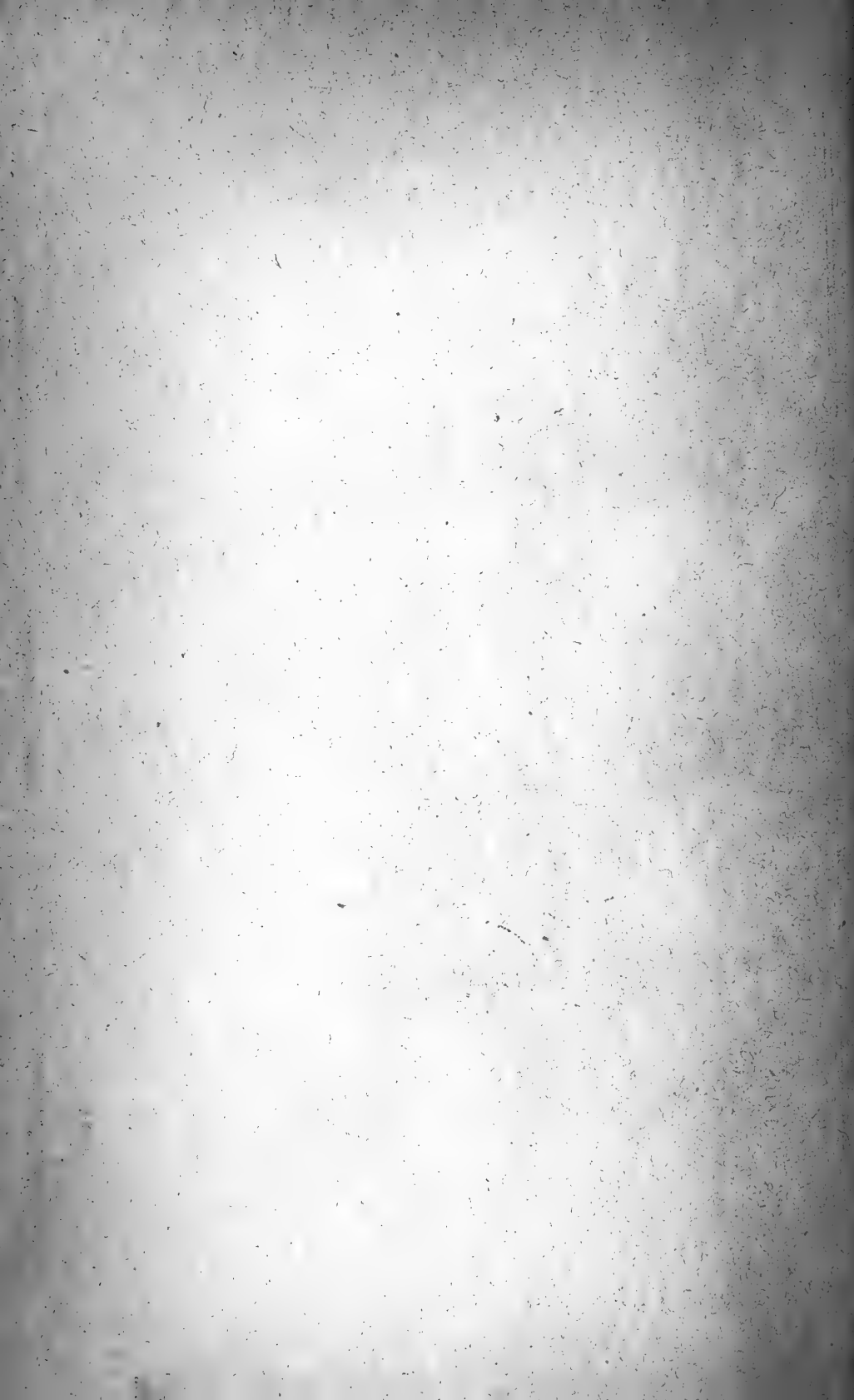


LONDON :

PRINTED BY BOWERS BROTHERS,

89, BLACKFRIARS ROAD, S.E.

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1881.

THE
South London Entomological Society,

(ESTABLISHED 1872),

94, NEW KENT ROAD,

(Near Elephant and Castle).

Patrons.

SIR JOHN LUBBOCK, BART., M.P. F.R.S., &c.

R. McLACHLAN, Esq., F.L.S., &c.

E. C. RYE, Esq.

HENRY T. STANTON, Esq., F.R.S., &c.

OFFICERS AND COUNCIL,

ELECTED DECEMBER 16, 1880.

President.

V. R. PERKINS.

Vice-President.

T. R. BILLUPS.

Council.

W. C. CHANEY

G. ELISHA.

A. FICKLIN.

G. P. SHEARWOOD.

J. R. WELLMAN.

J. WILLIAMS.

W. WEST (Streatham).

Hon. Curator.

W. WEST (Greenwich).

Hon. Librarian.

G. GILL.

Hon. Treasurer.

E. STEP, 7, Fairford Grove, Kennington, S.E.

Hon. Secretary.

ARTHUR BLISS, 249, Brockley Road, Brockley, S.E.

The Society has for its objects the diffusion of Entomological Science, by means of papers and discussions, and the formation of a typical collection of insects. A Library for the use of the Members is being formed. Meetings of the Members are held every alternate Thursday evening, from Eight to Ten p.m., at the above address. The Society's room is easy of access from all parts of London, and the Committee cordially invite the co-operation of all Entomologists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their captures.

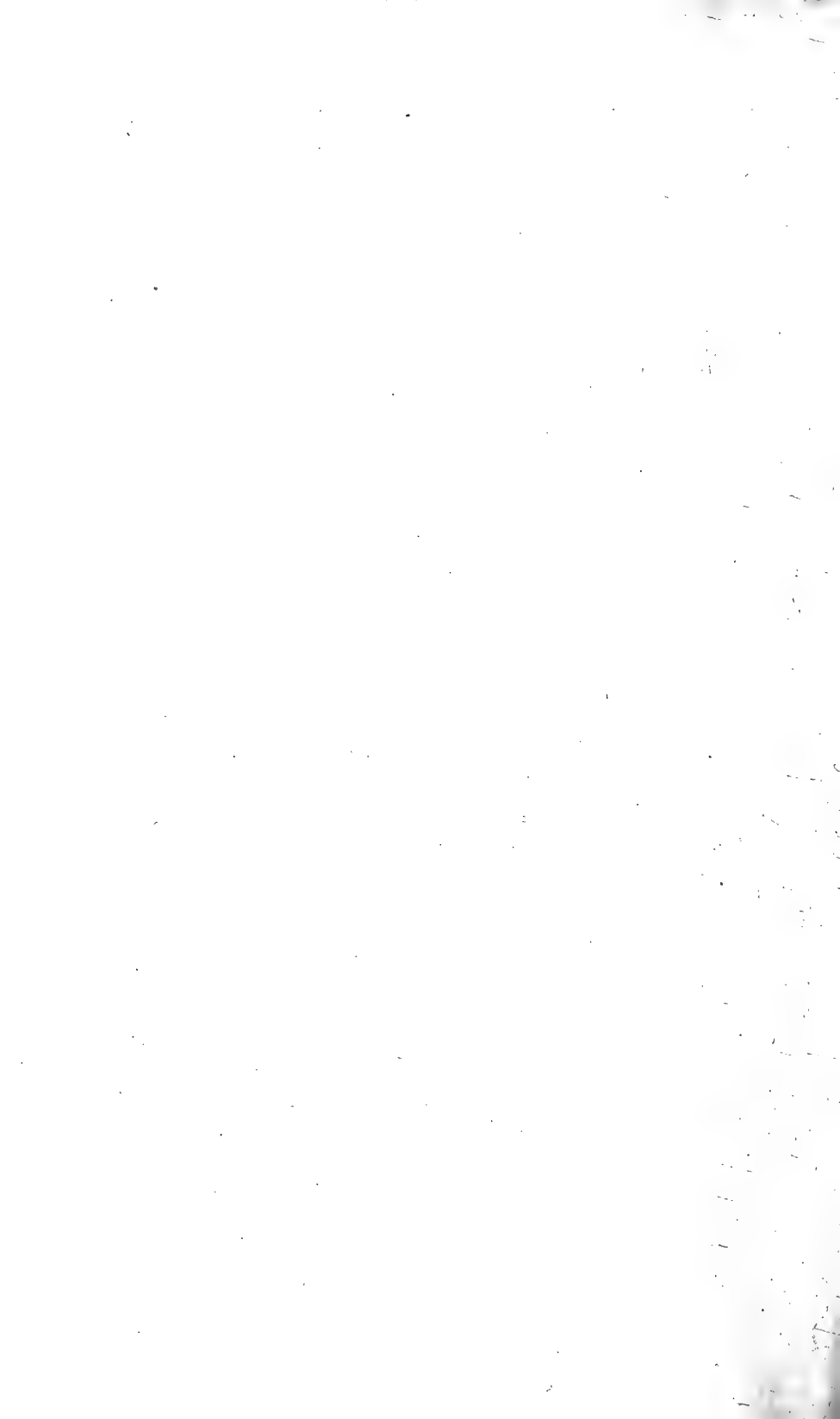
SUBSCRIPTION :

Six Shillings per Annum, with an Entrance Fee of One Shilling.

All Communications should be addressed to the Hon. Sec.

A: BLISS,

249, Brockley Road, Brockley, S.E.



REPORT, 1880.

GENTLEMEN,

Your Council in presenting their Annual Report and Balance Sheet for the year 1880, are glad to be able to bear testimony to the fact that the Society still sustains a well-earned reputation, and although the membership has not increased, owing to the striking out of names of members who did not pay their subscriptions, the meetings have been better attended than in former years, and many exceedingly rare and local species have been exhibited at the meetings.

In consequence of the uncomfortable condition of the rooms of the Society at the South Metropolitan Temperance Hall, your Council decided to change the location of the Society and gave notice to leave in June last, and accordingly the first meeting in July found the Society at the more convenient and comfortable rooms at 94, New Kent Road.

The library owing to the careful manner in which Mr. Rose, the Honorary Librarian, has arranged and kept the valuable collection of scientific works belonging to the Society, is in first class order and all the books printed in last years report, and acquired since, with the exception of the "World of Insects" are in the Library or in circulation.

The donations to the Library for the year are as follows :—

MR. SHEARWOOD	...	...	Two guineas.
„ STANDEN	...	...	British Larvæ by Wilson.
„ „	...	...	Scientific Lectures by Lubbock.
„ NEWMAN	...	...	"Entomologist," 1880.
„ „	...	...	"Zoologist," 1880.

MR. BILLUPS...	...	...	Variation of Species by Wollaston
,, MARSH ...	...	...	Anatomy of Blowfly.
,, GOSS ...	...	...	{ Insect Fauna of the Palæozoic period, by Goss.
,, STEP ...	...	...
EPPING FOREST AND COUNTY OF ESSEX NAT. CLUB ...			{ Papers read before this Society. Collected and Edited.
			{ Inaugural Address and first trans- actions of the Society.

The books obtained by purchase have not been numerous this year, and consist of:—

Synopsis of the Trichoptera of the European Fauna ...	{	By McLACHLAN.
Entomologist's Monthly Magazine		
Scottish Naturalist ...		

Owing to the untimely death of the Naturalist Vollenhoven, his valuable illustrated work on the Ichneumonidæ remains uncompleted, the Society, however, possesses all the published parts (ninè).

Perhaps the thing the Society has most reason to be proud of is the commencement of the typical collection of insects. We received the cabinet in April last, and since that time the Hon. Curator, Mr. W. West, has been indefatigable in his work, and the arrangement of the Lepidoptera section of the collection is now complete, and in so short a time, thanks to a few members of the Society, a very fair collection of Lepidoptera is already in the possession of the Society; and no doubt it has only to be known how the arrangement has advanced for other members to come forward with their duplicates.

The following are the donations to the cabinet collection:—

The President, MR. FICKLIN, 14 species, including *Hadena rectilinea*, *Nonagria typhæ*, *Asthena bloomeraria*, *Selidosema plumaria*, etc.

MR. SHEARWOOD, 57 species, including *Meliana flammea*, *Notodonta cuculina*, *Notodonta trepida*, *Apatura iris*, *Macrogaster arundinis*, *Sphinx convolvuli* (British), and others equally rare.

MR. W. WEST, 100 species, including many rare and local *Tortrices* and *Tinæ*.

MR. BLISS, Hon. Secretary, 17 species, including *Zygæna meliloti*, *Tethea subtusa*, *Cloantha solidaginis*, etc.

MR. STANDEN, 40 species.

MR. ELISHA, 20 „

MR. CHANEY, 6 „

MR. SNELL, 3 „

MR. PERKINS, 10 „

MR. RYDER, 6 species, including *S. Ichneumoniformis* (taken on a railway bank) and *S. Cynipiformis* (taken in Greenwich Park).

The exhibitions made at the different meetings of the Society have been more numerous and better than in former years. Mr. Billups again this year takes the most prominent place for rare captures, as will be seen from his list.

MR. BILLUPS, among other COLEOPTERA, has exhibited *Pseudopsis sulcatus*, *Agathidium nigrinum*, *Anisotoma grandis*, *Leptinus testaceus*, *Eros minuta*, *Heptaulacus villosus*, *Oxyporus rufus*, all of which are rare; also *Latheticus oryzae* (a genus new to Britain) and *Læmophlæus pusillus*.

Among HYMENOPTERA this gentleman exhibited many rare specimens taken by himself, notably:—*Polyblastus Walbergi*, *Exetastes illusor*, *Pimpla mandibularis*, *Mesostemus obnoxius*, all being new to Great Britain; also a new *Crabro*, and five new species of the genus *Pezomachus*, viz.: *P. nigritus*, *P. intermedius*, *P. Mülleri*, *P. incertus*, *P. juvenilis*

MR. BILLUPS also exhibited specimens of the rare *Ponera contracta* in the winged form as well as *Formica aliena*, *Tetramorium acervorum* and *cespitem*, and many beautiful species of *Chalcididae* bred from the galls of *Cynips Kollari*. Many *Tenthredinidae* and DIPTERA were also well represented by this gentleman.

MR. WEST also exhibited some fine Coleoptera, including *Leistis ferrugineus*, *Stomis pumicatus*, *Badister inipustulatus*, *Acupalpus consputus*, *Bembidium rufescens*, *Carcinops minima*, *Frognatha quadricorne*, *Throsacus dermestoides*, *Limonium cylindricus*, *Polydrosus micans* (from Blackheath), *Endomychus coccineus* (from Blackheath), and a collection of Lepidoptera taken 40 years ago, including *Vanessa antiopa*, *Vanessa polychloros*, *Pieris daphidice*, *Deiopeia pulchella*, *A. sulphuralis*, all in fine condition.

MR. PERKINS, a case of *Tenthredinidæ*, including a specimen of *Strongylogaster cingulatus*, which is extremely rare; a case of *Fossorial Hymenoptera*, including *Crabro ambiguus*, Dahl, two specimens, and *Passalæctius monilicornis*, Dahl, one specimen (both very rare), and a large box of DIPTERA, including many fine specimens. All the above were captured in Wotton-under-Edge during the present year. A specimen of *Fænus jaculator*, from Weybridge, and a series of *Chrysomela sanguinoluta*, Lin., with notes upon the difference between this species and *C. distinguendo*, Ste., with which it is constantly confounded.

MR. CHANEY exhibited *Carabus granulatus*, *Staphylinus erythrop-terus*, *Carabus clathratus*, *Cychrus rostratus*, *Silpha atrata* var *subrotundata*, *S. 4-punctata*, *Cleomis nebulosus*, etc.

MR. RYDER, a collection of foreign Coleoptera.

The exhibitions of Lepidoptera were very numerous, the most noticeable being those of MR. WILLIAMS, who exhibited bred series of *Cidaria sagittata*, *C. populata*, *C. psitticata*; specimens also of *Xylina conformis*, *Noctua sobrina*, *Nola centonalis*, *Platypteryx sicula*, etc.

MR. STANDEN, a collection of European Lepidoptera, and series of *Pachnobia alpina*, *Noctua sobrina*, *Tæniocampa gothica* var *gothicina*.

MR. WELLMAN, *Hadena atriplicis*, bred, *Acidalia sylvata*, *Venusia cambricaria*, *Sesia Ichneumoniformis*, *Melanippe tristata*, and many others.

MR. FICKLIN, *Hadena rectilinea*, *Luperina cespetus*, *Mamestra furva*, and others.

MR. BLISS, many preserved larvæ, including *Eupethecia Knautiata*, *Bryophila glandifera*, *Tæniocampa rubricosa*, *T. gracilis*; also European examples of *Polyommatus Hippothæ*, *P. virgauræ*, *Lampides Bœtica*; also *Attacus Atlas*, *Samia Cecropia*, *S. Fernyi*, *S. Polyphemus*, and others.

MR. ELISHA, *Dianthæcia albumacula* and others.

MR. FARN, *Anticlea Berberata*, bred, and others.

MR. SHEARWOOD, many finely preserved larvæ, including, *Xylina*

conformis, *X. conspicillaris*, *Dicranura furcula*, *D. bifida*, *Notodonta trepida*, and others equally rare.

MR. A. J. ROSE, *Acidalia emutaria*, and a black variety of *Limenitis sibylla*.

MR. SNELL, *Lampides Boetica* taken at Isle of Wight, *Aplecta occulta* and European lepidoptera, including *Papilio podalirius*, *Apollo*, *Lycœna Arion*, etc.

MR. MUGFORD, *Stilbia anomala*, and series of a *Paphia var Valezina*

MR. W. A. WEST, bred specimens of *Bryophila glandifera* and preserved larvæ.

It is with great regret that the Council has to report the death of one of its members, viz., Francis Owen, of Leatherhead. M.R.C.S., who lost his life while on his professional work by accidentally walking into a canal near Kintbury, Surrey.

From the accompanying Balance Sheet will be seen the Society's financial position, which must be considered very good indeed.

In conclusion it is to be hoped that the Society will make still greater headway in the coming year, and that even a more satisfactory report than this may be issued at the next annual meeting.

December 16th, 1880.

A. BLISS,
Hon. Sec.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

BALANCE SHEET, 16th DECEMBER, 1880.

RECEIPTS.				EXPENDITURE.			
	£	s.	d.		£	s.	d.
To Balance from last Audit	...	...	13 12 7	By Rent.	...	...	3 0 0
„ Subscriptions and arrears received during year 1880	...	...	22 2 0	„ Arrears six months, 1879	...	...	3 0 0
„ Donation to Library by G. P. Shearwood, Esq.	...	...	2 2 0	„ Six months to June, 1880	...	...	3 0 0
„ Book Fines	...	...	0 8 8	„ Deposit for new rooms	...	...	1 0 0
	£38	5	3	Society's Cabinet	...	...	7 0 0
	<hr/>			„ Purchase and Binding of Books	...	...	2 1 0
	<hr/>			„ Printing	...	...	3 4 0
	<hr/>			„ Stationery and Postage	...	...	8 3 4
	<hr/>			„ Hall Keeper (gratuity)	...	...	2 16 3½
	<hr/>			„ Insurance of Library and Collection	...	...	0 5 0
	<hr/>			„ Deed Box for Papers	...	...	0 7 0
	<hr/>			„ Sundry Expenses	...	...	0 19 0
	<hr/>				...	...	1 6 8½
To Balance in Hand	12 2 11	„ Balance	£26 2 4
„ Arrears of Subscriptions	18 13 0		12 2 11
	<hr/>				£38 5 3
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To Balance	27 15 11		£30 15 11
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LIABILITIES.

„ Rent six months to December, 1880	...	3 0 0
„ Balance	...	27 15 11
		<hr/>
		£30 15 11

Audited and found correct, 16th December, 1880. }
 GEO. P. SHEARWOOD.
 EDWARD STEEP.

LIST OF MEMBERS.

- Argent, W. J., Fern Cottage, Wanstead, Essex.
Barron, H. E., Claremont Villa, Lyndhurst Road, Peckham.
Bliss, A., *Hon. Sec.*, 249, Brockley Road, New Cross, S.E.
Bolger, H. L., 4, Rose Terrace, High Road, Lee, S.E.
Bond, F., F.L.S., F.Z.S., M.E.S.L., 5, Fairfield Avenue, Staines, Middlesex.
Bull, R. C., M.E.S.L., 85, Milton Street, Dorset Square, W.C.
Briggs, W. F., 16, Rosemary Road, Peckham, S.E.
Billups, T. R., M.E.S.L., *Vice-President*, 4, Swiss Villas, Coplestone Road, Peckham, S.E.
Champion, G. C., M.E.S.L., 274, Walworth Road, S.E.
Chaney, W., 39, Peplar Road, Old Kent Road, S.E.
Channon, C., Burnham House, Woodlands, Hither Green Lane, Lewisham.
Channon, H. J., Burnham House, Woodlands, Hither Green Lane, Lewisham.
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Cole, W., M.E.S.L., Laurel Cottage, Buckhurst Hill, Essex.
Cowley, A. F., 1, Rectory Villas, Crystal Palace Road, Goose Green, S.E.
Carrington, J., M.E.S.L., Royal Aquarium, Westminster, S.W.
Clode, W., 47, Phillimore Gardens, Campden Hill, W. (*Life Member*).
Caldecott, J. B., 5, Vanburgh Park West, Blackheath.
Chiesman, H., 8, St. Donat's Road, New Cross.
Etheridge, R. D., Woodbank, Perry Vale, Forest Hill.
Elisha, G., 122, Shepherdess Walk, City Road.
Edmunds, T., 17, Bedford Row, W.C.

- Farn, A. B., 13, The Dartons, Dartford, Kent.
- Ficklin, A., Kingston-on-Thames.
- Goss, H., F.L.S., M.E.S.L., The Avenue, Surbiton Hill, Surrey.
- Goldthwaite, O., Church Hill, Walthamstow.
- Gill, G., *Hon. Librarian*, 143, High Street, Lewisham, S.E.
- Hickling, G. H., London Cottage, Elm Road, Sidcup.
- Hodgson, A. E., Coleford, Gloucestershire.
- Jackson, H. J., 312, Mare Street, Hackney, E.
- Lockyer, B., 27, King Street, Covent Garden, W.C.
- Lavers, C. G., 33, Lyndhurst Road, Peckham.
- Loy, W. T., 11, Garrick Chambers, Garrick Street, W.
- Lowry, J., 61, Hackford Road, Stockwell.
- Marsh, J. G., M.E.S.L., 16, Hanover Street, Rye Lane, Peckham.
- Moncreiffe, H. 41, Shakspeare Road, Dulwich.
- Miller, H., jun., Ipswich.
- Montiero, Senor, A. de C., 72, Rua de Alamissi, Lisbon.
- Oldham, C., 2, Warwick Villas, Chelmsford Road, Woodford.
- Mugford, W. E., 3, Sisters Avenue, Lavender Hill.
- Peters, J., 79, Albany Road, Camberwell.
- Perkins, V. R., M.E.S.L., *President*, 54, Gloucester Street, Pimlico.
- Ponsford, J. T., 73, Loughborough Park, Brixton, S.E.
- Reeves, G. M., 172, High Street, Deptford.
- Ryder, E. H., 33, Guildford Road, Greenwich.
- Reston, A., Park Lane, Stratford.
- Rose, A. J., Mullah Lodge, College Avenue, Hackney.
- Rippon, R.F.H., M.E.S.L., Linden House, Rokeby Road, Brockley.
- Reed, H. A., The Ferns, Laurie Park, Sydenham.
- Spiers, E. G., 31, Bernard Street, Russell Square, W.
- Sabel, E. E., 30, Clarendon Gardens, Maida Hill, W.
- Standen, R., M.E.S.L., The White House, Alby, Norfolk.
- Step, E., *Hon. Treasurer*, 7, Fairford Grove, Lower Kennington Lane, S.E.
- Stevens, S., F.L.S., M.E.S.L., Loanda, Beulah Hill, Upper Norwood.
- Stewart, F., 516, Kingsland Road, N.
- Shearwood, G. P., 99, Belvedere Road, Upper Norwood.
- Snell, J., 56, Jeffreys Road, Clapham.
- Tugwell, W. H., 3, Lewisham Road, Greenwich, S.E.
- Urwack, W. F., Clapham Common.
- Vaughan, H., M.E.S.L., Ospringe Road, Brecknock Road, N.W.
- Watson, Rev. J., Vicarage, Upper Norwood.
- Weir, J. J., F.L.S., M.E.S.L., 6, Haddow Villas, Blackheath.

- Weston, W., M.E.S.L., Antrim Villa, Disraeli Road, Putney.
Wellman, J. R., 219, Elm Park, Brixton Rise.
Walker, J., Alma Street, Marine Town, Sheerness.
West, W., *Hon. Curator*, 6, Green Lane, Greenwich.
Williams, J., 23, Old Kent Road, S.E.
Wood, T. W., 4, Kempsford Gardens, Brompton.
West, W. A., Cyprus Villa, Lewin Road, Streatham Common.
York, W. B., 75, Cook's Road, Kennington Park, S..E.

LIBRARY CATALOGUE.

Name of Work.	—	Author.
Anatomy of Blowfly		—
British Hemiptera		DOUGLAS AND SCOTT.
British Larvæ		WILSON.
British Lepidoptera, Accentuated List of		—
British Tortrices... ..		WILKINSON.
British Hymenoptera (2 vols.)		F. SMITH.
British Butterflies		NEWMAN.
British Butterflies		HUMPHREYS.
British Moths		NEWMAN.
British Moths (4 vols.)		MORRIS.
British Beetles, Manual of		STEPHENS.
British Beetles		RYE.
Botany, Elementary Lessons in... ..		OLIVER.
British Wild Flowers in Relation to Insects		SIR JOHN LUBBOCK, BART.
British Hemiptera, Synopsis of... ..		SAUNDERS.
Coleoptera, Handbook of		COX.
Coleoptères, Species General de		DEJEANS.
Coleoptères, Genera des		LACORDAIRE.
Coleopterists' Manual (part 2)		HOPE.
Coleoptères, Catalogue des		DEJEANS.
Catalogue of E. India Co. Lepidoptera (vol. I.)		HORSFIELD,

Name of Work.	Author.
Catalogue of European Lepidoptera ...	STAUDINGER.
Entomologists' Annual (1855 to 1867)...	—
Entomology	KIRBY AND SPENCE.
Entomology, Burmeister's	SHUCKARD.
Entomologists' Monthly Magazine (1865, 1866, and 1872 to 1879)	—
Entomologist (from vol. 2 to present date)	—
Flora of Surrey	BREWER.
Fossorial Hymenoptera	SHUCKARD.
Flowering Plants of Great Britain (6 vols.)	ANNE PRATT.
Geodephaga of Great Britain	DAWSON.
Histoire Naturelle (2 vols.)	CHENU.
Insecta Britannica (Tineina)	STAINTON.
Insecta Britannica (Diptera, 3 vols.) ...	WALKER.
Insect Fauna of the Palæozoic Period ...	GOSSE.
Intelligencer (1856 to 1861)	
Insects, Guide to the Study of	PACKARD.
Insects, History of	NEWMAN.
Lepidopterists' Calendar (2 copies) ...	MERRIN.
Lepidopterists' Guide (2 copies)	KNAGGS.
Letters of Rusticus	—
Malay Archipelago	WALLACE.
Monograph of Thysanura	SIR JOHN LUBBOCK, BT.
Notes on Collecting and Preserving Natu- ral History Objects	J. E. TAYLOR.
New London Flora	DE CRESPIGNY.
Naturalist on the Amazons	BATES.
Natural History of Wasps	ORMEROD.
Our Woodlands, Heaths, and Hedges ...	COLEMAN.
Origin and Metamorphoses of Insects ...	SIR JOHN LUBBOCK, BT.
Ordnance Maps (Surrey and Kent)	
Pinacographia	VOLLENHOVEN.
Science Gossip (1865 to 1870, also 1872 and 1873)	—

Name of Work.	Author.
Scientific Lectures	LUBBOCK.
Scottish Naturalist (1871, 1872, and 1874 to 1878)	—
Stainton's Manual	—
Synopsis of the Tricoptera of the Euro- pean Fauna... ..	MCLACHLAN.
The Insect Hunters	NEWMAN.
The Insect Hunters' Companion ...	REV. JOS. GREENE.
The Universe (2 vols.)	POUCHET.
The World of Insects	DOUGLAS.
Variation of Species	WOLLASTON.
Zoologist (1872 to 1880)	—

In addition to the above books, there are numerous pamphlets containing interesting information on scientific subjects; papers read before Natural History Societies, &c., &c., which are too numerous to mention.

PRESIDENT'S ADDRESS.

GENTLEMEN,

On resigning the Presidency of this Society, it is necessary that I should say a few words on its present state and its progress during my term of office. It is customary also on this evening to call over our muster-roll, so to speak, and to note the gaps which have been made by death or by other causes. This is always a melancholy business, and the more so if we should find that the enemy has made but little havoc amongst us, and that our losses have been caused chiefly by desertion from our ranks. Happily, the only member, so far as I am aware, who has been taken from us by death, is Dr. Francis Owen, of Leatherhead. Mr. Owen unfortunately lost his life by drowning on the night of the 21st October. Outside our own Society, the only name of note in the obituary is that of the last of a family of Entomologists; I allude to Francis Oram Standish, who has passed away in the prime of life. On the continent, many Entomologists, well known to fame, have died during the year. Dr. Snellen Van Vollenhoven, the great Dutch Entomologist, the author of many works on Hymenoptera, &c., including the "Pinacographia," with the first parts of which we have lately enriched our library (it is to be hoped that this splendid work will be completed); the eminent and veteran Frenchman, Dr. Boisduval, who was known as the author of many valuable works and memoirs; Leopold Kirchner; Theodor Hartig; and Van Kiesenwetter, all men of note in Germany, and many others of lesser fame. Most of these died at a ripe age, and their works remain to us.

Turning again to the affairs of our Society, I am sorry to say that eleven members have brought their connection with us to a close during the past twelve months. That these resignations have been for the most part unavoidable, I have no doubt; in one instance, that of our late President, Mr. Standen, we know that this is the case. If you will allow me to digress so far, I will here take the opportunity of expressing my deep regret, which I am quite sure will be shared by all here, that he should have been obliged to leave us; his term of office was marked by a forward stride in the affairs of this Society, and I trust that you will not think it out of place to record our appreciation of his endeavours to improve its position; for the rest, his manly and earnest character and kindly disposition endeared him to everyone with whom he came in contact. The Secretary has already intimated to you that we are not gaining ground; I hope that this falling off is not permanent, and that, as the excellent opportunities which are offered by the Society for the study of Entomology become known, we shall more than recruit our losses in the coming year.

We have been very fortunate in our Honorary Curator and Librarian; the former, Mr. W. West, has spared no pains in preparing the Cabinet for the reception of insects, and, thanks to those members who have so kindly come forward with contributions, he has been able to make a very fair show in a short space of time. We are much indebted to him, for he is arranging a collection which will be of great value to us for purposes of comparison; his work requires to be seen to be fully appreciated. As to the Library, great credit is due to Mr. Rose for the way in which he has arranged and kept the books.

Although no papers have been read at our meetings, Mr. Billups has fulfilled his promise of last year and has given to us and to the world some more valuable information respecting the granary weevils, in the September number of this year's "Entomologist." He has also, I am told, discovered several species of Coleoptera and Hymenoptera which have not been hitherto captured in these islands. A large number of rare insects have been exhibited from time to time by other members, an account of which has been given to you in detail by the Secretary.

There still appears to be an unaccountable disinclination on the part

of many of our members to attend the meetings ; and the Society cannot fail to suffer if this state of things continue. It has consequently been a source of some anxiety to myself and colleagues to devise some means of making the meetings more attractive. My candid opinion is that, if the more learned of our members attended oftener, and gave the younger and more inexperienced amongst us the benefit of their superior knowledge, we should soon see a change for the better. The President, in his address of last year, spoke of a hope that the example of a few gentlemen who work in a larger field than most of us, might be followed, and that Entomology might be looked upon more as a whole, and not confined to one or two groups ; I think it would undoubtedly add to the attractiveness of our meetings, if this were so, and that our exhibits were not so exclusively confined to the macro-lep.doptera. The same gentleman, in alluding to the Fauna list, which it is our ambition to compile, hinted that the subject would be shortly revived. I confess that since that time I have not heard so much as a whisper of this all-absorbing topic ; but, in order that it may not be lost sight of, let me suggest to you to-night that each of us keep a diary or register in the coming year, and bring the result of our captures and observations together at the end of the season ; we shall thus be storing up reliable data for the desired end. I have been shown such a diary to-night, used by one of our members, which appears to me to be perfect. It used to be the custom, a few years ago, to hold special meetings now and then, when every member who attended was expected to make an exhibit, and was allowed to introduce a friend ; these meetings might be revived with advantage, as well as the annual excursion, which was certainly the means of bringing many of us together, and which seems to have been abandoned this year. It has also been suggested that we do not confine our attention to Entomology, but that we enlarge the scope, and change the character, and, if necessary, even the name of our Society, by including other branches of Natural History in our studies.

In conclusion, I have to thank you for the courtesy I have received in the performance of my duties, and especially for the consideration you have shown in respect of my somewhat irregular attendance at the

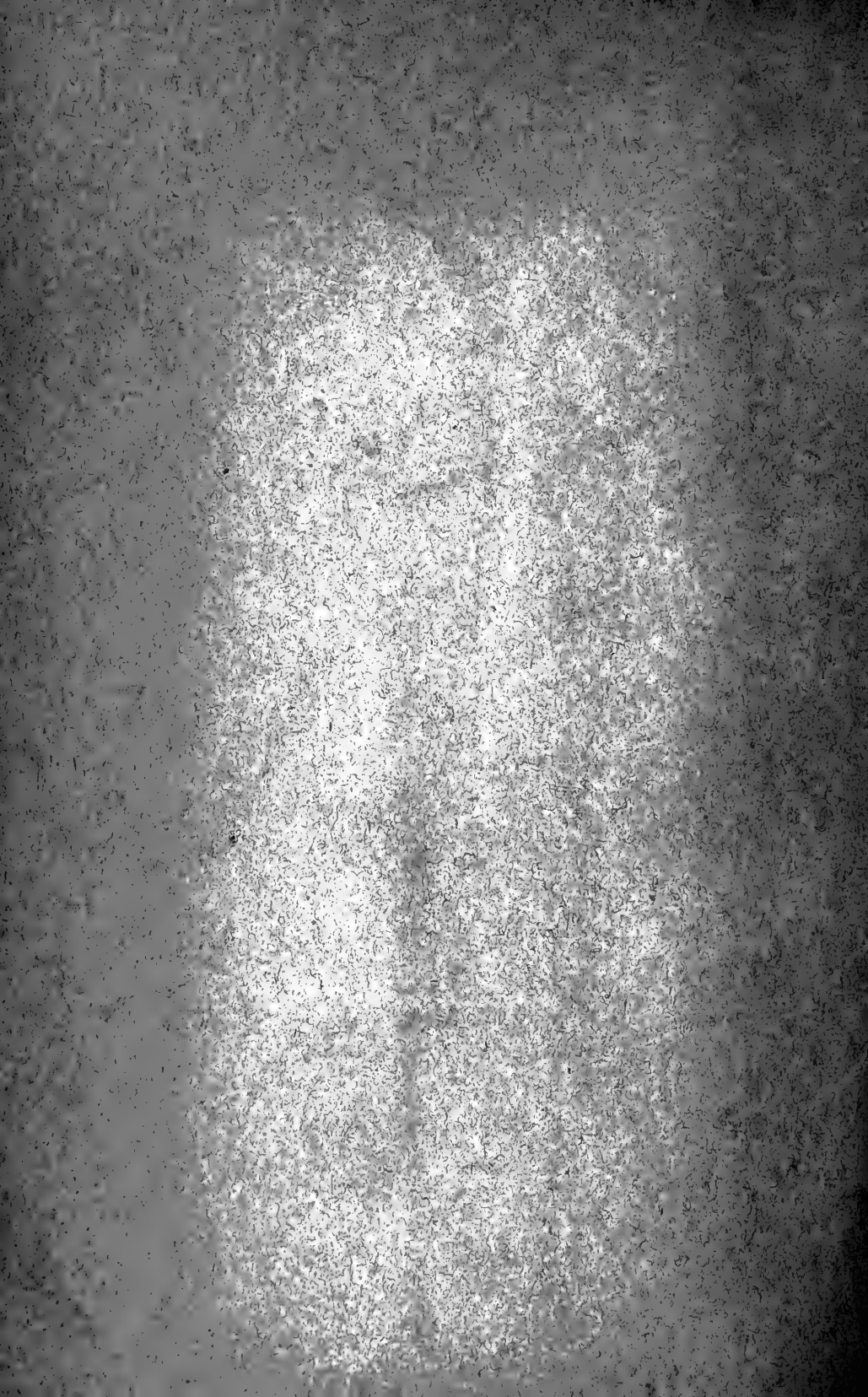
meetings of the Society ; other, I will not say more important duties, have been the cause of this remissness on my part, and I thank the Vice-President and others who have kindly taken the Chair on the occasions of my absence. In your President and Vice-President elect you have gentlemen of varied and extensive knowledge and of great experience in all matters relating to a Society such as this. I congratulate you on your choice, and wish you every success in the future.

A. FICKLIN.

Presented
13 NOV 1888







73 NOV 1888

REPORT

OF THE

SOUTH LONDON

Entomological Society,

FOR THE YEAR, 1882,

TOGETHER WITH

THE PRESIDENT'S ADDRESS,

LIST OF MEMBERS

AND

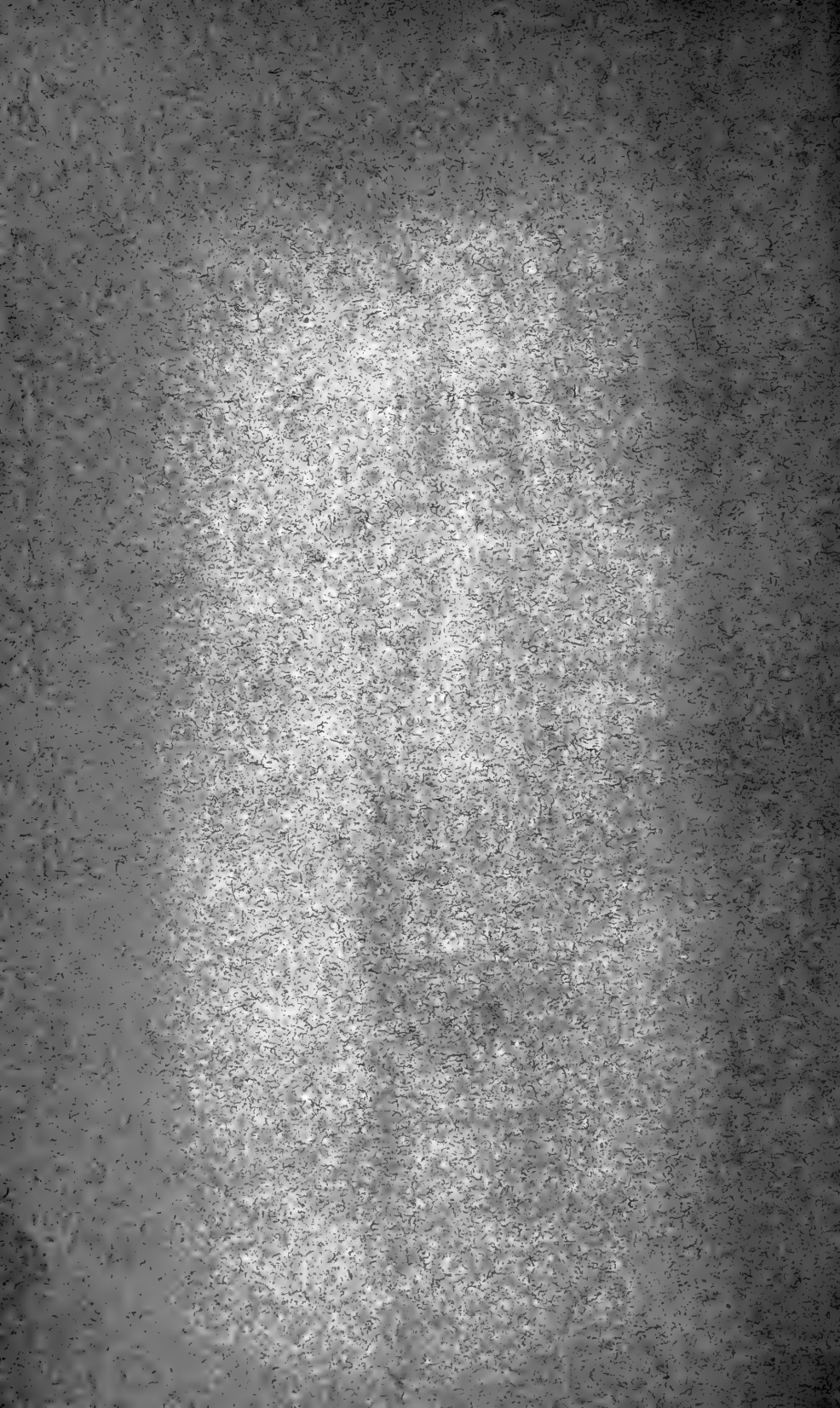
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1883,



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1883.



THE SOUTH LONDON Entomological Society,

(Established 1872)

94, NEW KENT ROAD.

(Near Elephant and Castle.)

Patrons.

Sir JOHN LUBBOCK, Bart., M.P.,
F.R.S., &c.
R. McLACHLAN, Esq., F.L.S., &c.

E. C. RYE, Esq., F.L.S.
HENRY T. STANTON, Esq.
F.R.S., &c.

Officers and Council,

Elected December 21st, 1882.

President.

J. R. WELLMAN.

Vice-President.

W. WEST (Streatham).

Council.

R. ADKIN.
T. R. BILLUPS.
A. BLISS.

R. SOUTH.

H. CUBISON.
G. ELISHA.
P. J. LOWRY.

Hon. Surator.

W. WEST (Greenwich).

Hon. Librarian.

W. C. CHANEY.

Hon Treasurer.

E. STEP, 130, Disraeli Road, Putney, S.W.

Hon. Secretary.

W. H. MILES, 33, Paris Street, Palace Road, S.E.

The Society has for its objects the diffusion of Entomological Science, by means of papers and discussions, and the formation of a typical collection of insects. There is a Library for the use of the Members. Meetings of the Members are held every alternate Thursday evening, from Eight to Ten p.m., at the above address. The Society's room is easy of access from all parts of London, and the Committee cordially invite the co-operation of all Entomologists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their captures.

SUBSCRIPTION.

Six Shillings per Annum, with an Entrance Fee of One Shilling.

All communications to be addressed to the Hon. Sec.,

W. H. MILES,¹

33, Paris Street, Palace Road, S.E.

Past Presidents.

1872	...	...	...	...	...	J. R. WELLMAN.
1873	...	...	...	...	...	"
1874	...	...	...	...	...	"
1875	...	...	...	...	...	A. B. FARN.
1876	...	...	..	...	...	"
1877	...	...	...	...	...	J. P. BARRETT.
1878	...	...	...	...	...	J. T. WILLIAMS..
1879	...	...	...	...	...	R. STANDEN.
1880	...	...	...	...	...	A. FICKLIN.
1881	...	...	...	...	...	V. R. PERKINS.
1882	...	...	...	...	...	T. R. BILLUPS.

REPORT, 1882.

IN issuing the 11th Annual Report of the Society's work, the Council are pleased at being able to state that, though its progress has not been so marked as in former years, yet, considering the remarkable scarcity of Insects during the past season, the results have been very satisfactory.

The suggestion of our late President that papers should be read at some of the meetings, was carried into effect by a very interesting lecture on "Stylops, the Bee Parasite," of which he was the author; this was followed by one on "Pond Snails," from Mr. Step; and later in the season Mr. Miles read a paper on "The Fertilisation of Plants by Insects," illustrated by numerous coloured diagrams.

The appointment of the latter gentleman to the post of Assistant Curator, with the especial charge of the botanical collection, the nucleus of which were the valuable Scottish specimens presented by Mr. Carrington, has resulted in the gathering together of 383 species, the majority of which have been obtained by Mr. Miles. The Council would suggest that if the members, when on an Entomological Expedition, were to collect specimens of any plant that was not familiar to them, many of a useful and rare character might be obtained.

Following up similar work in the previous year, your Council took part in the Memorial to the Conservators for the retention of the Natural features of Epping Forest.

The following donations have been made to the Library, which, under the careful attention of the Hon. Librarian, has attained a high state of efficiency :—

By Mr. WEST (Streatham), " Lectures on Botany."
 „ The *Hon. Treasurer*, " Freshwater Aquarium" (*Weston*).
 „ Mr. MILES, " Floral Dissections" (*Henslow*).
 „ Mr. BILLUPS, " 50 Years of Science" (*Lubbock*).
 " Fourth Annual Report of the Dulwich College Natural History Society."

" Report of the Hackney Microscopical Society."

" List of British Neuroptera."

By Mr. NEWMAN ... " Entomologist" for 1882.

" " ... " Zoologist " "

By purchase :—

The Entomologists' Monthly Magazine, 1882.

Scottish Naturalist, 1882.

Science Gossip, 1882.

The Cabinet has now been arranged for all orders of insects, and its present condition reflects great credit on the Hon. Curator, Mr. West, while the following donations have considerably added to its value :—

Mr. SOUTH, 2 *Toxocampa cracœ*.

Mr. WELLMAN, Several species of Lepidoptera.

Mr. BILLUPS, 155 species of Coleoptera.

Mr. KING (*Glasgow*), 54 species of Neuroptera.

Considering how very unproductive the past season has been, the exhibits show but little falling off, and as usual the President, Mr. Billups, heads the list in Coleoptera with *Ocyusa picina*, Aub. *Callistus lunatus*, F., *Microglossa gentilis*, Mack., *Philonthus fucicola*, Curt., *P-agilis*, Gr., *Lathrobium rufipene*,

Gyll., *Scydmaenus præteritus*, Rye., *Cryptophagus setulosus*, Sturm, *C. badius*, Sturm, *Licinus depressus*, Pk., *Ceuthorrhynchidens hepaticus*, Gyll., *Barypeithes pelucidus*, Boh., *Magdalinus barbicornis*, Lat., *Thyamis suturalis*, Marsh, and many others. Of other orders, Hemiptera, Diptera, Tenthredinidæ, Ichneumonidæ (including *Hemiteles fasciatus* and *Phæogenes hemochlorus*, new to Britain), etc., Mr. Billups has shown a large number, whilst his early capture of a number of the queens of *Vespa germanica*, Fab., on the 20th January last is probably unprecedented in this country.

Mr. WELLMAN, among many others, exhibited *Cidaria suffumata*, *Coremia quadrifasciata*, *Acronycta Alni*, *Acidalia degeneraria*, *Platypteryx sicula*, *Gnophos obscurata*.

Mr. MUGFORD, *Fidonia Piniaria*.

Mr. URWICK, *Aporia Cratægi*.

Mr. SHEARWOOD, *Noctua ditrapezian*, *Hepialus velleda* from Shetland, *Petasia nebeculosa*, *Anarta cordigera*, *Fidonia carbonaria*, and others.

Mr. WILLIAMS, *Phigalia pilosaria*, *Trachea piniperda*, *Nola confusalis*, *Cymatophora ridens*, *Platypteryx unguicula*, and *Ephyra orbicularia*.

Mr. PERKINS, variety of *Colias Edusa*, *Andrena atriceps*, *Nigrocœnia Trimmeraria*, &c.

Mr. WEST, *Harpalus melancholicus*, Dj., *H. ignavus*, Duft. fine var., *Licinus silphoides*, F., *Quedius truncicola*, Fair., *Q. cruentus*, Cæ., *Mycetoporus lucidus*, Er., *Stenus proditor*, Er., *Agabus paludosus*, F., *Drilus flavescens*, Cæ., *Rhynchites pubesceus* Hbst., *Hylotrupes bagulus*, L., *Anoplodera sexguttata* F., *Cryptocephalus punctiger*, Pk., *C. fulcratus*, Ger., and *Endomychus coccineus*, L.

Mr. SOUTH, *Oxyptilus Lætus*, *O. distans*, *Platyptilia trigonodactylus*, *P. Zetterstedtii*, and *Amblyptilia ternodactylus*.

Mr. LOWRY, *Clostera reclusa*, *Amphydasis prodromaria* and *Heliothis marginata*.

Mr. STEP, *Corimelana scarabæoides*, *Scaphidium quadrimaculatum*, *Chrysomela Banksii*.

Mr. OAKSHOTT, *Deiopeia pulchella*.

Mr. WEST (*Streatham*), Preserved larvæ of *Machaon*, *Pilosaria*, *Aurantiaria*, *Betularia*, &c

From the above it will be seen that, in spite of the dulness of the past season, our members have contrived to obtain many good species. In conclusion, the Council can only wish that their labours may be still better rewarded next year.

H. CUBISON, *Hon. Sec.*

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

BALANCE SHEET, DECEMBER 21st, 1882.

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
To Balance from last Audit	7 17 10	By Rent (Michaelmas, 1881, to Michaelmas, 1882) ...	8 0 0
„ Subscriptions and Arrears received during year 1881	13 4 6	„ Purchase and Binding of Books	1 4 8½
„ Book-fines, 1881	0 5 2	„ Printing	3 18 0
	<u>£21 7 6</u>	„ Stationery and Postage	0 15 3½
		„ Insurance of Library and Collection	0 7 0
		„ Sundries	0 8 6
			<u>£14 13 6</u>
		„ Cash Balance in hand	6 14 0
			<u>£21 7 6</u>
ASSETS.		LIABILITIES.	
To Balance in Hand	6 14 0	„ Rent 3 months to December, 1882	2 0 0
„ Proportion of Arrears of Subscriptions	4 9 6	„ Balance	9 3 6
	<u>£11 3 6</u>		<u>£11 3 6</u>
To Balance	9 3 6		

Audited and found correct, December 21st, 1882. { J. R. WELLMAN,
W. H. MILES.

PRESIDENTIAL ADDRESS.

GENTLEMEN,

The Annual Meeting has again rolled round, and the time arrived for your President to vacate the chair in favour of his successor. I feel it my especial duty before doing so, to tender you the expression of my warmest gratitude, for your kindness and forbearance during the past twelvemonths, it having been impossible for me to attend your meetings as regularly as I could have wished, on account of ill health. The Annual Report of the Council you have just heard read is, perhaps, not so glowing as many would have liked, but I trust it is fairly satisfactory. Now is the time for discussing the policy of the Council, or, if you please, criticising its acts, or asking for explanations of its conduct. For my own part I should think it a very healthy sign if those members who doubtless feel some interest in the management of the Society, but, who rarely or never attend during the whole of the season, would put in a large appearance at our Annual Meeting, and give us the benefit of their friendly criticisms and counsel. They would by this means greatly help and strengthen the hands of the executive ; for if year after year the Report is accepted, without a word of comment or inquiry, a suspicion is likely to arise that the Society is too acquiescent and, perhaps, would not be roused to activity if a Report were altogether wanting.

During the year 1882 our numbers have somewhat decreased by resignations, and I regret that others have not been forth-

coming to fill up the gaps. It is with pain I have to announce the loss of one of our members by death, in the person of Mr. C. Channon, a young man ardently devoted to the study of Lepidoptera. Outside our own circle, if I may so term it, death has been very busy amongst men of note in the entomological world, and, more particularly amongst Englishmen. Of these, I note John Gray, a lover of natural history generally, whose services to entomology will not soon be forgotten, although he published little; Dr. G. H. K. Thwaites, a noted Cryptogamic Botanist, but who was not too much absorbed by this beautiful study to entirely forget entomology, for many curious insects were sent by him while in charge of the Botanic Gardens, Peradeniya, Ceylon, to Professor Westwood, by whom they were described; George Norman, for many years a correspondent of the Zoologist, on most branches of Natural History, but in late years devoting most of his time to the Hemiptera of Perthshire and Morayshire, making many rare captures, and among them some new species; Beebee, Bowman, Labrey, noted for his beautiful drawings and Microscopical mountings of the plumules on some of the families of butterflies; Sir Charles Wyville Thompson, LL.D. F.R.S., in early life a collector of Lepidoptera, but he will most probably be better remembered as the head of the Scientific Staff of the Challenger Expedition; William Hay, the Venerable Archdeacon, well known amongst Entomologists as a Coleopterist of no mean order. The Water Beetles, or Hydrodephaga, received his most careful attention, they being his especial favourites, the neighbourhood of Askham and its bogs having to yield up many of its rarities, and from this locality alone more than one species has been added to the British Fauna at the hands of this indefatigable worker; Chas. Robert Darwin, F.R.S., etc., at the age of 74. In the death of this distinguished scientist, I think (however we may differ with regard to his teachings and theories),

we must all admit that we have lost the greatest Naturalist and most careful observer of modern times ; his works are numerous and mostly known to our members. On the Continent, we have to record the death of Jules Putzeys, at the age of 73 ; a most prominent Coleopterist and voluminous writer almost to the date of his death, and Professor C. G. A. Giebel, the successor to Burmeister in the direction of the Museum at Halle ; he was a noted Palæontologist, and in 1874 he produced an enormous folio work with 20 coloured plates on the *Mallophaga*, or Bird Lice, under the title of *Insecta Epizôa*.

But let us turn for a while from these melancholy records. We may, I think, fairly congratulate ourselves that the study of Entomology is progressing generally. By this, I do not mean Lepidoptera exclusively. That it is a large and most beautiful order I freely admit, but why so large a proportion of Entomologists should collect and study this group *alone* is to me a mystery. Are there not other orders equally as beautiful ? I cannot help thinking so, unless indeed beauty consists in gaudy colours. It must not be thought from this that I despise this particular order in which so many of our great Entomologists have risen to fame, but I am anxious that some of our own members should take up some of the other almost despised orders, and help to bring them more prominently before our own Society ; there are plenty of other fields in which the energies of Entomologists might find useful employment, and where, at the present time, workers are sadly wanted. Take, for instance, the Hemiptera or Homoptera, groups which are now receiving more attention, but not what they deserve. There is amongst them variety of formation as well as of colour, enough to please the most fastidious. That there are among them small insects I admit, but scientists are not concerned with size. Or take the sadly neglected order of Diptera. Here is a large field with, unfortunately, but few

workers to molest. How little is known of dipterous insects? Perhaps their unattractive appearance at first sight causes them to be neglected, but there are among them species which are extremely beautiful and, if colours are wanted, where can you excel the metallic lustre of the genius *Chrysonia*, or *Sargus*, or even that fly of ill repute, *Musca cæsar*, L; if more delicate markings are required, what can compete with the black and yellow of *Oxycera*, and most of the family of Syrphidæ? How rarely do we see a specimen of that lovely and delicate order, Neuroptera! Mr. King, of Glasgow, some time since presented our Hon. Curator with some 50 species from Scotland, and I had hoped their presence in our Cabinet would be an inducement to some of us to add from time to time to that collection, but I regret to say that they remain without any addition yet. Then I might refer to the order Orthoptera. Out of a large circle of Entomological friends, I only know one who makes any pretence to study this interesting family. I must not forget that large order, Hymenoptera, with its numerous sub-families. Here is a very wide field of work open, particularly amongst the *Ichneumonidæ*, *Chalcidæ*, and *Braconidæ*, and to our young aspirants after scientific honours, I may say there are many chances of meeting with new species in these groups. To show the still almost inexhaustible store in the insect world, I cannot do better than quote a sentence from Sir John Lubbock's address to the British Association at York, 1881, in which he says, "Lastly, to show how large a field still remains for exploration, I may add that Mr. Waterhouse estimates that our Museums contain not fewer than 12,000 species of insects which have not yet been described, while our collections do not probably contain anything like one half of those actually in existence." Then again, I would encourage a little more mutual help among us; this seems to me a great desideratum. Thus, when a Lepidopterist or

Coleopterist is out collecting, how frequently he meets with insects, other than those he is especially interested in, and which might be highly valued by some friend or fellow worker, if he would only devote a little trouble for their sake and pick up "bugs," bees, or other insects which he knows them to care for. In return, he would be almost sure to be helped in *his* pursuit; we all know "Fellow feeling makes us wondrous kind." Then again, I should like to see revived those occasional afternoon outings in which one could learn from each other, whilst rambling amongst nature's beauties in search of our particular favourites, more than whole volumes of musty book-lore can teach us, to say nothing of the reminiscences of bygone days, and the probability of making new acquaintances and forming friendships which may last during life. The exhibition, which was suggested by our late President, seems to have been entirely ignored, for what reason I am at a loss to understand. It cannot be for the want of material, for your Report shows how creditable and varied have been the exhibits at our ordinary meetings. I should have been glad to have seen Mr. Perkins' suggestion acted up to. I think it would have given great encouragement to our members, and proved not unlikely to have drawn in new ones. I must not omit to mention the presentation to the Society of a valuable collection of botanical specimens, I believe mostly Scotch, by Mr. Carrington, and the very large addition made to them by your sub-curator, Mr. Miles.

It is now time that I brought these remarks to a close, or I fear I may become wearisome. In conclusion, gentlemen, I will end as I began, by offering you my thanks for your courtesy and support during my term of office. I have much pleasure in congratulating you on your choice of a President for the coming year. He is a gentleman of extensive knowledge, particularly of the Macro-Lepidoptera, in which few can excel him; with his

wide experience, gained in the early history of the Society, when he was elected to the Presidency three times in succession, and carrying with him, as he undoubtedly will, the confidence of the Society, you may expect a year of great prosperity. In your Vice-President, you have a gentleman well known as a specialist in Microscopy, and thoroughly well acquainted with the minute forms of animal life, in addition to being an enthusiastic Lepidopterist. Under the able guidance of these gentlemen, I cannot doubt that our Society is on the high road to prosperity.

T. R. BILLUPS.

LIST OF MEMBERS.

-
- Adkin, R., Wellfield, Lingard Road, Lewisham, S.E.
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 West, W., *Hon. Curator*, 108, Royal Hill, Greenwich.
 West, W., *Vice-President*, Cyprus Villa, Lewin Road, Streatham Common.
 Williams, J. T., Sidcup, Kent:
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LIBRARY CATALOGUE.

Name of Work.	Author.
Anatomy of Blowfly... ..	J. WESTON
Aquarium, Freshwater	DOUGLAS AND SCOTT.
British Hemiptera	WILSON.
British Larvæ (Lepidoptera) ...	
British Lepidoptera, Accentuated List of	WILKINSON.
British Tortrices	F. SMITH.
British Hymenoptera (2 copies) ...	NEWMAN.
British Butterflies	HUMPHREYS.
British Butterflies	STARK.
British Mosses	NEWMAN.
British Moths	MORRIS.
British Moths (4 vols)	CAMERON.
British Neuroptera, List of	STEPHENS.
British Beetles, Manual of	RYE.
British Beetles	OLIVER.
Botany, Elementary Lessons in ...	
Botany, Lectures on	
British Wild Flowers in Relation to Insects	SIR JOHN LUBBOCK, Bart.
British Hemiptera, Synopsis of ...	SAUNDERS.
Coleoptera, Handbook of	COX.
Coleoptera, Catalogue of British ...	SHARP.
Coleoptères, Species General de ...	DEJEANS.
Coleoptères, Genera des	LACORDAIRE.
Coleopterists' Manual (part 2) ...	HOPE.
Coleoptères, Catalogue des	DEJEANS,
Catalogue of E. India Co. Lepidoptera (vol I)	HORSFIELD.
Catalogue of European Lepidoptera Croydon to the North Downs, Hand- book	STAUDINGER.

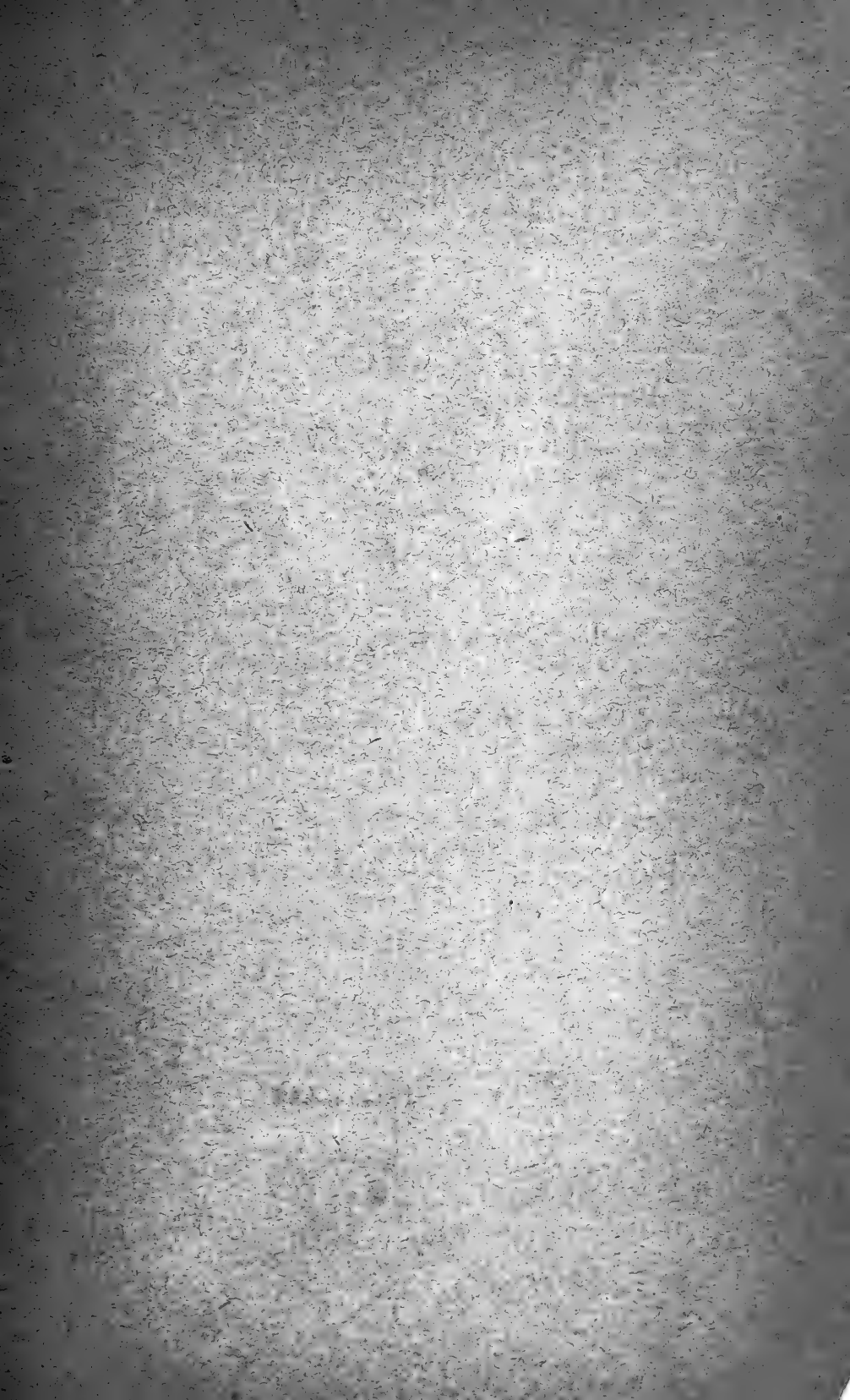
Dorking and District, Handbook ...	---
Entomologists' Annual (1855 to 1867)	---
Entomology	KIRBY AND SPENCE.
Entomology, Burmeister's	SHUCKARD.
Entomologists' Monthly Magazine (1865, 1866, and 1872 to date)	---
Entomologist (from vol. 2 to present date)	---
Field Naturalists' Handbook ...	WOOD.
Fifty Years of Science	LUBBOCK.
Flora of Surrey	BREWER.
Floral Dissections	HENSLOW.
Fossorial Hymenoptera	SHUCKARD.
Flowering Plants of Great Britain (6 vols)	ANNE PRATT.
Geodephaga of Great Britain ...	DAWSON.
Geological Rambles round London	---
Greenwich and Blackheath District, Handbook	---
Half-holiday Handbooks (8 vols) ...	---
Histoire Naturelle (2 vols.)	CHENU.
Insecta Brittanica (Tineina)	STANTON.
Insecta Brittanica (Diptera, 3 vols.)	WALKER.
Insect Fauna of the Palæozoic Period	GOSS.
Intelligencer (1856 to 1861) ...	---
Insects, Guide to the Study of ...	PACKARD.
Insects, Manual of Injurious ...	ORMEROD.
Insects, History of	NEWMAN.
Kingston-on-Thames, Handbook ...	---
Lepidopterists' Calendar (2 copies)	MERRIN.
Lepidopterists' Guide (2 copies) ...	KNAGGS.
Letters of Rusticus	---
Malay Archipelago	WALLACE
Microscopic Fungi	COOKE.
Mollusca, Manual of	WOODWARD.
Monograph of Thysanura	SIR JOHN LUBBOCK, Bart.
Notes on Collecting and Preserving Natural History Objects ...	J. E. TAYLOR.
New London Flora	DE CRESPIGNY.
Naturalist on the Amazons	BATES.
Natural History of Wasps	ORMEROD.

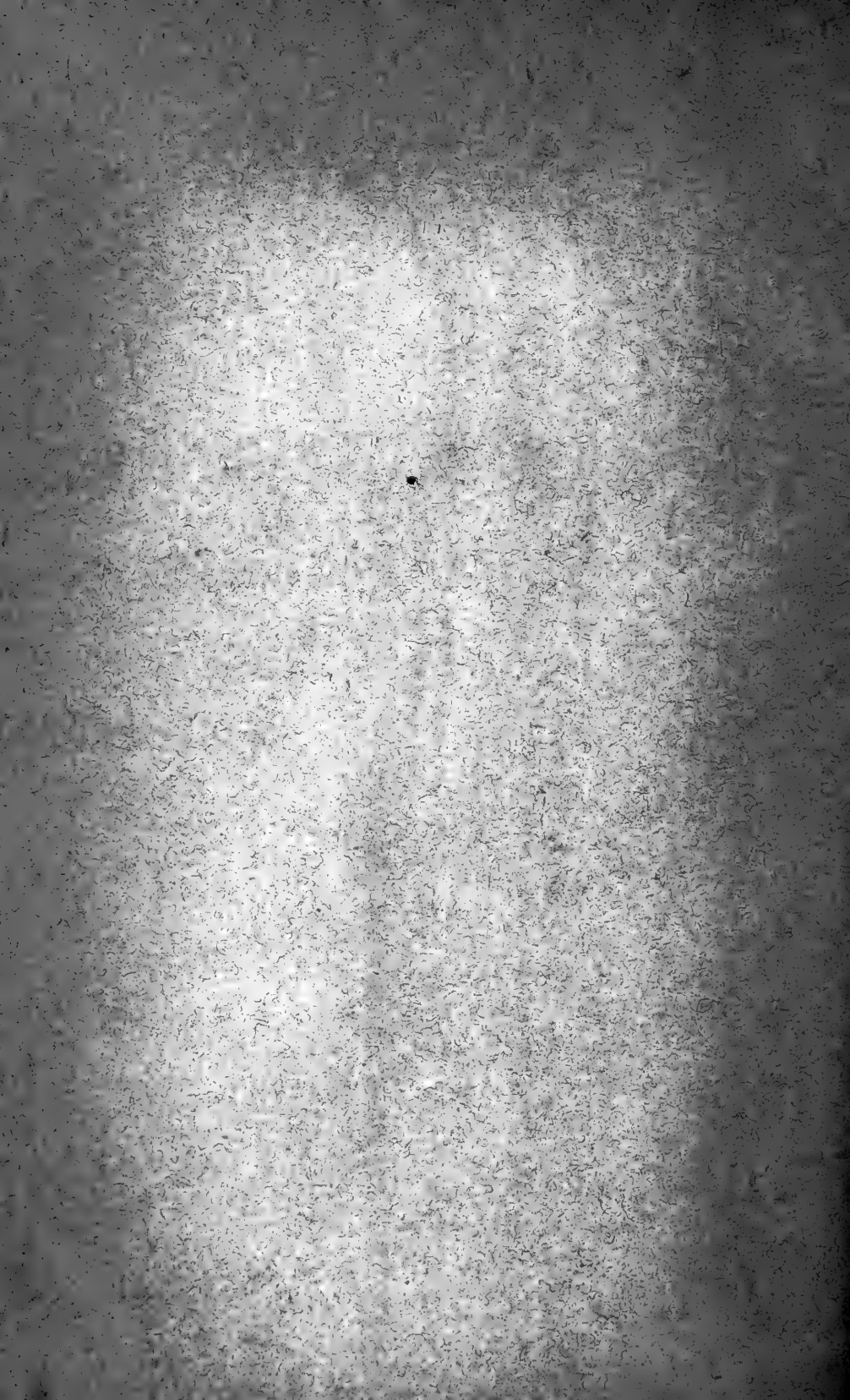
Neuroptera, List of British	CAMERON.
Our Woodlands, Heaths, and Hedges	COLEMAN.
Origin and Metamorphoses of Insects	SIR JOHN LUBBOCK, Bart
Ordnance Maps (Surrey and Kent)	—
Pinacographia	VOLLENHOVEN.
Plant Life	—
Reigate, Handbook	—
Richmond, Handbook	—
Science Gossip (1865 to 1870, 1872, 1873 and 1875 to date)... ..	—
Scientific Lectures	LUBBOCK.
Scottish Naturalist (1871, 1872, and 1874 to date)	—
Stainton's Manual	—
Stainton's Tineina (vol 2)	—
Synopsis of the Trichoptera of the European Fauna	McLACHLAN.
The Insect Hunters	NEWMAN.
The Insect Hunters' Companion	Rev. JOS. GREENE.
The Universe (2 vols.)	POUCHET.
The World of Insects	DOUGLAS.
Tunbridge Wells, Handbook	—
Variation of Species... ..	WOLLASTON.
Zoologist (1872 to date)	—

In addition to the above books, there are numerous pamphlets containing interesting information on scientific subjects, transactions, papers read before Natural History Societies, &c., &c.

Presented
13 NOV 1888









REPORT

OF THE

SOUTH LONDON

Entomological Society,

FOR THE YEAR, 1883,

TOGETHER WITH

THE PRESIDENT'S ADDRESS,

LIST OF MEMBERS,

AND

LIBRARY CATALOGUE.



LONDON:

PRINTED BY BOWERS BROTHERS,
89, BLACKFRIARS ROAD.

1884.



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1884.



THE SOUTH LONDON Entomological Society,

(Established 1872)

94, NEW KENT ROAD.

(Near the Elephant and Castle)

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Sir JOHN LUBBOCK, Bart., M.P.

F.R.S. &c.

R. MCLACHLAN, Esq., F.L.S. &c.

E. C. RYE, Esq. F.L.S.

HENRY T. STANTON, Esq.

F.R.S. &c.

Officers and Council,

Elected December 20th, 1883.

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Vice-President.

R. SOUTH.

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T. R. BILLUPS,
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G. ELISHA,
W. A. PEARCE,

J. R. WELLMAN.

Hon. Treasurer.

E. STEP, 130, Disraeli Road, Putney, S.W.

Hon. Secretary.

W. H. MILES, 33, Paris Street, Palace Road, S.E.

The Society has for its object the diffusion of Entomological Science, by means of papers and discussions, and the formation of a typical collection of insects. There is a Library for the use of the Members. Meetings of the Members are held every alternate Thursday evening, from Eight to Ten p.m., at the above address. The Society's room is easy of access from all parts of London, and the Committee cordially invite the co-operation of all entomologists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their captures.

SUBSCRIPTION.

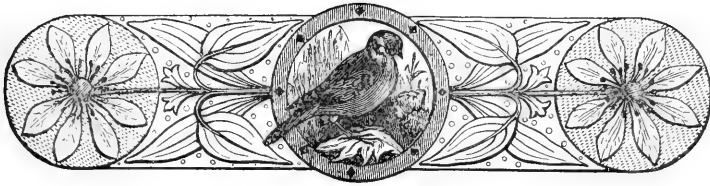
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All communications to be addressed to the Hon. Sec.,

W. H. MILES,

33, Paris Street, Palace Road, S.E.





➤: REPORT, † 1883. †:◀

IN presenting the 12th Annual Report, the Council feel a certain amount of diffidence in coming before you. Gradual secessions from us have considerably weakened our Society. We regret this very much, and though we are not Pessimists, still it will require very great tact and energy to carry us on in the future. The work of the past year, taken altogether, may be considered fairly satisfactory. Judging from the complaints that have reached us from all quarters as to the scarcity of insects, our exhibitions have been very good.

Your Council have always taken an active interest in the preservation of Epping Forest. Early in the year we were speedily on the alert, in conjunction with various other London Societies, to prevent the passing of the High Beech Extension Bill, promoted by the Great Eastern Railway. A resolution condemning the projected railway was passed, and letters were sent to the Members for Lambeth, Southwark, Greenwich, East Surrey and West Kent, asking their assistance against the bill. Further work in the matter was rendered unnecessary by the defeat of the bill on the 12th March.

During the summer four excursions were held, as follows :—

2nd June	...	Epping Forest.
30th June	...	Box Hill.
28th July	...	Ashtead.
25th August	...	Sevenoaks.

These were well attended, and many good and interesting captures were made.

On 25th October there was held a special pocket-box exhibition, when twenty-one boxes were shown. There was not such a large attendance as would have been desired, which may be attributed to the semi-private character of the meeting, but the exhibits were very good, and the meeting was, let us hope, the forerunner of many others of a more extensive character.

Our library continues in a very satisfactory condition, and we are all indebted to the gentleman who has so ably filled the post of hon. librarian. The following additions have been made to it during the course of the year :—

By Mr. BILLUPS, "Catalogue of British Coleoptera" (*Dr. Sharp*).
 „ „ „Life of a Scotch Naturalist."
 „ STEP „Guide to Wimbledon, Putney and Barnes."
 „ NEWMAN, "Entomologist for 1883."
 „ „ „Zoologist for 1883."

By purchase :—

"The Entomologists' Monthly Magazine," 1883.
 "Science Gossip," 1883.

We beg to acknowledge the following reports, &c., from the respective Societies, with thanks :—

Lewisham and Blackheath Scientific Society.
 Lambeth Field Club and Scientific Society.

Also three reports of the "Local Scientific Societies Committee," from the British Association.

Part 7 of the Transactions of the Essex Field Club.

The library contains 148 volumes, many being of great rarity and usefulness, and well worthy of your careful perusal.

The collection is steadily increasing, and the present condition of the cabinet reflects great credit on the hon. Curator, Mr. West, who has been unceasing in his attention to it.

The thanks of the Society are due to the following gentlemen

for their donations, which have considerably added to its value.

Mr. WEST (Streatham), 15 species of *Lepidoptera*.

Mr. BILLUPS, 29 species of *Hemiptera*.

Mr. ADKIN, 3 *Nola centonalis*, 3 *Lithosia pygmaeola*.

Mr. WEST (Greenwich), 33 species of *Lepidoptera*, also *Notiophilus*, 4-*punctatus* and *Carabus convescus*.

Mr. STEVENS, 90 species of *Coleoptera*, including *Cicindela germanica*, *Elaphirus uliginosus*, *Carabus intruatus*, *C. glabratus*, *Nebria complanata*, *Polystichus vittatus*, *Aëtrophorus imperialis*, *Dromius agilis*, *Lebia cyanocephala*.

The *Herbarium*, which at the close of last year contained 383 species, amounting to 702 specimens, has not received any support this year from the members, the only addition being about 90 specimens collected by the Curator, making a total of nearly 430 species.

Our numerical position, we regret to say, is very unsatisfactory, 3 members having resigned, and 7 had their names struck off during the course of the year, while only three have joined us. At present we have a total of only 44 members, of whom 2 are life members and 6 corresponding members.

We deeply sympathise with our President who has been laid aside through illness for the past three months, and are exceedingly sorry that he is not here with us to-night. We hope, however, that he may soon be amongst us again. In his absence, the Chairmanship has devolved on the Vice-President, Mr. W. West.

During the year we have held 24 meetings, and about 800 insects have been shown. Full reports of our most important meetings have appeared in the "Entomologist" and also in the "South London Press." Our Society has also been represented at several of the soirees given during the season

The exhibits have been exceedingly good this year considering the bad season. Amongst the more important ones may be mentioned, in *Lepidoptera* :

Mr. WELLMAN, *Cidaria silaceata*, *Callimorpha hera*, from Jersey ; *Meliana flammea*, *Bankia argentula*, *Boarmia repandata*, vars. (*bred*) *Thecla w-album*, *Nemeobius lucina*, *Acidalia ornata*, *A. rusticata*, *A. osseata*, *A. aversata*, *A. emarginata*, *Platypteryx unguicula*, *Ilithyia carnella*, *Phorodcsma bajularia*, *Corycia taminata*, *Fidonia conspicuata*, *Eubolia lineolata*, *Dianthæcia albimacula*, *Hesperia acteon*, *Miana literosa*, *Bryophila glandifera*.

Mr. WEST (Streatham), *Ephyra omicronaria* (*bred*), *E. trilinearia*, *Ligdia adustata*, *Thecla rubi*, *T. betulæ*, *Acidalia remutata*, *Cidaria corylata*. *C. testata*, *Scodiona belgiaria*, *Satyrus janira*, var. *Cerigo cytherea*, *Cleora glabaria*, *Larentia olivata*, *Melanippe rubiginata*, *Epione vespertaria*, *Himera pennaria*, *Oporabia dilutata* and larva of *Amphipyra tragopogonis*.

Mr. ADKIN, *Nola centonalis*.

Mr. ELISHA, *Cidaria suffumata*.

Mr. PEARCE, *Argynnis euphrosyne*, *Apamea oculea*, *Melanippe galiata*, *Acidalia incanaria*, *Eubolia mensuraria*, *Anaitis plagiata*, *Dipterygia pinastri*, *Setina irrorella*, *Hemithea thymiaria*.

Mr. ELEY, *Tephrosia punctulata*, *Lobophora lobulata*, *Ephyra pendularia*, *Sesia tipuliformis*, *Coremia munitata*, *C. ferrugata*, *Aspilates gilvaria*, *Sesia chrysidiformis*, *Eubolia cervinaria*.

Mr. GASKELL, *Cilix spinula*, *Lomaspilis marginata*, *Larentia pectinitaria*, *Leucania conigera*, *Bryophila perla*, *Anchocelis pistacina*.

Mr. MILES, Larva of *Cossus ligniperda*.

Mr SOUTH, *Pyralis fimbrialis*, var., *Boarmia consortaria*, *Lycæna adonis*, var., *L. corydon*, var., *L. Alexis*, three vars. *Dianthæcia carpophaga*, var., *Aspilates citraria*, var.

Mr. OLDHAM, *Argynnis paphia*, *Argè galathea*, *Miselia oxycanthæ*, var., *Apamea ophogramma*.

Mr. BOLGER, *Dicranura vinula*.

Mr. WILLIAMS, *Plusia bractea* (bred).

As usual, Mr. BILLUPS heads the list of exhibits in the following orders :—

Order *Coleoptera*.—*Monotoma brevicollis*, Aub, *Cercus rufilabris*, Latr., *Anthicus floralis*, L., and var. *quisquilaris*, Th., *Lithocharis obsoleta*, Nord, *Cilea silphoides*, L, *Silvanus unidentatus*, Fab, *Homalota cuspidata*, Er., *Scydmaenus collaris*, Mull., *Cephennium thoracicum*, Mul., *Ennearthron affine*, Gyll., *Atomaria pusilla*, Pk., *Ptinus lichenum*, Marsh, *Phospænus hemipterus*, Geof., *Athous difformis*, Lac, *Tetratoma fungorum*, F., *Coryphium angusticolle*, Steph, *Philonthus splendidulus*, Gr., *Triplax rusica*, L., *Leptura fumida*, Er., *Monohammus sutor*, L., and an abnormal var. of *Coccidula rufa*, quite black, very rare.

Order *Hemiptera*.—*Derephysia foliacea*, Falb., *Chilacis typhæa*, Perris, *Eurygaster niger*, Fab., *Sehirus morio*, L., *Sehirus biguttatus*, Lin., *Piezostethus rufipennis*, D. S., *Macrodema microptera*, Curt., *Macrocoleus Paykullii*, Fall.

Hymenoptera, *Heterogyna*.—*Formica sanguinea*, Lat., *Formica cunicularia*, Lat., *Formica niger*, Lin., *Formica alienus*, Forst, *Ponera contracta*, Latr., *Myrmica scabrinodis*, Nye, *Stenammina Westwoodii*, Westw., *Tetramorium cæspitum*, Lin., *Myrmecina, Latreillei*, Curt.

Aculeata.—*Pompilus gibbus*, Fab., *Pompilus spissus*, Schiodte, *Pompilus pectinipes*, V.d. Lind., *Tachytes pectinipes*, Lin., *Priocnemis obtusiventris*, Schiodte, *Sphecodes pilifrons*, Thom., *Sphecodes ephippium*, Lin., *Sphecodes similis*, Wesm, *Halictus zonulus*, Smith, *Halictus cylindricus*, Fab., *Halictus minutus*, Kirby, *Halictus minutissimus*, Kirby, *Halictus leucopus* Kirby, *Andrena bimaculata*,

Kirby, *Andrena lapponica*, Zett., *Andrena nigro-ænea*, Kirby, *Andrena græynana*, Kirby, *Dasygoda hirtipes*, Latr., *Nomada sesfasciata*, Panz., *Nomada jacobææ*, Panz., *Nomada Fabriciana* Lin., *Nomada flavo-guttata*, Kirby, *Melecta armata*, Kirby, *Megachile centuncularis*. Lin., *Osmia rufa*, Lin., *Anthidium manicatum*, Lin., *Stelis phæoptera*, Kirby, *Anthophora retusa*, Lin., *Heriades campanularium*, Kirby, *Bombus fragrans*, Dahlb., *Bombus subterraneus*, the var. *Harrisellus*, Westw.

Ichneumonidæ.—*Cleptes semiauratus*, Lin., *Pezomachus lugubris*, new to Britain; *Pezomachus Mulleri*, *Pezomachus agilis*, Först., *Pezomachus Neesii*, Först., *Pezomachus zonatus*, Foure, *Ichneumon sanguinator*, Rossi, *Ichneumon nigritarius*, Gr., *Ichneumon fabricator*, Fab., *Phæogenes hemochlorus*, new to Britain; *Phytodiaetus coryphæus*, Gr., *Hemeteles fasciatus*, new to Britain; *Ganychorus diversicornis*, Nees, *Diapria verticella*, new to Science; *Thaumatotypus Billupsi*, new genera and *sp.*, and upwards of 100 other species, many of great rarity.

Diptera, upwards of 80 species, amongst which we notice many very scarce species, as also some with exquisitely beautiful colouring. We must not forget to notice *Ascidia heraclii*, Lin., the celery fly, and its lovely parasite, *Phargonea smaragdula*, Curt.

Tenthredinidæ.—*Pæcilosoma Fletcheri*, Cam., *Tenthredopsis inornata*, Cam., *Tenthredo Lachlaniana*, Cam., all of which are rare, and are the first recorded specimens taken this side of the border.

This gentleman has also exhibited *Chelifer cancroides* amongst the *Arachnoidea*, as well as several species of the different orders with minute *Acari* attached.

A pleasing feature in connection with Mr. Billups' exhibitions has been a short and interesting description given with the rarer ones, which has always been very clear and instructive.

Mr. WEST (Greenwich), *Philonthus debilis*, *P. albipes*, *P. agilis*,

Quedius boops, *Q. 4-punctatus*, *Q. cruentus*, *Anthrenus musæorum*,
Chlœnius Schranki, *Anoplodera sexguttata*, *Clytus mysticus*, *Liobus*
nebulosus, *Corynetes cœrulus*, *Drilus flavescens*, *Choleva Sturmiæ*,
Scymnus lividus, *Cryptocephalus coryli*, *C. bilineatus*, *Apion genistæ*,
Chilocorus renipustulatus, *Engis humeralis*, *Necrophorus mortuorum*,
Callidium variabile, *Adimonia tanacetæ*.

Mr. ADKIN, *Copiophora cornuta*, *De G.*

Mr. STEP, *Syntonaspis caudata*, *Nees.*

Mr. CHANEY, *Anchomenus livens.*

Amongst the miscellaneous exhibits, we must not forget to mention Mr. Step's collections of Fungi, nor the exquisitely mounted specimens of dried plants by Mr. W. A. Pearce.

We welcome back to England Mr. Champion, whose letters have always formed such interesting additions to our meetings.

And now, in conclusion, though the sky is clouded, do not let us despair ; let "Onward!" be our motto. We must all work, and work hard to carry on the Society. We appeal to all to give us a willing hand. Everything has its vicissitudes, but we must not be disheartened. The darkness only makes the light appear all the brighter. We trust that everyone will give us that mutual help that is so necessary for the success of our undertaking. With this, we have an honest satisfaction in knowing that our labour will not be unrewarded.

W. H. MILES,

Hon Sec.

THE SOUTH LONDON ENTOMOLOGICAL SOCIETY.

BALANCE SHEET, DECEMBER 20, 1883.

RECEIPTS.

	£	s.	d.
Dec. 21. To Balance from last Audit	6	14	0
" Library Fines (1882)	0	18	8
" Subscriptions and Arrears	9	6	0

EXPENDITURE.

	£	s.	d.
By Rent (Michaelmas, 1882, to Michaelmas, 1883)	8	0	0
" Printing	3	4	0
" Sundries for Library and Collection	1	0	0
" Postage and Stationery	1	5	7
" Fire Insurance	0	7	0

£16 18 8

£16 18 8

ASSETS.

To Cash Balance in hand	3	2	1
" Library Fines (1883)	0	1	10
" Estimated realisable Proportion of Arrears	1	11	6

£4 15 5

£4 15 5

 " Balance

... ... 2 15 5

LIABILITIES INCURRED

By Rent to Christmas	2	0	0
" Balance	2	15	5

 " Cash Balance in hand

... ... 3 2 1

Audited and found correct, December 20, 1883.

RICHARD ADKIN,
WALTER A. PEARCE, } *Auditors.*



PRESIDENT'S ADDRESS.

GENTLEMEN,

It is the duty of each retiring President at the close of his year of office to read a short address. I therefore offer a few remarks as to the past season, but sincerely regret that my unfortunate illness for the last three months—the greater part of the time I was confined to my bed, and experienced much suffering—has prevented me saying so much as I should have liked to have done. I must therefore ask you kindly to excuse brevity under the circumstances.

In the first place, I wish to thank all the members of the Council for their kind assistance to me during the time that I have so unworthily had the honor of occupying the chair, more especially to our Vice-President, Mr. W. West, who has so kindly taken my duties during my unavoidable absence, and for his kind attention to me whenever he was able to call and see me while I was suffering and in trouble.

From information that I obtained from our worthy Secretary, I regret to learn that the list of members has somewhat decreased in numbers during the last year, but sincerely hope that before long we may get new members to join our society, and thus add to our yearly income, which is so very necessary. All members should as much as possible try and get their entomological friends who are not already members, to join us.

I am sorry to find that there are several members of the society who have allowed their subscriptions to go into arrear. These gentlemen have been continually written to by our treasurer, but unfortunately without receiving any reply, which does not, I think, show a nice feeling towards the society, and is anything but creditable to those gentlemen. The Council have therefore decided to erase their names from the list of members.

It has been the wish of, I think, each returning President to try and find out by what means our meetings could be made larger and more attractive, for it is very disheartening to find over and over again almost the same faces without seeing fresh ones turn in occasionally. Papers have been suggested, but unfortunately none have been read during the whole year. I understand from our Secretary that two gentlemen have kindly volunteered to favour us with papers during the season of 1884, and if we can induce others to follow it may be the means of making the meetings more interesting, and I sincerely trust that this will be the result.

I was sorry to learn that the "Pocket Box Exhibition" was not better attended than it was in October last, but hope that, should there be another next season, it will be more successful. When the Society held a similar exhibition ten years ago we had three times as many members attend, and three times the quantity of boxes on view, causing a most enjoyable evening, as all the older members will doubtless remember, with all due respect to those members who oppose a public exhibition of insects. I cannot help saying that I am in favour of holding a *conversazione* once in three or four years. It seems to me to give fresh zeal and energy to the members, by bringing so many of our old friends together, and if funds could be raised sufficient

to enable this to be done the coming year would, I think, be a good time for it. Having a President who is connected with so many microscopists, it would be the means of combining the two branches of science together, and thus form a most enjoyable evening.

All the students of natural history have to congratulate themselves on the success obtained by the decision arrived at in the House of Commons against the encroachment by the Great Eastern Railway Company upon one of the best parts of Epping Forest. For this boon we have to thank those kind members of Parliament (but not those who spoke of entomologists as "bug-hunters" and "butterfly fanciers" in such a disparaging manner), and also to the members of the Essex Field Club, who, with their very able secretary, did so much to assist in getting the bill thrown out. If our much honoured friend and supporter the late Mr. Edward Newman, had been alive now, how he would have rejoiced at this success.

Unfortunately, as it has been in each year, some of our fellow-workers in Natural History have been taken from us. This year we have lost through death two very able entomologists, the first being Mr. Benjamin Cook, better known perhaps in the North of England as a good working entomologist. The other Professor Zeller, whose reputation was so great both in England and on the Continent.

In a very able address read by the late President of the South London Microscopical Society last March, he referred to a very noble work by Smiles — "The Life of the Scotch Naturalist Thomas Edward." I could not rest until I had read the book from beginning to end. This interesting work was most kindly presented to our library by our late President, and I would venture to suggest that each of our members (more particularly

the younger portion) should borrow the volume and read it attentively, and thus see the wonderful perseverance this man had from his earliest childhood.

I sincerely trust that the summer excursions will be continued during next season, and will be well attended. They are the means of gaining so much useful and practical information which is imparted from one member to another while out collecting, for although some of us have collected for twenty-five or thirty years we have very much to learn and are always pleased to obtain hints and experience from our younger entomologists.

I am exceedingly sorry that I am not allowed by my doctor to be out late in the evening yet ; otherwise, it would have given me much pleasure to resign the chair in person, and hand it over to your new President, who is a gentleman I deeply respect, and have ever since I had the pleasure of his acquaintance, for his thorough kindheartedness, and feel confident that he will be everything that can be wished for in a chairman. His knowledge is great in most branches of natural history, and what information he has obtained is entirely due to his own hard-working and never-ceasing industry, and as a microscopist he is not to be excelled. I may also congratulate the members upon their choice of Vice-President for the ensuing year. He is a very hard-working and thoroughly practical entomologist. With these two gentlemen at your head, and your very able secretary, treasurer, librarian, and curator, I certainly think that the affairs of the Society should work well, and I trust with all my heart it will turn out so. In conclusion, I wish prosperity to the Society, and a Merry Christmas and a happy and good Entomological New Year to all the members.

J. R. WELLMAN.



RULES.

I. The South London Entomological Society has for its object the diffusion of Entomological Science by means of papers, discussions, and exhibitions; the formation of a typical collection of insects, and a library for the use of its members.

II. The officers of the Society shall consist of a President, Vice-President, Treasurer, Secretary, Curator and Librarian, who together with Seven other Members, shall form a Committee of Management. The whole of the officers shall be eligible for re-election except the President, who shall not be elected for two consecutive years.

III. The Meetings of the Society shall be held every alternate Thursday evening, the chair being taken punctually at Eight o'clock, when the order of business shall be as follows: 1—The minutes of the previous Meeting shall be read by the Secretary, and if confirmed, signed by the Chairman; 2—Donations announced; 3—New Members proposed and elected; 4—Business of the Society transacted; 5—Exhibitions made; 6—Papers read and discussed; 7—Subscriptions received. The Meeting shall then resolve itself into a Conversation Meeting.

IV. The Annual Meeting shall be held on the night of Meeting previous to Christmas Day, for the purpose of electing officers for the year ensuing; passing the Accounts and transacting any other business that may be brought before it. At this Meeting, the President be requested to deliver a short (written) address upon the progress the Society has made during his term of office, together with such other observations as he may deem conducive to the welfare and improvement of the Society, and the promotion of its objects.

V. The Treasurer shall receive all moneys and keep the accounts of the Society, and the Secretary shall conduct the

correspondence, take minutes of the Meetings in a book kept for the purpose, and take charge of all papers read before the Society.

VI. The Librarian shall take charge of the books of the Society, keep a catalogue of the same, and see the regulations of the Council respecting the circulation of the books are strictly carried out.

VII. All books in the possession of the Society shall circulate among the Members under such regulations as the Council may deem necessary, a copy of which shall be affixed to each book.

VIII. All notices, propositions, and business appertaining to the Society, shall be posted up in the library, where every Member may see them, one fortnight (Meeting) prior to discussion. Such notices to be signed by Members introducing them.

IX. Every candidate for admission to the Society, shall be proposed and seconded at one Meeting and balloted for at the next; when two thirds of the Members present are in favour of the candidate, he shall be duly elected.

X. Entomologists residing upwards of twenty miles from London, may be elected Corresponding Members of the Society, and shall pay a subscription of Two Shillings and Sixpence per annum.

XI. Members shall have a right to be present and to vote at all Meetings of the Society; to join in the discussions, to propose candidates for admission, and to introduce visitors at the Meetings. They shall also be eligible to hold any office in the Society.

XII. The entrance fee for a Member shall be one shilling, and the subscription six shillings per annum. Every person elected as a Member shall within one month after his election, and before he act as a Member, pay to the Treasurer the entrance fee and his subscription for twelve months, and in default thereof his election shall be void. The Treasurer shall at the annual meeting state the names of any member whose election is rendered void by non-compliance with this rule. The subscription shall be payable yearly and shall become due the first meeting in each year.

XIII.—No member shall have the right of voting, or be entitled to any of the advantages of the Society, if his subscription be

six months in arrear ; and should any Member be one year in arrear. the Council shall have power to erase his name from the list of Members.

XIV. Life Members may be elected on payment of three guineas, and shall be entitled to all the privileges of the Society.

XV. The Council shall have power to nominate gentlemen as Honorary Members.

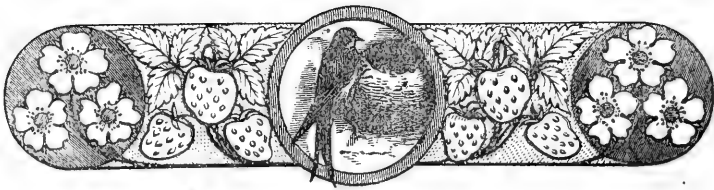
XVI. A book shall be kept in the Library containing a copy of the rules and regulations of the Society, and the names and addresses of every Member. Every Member upon admission to the Society shall sign his name in this book, as conforming to the rules.

XVII. That the Treasurer's accounts with the Society be printed, together with the names and addresses of the Members, and be distributed with the list of Meetings for the ensuing year.

XVIII. A Special Meeting may be called at any time, provided one month's notice in writing be given to the President or Secretary. Such notice should be signed by four Members, at least, and shall specify the purpose for which the Meeting is called.

XIX. Two Auditors shall be appointed at the Meeting preceding the Annual Meeting. They shall audit the Treasurer's accounts and produce their report at the Annual Meeting. Should the Treasurer at any time resign his office, the accounts shall be audited on his resignation.

XX. No alteration shall be made in these rules, except at the Annual Meeting or a Special Meeting called for the purpose

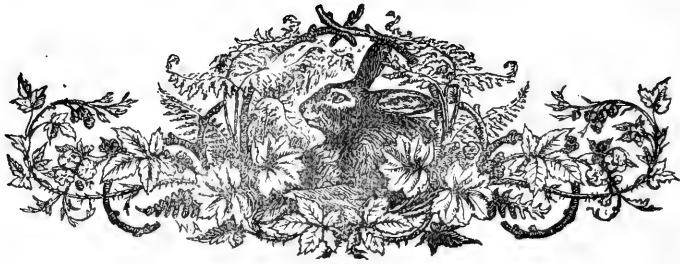


LIST OF MEMBERS:

- Adkin, R., Wellfield, Lingard Road, Lewisham, S.E.
Barker, H. W., 148, Hollydale Road, Peckham, S.E.
Bliss, A., Pennenis, Allenby Road, Forest Hill,
Bolger, H. L., 4, Rose Terrace, High Road, Lee, S.E.
Billups, T. R., M.E.S.L., 20, Swiss Villas, Coplestone Road,
Peckham, S.E.
Champion, G. C., M.E.S.L., 274, Walworth Road, S.E.
Chaney, W. C. *Hon. Librarian*, 96, Bird in Bush Road, Peckham, S.E.
Cole, W., M.E.S.L., Laurel Cottage, Buckhurst Hill, Essex.
Carrington, J. T., M.E.S.L., Royal Aquarium, Westminster, S.W.
Clode, W., 47, Phillimore Gardens, Campden Hill, W. (*Life Member.*)
Cook, A. E., 50, Albion Street, Rotherhithe.
Collett, E. P., 76, Islip Street, Kentish Town, N.W.
Elisha, G., 122, Shepherdess Walk, City Road.
Eley, A. G., 12, Bousfield Road, Nunhead, S.E.
Farn, A. B., Fairlawn, Stone, near Dartford.
Ficklin, A., Norbiton, Surrey.
Gaskell, A., 23, Queen's Road, Peckham, S.E.
Hickling, G. H., Landon Cottage, Elm Road, Sidcup.
Hodgson, A. E., Coleford, Gloucestershire.
Kane, Dr. H. N. K., Lanherne, Kingston Hill.
Kenward, J., Redclyffe, Corona Road, Lee, S.E.
Manger, W., 100, Manor Road, New Cross, S.E.
Miles, W. H., M.E.S.L., *Hon. Sec.*, 33, Paris Street, Palace Road,
Lambeth, S.E.
Miller, H., jun., Ipswich.
Montiero, Senor, A. de C., 72, Rua do Alacrine, Lisbon.
Mugford, W. E., 3, Sisters Avenue, Lavender Hill.
Oldham, C., 2, Warwick Villas, Chelmsford Road, Woodford.
Pearce, W. A., Lyndhurst, Croxted Park, Dulwich.
Perkins, V. R., M.E.S.L., Wotton-under-Edge, Gloucester.

- Ponsford, J. T., 73, Loughborough Park, Brixton, S.E.
 Sabel, E. E., 30, Clarendon Gardens, Maida Hill, W.
 South, R., *Vice-President*, 12, Abbey Gardens, St. John's Wood,
 N.W.
 Standen, R., M.E.S.L., The White House, Alby, Norfolk (*Life
 Member*).
 Step, E., *Hon. Treasurer*, 130, Disraeli Road, Putney, S.W.
 Stevens, S., F.L.S., M.E.S.L., Loanda, Beulah Hill, Norwood.
 Taylor, G. W., c/o E. E. Taylor, Woodside, Rowditch, Derby.
 Tugwell, W. H., 3, Lewisham Road, Greenwich, S.E.
 Urwick, W. F., Clapham Common.
 Walker, J., Alma Street, Marine Town, Sheerness.
 Weir, J. J., F.L.S., M.E.S.L., Chirbury, Copers Cope Road,
 Beckenham.
 Wellman, J. R., 219, Elm Park, Brixton Rise.
 West, W., *Hon. Curator*, 8, Ravensbourne Terrace, Lewisham
 Road, S.E.
 West, W., L.D.S. *President*, Cyprus Villa, Lewin Road, Streatham
 Common.
 Williams, J. T., 5, Woodland Villas, Foots Cray, Kent.





LIBRARY CATALOGUE.

Name of Work.	Author.
Anatomy of Blowfly... ..	—
Aquarium, Freshwater	J. WESTON.
British Hemiptera	DOUGLAS AND SCOTT.
British Larvæ (Lepidoptera) ...	WILSON,
British Lepidoptera, Accentuated List of	—
British Tortrices	WILKINSON.
British Hymenoptera (2 copies) ...	F. SMITH.
British Butterflies	NEWMAN.
British Butterflies	HUMPHREYS.
British Mosses	STARK.
British Moths (4 vols)	MORRIS.
British Neuroptera, List of	CAMERON.
British Beetles, Manual of	STEPHENS.
British Beetles	RYE.
Botany, Elementary Lessons in ...	OLIVER.
Botany, Lectures on... ..	—
British Wild Flowers in Relation to Insects	SIR JOHN LUBBOCK, Bart.
British Hemiptera, Synopsis of ...	SAUNDERS.
Coleoptera, Handbook of	COX.
Coleoptera, Catalogue of British ...	SHARP.
Coleoptères, Species General de ...	DEJEANS.
Coleoptères, Genera des	LACORDAIRE.
Coleopterists' Manual (part 2) ...	HOPE.
Coleoptères, Catalogue des	DEJEANS.
Catalogue of E. India Co. Lepidoptera (vol. 1)	HORSFIELD.
Catalogue of European Lepidoptera	STAUDINGER.

Croydon to the North Downs, Handbook	---
Dorking and District, Handbook ...	---
Entomologists' Annual (1855 to 1867)	---
Entomology	KIRBY AND SPENCE.
Entomology, Burmeister's	SHUCKARD.
Entomologists' Monthly Magazine (1865, to date)	---
Entomologist (from vol. 2 to present date)	---
Field Naturalists' Handbook ...	WOOD.
Fifty Years of Science	LUBBOCK.
Flora of Surrey	BREWER.
Floral Dissections	HENSLow.
Fossorial Hymenoptera	SHUCKARD.
Flowering Plants of Great Britain (6 vols)	ANNE PRATT.
Geodephaga of Great Britain ...	DAWSON.
Geological Rambles round London	---
Greenwich and Blackheath District, Handbook	---
Half-holiday Handbooks (9 vols) ...	---
Histoire Naturelle (2 vols)	CHENU.
Insecta Brittanica (Tineina) ...	STAINTON.
Insecta Brittanica (Diptera, 3 vols)...	WALKER.
Insect Fauna of the Palæozoic Period	GOSS.
Intelligencer (1856 to 1861) ...	---
Insects, Guide to the Study of ...	PACKARD.
Insects, Manual of Injurious ...	ORMEROD.
Insects, History of	NEWMAN.
Kingston-on-Thames Handbook ...	---
Lepidopterists' Calendar (2 copies)	MERRIN.
Lepidopterists' Guide (2 copies) ...	KNAGGS.
Letters of Rusticus	---
Life of a Scotch Naturalist 2 copies	SMILES.
Malay Archipelago	WALLACE.
Microscopic Fungi	COOKE.
Mollusca, Manual of	WOODWARD.
Monograph of Thysanura	SIR JOHN LUBBOCK, Bart.
Notes on Collecting and Preserving Natural History Objects ...	J. E. TAYLOR.

New London Flora	DE CRESPIGNY.
Naturalist on the Amazons... ..	BATES.
Natural History of Wasps	ORMEROD.
Neuroptera, List of British	CAMERON.
Our Woodlands, Heaths, and Hedges	COLEMAN,
Origin and Metamorphoses of Insects	SIR JOHN LUBBOCK, Bart.
Ordnance Maps (Surrey and Kent)	—
Pinacographia	VOLLENHOVEN.
Plant Life	STEP.
Reigate, Handbook	—
Richmond, Handbook	—
Science Gossip (1865 to 1870, 1872, 1873 and 1875 to date)	LUBBOCK.
Scientific Lectures	—
Scottish Naturalist (1871, 1872, and 1874 to 1882)	—
Stainton's Manual	—
Stainton's Tineina (vol. 2)	—
Synopsis of the Trichoptera of the European Fauna	MCLACHLAN.
The Insect Hunters	NEWMAN.
The Insect Hunters' Companion	REV. JOS. GREENE.
The Universe (2 vols)	POUCHET.
The World of Insects	DOUGLAS.
Tunbridge Wells, Handbook	—
Variation of Species — — —	WOLLASTON.
Wimbledon, Putney and Barnes, Handbook — — —	—
Zoologist (1872 to date) — — —	—

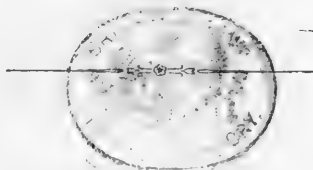
In addition to the above books, there are numerous pamphlets containing interesting information on scientific subjects, transactions, papers read before Natural History Societies, &c., &c.

Presented
13 NOV 1888





REPORT
OF THE
SOUTH LONDON
ENTOMOLOGICAL & NATURAL HISTORY
SOCIETY
FOR THE YEAR 1884,
TOGETHER WITH
THE PRESIDENT'S ADDRESS,
LIST OF MEMBERS,
AND
LIBRARY CATALOGUE.



LONDON:
PRINTED BY EDWARD KNIGHT,
18 AND 19, MIDDLE STREET, E.C.

1885.

❖ THE SOUTH LONDON ❖

ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,

60, Blackman Street, Borough, S.E.

The Society has for its object the diffusion of Biological Science, by means of papers and discussions, and the formation of typical collections. There is a Library for the use of Members. Meetings of the Members are held on the 1st and 3rd Thursday evenings in each month, from Eight to Ten p.m., at the above address. The Society's room is easy of access from all parts of London, and the Committee cordially invite the co-operation of all naturalists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their specimens.

SUBSCRIPTION.

Six Shillings per Annum, with an Entrance Fee of One Shilling.

All communications to be addressed to the Hon. Sec.

WALTER A. PEARCE,

Lyndhurst, Croxted Road, West Dulwich.

PAST PRESIDENTS.



1872	...	...	...	...	...	J. R. WELLMAN.
1873	...	...	...	...	...	”
1874	...	...	...	...	...	”
1875	...	...	...	...	...	A. B. FARN.
1876	...	...	...	...	...	”
1877	...	...	...	...	...	J. P. BARRETT.
1878	...	...	...	...	...	J. T. WILLIAMS.
1879	...	...	...	...	...	R. STANDEN, M.E.S.L.
1880	...	...	...	...	...	A. FICKLIN.
1881	...	...	...	...	...	V. R. PERKINS, M.E.S.L.
1882	...	...	...	...	...	T. R. BILLUPS, M.E.S.L.
1883	...	...	...	...	...	J. R. WELLMAN.
1884	...	...	...	...	...	W. WEST, L.D.S.

THE SOUTH LONDON
Entomological & Natural History Society,

(Established 1872)

60, BLACKMAN STREET, BOROUGH, S.E.



Patrons.

SIR JOHN LUBBOCK, Bart., M.P., F.R.S., etc.	E. C. RYE, Esq., F.L.S.
R. McLACHLAN, Esq., F.L.S.	HENRY T. STANTON, Esq., F.R.S., etc.

OFFICERS AND COUNCIL,

Elected December 18th, 1884.

President.

R. SOUTH.

Vice-President.

R. ADKIN.

Council.

T. R. BILLUPS.	G. ELISHA.	H. JOBSON.
J. A. COOPER.	A. FICKLIN.	J. R. WELLMAN.
	W. WEST, L.D.S.	

Hon. Treasurer.

E. STEP, 130, Disraeli Road, Putney, S.W.

Hon. Secretary.

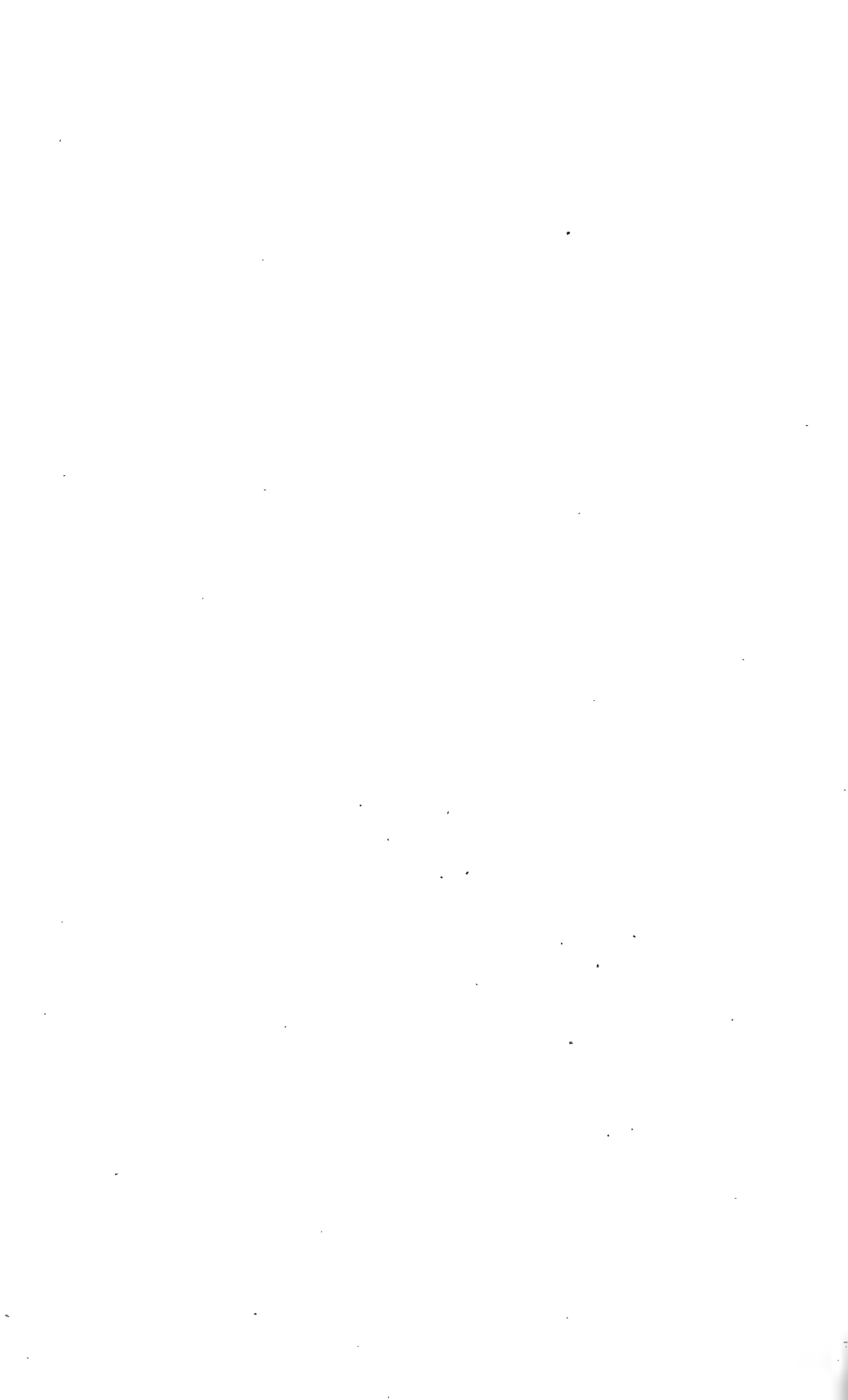
WALTER A. PEARCE, Lyndhurst, Croxted Road, West Dulwich.

Hon. Curator.

W. WEST (Greenwich).

Hon. Librarian.

W. C. CHANEY.



REPORT, 1884.



THE Council, in laying before the Members their 13th Annual Report on the status of the Society, feel a pardonable gratification in coupling with it the announcement that the year, now at its close, has been one of prosperity and advancement.

The Society has experienced seasons of apparent decline ; but it speaks to the vital activity and energy inherent in the Society itself, that on each occasion,—on the present occasion by an advance of a more marked character. This fluctuation is not a matter for real discouragement : it will be found to affect all classes of Societies founded for special purposes.

Mention should be made of the fact that the Society, since its last annual meeting, has removed to more convenient and commodious quarters. The new locality is more central ; and it is perhaps an indirect testimony to its greater convenience that, whereas during the first half of the year *three* new Members only were enrolled in the old quarters, *thirteen* have since joined us at our present location. The total number of new Members for the past year is therefore sixteen, making our present membership fifty-six.

The Society has also incorporated into its name the words “Natural History,” which a previous resolution (adding all branches of the science to the scope of its investigations) rendered necessary. Thus the field of research has vastly widened, and calls for new, staunch, and resolute workers.

The financial position of the Society has also improved, as will be seen on reference to the Balance Sheet.

The Library still continues to improve; and attention will have to be given to the provision of more accommodation for the increasing number of books. The following donations have been made this year:—

- By T. R. BILLUPS, "Life of a Scotch Naturalist."
 „ „ „The President's Address to the Entomological Society of London."
 „ G. C. CHAMPION, "Notes on Tropical Collecting."
 „ V. R. PERKINS, "Monograph of the Stylops."
 „ R. SOUTH (Vice-President), "The Entomologist Synonymic List of British Lepidoptera."
 „ R. McLACHLAN, "Synopsis of British Trichoptera."
 „ W. NEWMAN, "Entomologist" for 1884.
 „ „ "Zoologist" for 1884.
 „ W. WEST, (President) "British Coleoptera" (*Spry & Shuckard*).
 "The Report of the South London Microscopical and Natural History Club," from the Society.

The Society's typical collection of insects is in good preservation, for which we have to thank the Curator, Mr. West, who has given a great deal of time and attention to it.

Donations have been received this year from

MR. ADKIN, 39 species of *Lepidoptera*.

MR. SOUTH, 40 species of *Lepidoptera*.

MR. WEST, *Curator*, 90 species of *Coleoptera*, and a collection of Pupa cases of British *Lepidoptera*.

The Botanical Collection is in an improved condition, most of the specimens having been mounted, and a few additional species having been added by the sub-curator.

Four Excursions were held this year, viz :—

May 24th	...	Loughton.
June 28th	...	Box Hill.
July 26th	...	Sevenoaks.
August 23rd	...	Esher.

Those to Loughton and Boxhill were very successful, some valuable captures being made.

Another interesting feature this year was the opening meeting in this room, it being the occasion of an Exhibition which all who were present will remember with pleasure. We must here thank the Members of the South London Microscopical and Natural History Club, who so kindly exhibited microscopical preparations relating to entomology, and so contributed greatly to the success of the Meeting. A report of the exhibition appeared in the "Entomologist," the "Entomologist's Monthly Magazine," and the "South London Press." We must not forget the "Annual Pocket Box Exhibition of Insects" on Nov. 20th, at which a great number of rare species of *Lepidoptera* and *Coleoptera*, and other orders, were exhibited.

The Communications read before the Society this year were as follows, viz. :—

"Seeds," by Mr. E. STEP.

Notes on "*Drosera rotundifolia*," by Mr. E. STEP.

Notes on the Parasites and Inquilines of the "*Cynips Kollarî* Gall," by Mr. BILLUPS.

Notes on "*Blatta germanica* and *B. orientalis*," by Mr. BILLUPS.

The Exhibitions this year have been very numerous, amongst which we may mention in *Lepidoptera* :

Mr. ADKIN, *Macrogaster arundinis*, *Ennomos autumnaria*, *Acronycta alni*, *Petasia nubeculosa*, *Boarmia cinctaria* (bred), *Scoria dealbata*, *Aspilates strigilaria*, var., *Acidalia subsericeata* (bred), and *Eupithecia satyrata*, dark var. Living larvæ of *Endromis versicolor*, *Notodonta chaonia*, and *Acidalia holosericeata*.

Mr. BLISS, *Ennomos autumnaria*.

Mr. BILLUPS, *Nudariâ mundana*, *Emmelesia blandiata*.

Mr. COOPER, *Toxocampa pastinum*, *Chesias obliquaria*, *Polyommatus phlæas* (bred from ova).

Mr. COVERDALE, 37 Species of *Tineæ*.

Mr. COOK, *Deilephila lineata*, *Cymatophora fluctuosa*.

Mr. DOBSON, *Vanessa antiopa*, *Stauropus fagi* (bred).

Mr. ELISHA, *Senta ulvæ*, *Meliana flammea*, *Nonagria brevilinea*, living larvæ of *Coleophora conspicuella*, preserved larvæ of British *Lepidoptera*, and many rare species of *Tortrices* and *Tineæ*.

Mr. ELEY, *Arctia fuliginosa* (bred).

Mr. GASKELL, *Cuculia lychnitis*, *Eurymene dolabraria*.

Mr. HALL, Larvæ and imago of *Eupithecia consignata*.

Mr. JOBSON, *Eupithecia succenturiata*, varieties of *Smerinthus tiliæ*, *Angerona prunaria*.

Mr. KENWARD, varieties of *Acidalia aversata*, and *Boarmia cinctaria* (bred).

Mr. OLDHAM, *Cidaria sagitata*, *Anarta myrtilli* (bred).

Mr. W. E. PEARCE, *Lithosia helveola*, *Toxocampa pastinum*, and life-histories of British *Lepidoptera*.

Mr. SOUTH, *Toxocampa craccæ*, *Pædisca sordidana*, *P. semifuscana*, and varieties of *Pieris brassicæ*, *Larentia didymata*, *Melanippe fluctuata*, and *M. Montanata* from S. Devon.

Mr. TUGWELL, dark var. of *Vanessa urticæ*, *Laphygma exigua*, *Sesia sphægiformis* (bred), *Acronycta alni*, *Boletobia fuliginaria* (bred).

Mr. WEST (President), *Toxocampa pastinum*, *Anticlea sinuata*, *Laphygma exigua*, *Pseudopteropna cytisaria* (bred), *Colias helice*, also living and preserved larvæ of British *Lepidoptera*.

Mr. WEST (Greenwich), *Chærocampa celerio*.

Mr. WELLMAN, *Eupithecia helveticata*, *E. venosata* (bred), *Fidonia atomaria*, dark var., *Acronycta strigosa*, *A. alni*, and three broods of *Acidalia incanaria*, and *Timandra amataria*, twelve species of *Pterophori*, and thirty-seven species of *Tortrices*.

Mr. J. T. WILLIAMS, *Boletobia fuliginaria* (bred) and *Acidalia subsericeata*.

Coleoptera :—

Mr. BILLUPS, *Dytiscus lapponicus*, Gyll, *Philonthus thermarum*, Aub., *P. fumigatus*, Er., *P. adæendus*, Sharp, *Ocytus cyaneus*, Pk., *Staphylinus fulvipes*, Scop., *Stilicus fornicatus*, Steph., *Oxygoda exoleta*, Er., *Tachyusa scitula*, Er., *Ceryleon fagi*, Bris., *Cistela ceram-boides*, L., *Gymnusa brevicollis*, Pk., and *Trichopterus brevicornis*, Mots., a species new to Britain, also many rare species of *Exotic coleoptera*.

Mr. CHANEY, *Orchestes ilicis*, *O. avellanæ*, *Chrysomela didymata*, *Ocytus ater*, *O. compressus* *Cæloides subrufus*, *Hydroporus dorsalis*.

Mr. CHAMPION, *Vellicus dilatatus*.

Mr. ELEY, *Cerambyx moschatus*.

Mr. W. PEARCE, *Lathrobium rufipenne*, *Errirhinus costirostris*.

Hemiptera :—

Mr. BILLUPS exhibited many rare species belonging to this order, such as *Acalypta parvula*, D.S., *Cymus clavicularis*, Fall., *C. glandicolo*, Halm., *Stygnoceros setulosus*, Schill., *Peritrechus puncticeps*, Thom., *Salda Cocksii*, Curt., *Monanthia costata*, Fab., *Tropistethus holosericus*, Halm., and *Henestaris laticeps*, Curt.

Many rare specimens of *Ichneumonidæ*, bred as well as captured, were shown by Mr. Billups; while among the *Heterogyna* and *Fossorial Hymenoptera*, also the *Diploptera* and *Anthophila*, we may call attention to the following, viz. :

Lasius umbratus, Nye, *Stenammina Westwoodii*, Westw., *Myrmecina Latreilli*, Curt., *Methoca ichneumonides*, Lat., *Myrmica melanocephala*, Fab., *Priocnemis exaltatus*, Fab., *P. affinis*, V. de Lind., *P. obtusiventris*, Schiodt, *Pompilus chalybeatus*, Schiodt., *P. pectinipes*, V. de Lind., *Crabro peltarius*, Schr., *C. scutellatus*, Schr., *C. capitosus*, Shuc., *Psen ater*, Fab., *Odynerus reniformis*, Gmel. (a species new to Britain), *Halictus longulus*, Smith, *Andrena Hattofiano*, Fab., *A. cetii*, Schrank. Mr. BILLUPS also exhibited the curious wasp, *Pelopæus architectus*, St. Farg., and Nest from South America, also specimens of the beautiful ant *Cremastochilus scutellaris*, taken running about the streets of Greenwich.

Mr. GASKELL, *Cerceris arenaria*.

Among the Botanical Exhibitions we may mention :—

Mr. WELLMAN, variety of *Echium vulgare*, and *Geranium pratense* from Folkestone.

Mr. STEP, *Drosera rotundifolia*, specimens and sketches of British fungi.

Mr. PEARCE, *Lastrea filix-mas*, *Lathyrus pratensis*.

It is to be hoped that Exhibitions of Botanical Specimens will be more numerous in the future.

Among miscellaneous Exhibits we must not forget the realistic studies in colour of British and Exotic Plants by Mr. A. E. PEARCE, who also exhibited a fine living specimen of *Natrix torquata* (the common green snake). Skins of *Natrix torquata* and *Pelias berus*, were exhibited by Mr. COOK; and a small collection of cases made by the larvæ of *Limnophilidæ*, were shown by Mr. W. A. PEARCE.

Mr. WEST (President), a piece of pine bored by *Teredo*.

Before closing our Report, we must mention that Mr. MILES, our former Secretary, resigned the Secretaryship, owing to his leaving England for India, and we take this opportunity of expressing our appreciation of the able manner in which he discharged the duties of his office.

WALTER A. PEARCE,

Hon. Sec.

December, 1884.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

BALANCE SHEET FOR THE YEAR 1884.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
To Balance from last Audit, Dec. 20th, 1883	3	2	1	By Rent, (Michaelmas, 1883, to Michaelmas, 1884)	8	0	0
" Library Fines (1883 and 1884)	0	11	4	" Purchase of Books... ..	1	4	1
" Entrance Fees	0	13	0	" Postage and Stationery	1	12	5½
" Subscriptions	11	12	6	" Printing	2	9	6
" Arrears Received	1	12	0	" Sundries	0	12	0
				" Cash Balance in hand	3	12	10½
			<u>£17 10 11</u>				<u>£17 10 11</u>
ASSETS.				LIABILITIES INCURRED.			
To Cash Balance in hand	3	12	10½	By Rent, etc.... ..	1	6	0
" Estimated realisable Proportion of Arrears	1	2	0	" Balance of Assets over Liabilities	3	8	10½
Balance	4	14	10½		£4	14	10½
			<u>£4 14 10½</u>				<u>£4 14 10½</u>
			3 8 10½				

Audited, compared with vouchers, and found correct, *Thursday, December 18th, 1884.*

ALFRED GASKELL, }
 A. P. ELEY, } *Auditors.*
 EDWARD STEP, *Treasurer.*

PRESIDENT'S ADDRESS.

GENTLEMEN,

The time has now arrived when I must restore to your hands the important trust you confided to me a year ago, and when I am to have the privilege of addressing a few words to you respecting the condition of our Club.

The year we have just passed through has, I am happy to say, been very prosperous, both financially and in the increase of Members, no less than sixteen new names being added to our ranks ; which prosperity is due, I think, to two or three causes. What I consider the principal, is the change of residence. This present room, although less expensive, is far more commodious and convenient to the majority of our Members than the last ; but there is still room for improvement. At the same time, it will not do for us to be continually changing our abode. When our numerical strength increases, and we outgrow our present residence, then will be the time to look out for another. We must bear in mind the old proverb, "A rolling stone gathers no moss," and apply it to our Society, for a moving Society gathers no members.

At the beginning of the year it was thought desirable, by the majority of the Members, to add to the title the words *Natural History*, thus altering the constitution of the Club, by admitting papers upon any Natural History subject. I am sorry to say that very few have availed themselves of the opportunity afforded them. It would have been very gratifying to have had a paper and discussion every meeting. Perhaps, in the ensuing Session, Members will bear this hint in mind, and give us something to think about, as well as to see. There is very little doubt, that many who now seldom

come to the Meetings would do so more frequently if they had something to learn. It is not necessary that the paper should last the whole evening. Individually, I prefer short communications,—they are generally more interesting, and likely to lead to animated discussions. Most of us, in the course of our studies, come across something which is new to us, and probably to others, and it may be new to science. How much wiser to have it recorded and discussed at the time when the observation is fresh in the memory, instead of saying nothing about it except to a chosen few, when after a time it is forgotten, perhaps to be re-discovered by some one else, who receives all the honour.

The Exhibits during the year have been exceedingly numerous and interesting, thus showing that the Members are hard at work adding to their collections. Perhaps the paucity of papers may thus be accounted for.

Our financial condition is, thanks to our energetic Treasurer, in a very fair condition; so also is the Library, and Entomological and Botanical Collections; and the thanks of the Society are due to the gentlemen who have so kindly undertaken the charge of them.

On March 27th, our former worthy secretary, Mr. Miles, had to resign office, his business calling him abroad, and thus placing us in a difficulty. But our friend, Mr. W. A. Pearce, kindly came to the rescue and undertook the arduous work, and right well has he performed the task. I am sure you will all support me in thanking him, not only for his assistance, but also for the valuable and artistic present he made to the Club. I refer to the illuminated code of rules, which is doubly valuable to us, being the work of his own hands.

Having glanced at the social condition of our Club, let us look into its scientific status, and the study of Entomology generally. The unscientific world very much retards the advance of our study, especially with beginners, by holding us up to ridicule. I have myself had to put up with being called "fly-catcher," "bug-hunter," and various other epithets, more forcible than polite; and also by being followed (when

out with the net) by little boys, and declared to be "going a-fishing." This kind of treatment to a sensitive beginner is very trying, and apt to make him discard the pursuit for some other ; but, if he continues a season or two, the tables are turned ; he then begins to think his opponents' education has been sadly neglected, if they don't happen to know what *Papilio Machaon* is.

Another hindrance to the study is the want of time. It is true that to go into the work scientifically will take up most of the time that we have to spare in this busy age ; but very much may be done on the Saturday half-holiday, now so general, and nearly all of us have a summer holiday, which is a great boon to the entomologist.

Then, again, it is one of the most healthful pursuits we can engage in, inasmuch as it takes us out into the open air, away from the cares of business and troubles of life, gives an entire change of thought, thus resting the brain, which nowadays gets fatigued with the continual rush in the struggle for existence. It causes us to walk many miles (without our knowledge, as it were), our thoughts being occupied, not upon taking a constitutional walk, but upon what we shall catch ; thus we get open-air exercise, without the idea that we are going for it, which is very much more beneficial than if we went out for the purpose of health.

Another advantage to be derived is the cultivation it gives to the eye, in increasing its power of observation. How often does the experienced entomologist detect an insect on a tree trunk or fence, that the uncultivated eye may be looking at, yet fails to observe.

Again, the entomologist must, of necessity, learn a little of the science of botany, to be able to recognise the food plants of the various larvæ ; otherwise he may fail to rear some great rarity. And, *not* least of all its advantages, is the good fellowship it brings. I don't know any followers of science who are so generous and kindly disposed towards each other as entomologists. It is true there are sometimes little petty jealousies, it is so amongst all scientists ; but I have always

found them (even perfect strangers), ready to help with advice, instruction, and duplicates. Who has not, when out in the fields, or woods, been welcomed by a "brother of the net," and stopped and had a friendly chat, and inspected each others' specimens, and probably made a friendship that may last a life-time.

And now that I have advocated the cause, I should like with your permission to utter a few words of caution and advice. The tendency amongst all beginners is to see how quickly the cabinet can be filled with the different species: they are collected, set, and placed in their allotted spaces, without a second thought as to their life-history and anatomy. I have looked over a great many collections, but the majority have been collections of the perfect insects only. Now, for scientific purposes, this is of little use. Side by side should be placed the egg, larva, pupa, and imago. Then the collection is of real value for instruction and reference. Even the non-scientific person is more attracted to the drawer which contains the life history of a species.

With regard to studying the anatomy, the hindrance to this is, that it requires a microscope, entailing a little expense; but much may be done with the use of a pocket lens, costing a few shillings.

To the possessor of a compound microscope the insect world will afford an unlimited store of objects for his investigation. What can be more beautiful than the minute scales from the wing of a lepidopteron; and even rubbed and discarded specimens, too bad for the cabinet, may be brought into use. The wings, after the scales are rubbed off, are found to be full of minute depressions, in which the stalks of the scales were placed in such a position, that they lapped over each other like the tiles on a house. The shapes of the scales are very variable, according to the part of the wing they are taken from; and as nothing is done in nature without order, it is probable that some day they may assist in a more correct classification.

The spiracles or breathing mouths of insects are exceedingly

interesting objects; so also is the mouth proper, with its masticating apparatus in the case of the coleoptera and larvæ, but which in the lepidopterous imago is modified into a suctorial organ. The compound eyes are most beautiful and elaborate, consisting of innumerable facets or lenses, radiating from a centre. When a section of the eye is cut, it is seen that these lenses are somewhat cone-shaped, the apex of the cone, which is covered with a black pigment, being, of course, inwards. One little spot in the centre of the apex is left uncovered, through which passes a filament of the optic nerve situated at the back of the eye. Then again there are the antennæ to be worked at; and a very large field for study they afford, as their use has not been thoroughly and clearly made out. The internal organs of insects will also afford unlimited amusement and instruction; but to observe them properly it will be necessary to dissect them out carefully. This is generally done in a shallow trough of water; the parts are teased out with needles, or dissecting knives, the water enabling the parts to separate more easily.

I will not weary you with a lengthy paper on Microscopy, but, before concluding, will just consider what Entomology has done for us. In the first place it has enabled us to distinguish some of our friends from our foes; and a knowledge of their life history enables us to cope with them. I am afraid our enemies rather outnumber our friends, but it may be that we have not yet learned to make use of them.

The cockroach has for years, and is still by some, considered to be an enemy; but lately the medical profession has brought his ground-up body into use as a medicine, thus turning him into a friend. Again, he is said to be a very assiduous hunter after the bed-bug, which he devours ravenously. Were it not for the blow-flies, burying-beetles, and others, foul matter would be left to putrefy, and pollute the atmosphere, and engender disease, therefore we may classify them as friends, although they are sometimes a source of annoyance.

What better friends have we in the insect world than the honey bee, the silkworm, and lac-coccus, which produces not

only the gum lac, but a beautiful dye. There is also the cochineal insect and the Spanish fly, or *Cantharides* beetle, so useful to the medical profession.

On the other hand, as I remarked before, we have a great many insect enemies; for instance, the celery and turnip flies, the corn weevils, the phylloxera, or vine pest, and any number of aphides, or plant-lice, as they are designated. Altogether the poor agriculturist has rather a hard time of it in dealing with so many foes. Some farmers (or rather game-keepers) consider the entomologist one of their enemies; whereas they ought, really, to place him amongst their friends, and encourage him to visit their preserves. If we do disturb some of the game occasionally, and break off a few twigs in beating for larvæ, we compensate them for it, in the number of insects we capture, and whose ravages we thus lessen.

I think I have said sufficient to show that the study of Entomology is not such a trivial affair as some would have us believe. I should not have so strongly advocated the cause before you had this been entirely an Entomological Society, concluding, of course, that the members would know all about it; but as there are some amongst us who have not made this branch of science their special study, I hope by these few remarks to induce them to take it up scientifically. This must be my apology for troubling you at such length.

During this year the science has lost, through death, five of its most earnest devotees. The first on the obituary list is Mr. Buckler of Emsworth, Hants. He made the larvæ his special study, and collected notes and figures of about 850 species. The drawings are about to be published by the Ray Society; and as we have lately become subscribers to that Society our library will ere long include a copy of them.

We also have to deplore the death of Sir Sidney Smith Saunders, one of the only two original members of the Entomological Society of London. He was a thorough all-round entomologist, and having travelled a great deal in his official capacity was well conversant with ex-tic, as well as British Entomology.

We have also lost Mr. Prest, of York, and Mr. Harper, of Kingsland, both ardent workers in the cause, and whose names are familiar to the readers of the *Entomologist*.

Hymenopterists have lost a great friend (on the continent) in Dr. Förster, who, after a life of honour and distinction, died at the age of seventy-four.

In proof that the study of Entomology is a healthy pursuit and conducive to longevity, I may say that two of these gentlemen had reached the ripe age of seventy-four; one, seventy-one; one, seventy; and the other fifty-nine.

I am happy to say we have not this year been visited by death in our own Society; and I trust it may be many, many years before our President has to announce to us a loss to our ranks from this cause.

Gentlemen, I must now, in conclusion, thank you for the great honour you conferred upon me in electing me to the Presidential chair last December; and before vacating it would wish to thank you heartily for overlooking my many shortcomings, and for your kind support. I also wish to congratulate you on your choice of President for the next year. You have elected a gentleman who is well known in the entomological world, not only as a most assiduous collector, but one who has done a great work in his classification of the British Lepidoptera and by other literary productions.

In vacating the chair to Mr. South I feel great pleasure, because I am sure that whatever the Society has suffered in the past year it is sure to more than regain in the future.

LIST OF MEMBERS.

- ADKIN, R., *Vice-President*, Wellfield, Lingard Road, Lewisham, S.E.
BARKER, H. W., 148, Hollydale Road, Peckham, S.E.
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 PEARCE, A. E., " " " "
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 WELLMAN, J. R., 219, Elm Park, Brixton Rise.
 WEST, W., *Hon. Curator*, 8, Ravensbourne Terrace, Lewisham Road, S.E.
 WEST, W., L.D.S., Cyprus Villa, Lewin Road, Streatham Common.
 WILKINSON, S. J., 22, Richmond Terrace, Clapham Road, S.W.
 WILLIAMS, J. T., 5, Woodland Villas, Fooks Cray, Kent.

LIBRARY CATALOGUE.



NAME OF WORK.	AUTHOR.
Anatomy of Blowfly	<i>Dr. Lowme.</i>
Aquarium, Freshwater	<i>F. Weston.</i>
British Beetles	<i>Rye.</i>
British Beetles, Manual of	<i>Stephens.</i>
British Butterflies	<i>Humphreys,</i>
British Butterflies	<i>Newman.</i>
British Coleoptera	<i>Spry and Shuckard.</i>
British Hemiptera	<i>Douglas and Scott.</i>
British Hemiptera, Synopsis of	<i>Saunders.</i>
British Hymenoptera (2 copies)	<i>F. Smith.</i>
British Larvæ (Lepidoptera)	<i>Wilson.</i>
British Lepidoptera, Accentuated List of... ..	
British Mosses	<i>Stark.</i>
British Moths (4 vols.)	<i>Morris.</i>
British Neuroptera, List of	<i>Cameron.</i>
British Tortrices	<i>Wilkinson.</i>
British Trichoptera, Synopsis of... ..	<i>McLachlan.</i>
Botany, Elementary Lessons in... ..	<i>Oliver.</i>
Botany, Lectures on	
British Wild Flowers in Relation to Insects	<i>Sir John Lubbock, Bart.</i>
Coleoptera, Catalogue of British	<i>Sharp.</i>
Coleoptera, Handbook of	<i>Cox.</i>
Coleoptères, Species General de	<i>Dejeans.</i>
Coleoptères, Genera des	<i>Lacordaire.</i>
Coleopterists' Manual (part 2)	<i>Hope.</i>
Coleoptères, Catalogue des	<i>Dejeans.</i>
Catalogue of E. India Co. Lepidoptera (vol. 1)	<i>Horsfield.</i>
Catalogue of European Lepidoptera	<i>Staudinger</i>
Croydon to the North Downs, Handbook	

NAME OF WORK.	AUTHOR.
Dorking and District, Handbook ...	
Entomologists' Annual (1855 to 1867)	
Entomology	<i>Kirby and Spence</i>
Entomology, Burmeister's	<i>Shuckard.</i>
Entomologists' Monthly Magazine (1865 to date)	
Entomologist (from vol. 2 to present date)	
Field Naturalists's Handbook	<i>Wood.</i>
Fifty Years of Science	<i>Lubbock.</i>
Flora of Surrey	<i>Brewer.</i>
Floral Dissections... ..	<i>Henslow.</i>
Flowering Plants of Great Britain (6 vols)	<i>Anne Pratt.</i>
Fossorial Hymenoptera	<i>Shuckard.</i>
Geodephaga of Great Britain	<i>Dawson.</i>
Geological Rambles round London ...	
Greenwich and Blackheath District, Hand- book	
Half-holiday Handbooks (9 vols) ...	
Histoire Naturelle (2 vols)	<i>Chenu.</i>
Insecta Brittanica (Tineina)	<i>Stainton.</i>
Insecta Brittanica (Diptera, 3 vols) ...	<i>Walker.</i>
Insect Fauna of the Palæozoic Period ...	<i>Goss.</i>
Intelligencer (1856 to 1861)	
Insects, Guide to the Study of	<i>Packard.</i>
Insects, History of	<i>Newman.</i>
Insects, Manual of Injurious	<i>Ormerod.</i>
Kingston-on-Thames Handbook	
Lepidopterists' Calendar (2 copies) ...	<i>Merrin.</i>
Lepidopterists' Guide (2 copies)	<i>Knaggs.</i>
Letters of Rusticus	
Life of a Scotch Naturalist (2 copies) ...	<i>Smiles.</i>
Malay Archipelago	<i>Wallace.</i>
Microscopic Fungi	<i>Cooke.</i>
Mollusca, Manual of	<i>Woodward.</i>
Monograph of Thysanura	<i>Sir John Lubbock, Bart.</i>
Notes on Collecting and Preserving Natural History Objects	<i>F. E. Taylor.</i>
New London Flora	<i>De Crespigny.</i>

NAME OF WORK.	AUTHOR.
Naturalist on the Amazons	<i>Bates.</i>
Natural History of Wasps	<i>Ormerod.</i>
Neuroptera, List of British	<i>Cameron.</i>
Our Woodlands, Heaths, and Hedges	<i>Coleman.</i>
Origin and Metamorphoses of Insects	<i>Sir John Lubbock, Bart.</i>
Ordnance Maps (Surrey and Kent)	
Pinacographia	<i>Vollenhoven.</i>
Plant Life	<i>Step.</i>
Reigate, Handbook	
Richmond, Handbook	
Science Gossip (1865 to 1870, 1872, 1873 and 1875 to date)	
Scientific Lectures...	<i>Lubbock.</i>
Scottish Naturalist (1871, 1872, and 1874 to 1882)	
Stainton's Manual...	
Stainton's Tineina (vol. 2)	
Synopsis of the Trichoptera of the Euro- pean Fauna	<i>McLachlan.</i>
The Insect Hunters	<i>Newman.</i>
The Insect Hunter's Companion	<i>Rev. Jos. Greene.</i>
The Universe (2 vols.)	<i>Pouchet.</i>
The World of Insects	<i>Douglas.</i>
Tunbridge Wells, Handbook	
Variation of Species	<i>Wollaston.</i>
Wimbledon, Putney, and Barnes, Hand- book	
Zoologist (1872 to date)	

In addition to the above books, there are numerous pamphlets containing interesting information on scientific subjects, transactions, papers read before Natural History Societies, &c., &c.



THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 1

MECHANICS

WINTER 2008

ABSTRACT OF PROCEEDINGS
OF
THE SOUTH LONDON
ENTOMOLOGICAL & NATURAL HISTORY
SOCIETY
FOR THE YEAR 1885,
TOGETHER WITH
THE PRESIDENT'S ADDRESS.



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PRICE ONE SHILLING.



THE SOUTH LONDON
Entomological & Natural History Society,

(Established 1872)

1, DENMAN STREET, RAILWAY APPROACH,
LONDON BRIDGE, S.E.

Patrons.

SIR JOHN LUBBOCK, Bart., | R. McLACHLAN, Esq., F.R.S.,
M.P., F.R.S., F.L.S., F.E.S. | F.L.S., F.E.S.
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Elected December 17th, 1885.

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Hon. Secretaries.

H. W. BARKER.

* WALTER A. PEARCE, Lyndhurst, Croxted Road, West Dulwich.

** To whom all Communications should be addressed.*

❖ THE SOUTH LONDON ❖
ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,
1, DENMAN STREET, RAILWAY APPROACH, LONDON BRIDGE, S.E.

The Society has for its object the diffusion of Biological Science, by means of papers and discussions, and the formation of typical collections. There is a Library for the use of Members. Meetings of the Members are held on the 1st and 3rd Thursday evenings in each month, from Eight to Ten p.m., at the above address. The Society's rooms are easy of access from all parts of London, and the Council cordially invite the co-operation of all naturalists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their specimens.

SUBSCRIPTION.

*Seven Shillings and Sixpence per Annum, with an Entrance
Fee of Two Shillings and Sixpence.*

All communications to be addressed to the Hon. Sec.,
WALTER A. PEARCE,
Lyndhurst, Croxted Road, West Dulwich.

PAST PRESIDENTS.

1872 ... J. R. WELLMAN.
1873 ... ,,
1874 ... ,,
1875 ... A. B. FARN.
1876 ... ,,
1877 ... J. P. BARRETT.
1878 ... J. T. WILLIAMS.

1879 ... R. STANDEN, F.E.S.
1880 ... A. FICKLIN.
1881 ... V. R. PERKINS, F.E.S.
1882 ... T. R. BILLUPS, F.E.S.
1883 ... J. R. WELLMAN.
1884 ... W. WEST, L.D.S.
1885 ... R. SOUTH, F.E.S.

REPORT, 1885.

THE Council have pleasure in again reporting a year of satisfactory work and progress, testified by the numerous exhibits, and the increasing interest taken by Members in the Meetings of the Society.

It will be remembered that, owing to the disposal of the premises in which the Society had its offices, we were again compelled to seek a new abode. The change has been one for the better. The new position chosen by your Council we feel sure has done much to improve the standing of the Society, the accommodation and comfort afforded being a vast improvement on our former quarters.

The position of the rooms is all that can be desired, and although the change was inconvenient at the time, we may safely conclude that no one has regretted it.

This year we observe with pleasure the development of a spirit of unreserve in the imparting of personal knowledge, as evidenced by the number of papers, communications, etc., that we have had the pleasure of listening to.

Six new Members have been elected this year, but we regret to say that three others have sent in their resignation; therefore our present membership numbers fifty-five.

We have pleasure in stating that the financial position of the Society is in every way satisfactory.

The Library has been greatly improved by the binding of some fifteen volumes: this we were enabled to do by the generosity of several anonymous friends. The duties of Librarian are still rendered by Mr. CHANEY, who has attended to them with his usual care.

The additions this year are as follows, viz. :—

DONATIONS.

“The Entomologist” for 1885, and “The Zoologist” for 1885.

From Mr. T. P. NEWMAN.

“The Entomologist’s Monthly Magazine” for 1885. From Mr. M’LACHLAN.

- “Transactions of the Entomological Society of London” for 1884. From Mr. W. H. MILES.
- “Our Insect Allies;” “Transactions of the Entomological Society of London” for 1885; and “The Garner” (Vol. I.) From Mr. T. R. BILLUPS.
- “Stephens’ British Entomology” (2 Volumes). From Mr. E. STEP.
- “The Sixth Annual Report of the Dulwich College Science Society.” From the SOCIETY.
- “Illustrated Science Monthly.” From Mr. J. T. CARRINGTON.

BY PURCHASE.

- “Science Gossip” for 1885.
- Cameron’s “Phytophagous Hymenoptera,” Vol. II.

The Society’s Collection of Insects is steadily progressing; and to Mr. WEST, the Curator, we owe the arrangement and preservation of this valuable portion of the Society’s work.

Additions this year have been:—

172 species of *Micro-* and *Macro-lepidoptera*, from the President, Mr. SOUTH; and several species of *Lepidoptera*, from Mr. ADKIN.

We should have been glad to have reported a like progress in the Herbarium, but we are sorry to say no new species have been added to it this year.

The Excursions held this year were to

Chingford	on	May	16th.
Oxshot	„	June	6th.
Boxhill	„	„	27th.
Chobham	„	July	18th.
Folkestone	„	August	3rd.

the most successful being those to Oxshot and Boxhill.

The principal event of the year was the Exhibition, held at our Rooms on December 3rd, which was a great success, and has established on a firmer basis the reputation of the Society. The Exhibition consisted of all branches of Natural History, the Class Insecta being best represented; the other Classes comprising Mammalia, Aves, Arachnida, and Mollusca.

The Botanical exhibits included specimens and coloured studies of British and exotic plants ; also coloured studies of British Fungi.

The lower forms of Animal and Vegetable life were well represented in the room set apart for the display of Microscopical objects, in which the Society was assisted by Messrs. ENOCK and NEWMAN, and Members of the South London and Queckett Microscopical Societies.

Among the Exhibitions at our Meetings we notice the following :—

Hymenoptera.

MR. BILLUPS, *Hymenoptera-Aculeata*, such as *Pompilus spissus*, *Priocnemis pusillus*, *Sphecodes subquadratus*, *S. variegata*, *S. similis*, *S. affinis*, *Prosopis dilata*, *P. confusa* ; also many rare species of *Ichneumonidæ*, such as *Chrysis fulgida*, *C. neglecta*, wasps' nests, genera *Polistes* and *Odynerus* from Borneo, and nest of *Vespa germanica* from North Devon.

MR. WEST (Greenwich), Wasp's nest from S. America.

Lepidoptera.

MR. ADKIN (Vice-President), *Eugonia quercinaria* including var. *infuscata*, and the Irish form of *Noctua dahlia* ; also the following, all bred. *Endromis versicolor*, *Notodonta chaonia*, *Acronycta alni*, *Eugonia erosaria*, *Eupithecia satyrata*, also *Acidalia inornata*, and a very dark form of *Dianthæcia capsophila* from south of Ireland.

MR. BARKER, varieties of *Lycæna icarus (alexis)* and *Boarmia repandata*, and *B. abietaria*, bred ; also *Acidalia rubiginata (rubricata)*, taken in the Warren at Folkestone, in August.

MR. COOK, *Chærocampa porcellus*, var., *Lithosia griseola*, and bleached variety of *Epiphinele (Satyrus) ianira*.

MR. COOPER, *Pericallia syringaria* (bred), and *Zonosoma (Ephyra) orbicularia*.

MR. CROKER, Variety of *Abraxas grossulariata*, *Geometra (Iodes) vernaria*, and *Melitæa athalia*, from Cromer.

MR. DOBSON, *Eugonia (Ennomos) erosaria*, *Drepana lacertinaria (Platypteryx lacertula)*, dark var., and *Dicranura bifida*.

MR. ELEY, *Drepana lacertinaria (Platypteryx lacertula)*, and *Lobophora lobulata*.

MR. ELISHA, *Lithocolletis bremsella*, *L. canvella*, *L. lantella* (bred), *Eupœcilia udana*, *Acronycta strigosa*, and *Plusia chryson* (*orichalcea*) (bred); also *Coleophora vibicigerella*, bred from larvæ taken in the Essex salt marshes during the present year.

MR. GASKELL, *Lithosia deplana* (*helveola*) and *Dianthœcia conspersa*.

MR. HALL, *Dianthœcia albimacula*.

MR. HELPS, *Melanippe unangulata*, and an unusually pale variety of *Eurrhypara urticata* (*Botys urticalis*).

MR. HICKLING, a strongly marked specimen of *Argynnis aglaia*, and *Sphinx convolvuli* taken at Sidcup.

MR. LEVETT, a variety of *Vanessa urticæ* and *Angerona prunaria*, also *Dianthœcia conspersa*.

MR. LOWRY, *Gnophria* (*Lithosia*) *rubricollis*.

MR. McLACHLAN, *Psychidæ* larva-cases from Zanzibar, resembling the molluscan genus *Cyclostoma*.

MR. MERA, *Chærocampa elpenor*, var., and *Dicranura furcula*.

MR. OLDHAM, *Thecla betulæ* and *Ptilodontis palpina*.

MR. W. A. PEARCE, *Acidalia rusticata* and *Eupithecia minutata* (bred).

MR. SOUTH (President), Varieties of *Polyommatus phlœas*, *Lycœna icarus*, *Zygœna filipendulæ* and *Boarmia repandata*; *Chærocampa celerio* from Natal and Italy, British and Swiss *Melitea*, *Lycœna escheri* and *L. dorylas* from Switzerland, and living larvæ of *Toxocampa craccœ*, also several local Tortrices.

MR. TUGWELL, varieties of the *Zygænidæ*, the unique British specimen of *Syntomis phegea*, *Eugonia autumnaria*, *Nola centonalis* and the whole of the *Dianthœcia*, northern and southern forms.

MR. J. JENNER WEIR, *Deiopeia pulchella* from South Africa, varieties of *Lycœna icarus* (*alexis*) and *L. corydon*, also the exotic genera *Morpho* and *Caligo*, and a series of *Danais archippus*.

MR. WELLMAN, *Sesia chrysidiformis*, *S. ichneumoniformis*, *S. culiciformis*, taken at Folkestone, *Chærocampa celerio* from Walton-on-Naze, varieties of *Cidaria suffumata*, second brood of *Acidalia trigeminata*, and a third brood and larvæ of *A. rubiginata* (*rubricata*), also *Lemiodes pulveralis*.

MR. WEST (Greenwich), *Spilosoma* (*Arctia*) *urticæ*.

MR. WEST (Streatham), *Oporina croceago* (bred), *Acronycta myricæ*, *Nudaria senex*, *Acidalia marginepunctata* (promutata), var., and *Chesias spartiata* from Folkestone.

MR. J. T. WILLIAMS, *Sphinx convolvuli*, *Plusia chryson* (orichalcea) (bred), and *Oxyptilus distans*.

Coleoptera :—

MR. BILLUPS, the rare *Anthicus Schaumi*, *Scolytus pruni* (bred), *Scymnus frontalis* *Stilicus geniculatus*, *Quedius attenuatus*, *Cis vestitus*, *Olibrus particeps*, *Coccinella* 12-guttata, and many exotic species.

MR. CHANEY, *Carabus auratus*, *Donacia menyanthidis*, *D. thalassina*, *D. semicuprea*, *Bembidium varium*, *Lina populi*, *Aphodius lividus*, and *Mononychus pseudacori*.

MR. CROKER, Exotic *Coleoptera*.

MR. ELEY, *Notiophilus rufipes*, *Cerylon fagi*. and a fine specimen of *Brachycerus apterus* from the Cape of Good Hope.

MR. WEST (Greenwich), *Calosoma sycophanta*, *Chlænienus Schrankii*, and *Stenolophus Skrimshiranus*.

Hemiptera :—

MR. BILLUPS exhibited *Salda Cocksii*, *Dicyphus errans* and *Globiceps flavomaculatus*.

Homoptera :—

MR. BILLUPS exhibited *Eupteryx picta*, *Cybus smaragdula*, and *Bythoscopus flavicollis*.

MR. J. JENNER WEIR, species of *Mantidæ* and *Cicadæ* from South Africa.

MR. BILLUPS also exhibited Exotic *Neuroptera*.

MR. McLACHLAN, European *Trichoptera*, *Ascalaphidæ*, *Nemopteridæ* and ant-lions.

MR. W. A. PEARCE, Trap-door spider and nest, and Horned Lizard, Genus *Phrynosoma* from California.

Mollusca :—

MR. BILLUPS, *Zonites excavatus*, *Z. radiatulus*, from Bromley, Kent, *Helix nemoralis*, var. *roseolabiata*, *Achatina acicula* and *Paludina vivipara*.

MR. W. A. PEARCE, *Chiton chilensis* from California.

MR. STEP, *Paludina contecta*, *Pupa marginata*, *Sphaerium ovale* from Richmond Park, and *Cochlicopa tridens*.

MR. WEST (Streatham), *Bulimus acutus* including var. *nigricens* from New Quay, Cornwall.

MR. COOK exhibited some excellent mounted specimens of birds, including *Strix flammea*, *Turdus merula*, *Sternus vulgaris*, *Fringilla cœlebs*.

Botanical Exhibits :—

MR. A. E. PEARCE, Sketches of Exotic and British plants.

MR. W. A. PEARCE, Exotic and British plants, among the latter being a curious monstrosity of *Digitalis purpurea*.

We have to thank the following Gentlemen who have exhibited at our Meetings, as Visitors, viz. :

Messrs. BIRD, BOWER, BROOKS, CRIPP, DAWES, FARN, GURNEY, JAGER, JANSEN, LEWCOCK, MACKENZIE, NEAVE, ROWE, SHUTTLEWORTH, TUTT, WATKINS and WEBB.

From this lengthy Report, which represents but a portion of the year's exhibits, it will be seen that the Members have been doing serviceable work, and we hope to be able as an outcome of this Report to record next year a greater increase of Members.

WALTER A. PEARCE,

H. W. BARKER,

Hon. Secretaries.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

BALANCE SHEET FOR THE YEAR 1885.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
To Balance from last Audit, Dec. 18th, 1884	3	12	10½	By Rent	...	...	...
„ Library Fines	...	0	10	„ Purchase of Books, and Binding	...	...	...
„ Entrance Fees and Subscriptions	...	21	18	„ Postage and Stationery	...	...	...
„ Arrears Received	...	4	16	„ Printing	...	...	...
				„ Expenses of Exhibition	...	...	...
				„ Sundries	...	...	...
				„ Balance in hand...	...	...	...
			£30		£30	17	6½
ASSETS.				LIABILITIES.			
To Cash Balance in hand	...	10	9	By Rent, 1 Quarter, to Christmas, 1885	...	2	5
„ Estimated realisable Proportion of Arrears	1	10	0	„ Balance of Assets over Liabilities	...	9	14
			£11		£11	19	5
Balance	...	£9	14				

Audited, compared with vouchers, and found correct, *Thursday, December 17th, 1885.*

H. W. BARKER, }
Auditors.
 A. W. MERA, }

EDWARD STEP, *Treasurer.*



PRESIDENT'S ADDRESS.

GENTLEMEN,

It being customary for your President, at the expiration of his term of office, to briefly review the present position and future prospects of the Society, I have very great pleasure in performing this, the final duty devolving upon me.

Our Society, like other Societies of a kindred nature, has been subjected to a somewhat chequered career since its foundation in 1872. It is not, however, my intention to unveil its past history further than will enable us to glance at our position in December, 1884. We were then just beginning to settle down in our quarters in the Borough, and my friend and predecessor in the chair, Mr. West, in his farewell address congratulated us on the possession of a larger and at the same time less expensive room than that we had previously occupied. We little anticipated at that moment the awkward predicament from which we were shortly to be called on to extricate ourselves.

You may remember that in March last (1885) I had to announce to the Society that the landlord, from whom we rented the room in which we were then assembled, was about to close his premises, and he requested us to remove all that belonged to us as soon as we possibly could.

Fortunately for us we had among the Members of our Council, gentlemen who were able to cope with the difficulty which thus unexpectedly turned up. For a time the Society was without a local habitation, but through the kindness of Mr. Billups, the Members of our Council were enabled to meet and transact the extraordinary business connected with our enforced change of residence. It only remains for me to say in this connection, that the Society is fortunate in the change of domicile which has been effected, and that our best thanks are due to Messrs. Adkin, Billups, Ficklin, Pearce and

Step. These gentlemen, by charging themselves with particular duties, contributed materially towards the recovery of the Society from its unpleasant position, and by their energy and tact enabled us to secure our present commodious rooms. We have now the advantage of being within a short distance of the City, and the London Bridge and Metropolitan Railways. Thus favourably situated we may reasonably expect to obtain additional recruits from among those dwellers on the other side of the river, who are interested in Natural History, as well as from those who reside in localities south of the Thames.

It is to be regretted that for some obscure reason or other, one or two of our old Members have withdrawn their support; but as a set off against this, we have had the satisfaction of welcoming the return to our ranks of certain workers who had been estranged from the Society for some years.

As you will have learnt from the Treasurer's report, our financial position is not only sound, but we have a respectable balance in hand.

The attendance of Members and the business transacted by the Society, during the year now drawing to a close, not only maintains the improved character manifested during the latter part of 1884, but on one or two occasions has afforded evidence of still greater improvement. This encourages me to exhort you to exert yourselves to the utmost to prevent the Society from again subsiding into the inert condition which at one time promised to put a period to its existence. Let us endeavour to raise it to such a state of efficiency and usefulness, as will establish it in the front rank of local Natural History Societies.

If it is our desire, as I have every reason to believe it is, that the Society should be considered something more than a Conversational Club, it is of primary importance, that when we meet to transact the business of the Society, we should give our undivided attention to such business, especially during the time that interesting facts are being communicated.

Our Exhibition this year eclipsed anything of the kind hitherto attempted by the Society. Although the greater proportion of the exhibits pertained to the class Insecta,

various other Zoological classes were represented, and the sister Science of Botany was not unrecognized.

In the room set apart for Microscopes, no less than 21 instruments were fitted up. Of this number 11 belonged to Members of the South London Microscopical and Natural History Society. To this Society, as also to the Lambeth Field Club, we are indebted for much valuable assistance, and I take this opportunity of thanking these Societies, on behalf of the South London Entomological and Natural History Society, for their courtesy.

Among the very large number of visitors who favoured us by attending, were many distinguished Entomologists and workers in other branches of Biological Science. Several of these* also contributed most interesting exhibits.

Altogether, I think I may fairly congratulate the Society upon having scored a success. Although such success is unquestionably due to the united action of all, still the carrying out of details, must of a necessity, rest with a few. As a fact, the general plan of the Exhibition was worked out by Mr. Adkin, and in the execution of that plan he was very ably seconded by Mr. Billups. To these gentlemen, and to our worthy Secretary, Mr. Pearce, on whom devolved the incidental correspondence, the thanks of the Society are especially due for their careful forethought and untiring zeal, which practically conduced so much to the happy issue of the undertaking.

One of the specified objects of the Society, is the "diffusion of Biological Science, by means of papers and discussions." Up to the present I am afraid we have not done a great deal towards giving effect to this article of our Association. However, it is perhaps not too much to hope that the little we have done in this direction during the past year, is but an earnest of the greater things we propose doing in the future.

Among the many useful labours that should be undertaken by a local Natural History Society, is the compilation of the Flora and Fauna of its own particular district or county. County and district lists of animals or plants, consisting of names and localities only, are not without a certain value to

collectors ; but from a scientific point of view, they are comparatively valueless.

The compiler of a Flora or Fauna, or any section or sections thereof, will do well to bear in mind that the end and aim of his labour should not be simply to enumerate the species occurring in any given area or district. He should endeavour to impart to his work a deeper interest and a greater value, by giving not only the habitat of animal and the station of plant, but also information respecting the geological features—especially as regards subsoils—of the locality, and distributions of the species over the area dealt with. Particular attention should be given to variation, and all species which vary, or show a tendency to vary, even though it be but slightly from the type, should be noticed. For instance, supposing we are compiling a list of the *Lepidoptera* of Surrey, and we know that the Box Hill representatives of a species differ from those occurring in other parts of the county, we should certainly not omit reference to the fact, but should briefly point out the characteristics of the Box Hill form. The habits of local forms of species may also differ from the normal habits of the types of those species, and where such is known to be the case, particulars should be given. Very many other details might be added ; these will suggest themselves to the compiler who undertakes his task, with the set purpose of producing a work which shall be of service to the student as well as the collector.

Some years ago, when the Society was solely Entomological, it was resolved to collect material for the formation of the insect Fauna of our district, which I suppose, would be particular portions of Kent, Surrey, and Sussex. I am given to understand, that certain sections of the list were elaborated to something like completion, and other sections were in a forward state. Estimates for printing were obtained, and all preparation made for early publication, when for some reason the whole thing collapsed. I don't know why, when the proposed Fauna was on the very eve, as it were, of publication, it should have been allowed to become a dead letter. There may have been dissension in our ranks. Surely the private pique of a Member or Members could not derange the

organization of a Society to the extent of preventing that Society from proceeding with an undertaking upon which it had long been engaged, and which it had nearly completed. That the existence of a Society depends upon the unity and cohesion of its Members is a fact I can readily understand, but that a useful work, which all Members of the Society are interested in, and contribute to, can at any moment be suppressed by the action of one or more Members, is a state of things which I must confess myself unable to comprehend.

One would naturally conclude that as material, in the shape of local lists, notes, observations, etc., was furnished to the Society for an avowed purpose, such material would still be found among the property of the Society. This, however, I regret to say, is not the case. I am informed that the MS. list of *Coleoptera* is still at our service, but I am afraid that the same cannot be said of the MS. list of *Lepidoptera*, or yet of the original local lists and notes from which it was compiled.

I venture to say that the Society is, at the present moment, as well qualified to take in hand the preparation of the insect Fauna of Kent, Surrey, or Sussex, or any particular area or areas of those counties, as it has been at any time since its establishment.

As a nucleus we have the MS. list of *Coleoptera*, but lists of all other Orders will have to be compiled *de novo*. I may add that this matter will probably come under the consideration of the Council at an early date. If it is deemed expedient that a Fauna should be compiled, I hope that the proposal will not only meet with your approval, but that every Member will render all the assistance he possibly can towards making the work a credit to the Society.

Occasional reports of our proceedings have been published in the *Entomologist*; and a local paper, *The South London Press*, has frequently inserted extended notices of our meetings. This is very satisfactory as far as it goes; but falls short of what should be the acmé of our ambition. I am sure we should all be pleased to see our proceedings and transactions issued in a separate form, emanating from the Society itself.

It may be within our power to do something in this direction during the New Year, if it is only by enlarging our Annual Report, by adding an abstract of our transactions. As we gather numerical strength, we may hope that our transactions will increase in a proportionate ratio, and that in the near future we may be enabled to publish a volume of respectable size. But for the present we must be content with the modest addition of a few pages to our Annual.

The contemplated improvement is but a small one, I admit ; but if it should be effective, it may be considered as the legitimate outcome of the advancement made by the Society during the year, and for this reason it will be welcome.

Before concluding this portion of my address, I cannot refrain from adverting to a matter which I consider as not only satisfactory in itself, but as indicative of a more comprehensive interest obtaining among those workers who either from choice, or the limited time at their disposal, confine their attention to Entomological subjects only.

Even in the history of the Society, there was a time when anything in the way of an exhibit or communication pertaining to any order other than *Lepidoptera*, received but scant courtesy at the hands of those Entomologists who affected rather the particular than the general. It is gratifying to observe a more liberal feeling springing up among and around us. The Lepidopterist is beginning to recognise the fact, that, as regards insects alone, nature has not exhausted all her wondrous cunning in the creation of Butterflies and Moths, but that a considerable share of it has been reserved for beetles, flies, and such like "beasties."¹

This augurs well for the success of the Society at the time—which I hope is not far distant—when we may have in our body a larger proportion of workers in other branches of Natural History than we have to-day.

In the intercourse of students in various fields of Biological Science, banded together for a common purpose, I see much that cannot fail to contribute to the mutual advantage of all.

¹ According to Kirby, about 12,000 insects of all Orders are known to occur in our islands, and of this number, as you will probably know, only about 2080 belong to the Order *Lepidoptera*.

A number of species have been made known and added to the British Fauna during the year. Of these I note the following:—

Dicranoneura similis, and *Typhlocyba salicola*, two Hemipterons new to Science, named and described by MR. JAMES EDWARDS. (*Ent. Mo. Mag.*, xxi. 229, 230.)

MR. R. H. MEADE describes a new maritime fly (*Ent. Mo. Mag.*, xxii. 152), under the name of *Ceratinostoma maritimum*. This Dipteron possesses some of the characteristics of species in the genus *Scatophaga*, and some of those pertaining to the genus *Cordylura*; it was therefore found necessary to create a new genus for its reception.

A *Lepidopteron*, new to Science, taken by MR. GEORGE COVERDALE in the salt marshes near Shoeburyness, July, 1884, was named and described by MR. STAINTON in the *Ent. Mo. Mag.*, xxii. 9, under the name of *Coleophora paludicola*. *Lithocolletis anderidæ*, also new to Science, bred in the spring from larva, found in the preceding October. Named and described. (*Ent. Mo. Mag.*, xxii. 40.)

Two species of *Lepidoptera* are recorded as probably new to the British Fauna by MR. A. F. GRIFFITH, *Ent. Mo. Mag.*, xxii. 64. These are named respectively *Ornix fagivora* and *Nepticula nylandriella*. The first bred in the spring from larva, found in autumn on beech, and the last was found in some numbers on the trunks of mountain-ash in Sutherlandshire, May.

A *Gelechia* taken by MR. SANG, amongst *Artemisia maritima*, in salt marshes, near Redcar in July, is described by MR. STAINTON, under the name of *Gelechia tetragonella*. (*Ent. Mo. Mag.*, xxii. 99.)

Nepticula assimilella, a species new to Britain, was bred by MR. W. H. B. FLETCHER, in June last, from larvæ found in Sept. 1884, on *Populus tremula*, in Abbots Wood. (*Ent. Mo. Mag.*, xxii. 113.)

Coleophora potentillæ, recorded by MR. GEORGE ELISHA, as occurring in Epping Forest, cases on *Potentilla tormentilla*, in September, *Ent. Mo. Mag.*, xxi. 254.

Coleophora tinctoriella, named and described by MR. GEORGE COVERDALE, *Entom.* xviii. 225.

Lycæna argiades, a new "blue" recorded by the REV. O. PICKARD CAMBRIDGE (*Entom.* xviii. 249), and *Cucullia artemisiæ*, added to the British Fauna (*Entom.* xviii. 290).

Nine species of *Sphcodes*, added to the British *Hymenoptera*, and described by MR. EDWARD SAUNDERS, (*Ent. Mo. Mag.*, xxi. 177), viz. :—*spinulosus*, *puncticeps*, *longulus*, *niger*, *pilifrons*, *similis*, *feruginatus*, *hyalinatus*, *variegatus*, *divisus*, and *dimidiatus*.

At the April Meeting of the Entomological Society of London, MR. BILLUPS exhibited two species of *Pezomachus*, new to Britain, *P. immaturus*, and *P. vulnerans*.

A single example of a *Coleopteron* (*Tachys parvulus*), new to Britain, taken by MR. J. H. SMEDLEY, at Wallasey, September, 1884, and described by the REV. W. W. FOWLER, *Ent. Mo. Mag.*, xxii. 43-

Of these additions to our Fauna, the most important, or at least the most interesting, is that of a new butterfly. The fact of a new butterfly, and that too a species of *Lycæna*, occurring in England, is an event for which Entomologists were hardly prepared. Among *Lepidoptera*, the butterflies have always received most of the collectors' attention. The "blues" especially have been industriously worked. In the hope of obtaining varieties, many Lepidopterists give considerable time to the capture and examination of the commoner species of *Lycæna*. Now that examples of a new species are among the possible results of a free overhauling of such species as *L. icarus* and *L. ægon*, it is probable that both these insects will in the future, like our canine friends at present, have their liberty considerably interfered with. It is to be hoped that the "suspects" may be treated with moderation, and receive their immediate discharge if after capture and examination they are found to have no criminating evidence in the shape of a tail about them, and do not happen to be wanted on a charge of hermaphroditism or aberration.

The circumstances attending the capture of this new species would seem to suggest a more careful scrutiny of our commoner species of *Lepidoptera* in out-of-the-way places. It cannot, however, be expected that the greatest energy or most consummate care will result in the detection of many other new species in this way; but it would be well for us, perhaps, never to take for granted that any object *is* what it appears to be, until we have assured ourselves of its identity. Certain species may be so familiar to us that we would venture to identify them even at a distance; but it is better not to place too much reliance on our ability in this respect. A little trouble taken in the examination of a supposed common object might be rewarded by the discovery of a novelty.

The curious feature connected with the capture of *Cucullia artemisiæ* in this country is the unusual date. Mr. Brooks says he took his two specimens on the 26th of August. On the Continent, where this insect is abundant in its particular localities, it is out in May and June, and the larvæ would be feeding on wormwood at the time Mr. Brooks took his specimens. According to Dr. Staudinger *Cucullia artemisiæ* and *C. absinthii* are both found in Germany, Switzerland, Hungary, Central and South Russia, and in the Altai. *C. absinthii*, however, has a more western range than *C. artemisiæ*, as it occurs in France, also in England. The British counties from which it has been recorded are, Dorsetshire, Devonshire, Cornwall, Somersetshire, Glamorgan, and Berkshire. With the exception of the last-named county all these are on the coast. The first four adjoin, and Glamorgan is only separated by the Bristol Channel.

Wormwood (*Artemisia absinthium*), the food plant of both these insects, has a very wide geographical range. It is found in Europe, N. Africa, Siberia, Dahuria, N.W. India, and N. America. As a British plant it is local, occurring in waste places. It extends from Forfar southwards. In the north and west of Scotland it is rare. It occurs in Ireland, but is probably not indigenous to that country.

The occurrence this year of some of the rarer Sphinges in England has caused no little excitement among lepidopterists. I have not the slightest doubt myself as to their origin. Like the *Colias* they are immigrants in the first instance. Under favourable circumstances they may breed here, but their permanent establishment in England is hardly probable.

In his article on *Anosia plexippus* (formerly known as *Danaïd archippus*) Mr. Jenner Weir states (*Entom.* xviii. 306) that altogether nine specimens of this insect have been recorded as captured or seen in England this year. He also adds that as regards the four specimens taken, and two others seen in Cornwall (*Entom.* xvii. 290-292), "there is no reason to doubt but that they were actually bred in this country." Mr. Weir is further of opinion that there is a fair chance of this handsome species establishing itself in England. Such an event is one that would be most gratifying to all British

lepidopterists, and might be considered as an exchange for *Pieris rapæ*, which North America probably received from us as an importation during late years. This latter insect, by the way, has already developed a climatic race in the New World.

Callimorpha hera has been again taken in the south of England by Mr. Jager, who captured a specimen and saw another on the 24th of August this year. This specimen was brought up to our Exhibition by Mr. Jager. It has yellow hind wings, and is the *var. lutescens* of Staudinger. Mr. Brooks, who it may be remembered has been very successful with this species during three successive seasons, and is also the fortunate possessor of *Cucullia artemisiæ*, was good enough to point out the lucky hedgerow to Mr. Jager.

One specimen of *Callimorpha hera* is recorded by Mr. H. D'Orville, as taken near Exeter on August 14th, 1871 (*Ent. Mo. Mag.* viii. 87). Appended to this note is an editorial, stating that several other well-authenticated cases of the occurrence of *C. hera* in the south-west of England had occurred during the previous ten years, and asking Entomologists who had knowledge of such captures to give an account of the circumstances. I do not find that this request elicited any information on the subject, but I believe there are records extant of a specimen taken at Newhaven in 1855, and another near Brighton in 1868; and at some time before the earliest of these dates, Captain Russell captured several in Wales.

In the *Entomologist* for December last (vol. xviii. 318), Mr. Joseph Potter records the capture of a specimen of *Catocala fraxini* in Hyde Park, on the 9th of September. He states that it was at rest in a sycamore, thirty feet from the ground, and that it had been seen two hours previously on an ash tree. Mr. Potter adds, "I have no doubt it emerged from the pupa in the immediate locality; it had apparently not flown far." Just fifteen years ago, that is in 1870, Mr. Potter recorded a specimen as taken by a friend of his, at rest on an ash tree in Regent's Park, also on the 9th of September (*Ent. Mo. Mag.* vii. 111).

In 1874, Mr. Charles Oldham took a worn specimen at Folkestone, on September 5th, and Parry of Canterbury says he took one "almost equal to bred" in Pine Wood, Kent,

September 26th (*Entom.* vii. 228, 289). A rather wasted example was taken by Mr. W. W. Shaw in Berwickshire, September 9th, 1876 (*Entom.* ix. 278).

In 1880, five specimens were seen or taken at sugar in various parts of the country as follows:—Mr. John Mundie, of Aberdeen, says one visited a sugared tree on August 30th, and two following nights. Mr. Wratislaw took one at Rugby, August 31st. A much worn and broken example fell to the lot of Mr. Griffiths, taken in the Leigh Woods, Bristol, Sept. 1st. Mr. W. White one, at Barnsley, Sept. 6th, and Mr. J. H. A. Jenner, one in fair condition, near Lewes, Sept. 27th (*Entom.* xiii. 240, 241, 281, 310).

Having reviewed the Society's actual position, touched on some of the probable items of our programme for 1886, and also glanced at the most notable captures and important discoveries made this year by Entomologists in Britain, I will now briefly refer to some eminent Biologists, learned specialists, and earnest workers who have been removed from their labours by the hand of death during the past twelve months.

By the untimely death of Mr. RYE, F.Z.S., F.E.S., the scientific world has lost an able Entomologist and most assiduous literary worker, and this Society one of its original patrons.

EDWARD CALDWELL RYE was born in London in June, 1832, and died at Stockwell on Feb. 7th, 1885, after a very short illness, in the fifty-third year of his age.

As an Entomologist, he at first was interested in *Lepidoptera*, but subsequently turned his attention to *Coleoptera*, among which order he was especially successful in discovering species new to the British fauna. In the *Entomologist's Annual* 1863, he commenced a series of articles on British *Coleoptera*, which he continued until the *Annual* ceased in 1874. Mr. Rye was one of the original founders and co-editors of the *Entomologist's Monthly Magazine*, the first number of which appeared in June, 1864. In 1866, he published his well-known *British Beetles*. He was sole editor of the last ten volumes of the *Zoological Record*, and in several of the earlier volumes the article 'Coleoptera' was from his pen. He contributed articles on various orders of

the class *Insecta* to the *Encyclopædia Britannica*, and was also connected with the *Field* newspaper as one of the Natural History editors, and sole editor for *Travel*. In 1874, Mr. Rye was appointed Librarian of the Royal Geographical Society, and from this date his numerous literary engagements caused him to withdraw his attention from entomological field work. His splendid collection of coleoptera is in the possession of Dr. Mason, of Burton-on-Trent, by whom it was purchased a few years ago.

Dr. GWYN JEFFRYS was born in January, 1809, and died January 24th, 1885, aged 76. He practised as a solicitor at Swansea until 1856, when he was called to the bar. Shortly afterwards he retired from the profession, and devoted himself to the study of Natural History, a taste for which he had acquired as a boy when he took great interest in the insects and shells occurring in South Wales. He appears to have made Conchology his principal study, and as an authority soon rose to fame. Among his most important literary works is *British Conchology* in five volumes. He was an honorary LL.D. of St. Andrews, and a Fellow of the Linnean and Royal Societies.

HENRY MILNE-EDWARDS was born of English parents at Bruges, in October 1800, and died in Paris, July 29th, 1885. His name will always occupy a prominent place among the most eminent naturalists of the first half of the present century. Although he at first took up the practice of medicine as a profession, he eventually abandoned this in favour of Natural History, in the study of which he had always evinced a passionate interest. The lower forms of animal life principally engaged his attention, particularly the Marine Invertebrata, and it is among these that he found material for much original research.

His earliest important investigations were undertaken during the year 1826 and 1828, when he and Audouin studied the littoral zone fauna of the coasts of Granville and around the Isles of Chansey to Cape Frehel. In 1829, the results of their labours were brought before the French Academy of Sciences, and in 1830, Cuvier, assisted by Dumeril and Latrielle, drew up and presented to the Academy a report

upon these investigations. In this report, the young naturalists were complimented for the good work they had so successfully conducted.

Among other appointments held by MILNE-EDWARDS was that of Professor of Entomology at the Museum Jardin des Plantes. Besides numerous original memoirs, he was author of many important works; of these it may suffice to mention *Histoire Naturelle des Crustæces* 1834-40, *Histoire Naturelle Coralliaires*, 1857-60, *Leçons sur la Physiologie et l'Anatomie comparée de l'Homme et des Animaux*, 1857-1881, 14 vols. *Recherches Anatomiques et Zoologiques faites pendant un Voyage sur les Côtes de la Sicile*, etc., with nearly 100 coloured plates.

Dr. WILLIAM BENJAMIN CARPENTER, C.B., F.R.S., was born in Exeter, 1813, and died in London, Nov. 10th, 1885, in the 73rd year of his age. He graduated M.D. at the University of Edinburgh at the age of 26, and shortly afterwards commenced the practice of medicine at Bristol. In 1843, he removed to London, with the determination of devoting himself entirely to scientific and literary pursuits. He filled the offices of Examiner of Physiology and Comparative Anatomy in the University of London and Professor of Medical Jurisprudence in University College, until 1856, when he succeeded to the Registrarship of the University of London.

Dr. Carpenter was the author of numerous works; but the manuals of Physiology, human, comparative, and general, are perhaps more particularly associated with his name. His *Microscope and its Revelations* still holds its place, as also does his masterly *Introduction to the Foraminifera*. He also contributed able papers to the *Cyclopedia of Anatomy and Physiology*, and to the journals and transactions of several learned Societies. He took a prominent part in promoting deep-sea exploration and research, and in conjunction with Sir Wyville Thompson, he initiated the Challenger expeditions. The results of these expeditions he reported in the Proceedings of the Royal Society, and in the Journal of the Royal Geographical Society.

Dr. Carpenter was in no sense of the term a specialist, but a many-sided naturalist. After labouring in the brain-exciting occupation of original research, he would by way

of relaxation and amusement contribute to an *Encyclopædia* or compile a text-book. It has been well said of him that in the days when he was fully employed, he was doing two men's work as a profession, and compassing that of a third simply for recreation.

Major F. J. SIDNEY PARRY, F.L.S. Born October, 1810. Died February 1st, 1885, aged 74.

Major Parry was a Coleopterist. His collection of *Lucanidæ*, comprising species from all parts of the world, was almost complete. He was elected a member of the Entomological Society of London in 1840, and was one of its oldest Members.

NICHOLAS COOKE was born at Liverpool, January 1818, and died May 19th, 1885. The loss of this energetic lepidopterist will be greatly felt by the Lancashire and Cheshire Entomologists, whose Society he, in conjunction with Mr. Capper and other friends, founded, and of which he was one of the vice-presidents. His collection of British *Lepidoptera*, probably one of the largest in England, was bequeathed, together with his almost complete one of European Butterflies, to the Corporation of Liverpool.

Mr. Cooke not only industriously worked his own district, but for many years past he collected annually in the Highlands of Scotland. He added *Nyssia zonaria* and some other species to the British Fauna, and was especially successful in the capture of rare and local species, such as *Sesia scoliiformis* and *Crymodes exulis*.

JOSEPH SIDEBOTHAM, F.L.S., born near Hyde. Died at Bowdon, Cheshire, May 30th, 1885, aged 62.

Mr. Sidebotham was a thorough naturalist and a student in many other branches of science. He was perhaps more generally known as a Botanist and Entomologist. The Cheshire scientific Societies have lost in him one of their most ardent supporters.

SIDNEY SMITH of Walmer died on the 28th of December, 1884, in the 78th year of his age.

Mr. Smith was probably known to those of our entomological members who have worked much around and about St. Margaret's Bay. His collection of British *Lepidoptera* contained many interesting varieties of certain species, among

which were several of *Callimorpha dominula*, some of which were black, and others had pink or yellow hind wings.

And now, gentlemen, in conclusion I have to tender you my most sincere thanks for the distinction you conferred upon me last December, when you elected me as your President for the year 1885. Believe me that I am deeply grateful for your uniform kindness and courtesy during the time I have had the honour of presiding at your meetings. As previously adverted to, the Society has made progress during the past twelve months, and I shall always feel a pardonable pride in remembering that it was my good fortune to occupy the Presidential chair in 1885.

The present satisfactory status of the Society is due not to any one particular cause, but to the harmonious working of a set of circumstances. Certain officers and members of Council, to whom reference has been made, have by their special efforts on behalf of the Society contributed in no small degree to the general success; but it is my pleasing duty to acknowledge the very able manner in which our Treasurer and Secretary have discharged their several important duties. It is upon these officers that the success of the Society depends to a very considerable extent, and upon whom the bulk of the work connected with the executive devolves. The Assistant Secretary, Mr. Barker, has also rendered valuable service to the Society in drawing up the various reports which have been published. Our Librarian and Curator have bestowed much careful labour on our Library and Collections respectively.

I congratulate the Society on its election of Mr. Jenner Weir as Vice-President.

In Mr. Robert Adkin, whom you have elected as your President for the year 1886, you have a gentleman who is not only in every way well qualified for the position, but is one who has given abundant proof of the keen interest he takes in the welfare of the Society. I have very great pleasure in vacating the chair in favour of Mr. Adkin, and I look forward with the greatest confidence to the future of the South London Entomological and Natural History Society.

RICHARD SOUTH.

ABSTRACT OF PROCEEDINGS.

JANUARY 1st, 1885.

R. SOUTH, Esq., *President*, in the Chair.

Mr. T. R. Billups exhibited specimens of *Hebrus ruficeps*, Linn., taken for the first time in England in the developed form. Locality : Loughton, Essex.

FEBRUARY 5th, 1885.

R. SOUTH, Esq., *President*, in the Chair.

The President read a paper entitled "Some Observations on the Protective Coloration of Lepidoptera." Printed in full at page 36.

Mr. T. R. Billups exhibited two female specimens of *Ranatra linearis*, Linn., taken at Loughton on 6th January, 1885. This Hemipteron, usually associated with stagnant pools, was taken at least a mile from any water.

MARCH 5th, 1885.

R. SOUTH, Esq., *President*, in the Chair.

Mr. H. T. Dobson read a paper, the subject being: "Do the Lower Forms of Animal Life feel Pain?" The author commenced by expounding what was meant by the lower forms of animal life, briefly referred to the division of the animal kingdom by Cuvier, and at some length described experiments which he and others had made; all tending, in his opinion, to show that the lower animals did not feel pain. The paper was illustrated by diagrams of the anatomy of the invertebrata.

APRIL 16th, 1885.

R. ADKIN, Esq., *Vice-President*, in the Chair.

Mr. T. R. Billups exhibited *Pezomachus immaturus*, Först, and *P. vulnereus*, Först, both species being new to

Britain, and having been taken on January 3rd, 1885, in Headley Lane.

MAY 7th, 1885.

R. SOUTH, Esq., *President*, in the Chair.

Mr. T. R. Billups exhibited living specimens of *Carabus auratus*, taken on April 30th, in the Borough Market, from a basket of vegetables imported from the South of France.

AUGUST 6th, 1885.

R. ADKIN, Esq., F.E.S., *Vice-President*, in the Chair.

Mr. T. R. Billups exhibited a rare species of *Proctotrupidæ*, *Inostemna Boscii* Jur, taken on a sunflower leaf at Peckham; also the egg case of a mantis, found in tobacco leaves by Mr. Adkin.

SEPTEMBER 3rd, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. Jenner Weir exhibited species of *Arachnida*, of the order *Solpugidæ*, which appeared to belong to the genus *Galeodes*. Mr. Weir said these specimens were taken in the Kalahari Desert by Mr. G. A. Farini, and he briefly referred to the structure and size of these Arthropods, they being about two and a half inches in length, and the legs extending over six inches.

Mr. T. R. Billups exhibited *Ledra aurita*, L., *Centrotus cornutus*, Linn., *Gargara genistæ*, Fab., *Ulopa reticulata*, Fab. etc., and read the following notes:—

“The insects exhibited belong to the sub-order Hemiptera-Homoptera. They include a very extensive set of insects, in which the upper and lower wings are generally homogeneous, I mean by that of the same kind or nature. The antennæ are in most of them very short and bristly, and consisting of three joints, the head having only two ocelli. They are represented in this country by some fifty-two genera and two hundred and seventy species. If strange variety of form, in fact, if the most *outré* and *bizarre* shapes be the object of admiration,

this family will supply abundant material; and if our own especial group in the Fauna list should not be enough, we have only to go to Guiana, the Brazils, and the islands of Florida, where these strange little creatures may be met with in the most beautiful, at the same time weird and fantastic shapes; while, to come nearer home, Geoffroy, the historian of the insects of the environs of Paris, while describing *Centrotus cornutus*, calls it "Le Petit Diable," or "Little Devil," and at the present time this group is known all over the Continent as "Geoffroy's Little Devils." The Cercopidæ proper and the Tettigoniæ are very extensive and beautifully coloured long, or rather parallel insects. They are represented in this country by two genera and two species only: *Tricophora sanguinolenta* and *Tettigonia viridis*, but they abound in South America and in Asia.

Our smaller species such as *Typhlocyba*, *Alebra*, *Cybus*, *Eupteryx*, *Gnathodus*, etc., are extremely beautiful little creatures, while to come further on, which of us is not acquainted with our active little saltatorial friend, *Aphrophora Spumaria*, the common Frog-hopper of our little town gardens. How many of us and how often have we been annoyed by seeing our plants infested by a larva, which carries on his depredations and robs our plants of its juices while artfully concealed and enveloped in a mass of white froth, closely resembling saliva. De Geer, the celebrated Swedish naturalist, wishing to know how the larvæ produced this frothy dwelling, says he took one of them out of its home, wiped it dry with a camel's hair brush, and placed it on a young stalk of honeysuckle, placed in a glass of water to keep it fresh. It began, he says, by fixing itself on a part of the stalk, into which it inserted its trunk, and remained a long time in this attitude, occupied in sucking and filling itself with the sap. Having then withdrawn its trunk, it remains there, or else places itself on a leaf, where, after different reiterated movements of its abdomen, which it raises or lowers and turns on all sides, one may see coming out of the hinder part of its body a little ball of liquid, which it causes to slip along, bending it under its body. Repeating again the same movement it is not long in producing a second globule filled with air like the first, which

it places side by side with, and close to, the preceding one. This operation it continues as long as there remains any sap in the body, it is very soon covered with a number of small globules; which, coming out of its body one after the other, tend towards the front part, aided in this by the movement of the abdomen. It is all these globules collected together which form a white and extremely fine froth, whose viscosity keeps the air shut up in the globules, and prevents its moisture from easily evaporating. If the sap which the larva has drawn from the plant, is exhausted before it feels itself sufficiently covered with froth, it begins afresh to suck, until it has got a new and sufficient quantity of froth, which it takes care to add to its first stock. My own observation leads me to believe that this frothy exudation is secreted by peculiar organs in the tail of the larvæ. This exudation undoubtedly serves to protect them from the heat of the sun; the soft body of the larvæ but for this would soon shrivel up; it also conceals them from birds, and other insects which would otherwise prey upon them. Notwithstanding the concealment, wasps, however, often get them out and carry them off. It is in the froth that the larvæ change into pupæ, and do not leave their strange habitation to undergo their final metamorphosis. It is in this vaulted cell that the pupa disengages itself, little by little, from its skin, and in the month of September we find these creatures most abundant. Towards the end of autumn the females become gravid: they are then so heavy that they are scarcely able to fly or jump; while the males, on the contrary, make prodigious bounds, springing sometimes two or three yards. How few know that the little broad-headed, brownish, frog-jumping insect now so common on plants is the frog-spittle insect in its perfect state. Many good people class these insects along with the Aphides, as species of the very comprehensive, though most unscientific genus, vulgarly called Blight."

Mr. H. Janson, who was present as a visitor, exhibited a specimen of *Sphinx convolvuli*, taken on the knocker of a door in Victoria Road, Finsbury Park.

SEPTEMBER 17th, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. Adkin exhibited a female variety of *Pararge megæra*, taken at Folkestone, in which the black spot near the apex of the right fore wing is represented only by a dark dot, not larger than the usual white centre, which in this case is wanting.

Mr. Elisha exhibited *Geometra smaragdaria*, bred from larvæ taken in the Essex salt marshes.

Mr. T. R. Billups exhibited a species of *Lepisma*, new to science, which was found swarming on some account books which were kept in an iron safe at Messrs. Adkins' Tobacco Factory, Aldgate. Mr. Billups said its nearest approach was *Lepisma subvittata*, Guerin, which was described by Sir John Lubbock in his *Monograph of the Collembolla and Thysanura*, and which was exceedingly common round the environs of Paris.

OCTOBER 1st, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. J. Jenner Weir exhibited specimens of *Lycæna argiades*, taken in Saxony, also *L. trochilus*, which he said was the smallest known European butterfly.

Mr. Cook exhibited a specimen of *Sphinx convolvuli*, taken in an oil shop at Rotherhithe.

Mr. Step exhibited colour sketches of *Boletus scaber*, *Agaricus* (*Amanita*) *vaginatus*, and *Agaricus* (*Clitopilus*) *orcella*; three species of edible fungi, found a few days previously on Bookham Common, Surrey. Mr. Step stated that he had found these in some abundance, growing in close proximity to *Agaricus rubescens*, *A. procerus*, *Boletus edulis*, and other species. Questioned as to their edible qualities, he replied that he could not endorse the encomiums of Badham respecting the *Boleti*, but all the other species named he had found excellent. Mr. J. Jenner Weir remarked that on the Continent he had frequently seen various *Boleti* for sale in the markets, and quantities of *Cantharellus*, which, according to Mr. Step, had been abundant this season on Wimbledon Common.

OCTOBER 15th, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited specimens of *Tettigometra impressopunctatus*, Dufour, and communicated the following note:—

“It was first taken in 1865 at Freshwater Bay, Pembroke-shire, by the Rev. T. A. Marshall, in a sheltered hollow, thinly covered with thyme and short grass. It was there very common, but restricted to a small area. It is a sluggish insect, concealing itself on the ground, where it is not easily detected. According to Signoret it occurs near Paris, and on both sides of the Mediterranean. The present specimens were taken in a little hollow, in some numbers, on the range of hills known as the Hog’s Back, running from Guildford into Portsmouth, by Dr. Capron, of Shere, near Guildford, who has generously presented them to me.”

Mr. Adkin exhibited a bred series of *Cidaria prunata*, Linn., and remarked that the larvæ should be fed on red, not black, currant, and suggested as a probable cause of the failure of some who had attempted to rear this species during the present summer, that the latter food-plant had been used. In his experience it was easy to rear. The specimens now shown were the descendants of a moth received from Folkestone in August of last year. The ova commenced to hatch on May 5th, the larvæ fed readily on the young leaves of the red currant, on which they were placed, the first spinning up on June 24th, the imagines emerging between July 10th and 26th. The larvæ required but little attention during the time that they were feeding, and in spinning up appeared to select a part of the stem of the food-plant just below the juncture of the branches, several cocoons being placed together, the cluster thus formed often completely encircling the main stem.

NOVEMBER 5th, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited two species of Colcoptera, viz., *Mononychus pseudacori*, F., and *Lina longicollis*, Suf.,

also four species of the *Tenthredinidæ*, viz., *Hoplocampa plagiata*, Klug., *Blennocampa melanocephalus*, Fab., *Lyda flaviventris*, Cam., and *Fanus femoratus*, Klug., and made the following remarks :—

1. *Mononyclus pseudacori*, F., feeds on *Iris Pseudácorus* the yellow iris, flag, or corn flag.

2. *Lina longicollis*, Luf., is not at all a common beetle, but occurring locally, and sometimes in profusion on alder or poplar.

3. *Hoplocampa plagiata*, Klug., is an exceedingly rare sawfly, there being only three known captures recorded ; one by the Rev. T. A. Marshall, at Boxhill, in 1870 ; one by myself, a female, at Weybridge, May, 1884 ; and the present specimen, also by myself, at Chingford, May, 1885.

4. *Blennocampa melanocephalus*, Fab., appears to be generally distributed in England and Scotland, but not common ; this specimen being taken at Chingford, May, 1885.

5. *Lyda flaviventris*, Cam., very rare, this being according to Cameron, the finest specimen captured in this country, there being only three recorded captures previously. This specimen was taken at Boxhill, May, 1884, by myself.

6. *Fanus femoratus*. This is also an uncommon sawfly, and was bred from the almost extreme ends of the willow, into which the larvæ bore, and feed on the pith undergoing their final metamorphosis in the stem. This insect has also been known to attack a young oak, burrowing under the bark, and causing small gall-like excrescences, in which, unlike most of the *Tenthredinidæ*, it changes, instead of dropping into the ground to pupate.

Mr. T. W. Hall exhibited a remarkable variety of *Abraxas grossulariata*, and said it was the only variety bred from 343 larvæ, 190 of which were infested either with the Ichneumon *Cassinaria vidua*, Gr., which was considered rare, or the Dipteron *Hyctodissa lucorum*, Fall. ; specimens of both species, mounted by Mr. Billups, were also exhibited.

Mr. R. South exhibited *Melitæa athalia*, *M. aurelia*, *M. parthenie*, and *M. dictynna*, and read the following note:—

“In 1881 I found a good number of *Melitæa* larvæ feeding on yellow cow-wheat (*Melampyrum pratense*) and foxglove (*Digitalis purpurea*). From these I bred a fine and variable series of *M. athalia*.

Through the kindness of the Rev. J. C. W. Tasker, I have a fairly good collection of Swiss butterflies, and among them are fine series of several species of *Melitæa*.

Among the North Devon *athalia* I find an example which comes so close to *M. aurelia* from Switzerland, that I am quite unable to detect the least difference between them. Entomologists more experienced in separating closely allied species of *Rhopalocera*, may not have the same difficulty. Other specimens in the North Devon series show a tendency towards the *aurelia* type on the upper surfaces of their wings, and the undersides of others very closely resemble the coloration and markings of *M. parthenie*.

As regards the geographical distribution of these three insects, it may be stated that *athalia* has a much wider range than either of the others. It is distributed throughout the countries of Europe, even to the Arctic regions, and is also found in Asia Minor, in the mountainous parts of Armenia, and in Siberia; still it only occurs in certain localities in those countries. As a British insect, for instance, it is only to be found in certain places in South England and South Ireland. There is no record of its having been observed in the North of England or in Scotland, though why it should be absent therefrom, seeing that it is an inhabitant of regions very much farther north, is a question which does not appear easy to answer in a satisfactory manner.

Aurelia and *parthenie* both occur in Switzerland, but from this country their course of distribution diverges. The first named, that is, *aurelia*, is found as far north as Lapland, and east into Asia as far as Armenia. *Parthenie*, on the other hand, is confined to mountainous districts in South-West Germany, France, Piedmont in Italy, Central Spain, and Andalusia. Thus one spreads north and east, and the other south and west.

Both these insects are also local, being restricted, like *athalia*, and indeed all other species of the genus, to small holdings here and there throughout the area of their distribution.

In the case which I exhibit this evening you will find series of *Melitæa athalia* from Sussex, Essex, North Devon, and Switzerland. In the last row but one is a specimen of *Melitæa dictynna* from Switzerland, and below it one of the North Devon examples of *athalia*, which is not altogether unlike the Swiss insect.

In the last row are three specimens of *M. parthenie* from Switzerland. These are put in so that you may compare them with the Swiss *M. athalia*. I think you will agree with me that the Swiss *athalia* favours *parthenie* rather than the British *athalia*, as regards colour and pattern of the upper wing surfaces. As already adverted to, some of the North Devon *athalia* resemble *parthenie* on the under sides.

Next to *parthenie* you will observe two examples of *M. aurelia* (Swiss), and below them two North Devon *athalia*. I think that you will admit that the foreigner and the Britisher are exceedingly alike.

When I first observed the resemblance of these specimens to *M. aurelia*, I was inclined to send a note to our Entomological journals regarding the capture of this species in Britain. Further comparison of British with Swiss *M. athalia*, and these again with Swiss *M. aurelia* and *M. parthenie* induced me to suspect that these last-named insects might not be distinct species, but only forms of *M. athalia*.

However, I have at the present moment no strong evidence to offer in support of my supposition. I must therefore let it remain in abeyance until I have collected more facts and additional material, when I may be enabled to put the whole matter before you in a more complete form."

Mr. Step read a short paper on the Freshwater Mussels (*Anodonta cygnea* and *anatina*), which he illustrated by specimens and diagrams. The species were said to be widely distributed over the lakes and rivers of the country. Commencing with a description of the shell, its hinge and the muscles by which the valves are held together, the reader

proceeded to the morphology of the creature, and thereafter to an explanation of its anatomy and physiology, concluding with an account of its reproduction and development.

NOVEMBER 19th, 1885.

R. SOUTH, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited the following *Ichneumonidæ* :

<i>Bracon osculator</i> , Ns.	Bred from <i>Coleophora virgaureæ</i> .
<i>Hemiteles fulvipes</i> , Gr.	„ <i>Zygæna filipendulæ</i> .
<i>Colastes braconius</i> , Hal.	„ <i>A miner</i> in oak-leaves.
<i>Bracon variator</i> , Nees.	„ <i>Coccyx strobilana</i> .
<i>Macrocentrus infirmus</i> , Ns.	„ <i>Hydræcia petasites</i> .
<i>Ichneumon computatorius</i> , Gr.	„ <i>Arctia fuliginosa</i> .
<i>Lissonota segmentator</i> , Fab.	„ <i>Sesia sphegiformis</i> .



SOME OBSERVATIONS ON PROTECTIVE COLORATION OF LEPIDOPTERA.

READ FEBRUARY 5TH, 1885, BY RICHARD SOUTH.



ALL forms of animal life dependent upon plants are themselves the natural prey of other animals. It is, therefore, a matter of vital importance to the majority of animals that they should possess colour and markings, which in character, assimilate or harmonise with their surroundings. The plant-feeder requires protective colour, so that it may conceal itself from its carnivorous enemies, and the flesh-eating animal, so that it may be able to steal upon its herbivorous prey unobserved.

In those localities, as for instance in the tropics, where vegetation is most varied, a corresponding variety in animal life will be found to exist; but on the other hand, in the sandy deserts where there are neither trees nor shrubs we find the coloration of reptile, bird, or beast, to be in unison with that of the sandy soil. Again, in the Arctic regions, pure white, with one or two exceptions, is the prevailing tint of fur and feather.

Some writers, although they do not entirely deny its being to a certain extent protective, contend that protection is not the primary object of colour. Such writers draw attention to the heat absorbing qualities of colour, and argue that, in the Arctic regions for example, white fur is of more utility to animals than would be a darker coloured fur, because white is a bad absorber of heat, and in consequence an animal possessing a white fur would be better able to exist in its ice-bound habitat, as the heat of its body would be economised and not readily parted with. But, on the other hand, it is well known that the musk sheep (*Ovibos moschatus*) a gregarious arctic animal, is of a dark brown colour. Now brown as a good absorber of heat, is only second to black. It is unnecessary to say more on this head than to observe that looking at the habits of musk sheep, colour in harmony with their surroundings would be of less service to them than a conspicuous colour. Their dark colour

enables them to readily see each other, therefore, when danger threatens, these animals can quickly flock together.

From this point my remarks will be confined to a consideration of the protective colour and mimetical markings of *Lepidoptera* only.

To the casual observer, the various hues and styles of ornamentation of the wing surfaces of *Lepidoptera* may appear to be distributed without particular object or method. If we look at a collection of set-out specimens, we shall probably be at a loss to say why this species is of a uniform green, and that species curiously mottled or striated with various shades of grey, red, or brown. To the Lepidopterist the colours and pattern of an insect are most intimately associated with the determination of species, but to the insect itself it is a matter of different import. It is essential to the insect that its colour and ornamentation should confer upon it a resemblance to some other natural object, peculiar to the situation in which it occurs, especially during its periods of repose. In fact, for its protection at such times it is necessary that the insect should be as unlike itself as ornate harmony with its surroundings can render it.

We can only properly understand how it is that the structure, colour, and pattern of an insect's wings can afford protection to the insect, by going out into the woods and fields, and there studying the normal habits of Butterflies and Moths when at rest. We shall then observe that the various species have peculiar methods of folding, expanding, or otherwise disposing their wings so as to accord with the material upon which they are reposing, or if not with the material itself, then with some other natural object, such as a leaf, tuft of lichen, stick, stone, or even an excrescence on the bark of a tree. The colours and pattern on the wings of the insects will be found to render the assimilation wonderfully complete.

In tropical regions numerous instances occur of species of *Lepidoptera* imitating or mimicking, not only other species of their own order, but also certain species of other orders. In Britain however, with the exception of the resemblance of the clear-winged Moths to Bees, Hornets, etc., there are probably no good examples of mimetic analogy. So this phrase of protective mimicry may be passed without further remark.

By way of illustrating the subject of this paper a few familiar examples of British *Lepidoptera* only will be referred to.

As is well known the genus *Vanessa* is composed of species whose wings are brilliantly coloured on the upper surface, and they are consequently noticeable objects even at a distance, but the under

sides of the hind wings of all the species are mottled and shaded with sober colours, so that when the insects are at rest on the trunks of trees, or even on the ground in the ordinary manner of butterflies in repose, that is with the wings raised vertically over the back, they are perfectly protected by reason of the complete harmony existing between the colours of the under sides of the hind wings of the insects and the object upon which they rest.

Darwin in *The Descent of Man* suggests that conspicuous colours are indirectly beneficial to many species as a warning that they are unpalatable. I am not aware whether or not this will apply to species of the genus *Vanessa*; if it does, then they are doubly protected, and can roam from flower to flower or bask in the pleasant sunshine without a thought of danger. I am inclined to think, however, that they do not enjoy entire immunity from attack when on the wing, or when settled with wings expanded. I have frequently watched the commoner species of the genus basking in the sunshine with their wings fully displayed, and have always observed that on the least shadow falling across them, they either took to flight or immediately closed their wings. This fact would suggest an instinctive knowledge of the protective nature of the under sides of their wings, and at the same time imply that they did not place implicit confidence in the deterrent properties of their brilliant colours. This is, however, a matter that I do not propose to go into in the present paper, it being my intention to treat of protective coloration of *Lepidoptera* only, in as far as it relates to the safety of the species in a state of repose.

Most of you will probably have had some experience with *Satyrus semele*, and will have observed how cleverly it eludes capture by the simple process of closing its wings. A specimen of this insect will alight on the ground a few feet in front of you. Then with net in hand you creep gently forward with your eye fixed on the spot where you saw *semele* settle, but only to find the insect vanished. You feel certain it cannot have flown away, still, you cannot see it; and whilst you are peering here and there *semele* darts from under your very nose, and settles again a few yards further on, there to repeat the same tactics.

The orange tip butterfly (*Euchloë cardamines*) again, is not difficult to see or capture when on the wing, but when at rest in its favourite position, that is, on the flower-heads of one of the *Umbelliferae*, the under sides of its wings harmonize with the flowers, and render its detection difficult. In *Thecla rubi* we have an example of bright

coloration confined to the under sides of a butterfly. This insect, as most of you will know, is brown on the upper surfaces of the wings, but the under sides are bright green. When danger is imminent it settles on a leaf, erects its wings over its back, and is effectually concealed.

Many other examples of protective coloration among Butterflies could be given, but I think those I have referred to will suffice. If you recall your experiences many instances will doubtless occur to you where you may remember to have noted a resemblance between the undersides of a butterfly and the object upon which it rested, but which you may possibly have considered only a coincidence and not as an illustration of protective coloration.

Among the *Bombyces* and *Notodontidæ* there are many remarkable imitations of bark, twigs, and withered leaves. For instance, *Cossus ligniperda* and *Stauropus fagi*, resemble the bark of trees on which they rest. *Phalera bucephala* rests on branches of trees or bushes, and the yellow patch on the hinder portion of its fore wings represents the fractured base of a recently detached twig. *Lasiocampa quercifolia* at rest is very like a cluster of dead leaves.

Several species of *Noctuæ* and *Geometræ* habitually rest on the trunks of trees, e.g., *Acronycta megacephala* on poplar, *Acronycta ligustri* on ash, *Tephrosia punctulata* on birch, *Eupithecia abbreviata* on oaks, and *Eupithecia rectangulata* on apple or crab. All these afford good illustrations of insects possessing colour and ornamentation in harmony with their resting-places. Most collectors of *Lepidoptera* will have observed these insects in repose, and will not have failed to remark how beautifully they assimilated with the bark of the trees upon which they were noticed.

Various species of moths are sometimes found on palings, but as a rule their occurrence in such situations is probably due to accident.

It is well known that when the wind has been blowing with some degree of force from a favourable quarter during the night, examination of fences in certain localities early the following morning, often results in the finding of numerous specimens of *Lepidoptera* ensconced thereon. At other times, long stretches of fencing will not yield a single moth. It may therefore be concluded that in the majority of cases moths rest on pales and other kinds of fencing rather from the force of circumstances than from the exercise of their own free will. Some few species of *Lepidoptera* do habitually, but not exclusively, repose on old fences, especially when such fences are plentifully covered with lichen. The lichen, for instance, would

afford food for the larvæ of *Cleora lichenaria*, and the perfect insect would find a safe resting-place thereon because the colours of insect and lichen would blend harmoniously together.

The great bulk of *Lepidoptera* conceal themselves during the day among the foliage of trees or bushes, or hide at the roots of grasses and other herbage. In whatever way they may rest, enemies of various kinds are ever on the alert, and wherever the moths may secrete themselves, they would be in danger of detection and seizure unless their structure, ornamentation, and colour either harmonized with their immediate surroundings, or counterfeited some natural object occurring near their resting-places. Possibly you may have met with that ubiquitous insect *Triphæna pronuba* hiding away under various plants in fields and hedgerows. It is not often seen among the foliage of plants, but generally on the ground and near the root-stock of the plant. In this position it is not unlike a stone, and for such an inanimate object I have frequently mistaken it, until I attempted to touch it, when it darted away and at the same time revealed its identity by exposing its yellow hind wings. *Agrotis strigula* (*porphyrea*) and *Anarta myrtilli* offer excellent examples of protective ornamentation. The colours of the fore wings of each of these insects blend admirably with the colours of the dead twigs and flowers of the heather, upon and among which these species rest. Species of the genus *Xanthia* agree in a striking manner with the dead and dying leaves of their food plants. Thus we see typical *Xanthia fulvago* (*cerago*) is in coloration exactly like a dying leaf of the willows *Salix aurita* and *Salix caprææ*, even to the spots. The lemon-coloured variety of *Xanthia fulvago*, known as *flavescens*, is said to be chiefly bred from larvæ found feeding on the leaves or catkins of *Salix viminalis*, a narrow-leafed species of willow commonly called "osier." The insect in this case is smaller than the type, and is of the same tint of colour as the dying or defunct leaves of the osier. *Oporina croceago* is often found during the winter hibernating among the dead leaves of oak as they hang on the young or scrubby oaks growing in hedgerows, etc., on the borders of woods.

So far, except in the case of *Xanthia fulvago*, I have confined my remarks to what may be termed typical coloration; I shall now refer more particularly to variations from the type, and shall endeavour to show that such variation is not of the accidental character it is often supposed to be, but is closely connected with, or I should say influenced by, the nature of the insect's surroundings in different localities.

In speaking of an insect imitating or mimicking an object, such as a leaf, twig, bark, etc., it must not be supposed that the use of such terms imply conscious action on the part of the insect. As will presently be shown more fully, there is in all insects a tendency to vary; by the laws of inheritance, varieties are reproduced, and natural selection does the rest.

The offspring of all animals exhibit a general likeness to their parents, but individually they vary to a greater or lesser extent, not only one from the other, but also from the parent type. This is well exemplified in the *Lepidoptera*. If a series of any species in this order is examined, even though such series is formed of individuals of the same brood, it will be found that no two specimens of the series are exactly identical in every particular of structure, colour, and pattern of marking. In the case of species usually considered constant in colour and markings, the points of difference may be so trivial and minute as to escape detection unless the specimens are carefully and critically compared; but in a species of a polymorphic character, the divergence from the type and from each other is more pronounced, though there is a decided bias in favour of the parents where the series is composed of individuals of one brood. In any case, if variation from the type is of a nature to confer additional protection on the form so varying in any particular locality, then such form will possess an advantage over the type in that locality, and will probably supersede it, for, as Darwin in *Origin of Species* tells us, it is varieties of the same species and species of the same genus that come into the sharpest conflict in the great struggle for existence.

On the other hand, if the type is well protected by virtue of assimilation with its surroundings, and none of the varietal forms, which from time to time occur, improve upon the type in this respect, then the type will continue to prevail; but should the environment of the species become gradually altered in character, then the forms best fitted to exist under the changed conditions, will be perpetuated, and the former type being at a disadvantage will be gradually eliminated.

In *Boarmia repandata* we have a good illustration of a species which is either variable or constant in coloration according to the locality it inhabits and the nature of its surroundings in that locality. Thus for instance, in the Isle of Lewis, one of the Hebrides or Western Islands of Scotland, the species is represented by a small leaden grey form which in colour and style of ornamentation agrees

with the rocks upon which the insect habitually rests in that island. Mr. Jenner Weir has named this form *sodorensium* (*Entom.* xiv. 220).

I should say that the representatives of *B. repandata* in the Isle of Lewis are but little affected by crossing with forms from the mainland of Scotland, in fact the small size of the specimens is very suggestive of an impoverished strain, probably the result of isolation and consequent inter-breeding.

In some parts of North Devonshire *B. repandata* varies from a pale grey with few markings, through grey with ochreous tinge and distinct lines, to an almost uniform smoky grey brown, together with a predominant banded form (*conversaria*). This form also varies in depth and tone of colour. The species is common all along the coast district between Ilfracombe and Lynton, but it is found to be most variable in the charming little oak woods in the glens by the sea, and in those places the var. *conversaria* is more numerous than the type, if it be possible to speak of a type where all that are not of the banded form are of such various patterns and shades of colour.

Conversaria and the more or less typical forms rest on oak trees, and in this position the banded form is quite secure, its coloration harmonises with the lichen-clad oaks so well, that the insect's detection is a matter of difficulty. My first experience with the banded variety led me to suppose that this form would be easily seen when at rest; but what I observed of its habits afterwards convinced me that the first specimens of *conversaria* I had seen were for some reason unfortunate in their resting-place. Occasionally *repandata* was observed sitting on old walls, also on rocks, of which latter masses of various sizes occur in all the woods. Many of the *repandata* captured or bred would have harmonised well in coloration with the rocks, but only few specimens were actually seen thereon.

The present sylvan character of those North Devonshire localities, to which reference has been made, is a feature of comparatively recent date, and is due to man's agency. Without doubt the low growing herbage, such as bilberry and heather flourished there, though perhaps not so luxuriantly, ages ago. Possibly birch and willow of a scrubby growth may also have existed before the oak trees were planted. Then, as now, the larvæ of *Boarmia repandata* would feed on the bilberry and heather, and the perfect insects would probably rest on the rocks. After the oak trees were planted, and as they increased in size, the herbage, including bilberry and

heather would, under the fostering shelter of the trees, become more robust, growing and spreading in all directions, and gradually cover nearly the whole of the rocks, in consequence of which *repandata* would generally rest on the tree-trunks. Arboreal insect-eating birds would take up their abode in the young woods, and then commenced a struggle for existence between the varieties of *repandata* and that form best adapted by reason of its protective coloration, to exist under the altered nature of the locality would be preserved. Of course the best protected, and therefore predominant form of to-day (*conversaria*), did not acquire all at once the distinctive pattern of wing ornamentation we now find in this insect. As the nature of its habitat gradually changed from a treeless and rocky wilderness into a well-timbered wood with a luxuriant undergrowth, so first one, and then another of the varieties of *repandata* would be in the ascendant, but the tendency of the variation throughout must have been towards the character of marking now so fully developed in *conversaria*. In evidence of this we have the fact that the majority of the more or less typical *repandata* exhibit either a strong outline or a faint trace of the band of *conversaria*.

There are many other places in England where the *conversaria* form of *Boarmia repandata* occurs from time to time, but not in such numbers as to threaten to supplant the type. From one of these localities (Bristol) I received part of a brood of larvæ hatched from eggs deposited by a banded female. The nineteen larvæ produced ten typical *repandata*, and nine of the form *conversaria*. Unfortunately nothing of the male parent was known, but probably as *conversaria* only occurred sparsely in the locality, the male was of the typical form.

Types of some species of Butterflies and their named varieties are sometimes only slightly differentiated in colour and markings of the upper surfaces of the wings, but the under sides of the wings show considerable difference, for instance in the case of *Cænonympha typhon* and its varieties *laidion* and *philoxenus*. A pair of each of these insects are shown. On reference to the var. *laidion* it will be observed that the sub-marginal spots of the under side are either very small or entirely absent. This form occurs in Ireland and Scotland, but does not appear to have occurred elsewhere. The variety *philoxenus* is only found in the North of England, and is peculiar to the counties of Cumberland, Durham, and Yorkshire. If you compare this form with the type it will be found to possess an extra spot on the upper surfaces of the superior wings, situated

near the anal angle. You will also observe that the sub-marginal spots of the under sides of the inferior wings are large and distinct. Newman in *British Butterflies* considered this form as a distinct species, and it will be found in his work under the name *rothliebii*.

I have never had the pleasure of seeing *Cænonympha typhon* or either of its varieties in a state of nature, therefore I am not able to say anything positively of its habits during repose. *C. pamphilus* a near congener of *typhon* rests on the heads of rushes and coarse grasses, sometimes two or three examples on one head. I have often seen this species in repose, and can assert that the position selected is one well calculated to afford protection by reason of the complete harmony of the colouring and ornamentation of the under sides of the wings of the insects with the grass or rush heads upon which it rested.

In their various habitats the type and varieties of *Cænonympha typhon* may also assimilate with their resting-places. On the Yorkshire moors and mosses for example, it may be an advantage to the species that the spots and rings of its under wings should be of the size we observe in the form *philoxenus*, and in the same way small size or complete absence of spots on the hind wings of the var. *laidion* may also confer security upon that form.

Xylophasia rurea, and its variety *alopecuris (combusta)*, affords an instance of marked difference between type and form of a species of *Noctua*. The normal habit of this insect is to rest among herbage at the roots of trees and bushes. Sometimes it may be found in the crevices of the bark of trees. In marking and coloration the type bears a strong resemblance to a piece of oak twig, or of a darker coloured stick from which the bark has been partly stripped. The variety, on the other hand, is not unlike a bit of birch or some such dark or reddish-barked twig. In some parts of Britain the variety is more frequently met with than the type, and in other parts the type is predominant. Another noteworthy fact is that where *combusta* and type are nearly or quite equal in point of numbers, intermediate varieties occur which connect the two extreme forms. From these facts I am inclined to infer that in certain localities, some parts of Scotland, for instance, the *combusta* form prevails because its colouring is in harmony with the general character of the *debris* in and about the resting-places of the insect in those localities. In the same way the lighter colour and arrangement of markings give protection to the typical *rurea* in those localities where it predominates.

Reference might be made to many other examples of types and

varieties of species being respectively coloured and marked in accordance with the peculiar character of their surroundings; but in a short paper of this kind it is not possible to instance more examples. We will now pass on to a consideration of reproduction of varieties.

In the observations of *Boarmia repandata* var. *conversaria* it has been shown that in a portion of the progeny of a banded female nearly fifty per cent. favoured that parent. This fact is the result of the action of the laws of inheritance.

With the view of further illustrating how strong is this tendency to inherit the coloration of a parent, I exhibit four series of bred *Cidaria truncata* (*russata*). The four series represent the progeny of the captured females you see lettered respectively *A. B. C. D.* All the specimens of each set or brood are arranged in double columns above their proper female parents. The examples in the first column of each set more particularly favour the parent, except in the matter of size. (It is well-known that individuals of summer broods of *Lepidoptera* vary in size from individuals of spring broods.) In no case was anything known of the male parent of either of the series of *C. truncata*; but we see that a large proportion of each series favour the female parent, and this is sufficient to show, that at least on one side, the parental coloration and device of the wings of a moth are transmitted to the progeny. In North Devon, where the female *Cidaria truncata* were captured, the form *A.* is predominant. In the case on the table, you will see five other captured specimens of this species lettered *E. F. G. H. I.* These examples are added to show the whole range of variation of *truncata*, in the coast district between Woody Bay and Lynton, in North Devonshire.

If you look at the series *A.* and *B.* you will see that nearly all the individuals of *A.* are of the same form as the female parent, whereas in *B.* sixteen examples only favour the female parent, ten others are in coloration something like the female parent of series *D.*, and two specimens are of the form *A.* From these facts I am inclined to suppose, that the male parent of the *A.* series was of the same form as the female of that series, and that the female parent of series *B.* paired with a male of the coloration of the *D.* female. Of course, this inference is ideal, and I only put forward the hypothesis that you may be induced to prove or disprove it by breeding this or other polymorphic species from parents which are either of different or identical forms.

I am strongly of opinion that by carefully selecting males and females to breed from, we might ultimately get nearly entire broods of a particular form of almost any species of *Lepidoptera* that will

breed freely in confinement. The reproduction of varieties in this way might be termed artificial employment of natural laws, and is analogous to the operations of the poultry, pigeon, or stock breeder. It is, however, performed by nature herself, but by the much slower process known as "Natural Selection." In nature, the forms of a species most nearly assimilating with their surroundings, or those which most successfully imitate other objects, escape their enemies, while the less protected forms of species fall victims, and a long continuance of this process will not fail to gradually, but surely, eliminate those less favoured forms, thus leaving the protected forms free to increase and multiply. These remarks do not apply to "hybrids," or certain phases of deformity. Hybrids are the result of unnatural union between opposite sexes of distinct species, and the offspring are sterile. Deformities are due either to accident or influence of some atmospheric condition.

In conclusion, I may say, that protective coloration of *Lepidoptera* is not a favourite subject with Entomologists generally, but I trust that the few remarks I have had the honour of reading before you this evening may induce those of you who do not already give attention to the matter, to take note of those moths you may find at rest in their native haunts, and see if you cannot trace some similarity between the insects and their resting-places, or some natural object adjacent thereto.

Now that the breeding of *Lepidoptera* from the egg is so generally practised among Entomologists, many good opportunities must occur for obtaining information upon the following points :—If of a species, more or less constant in colour and markings, a female differing from the normal type has been captured and fertile ova obtained therefrom, it would be interesting to ascertain to what extent the variation was reproduced in the offspring of that female.

In the case of a variable species, male and female known to be of different forms, as for instance, female type of *B. repandata* paired with male of the form *conversaria*. How many of the offspring favour the male? How many the female? How many of the brood are unlike either parent?

When the male and female are of identical form, as for example, var. *combusta* of *Xylophasia ruria*. What proportion of the offspring are of the parent type?

There is a wide field for experimental research in this direction, open to those Entomologists who are willing to sacrifice their rarer varieties in the enterprise.

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- DOWNING, J. W., 59, Lupus Street, Pimlico, S.W.
- ELISHA, G., 122, Shepherdess Walk, City Road.
- ELEY, A. G., 84, Drakefell Road, St. Katherine Park, Hatcham, S.E.
- FICKLIN, A., Norbiton, Surrey.
- FREMLIN, H. S., 1, Margaret Street, Cavendish Square.
- FROHAWK, F. W., Park Place, Eltham.
- GASKELL, A., 23, Queen's Road, Peckham, S.E.
- GIBB, L., 185, High Street, Lewisham, S.E.
- GODWIN, F., 88, Carlisle Street, Edgware Road, W.
- GOLDTHWAITE, O. C., 2, Grove Villas, Grove Road, Walthamstow.
- HALL, T. W., F.E.S., 3, New Inn, W.C.
- HELPS, J. A., Newstead Lodge, Westhall Road, Forest Hill, S.E.
- HENDERSON, J., 58, Romolo Road, Herne Hill, S.W.
- HICKLING, G. H., Landon Cottage, Elm Road, Sidcup.

- HODGSON, A. E., Coleford, Gloucestershire.
 JOBSON, H., 3, Clarendon Road, Walthamstow.
 JOY, E., 15, Brownswood Park, South Hornsey, N.
 KENWARD, J., Redcliffe, Corona Road, Lee, S.E.
 LEVETT, C., 104, Malpas Road, Brockley, S.E.
 LOWRY, P. H., 61, Hackford Road, Brixton, S.W.
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 MERA, A. W., 68, Richford Street, Hammersmith.
 MILES, W. H., F.E.S., Dawson & Co., 5 & 6, Hare Street, Calcutta,
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 MONTIERO, Senor A. de C., 72, Rua do Alacrine, Lisbon.
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 PEARCE, A. E., " " " "
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 WILLIAMS, J. T., 5, Woodland Villas, Foots Cray, Kent.







ABSTRACT OF PROCEEDINGS

OF

THE SOUTH LONDON

ENTOMOLOGICAL & NATURAL HISTORY

SOCIETY

FOR THE YEAR 1886,

TOGETHER WITH

THE PRESIDENT'S ADDRESS.



PRINTED BY EDWARD KNIGHT,
18 & 19, MIDDLE STREET, LONDON, E.C.

ONE SHILLING & SIXPENCE.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 309

LECTURE 10

PROBLEMS

1. A particle of mass m moves in a circular path of radius r with constant speed v . Find the magnitude of the centripetal force.

2. A particle of mass m moves in a circular path of radius r with constant speed v . Find the magnitude of the centripetal force.

3. A particle of mass m moves in a circular path of radius r with constant speed v . Find the magnitude of the centripetal force.

THE SOUTH LONDON
Entomological & Natural History Society

(Established 1872),

The Bridge House, London Bridge, S.E.



Patrons.

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Elected December 16th, 1886.

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R. ADKIN, F.E.S.

Vice-President.

R. SOUTH, F.E.S.

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To whom all Communications should be addressed.

THE SOUTH LONDON
ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY,
THE BRIDGE HOUSE, LONDON BRIDGE, S.E.

The Society has for its object the diffusion of Biological Science, by means of papers, and discussions, and the formation of typical collections. There is a Library for the use of Members. Meetings of the Members are held on the 2nd and 4th Thursday evenings in each month, from Eight to Ten p.m., at the above address. The Society's rooms are easy of access from all parts of London, and the Council cordially invite the co-operation of all naturalists, especially those who are willing to further the objects of the Society by reading papers and exhibiting their specimens.

SUBSCRIPTION.

*Seven Shillings and Sixpence per Annum, with an Entrance
Fee of Two Shillings and Sixpence.*

All communications to be addressed to the Hon. Secretary,
W. H. BARKER,
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PAST PRESIDENTS.

1872 ... J. R. WELLMAN.
1873 ... ,,
1874 ... ,,
1875 ... A. B. FARN.
1876 ... ,,
1877 ... J. P. BARRETT.
1878 ... J. T. WILLIAMS.

1879 ... R. STANDEN, F.E.S.
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1881 ... V. R. PERKINS, F.E.S.
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1883 ... J. R. WELLMAN.
1884 ... W. WEST, L.D.S.
1885 ... R. SOUTH, F.E.S.

1886 ... R. ADKIN, F.E.S.

REPORT, 1886.

ON reviewing the transactions of the Society for the past year, it is with great satisfaction that the Council have to report the continued vigour and increasing scope of its operations.

Its progress has been attended with a rapidly increasing membership, in itself a guarantee that the useful and interesting matter brought forward for discussion at the Society's Meetings, together with the wider range and thoroughness of its investigations into Biological Science, have been deservedly appreciated by the Members.

The regular attendance at the Meetings of the Society attests also to the enduring interest with which its work is regarded.

Since our last Report fifty-two new Members have been elected, three have resigned, and three have been struck off the books, leaving a total of one hundred and one.

Our financial position is also very satisfactory. After covering all expenses there is a useful balance left in favour of the succeeding year.

The Library has been enlarged by the following donations, viz. :—

“List of Yorkshire Lepidoptera.” By G. T. Porritt, F.L.S.
From Mr. R. ADKIN.

“Catálogo de Los Lepidópteros, Chili.” Por W. Bartlett-Calvert. From the AUTHOR.

“The Garner;” “Dictionary of British Plant Names” by Fitzgerald. From Mr. T. R. BILLUPS.

“Illustrated Science Monthly;” Vols. VI. and VII. of the “Dorset Natural History and Antiquarian Club;” “Midland Naturalist;” “Our Insect Enemies,” by Theodore Wood; “Report on the Migration of Birds;” “Gapes

Disease ;” “Cornish Fauna—Vertebrate Animals and Crustacea ;” “The Hessian Fly,” by Miss Ormerod ; “Catalogue of Lepidoptera of Devon and Cornwall ;” “Goss’s Insect Fauna.” From Mr. J. T. CARRINGTON.

“Fauna and Flora of West Kent.” From Mr. T. D. A. COCKERELL.

“Entomologist’s Monthly Magazine” for 1886. From Mr. R. MCLACHLAN.

“Entomologist” for 1886, and “Zoologist” for 1886. From Mr. T. P. NEWMAN.

“Annual Report of the Lancashire and Cheshire Entomological Society.” From the SOCIETY.

“Fauna of Blackheath and its Vicinity” (Part I.). Part IV. Vol. IV. “Transactions of the Entomological Society of London : On the Distribution of Lepidoptera in Great Britain ;” “List of Land and Freshwater Mollusca of East Sussex,” by J. H. A. Jenner ; “Variations in the Colour of Lepidoptera,” by J. J. Weir. From Mr. J. JENNER WEIR.

AND BY PURCHASE.

“Science Gossip” for 1886.

“Larvæ of British Lepidoptera,” by Buckler.

The Society’s Collection of Insects under the care of Mr. W. WEST, of Greenwich, has received the following addition :

A number of species of British *Lepidoptera* from Mr. J. T. CARRINGTON.

The Herbarium has been greatly enriched by :

125 species from Yorkshire, and 157 species from Ranoch. From Mr. J. T. CARRINGTON.

And a number of plants, including fifty species of mosses from Mr. T. D. A. COCKERELL.

The Society has also received a small Collection of British and Foreign *Mollusca* from Mr. T. D. A. COCKERELL.

The Excursions held this year were to

Horsley on May 29th.

Conducted by Mr. WINDYBANK.

Bookham on June 26th.

Conducted by Mr. STEP.

Westerham on July 17th.

Conducted by Mr. CARRINGTON.

Chobham on August 7th.

Conducted by Mr. BILLUPS.

Epsom on September 4th.

Conducted by Mr. CHANEY.

We must call attention to the project which has been developed of collecting material for the publication of a Fauna of Kent, Surrey, Sussex, Hampshire, and Berkshire, to which further reference will be made in the President's Address.

WALTER A. PEARCE, }
H. W. BARKER, } *Hon. Secs.*

THE SOUTH LONDON ENTOMOLOGICAL

BALANCE SHEET FOR

GENERAL

RECEIPTS.

	£	s.	d.
To Balance from last Audit, Dec. 17th, 1885	10	9	5
„ Subscriptions and Entrance Fees	31	8	6
„ Contribution towards Cost of "Proceedings"	2	2	0

£43 19 11

PUBLICATION

To Special Donations	11	0	0
„ Sale of "Proceedings"	0	15	0

£11 15 0

LIBRARY

To Special Donation	0	10	0
„ Library Fines	0	17	8

£1 7 8

ASSETS.

To Cash Balance, General Fund ...	9	5	9
„ „ Publication „ ...	1	5	0
„ „ Library „ ...	1	7	8
	11 18 5		
„ Estimated Realisable Proportion of Arrears	3	0	0

£14 18 5

Audited, compared with vouchers, and found correct,

AND NATURAL HISTORY SOCIETY.

THE YEAR 1886.

FUND.

						EXPENDITURE.		
						£	s.	d.
By Rent	...	...	...	...	...	10	2	6
„ Printing	...	...	...	...	...	9	14	0
„ Expenses of Annual Exhibition	...	...	...	...	...	9	3	10
„ Postage and Stationery	...	...	...	...	...	5	0	11
„ Sundries	...	...	...	...	...	0	12	11
„ Balance in hand	...	...	...	...	...	9	5	9
						<u>£43 19 11</u>		

FUND.

By Engraving	...	...	...	...	...	3	3	0
„ Printing	...	...	...	...	...	7	7	0
„ Balance in hand	...	...	...	...	...	1	5	0
						<u>£11 15 0</u>		

FUND.

By Balance in hand	...	...	...	...	...	1	7	8
						<u>£1 7 8</u>		

LIABILITIES.

By Rent due at Christmas, 1886	...	...	...	...	...	1	10	0
„ Balance of Assets over Liabilities	...	...	...	...	...	13	8	5
						<u>£14 18 5</u>		

December 16th, 1886.

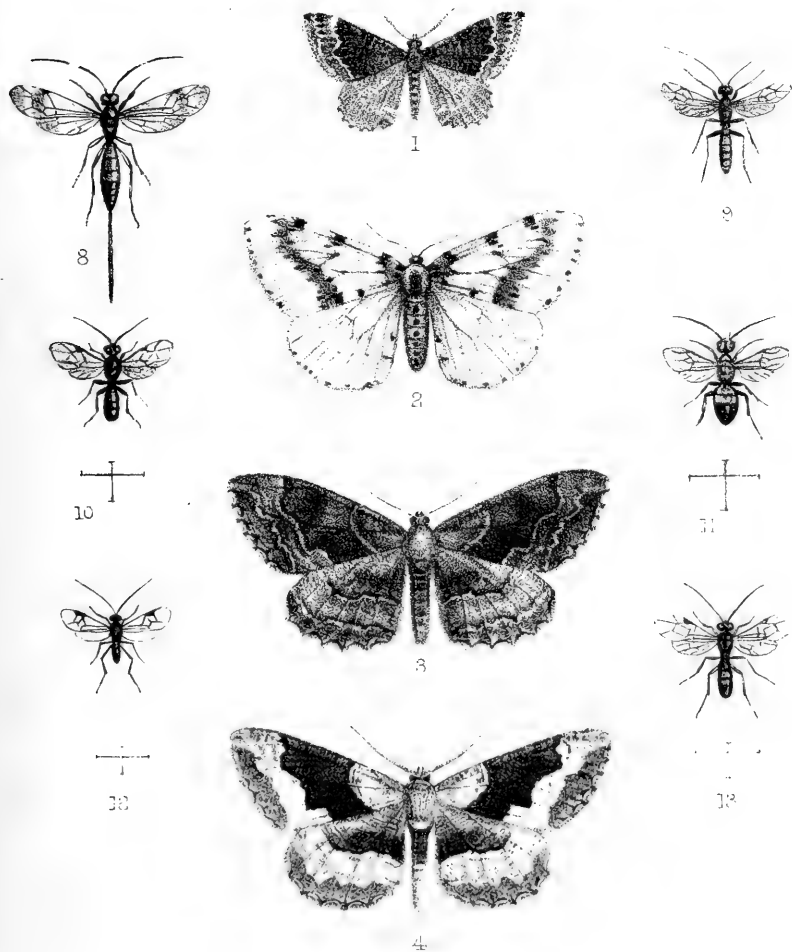
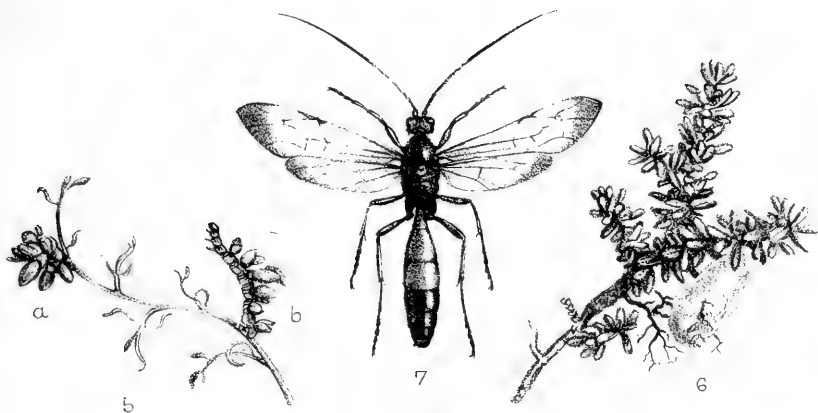
THOS. WM. HALL, }
J. W. TUTT, } *Auditors.*

EDWARD STEP, *Treasurer.*

PLATE I.



- Fig. 1. *Larentia olivata*, Bork. (var.), page 53.
,, 2. *Abraxas grossulariata*, L. (var.), page 46.
,, 3. }
,, 4. } *Boarmia repandata*, L. (vars.) page 46.
,, 5. Larva of *Phorodesma smaragdaria*, Fb. (*a* At rest; *b* extended), page 53.
,, 6. *Zygæna exulans*, Hoch. (pupa case among crowberry) page 64.
,, 7. *Trogus alboguttatus*, Gr., page 62.
,, 8. *Echthrus lancifer*, Gr., page 58.
,, 9. *Perilissus triangulatus*, Bridgm., page 73.
,, 10. *Erromenus plebejum*, Wolds., Foerst., page 73.
,, 11. *Cleptes nitidula*, Latr. (male), page 48.
,, 12. *Apanteles jucundus*, Marsh, page 63.
,, 13. *Bassus bizonarius*, Gr., page 73.



PRESIDENT'S ADDRESS.

GENTLEMEN,

In accordance with the usages of this Society it is my pleasing duty to address you on its progress during the year now drawing to a close. With this object in view I do not propose to enter in detail upon the earlier history of our Society; that is probably known much better to many of you than to myself, and it is with great pleasure that I observe our first President among us this evening; but as many of the members now present have joined us at comparatively recent dates, it may not be amiss to glance very briefly at our position from time to time during the fourteen years of our existence.

Founded under favourable circumstances in the year 1872, the Society appears to have met with considerable support; and at the close of 1879, the membership had reached the respectable total of 94. About this time, however, a period of depression set in. At the termination of the following year we find, by the report of the Council, that "the membership had not increased," and a falling off is from time to time recorded, until, at the Annual Meeting of 1883, the number of members on the Society's books stood at only 44, the cash balance in the hands of the Treasurer at less than £3, and the Council had to make the unpleasant confession that "secessions from us have considerably weakened our Society." Times of adversity often father prosperity. So in our case; despite the untoward events in regard to our place of meeting, which are, I doubt not, fresh in the minds of many of you, the membership began again, slowly but surely, to increase, and the Treasurer's balances to become more substantial, until, at the end of last year, we were able to show a list of some 55 members, and a cash surplus of over £10, and there

appeared to be good reason for looking with confidence to the future.

This brings me to the period more directly under our notice this evening.

Since our last Annual Meeting we have elected 52 members, many of them men of repute and considerable experience in various branches of Natural History ; happily, death has caused no breach in our ranks ; there have been but 3 resignations, and 3 names have been written off, so that our membership at the present moment stands at 101, a total with which we have every reason to be satisfied for the time being.

The Treasurer's balance, as you have already heard from the statement that he has so clearly put before you, compares favourably with last year, and the finances of the Society continue to maintain a thoroughly sound condition.

The Rules of the Society have, from time to time, been modified in some particulars to meet the requirements of our altered circumstances ; they are, I believe, now out of print, and I would suggest that their revision, as a whole, might, with advantage, receive the early attention of the Council with a view to their presentation to a special meeting for confirmation, pending a re-issue.

The improved attendance of members at our meetings continues, and much business of an interesting character has been transacted. The Exhibits also have been more numerous, and have included objects of considerable interest in various branches of Natural History, and in many cases the reading of short notes has materially added to their importance. I cannot too highly commend this practice. Often an Exhibit that in itself appears to have little to recommend it, and which may even be passed over comparatively unobserved by the bulk of those present, will, when particulars concerning it are known, become of some scientific value, and induce discussion that is calculated to throw light upon matters, producing results otherwise unattainable ; and I venture to think that those who are good enough to favour

us with such notes, are justly entitled to the undivided attention of the meeting, while they are reading them.

It is to be regretted that more papers have not been read before the Society, the three with which we have been favoured, one on the *Entozoa*, by Mr. W. West (Streatham), one by Mr. R. South, on *British Snake-like Reptiles*, and another by Mr. E. Joy, *On collecting Lepidoptera at Wicken Fen*, afforded much information on their respective subjects, and added considerably to the interest of the meetings at which they were read, and the thanks of the Society are due to their authors for the great care evinced in their preparation. I am happy to be able to state that there is a prospect of a larger number being brought forward during the coming year; indeed, I am given to understand that some few have already been promised; and we may, therefore, hope to have the benefit of them at no very distant date.

It is also a matter for regret that so little has been heard of our corresponding members. There appears to be a prevailing impression that a corresponding member has simply to pay his half-crown a year, receive in return any matter that may be printed by the Society for the use of its members, and rest contented. But surely he has greater privileges than these? He is enabled to become a *corresponding* member by reason of his place of residence being more than twenty miles from London; but that is no reason why he should not have the advantage of bringing his queries before the meetings. I am sure that our Secretary will be only too happy to read to the meetings any correspondence that he may from time to time be pleased to send up, to our mutual advantage; and, I trust, that in the future we may hear more of our corresponding members in this wise than has been the case of late.

During the summer months five excursions were held, the localities visited being Horsley, Bookham, Westerham, Chobham, and Epsom. In the majority of cases it was new ground to the members, and the thanks of the Society are due to Messrs. Windybank, Step, Carrington, Billups, and

Chaney, for the arrangements made, and personally conducting on the respective occasions. The first three were well attended, and some interesting captures made, as well as much productive-looking ground explored; but the two last, owing probably to their dates falling at a time when many members were from home, coupled with the lateness of the season, produced but small musters; and it will be a question for the New Council, when considering the list of excursions for the coming year, whether even better results might not be obtained by shortening the programme.

The plan of our Exhibition this year was laid on a much larger scale than anything that has been attempted by the Society in recent years, and in the result proved a success fully justifying the most sanguine expectations. The Exhibits were exceedingly numerous and varied, and represented many branches of general Natural History; the more minute specimens shown under microscopes contributing in no small degree to the usefulness of the Exhibition, from a scientific point of view. It is to be regretted that, owing to the dense fog that prevailed in the southern suburbs, we were deprived of the assistance of some few of our old and much esteemed members. We were, however, favoured by a very large attendance of members and visitors, including many distinguished Entomologists and workers in other branches of Zoology, many of whom very kindly exhibited most interesting specimens, as did also the Zoological Society of London. To these, as well as to the Royal Microscopical Society, the South London Microscopical and Natural History Society, and several other Microscopical Societies, and the Lambeth Field Club, we are indebted for much valuable assistance on the occasion, and I take this opportunity of thanking them on behalf of the South London Entomological and Natural History Society. I have no hesitation in saying that the success of this undertaking was mainly due to the disinterested manner in which the general body of members worked together with that one common object in view; but I should be remiss in my duty were I to omit

to mention the Committee entrusted with the perfecting of the arrangements, namely, Messrs. Barker, Billups, Pearce, South, and Step, to whose untiring energy I have very great pleasure in bearing testimony.

Many valuable additions have been made to our Collections and Library, and the best thanks of the Society are due to the respective donors. Our Curators and Librarian continue to exercise their accustomed care in the preservation of the objects in their charge.

A feature in the management of the Society during the year has been the delegation to small committees of matters requiring that continued and undivided attention which it is impossible for the Council to give in the hour allotted to them in each month : the system so far has worked admirably, and I see no reason why it should not be more extensively applied, with good results. As an illustration of its working I am able to say that the somewhat voluminous reports of our meetings have been carefully revised to the end of November ; and should it be decided to print them in abstract form, there is no reason why they should not be issued early in the coming year.

In his Address to you at the last Annual Meeting, my worthy friend and predecessor, Mr. South, said that "Among the many useful labours that should be undertaken by a local Natural History Society, is the compilation of the Flora and Fauna of its own particular district or county," and further suggested that this Society was well qualified to take in hand the preparation of such work. You will, no doubt, remember, that early in the New Year the question was brought forward at one of our meetings, and a resolution passed empowering the Council to collect and arrange the necessary material for such a Fauna. The matter having been sifted by the Council, it was decided that the area to be covered should include the counties of Kent, Surrey, Sussex, Hampshire, and Berkshire, being in effect the five counties South of the Thames, from its source to outfall, and elected a Committee to make preparations for carrying out the work.

Within the last few days a circular and outline have been issued to you, setting forth, in some detail, the plan upon which it is proposed to proceed, accompanied by a map which I may term the foundation on which to build up the work. I need not point out to you that the preparation of a map containing so much elaborate detail is a work of much skill, and necessitating the expenditure of a large amount of time; and I take this opportunity of congratulating our esteemed Secretary, Mr. W. A. Pearce, to whose unaided labours we are indebted for its production, on behalf of the Society, upon the very able manner in which he has completed the arduous task so willingly undertaken by him.

From the numerous offers of assistance already received, both from members and friends of the Society, there is good reason for believing that abundant material will be forthcoming; and I cannot urge upon you too strongly the desirability of every member giving the fullest information in this respect.

The promised "descriptions of the various catchment basins" are already in course of preparation, and there appears to be every probability that the work of compilation will proceed forthwith.

It is, perhaps, premature to speak upon the subject of publication further than is mentioned in the outline plan already referred to; but I may be permitted to say that the comprehensiveness of the work and the rate of publication must largely depend upon the available means for the time being, and that, however important the work may prove itself to be as it progresses, it must not be allowed to become a drain upon the ordinary resources of the Society. It is probable that a scheme bearing upon the subject may ere long be brought before you; but in the meantime a special publication fund (that has received sufficient support to provide for the printing of the maps, circulars, etc., without trenching upon the ordinary funds of the Society) has been opened, and to this I would direct your attention.

During the year some few additions have been made to the British Insect Fauna, from which I note the following:—

Coleoptera :—

Eucnemis capucina, Ahr, was exhibited at the Entomological Society's meeting on July 7th, by Rev. H. S. GORHAM. The specimens were discovered, in June last, in an old beech tree in the New Forest. ("Proc. Ent. Soc.," 1886, xxx.)

Langelandia anophthalma, Aubé., was first taken by Mr. THEODORE WOOD, at St. Peter's, Kent, in May last, where he found it in some numbers in decaying seed potatoes ("Ent. Mo. Mag." xxiii. 93), and specimens were exhibited at the Entomological Society's meeting on August 4th. ("Proc. Ent. Soc.," 1886, xxxvii.)

Anchomenus sahlbergi, Chaud. At page 264, vol. xxii., "Ent. Mo. Mag.," the Rev. W. W. FOWLER describes this species from three specimens taken by MR. HENDERSON on the banks of the Clyde, below Glasgow, about twenty years ago; it had not before been found in Europe.

Lepidoptera :—

Botys repandalis, Schiff. MR. C. G. BARRETT, in the "Ent. Mo. Mag." xxiii. 145, identifies as this species some Pyrales bred some time since by Rev. HENRY BURNEY, from larvæ found feeding in the heads and young shoots of *Verbascum nigrum* on the south coast of Devon. To quote MR. BARRETT'S words, "This species is a welcome and extremely interesting addition to the British Fauna."

Two species are contributed by MR. JOHN H. WOOD of Tarrington, Ledbury, viz. :—

Lithocolletis distentella, H.-S., and *Nepticula desperatella*, Frey, bred from larvæ mining in the leaves respectively of oak and wild apple ("Ent. Mo. Mag." xxii. 261; xxiii. 188).

Heydenia auromaculata, Frey, a species closely resembling *Æcophora fulviguttella*, Zell., is recorded by MR. C. G. BARRETT, as having been taken in Shetland some time since, but not previously identified ("Ent. Mo. Mag." xxiii. 13).

Cateremna terebrella, Zk., has been bred by LORD WALSINGHAM from larvæ found in small aborted cones of *Abies Douglasii*, near Thetford, Norfolk ("Ent. Mo. Mag." xxiii. 82).

Cosmopteryx Schmidiella, Frey, is recorded by Mr. W. H. B. FLETCHER as having been found by him in the larval state in leaves

of *Vicia sepium* growing in low damp hedgerows near Worthing, Sussex. ("Ent. Mo. Mag." xxiii. iii.)

Hymenoptera :—

In the *Ichneumonidæ* we have several additions, among them :—

Meteorus luridus, Ruthe., obtained by MR. BIGNELL.

Bassus bizonarius, Gr., taken at Peckham, and

Echthrus lancifer, Gr., from Walmer, both by MR. BILLUPS. Our indefatigable member also contributes two new Braconidæ, namely, *Chelonus carbonator*, Math., taken at Bookham, and *C. speculator*, Math., from Benfleet, Essex; and ("Ent. Mo. Mag." xxii. 228) Dr. Capron describes two others, *Bracon Westmæli*, Wesm., and *Ascogaster canifrons*, Wesm., which, though taken previously, are only now identified.

Diptera :—

MR. G. H. VERRALL describes one hundred new species ("Ent. Mo. Mag." xxii. 179), and MR. PETER INCHBALD, two, namely, *Cecidomyia muricata*, Meade ("Entom." xix. 152), and *C. clausilia*, Bouché ("Entom." xix. 223).

In this order we must not omit to mention the recently determined corn-pest *Cecidomyia destructor*, Say, which has caused some consternation among our agriculturists, and for particulars of which I cannot do better than refer you to Miss E. A. Ormerod's concise little pamphlet, published by Simpkin, Marshall & Co., at the moderate price of 6d.

Neuroptera :—

For the only addition in this order we are indebted to MR. R. M'LACHLAN, who describes *Kolbia quisquilarum*, Bertkau, a genus and species new to Britain, taken in the New Forest ("Ent. Mo. Mag." xxiii. 38).

From the foregoing it will be seen that the year has been by no means deficient in novelties, and among the rarer Lepidoptera and occasional visitors in that order, several interesting notes have been from time to time made.

A single specimen of *Papilio machaon*, L., is recorded as having been taken between Herne Bay and Whitstable, Kent, by Mr. Martin Jacoby, and is perhaps worthy of mention on account of the unusual locality for the species.

Colias edusa, Fb., so common last year, has been noted but very sparingly during the past autumn, the only records of its occurrence, so far as I am able to ascertain, being some ten specimens at St. Leonards; three (including one var. *helice*, Hb.) at Deal; two at Eastbourne; and one each at Chicester, Folkestone, Maldon, Swansea, and Christchurch, in all some twenty examples. And one specimen of *Vanessa antiopa*, L. was taken by Mr. W. H. Pemberton-Barnes, in his greenhouse at Havering-atte-Bower, Essex ("Entom." xix. 248).

But perhaps the most interesting of the recent additions to the British Butterflies (if we except *Lycæna argiades*, Pall., introduced to our lists last year, but which has this year been conspicuous by its absence) is *Anosia plexippus*, L. From an exhaustive paper on this species by Mr. James J. Walker, R.N., F.E.S., published in the "Ent. Mo. Mag." xxii. 217, we learn, that starting from its American home, it rapidly colonized the numerous groups of South Pacific Islands, and eventually established itself in Australia; but its Eastern march appears to have been more difficult to accomplish, the great expanse of ocean (over 2,000 miles) between the American Continent, and the first resting-place in our direction, may have offered obstacles requiring unusually favourable surroundings to overcome them. In due time, however, it reached our shores, and a specimen was taken at Neath, in South Wales, by Mr. J. T. D. Llewelyn on 30th September, 1876, just ten years ago ("Ent. Mo. Mag." xiii. 107), and single examples have been recorded from time to time up to last year, when fully a dozen were accounted for, quite half of them from Cornwall. We do not, however, appear to have any mention of its occurrence on the Continent of Europe until the present year; it is therefore interesting to note its capture at Gibraltar ("Ent. Mo. Mag." xxiii. 162), and a specimen is also recorded from Guernsey ("Entom." xix. 278), facts pointing strongly to a continued eastward range and probable permanent settlement within our coasts. The number of records of its capture in this country during the past summer show that it probably existed in some numbers, its range apparently being from

Cornwall to Hampshire, on the South Coast; and on the West, one specimen is noted from Pembroke.

Among the Sphingidæ I note *Acherontia atropos*, L., is far less commonly mentioned than was the case last year, the only records being one taken at Greenwich by our Member, Mr. C. Levett, on the 18th May, in fine condition ("Entom." xix. 157); and this capture appears to be of some importance as pointing to a spring emergence; three specimens in Shetland ("Entom." xix. 279), four at Leominster, and one each at Howth, Ireland ("Entom." xix. 279), and Dartlington, South Devon ("Ent. Mo. Mag." xxiii. 162).

Sphinx convolvuli, L., on the other hand, appears to have been fairly common in many parts of the country. Mr. Dover C. Edgell records the capture of many specimens on flowers in a garden at Lewes ("Entom." xix. 300), and it has also been taken at various other places, from South Devon ("Entom." xix. 280) to Aberdeen ("Entom." xix. 249).

A specimen of *Deilephila euphorbiæ*, L., is recorded from Bowden, near Manchester, by Mr. Joseph Chappell, who suggests that having both wings on one side crippled, it could not have flown, and must have emerged near the place of capture ("Ent. Mo. Mag." xxiii. 108; "Entom." xix. 250). Two specimens of *Chærocampa celerio*, L., are reported from Lewes ("Entom." xix. 300), and one from Hastings ("Entom." xx. 16), and one of *C. nerii*, L., from Brighton, the latter by Mr. T. Langley ("Entom." xix. 250).

We have also records of *Deiopeia pulchella*, L., one specimen taken at Ramsgate by Mr. Theodore Wood ("Entom." xix. 280); *Callimorpha hera*, L., which has again been turned up in some numbers in South Devon, by the assiduity of our member, Mr. J. Jäger ("Entom." xix. 250); and *Leucania vitellina*, Hb., taken at sugar at Finchley, Middlesex, by Mr. W. T. Sturt ("Ent. Mo. Mag." xxiii. 110), noticeable chiefly on account of the unusual locality.

The year has been by no means unproductive of literature bearing upon subjects connected with Natural History, and among the more important works on Entomology I may

mention the following: "The Larvæ of British Butterflies and Moths," by the late William Buckler, Vol. I. "Butterflies," being the Ray Society's vol. for 1885, but issued only in the early part of this year. It contains coloured illustrations of the larvæ of the majority of our British Butterflies, with descriptive notes upon their life-histories.

The "British Pyralides" (including the Pterophoridae) by J. H. Leech, B.A., F.L.S., F.Z.S., etc., recently published, should prove a useful addition to the somewhat scanty literature upon this particular group of Lepidoptera. The volume contains upwards of a hundred pages of letterpress, devoted mainly to the descriptions and habits of the larvæ; localities; notes on the more important varieties of, and chief distinguishing characters between, closely allied species; and eighteen admirably coloured plates, in which the greater portion of the imagines are delineated. (London: R. H. Porter, 6, Tenterden Street, W.)

The "Coleoptera of the British Islands," by Rev. W. W. Fowler, M.A., F.L.S., Sec. Entom. Society, etc. is now publishing in monthly parts, in two editions, the one containing letterpress, the other letterpress and carefully coloured plates, and will probably form, when completed, one of the most important works on the subject. (London: L. Reeve and Co., 5, Henrietta Street, Covent Garden.)

In other branches of Natural History we have "A History of British Birds" (with coloured illustrations of their eggs), by Henry Seebohm, sixth and concluding volume. (London: R. H. Porter.)

"British Fungi." By Rev. John Stevenson. Vol. I. Agaricus—Bolbitius. Illustrated with some woodcuts. (W. Blackwood & Sons, Edinburgh.)

"Illustrations of British Fungi," by Dr. M. C. Cooke. Vol. 4, bringing the total number of species illustrated up to 790.

In the early part of this address I congratulated you upon the immunity of our Society from loss of any of its members by death, but death has been very near our doors. In the early days of the year we heard with regret that EDMUND

SHUTTLEWORTH, a gentleman who had for many years taken a considerable interest in Entomology, had been taken from us. Mr. Shuttleworth was known to several of our members, and he had signified his intention of offering himself as a candidate for membership, but his untimely decease prevented his intention being carried into effect.

And looking further, to the ranks of the great body of students of Biological Science, we have to deplore the loss of many learned men and ardent workers; among them:—

REV. C. S. TRESS-BEALE, M.A. More than thirty years ago, when living at Tenterden, Kent, he supplied that locality where cited in Stainton's "Manual of British Butterflies and Moths." He afterwards resided at Alkham, near Dover, where he added the pretty *Cnephasia cinctana*, Schiff., to our lists, and ultimately returned to Tenterden, where he died, Dec. 23, 1885.

J. B. JEAFFRESON, M.R.C.S., for some time President of the Highbury Microscopical Society, and well known in the North of London as a diligent worker with the microscope in biological research, died Jan. 12th.

Rev. W. W. NEWBOULD, F.L.S., died April 16th. His special study was our native British plants, and several of our local county floras owe much to his co-operation.

THOMAS EDWARD, immortalised by Smiles in his "Life of a Scottish Naturalist," died April 27th. Born on Christmas-day, 1814, he early in life showed a great love for mammals, insects, and creatures of every description, and many amusing anecdotes are told to illustrate his extreme fondness for even the most repulsive subjects in the animal kingdom. His researches added greatly to the knowledge of Natural History, as he embodied his new discoveries in papers written to scientific magazines, etc. After the publication of his biography by Smiles, he was raised from comparative poverty to a condition of comfort by the presentation to him of some £300, the result of a subscription, and the award of an annual pension of £50 by the Queen. Recently a scheme has been set on foot for the erection, by subscription, of a

memorial to his memory, in which the town council of Banff are taking a leading part.

JOHN ARTHUR POWER, M.D. By the death of Dr. Power, which took place at Bedford, on Thursday, June 10th, Entomologists, and especially Coleopterists, have lost a good friend and an ardent worker. To his energy and perseverance we are indebted for many additions to our list of British Coleoptera; and numbers of species, previously regarded as great rarities, were, by his aptitude for becoming acquainted with their habits, found to exist far more commonly than was generally supposed. He became a member of the then recently formed Entomological Society of London, in 1834, but appears to have resigned his membership some ten years later. In 1856, he was chosen a member of the Entomological Club, and continued so until the day of his death.

ARTHUR GROTE, F.R.S., F.L.S. Born 1814, died December 4th. He wrote a number of papers on subjects connected with Botany and Zoology and contributed an introduction to Hewetson's "Descriptions of New Indian Lepidopterous Insects in the Atkinson Collection."

So much, gentlemen, for the year now rapidly drawing to its close; and in conclusion I beg to express to you my sincere appreciation of the honour you did me in electing me your president, of the kindly way in which you have overlooked my many shortcomings, and the courtesy and support that you have at all times so willingly extended towards me.

To the Officers and Council my thanks are especially due. Their many good qualities are too well-known to you to need any special mention at my hands.

I am quite sure that you have learned, as I did, with much regret, that Mr. W. A. Pearce finds it incumbent upon him to withdraw from the office of Secretary, and I feel that I am only expressing your sentiments when I say that the Society fully appreciates the able manner in which he has discharged the arduous duties devolving upon him in that capacity. In

Mr. H. W. Barker, whom you have selected to succeed to this all-important post, and who has for more than twelve months carried on a material portion of the secretarial work, we are fortunate in having a gentleman of unusual ability, and who I have no hesitation in saying has the true interests of the Society at heart.

This year has been one of progress. We have every reason to be confident in the immediate future; the field before us is great. Let me conclude with the wish that our Society may "go on and prosper."

ROBERT ADKIN.

ABSTRACT OF PROCEEDINGS.

JANUARY 7th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. W. A. Pearce exhibited *Deilephila lineata*, Fab. from California.

Mr. South exhibited and made some remarks upon the following *Zygænidæ*:

Zygæna transalpina, Esp. Valleys of the Southern Alps.

„ „ var. *hippocrepididis*, Hüb. Germany, France, and Belgium. Common.

„ *filipendulæ*, L., from Folkestone, July.

„ *trifolii*, Esp., var. *dubia*, Staudinger, *transalpina*, Hüb.

„ *filipendulæ*, L., var. *ochsenheimeri*, Zeller. Generally considered a South European insect, occurring in the South of France, valleys of the Southern Alps, Italy, and Greece. It is the *transalpina* of Ochsenheimer, and is by some considered a distinct species.

Mr. J. Jenner Weir exhibited specimens of the spring and autumnal emergences of *Lycæna argiolus*, L., among which was a specimen of the autumnal brood very closely resembling an American species, *Lycæna pseudargiolus*, Boisd.; whilst another was almost the colour of *L. corydon*, Fb.

Mr. Weir said, it was generally known that the females of the spring brood laid their eggs on the flowers of the holly; whilst those of the autumnal brood laid theirs on the flowers of the ivy. He had noticed that while this insect was double-brooded in his garden at Blackheath and various other places,

it was single-brooded at others. Mr. Harcourt Bath, writing on the subject, had stated that in the Midlands (Birmingham) the species was only single-brooded. Mr. Weir added that he had tried a great number of times to obtain specimens of the autumn brood from the Gullivers in the New Forest, and they said they had never seen an example of the species in the autumn.

In those parts of the New Forest in which holly is abundant, *L. argiolus* is very common in the spring; ivy, on the other hand, is generally scarce in the forest. He had himself spent considerable time in the neighbourhood of Brockenhurst, where the insect is most plentiful, trying to find the ivy-feeding larvæ. He had found very little ivy, and no *Lycæna* larvæ among that examined.

It was a singular possibility of this insect having a brood suppressed through the proper pabulum being absent. He could not say himself whether it was so or not, but the Gullivers, old foresters, born in the forest, and keen observers of insect life, ought to know. Was the brood suppressed through want of pabulum? And if so, he thought it was a new idea and well worthy of the consideration of the Society.

Weismann certainly had succeeded in suppressing the summer brood of *Pieris napi*, L., by putting the pupæ on ice, when, instead of A producing B, A produced A indefinitely. It was just the same in the Alps, the variety of *P. napi*, *bryonia*, Hüb. having only time to make one emergence.

He would ask the members of the Society to capture *L. argiolus* whenever they saw it, carefully label it with time of year and where taken, whether ivy was there as well as holly, and add any other information or further note which might be of interest.

Several members made observations on these remarks and it was the feeling of all present that members of the Society would gladly render what assistance they could to Mr. Weir in clearing up this question.

JANUARY 21st, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. F. W. Frohawk exhibited specimens of the curious ichneumon *Allysia manducator*, Panz., bred from the coleopteron, *Creophilus maxillosus*, L.

Mr. T. R. Billups exhibited male and female specimens of *Sirex gigas*, L., and read the following notes:—

“ The species exhibited belongs to the family of Siricidæ (Tailed Wood Wasps), the larvæ of which are very destructive to timber, more especially fir-trees. The female lays her eggs in living wood, and the larvæ live for many years in the interior. They are not only very destructive to plantations, which have been destroyed by the borings of these insects, but they have been known to be a terror to whole households. Kirby and Spence, in one of their letters upon indirect injuries caused by insects, give an instance of this, in which several specimens of *S. gigas*, were seen to come out of the floor of a nursery in a gentleman’s house, to the great discomfiture both of nurse and children. Another instance, upon the authority of Mr. Ingpen, is also worth mentioning, and occurred in the house of a gentleman at Henlow, Bedfordshire, from the joists of the floor of which, swarms, literally thousands of *Sirex*, emerged from innumerable holes large enough to admit a small pencil-case, causing great terror to the occupants. Numerous other references might be made to the destruction caused not only to woods and plantations, but to houses after they have been built some three or four years. But I cannot help quoting another instance, showing how powerful the mandibles of the larvæ are; lead itself not being impervious to its attacks. Marshall Vaillant presented to the Académie des Sciences in 1857, some packets of cartridges containing balls which had been pierced through by the larvæ of the *Sirex*, during the sojourn of the French troops in the Crimea: some of these insects were still shut up in the galleries which they had hollowed out in the metal. Then M. le Marquis de

Brême in the year 1844 also exhibited before the Société Zoologique many cartridges, the balls of which had been perforated to the depth of a quarter of an inch. These cartridges appear to have come from the arsenal of Turin, packed in barrels made of larch-wood; after leaving which, the insects gnawed through the envelopes of the cartridge, and at last into the balls themselves.

“I might give many more instances; but I think I have said enough to show the very great rapacity, as also the strength of mandibles of these destructive creatures. But I must not close these few remarks without calling your attention to a most valuable ally which comes to our assistance in keeping down the very prolific *Sirex*; and that is no other than the delicate and fragile parasite, *Rhyssa persuasoria*, L., of the family of *Ichneumonidæ*, the long ovipositor of which is well adapted for finding its host in the gallery made by *Sirex*, in the larvæ of which the female deposits her eggs, checking in a great degree the increase of that species. In Canada, many people imagine that it is the *Rhyssa* which kills the trees by ‘stinging’ them, as they term it; and as often as they see it, they heedlessly destroy the very creatures which help to lessen the real enemy of the tree, whose works are more secret and deep. Species of the genus *Rhyssa* occur all over the world, but probably not more than twenty-four or twenty-five species have been described, two only of which occur in this country, namely, *Rhyssa leucographa*, Gr., and our friend, *R. persuasoria*, L.

“Mr. Bond observes that ‘*Rhyssa* actually bores through the solid wood to deposit its eggs in the larvæ of *Sirex*; the ovipositor being worked into the wood like an awl.’”

Mr. Billups also exhibited specimens of *Rhyssa persuasoria*, from Chobham.

Mr. Dobson exhibited two specimens of *Acherontia atropos*, L., and said he obtained three pupæ of the species last autumn; about the 20th November the pupæ to all appearance were dying, he then placed them in a tem-

perature of between 60° and 70° F., with the result that one died, the others revived under the warmth, and in five weeks, six days, one emerged, and the other in six weeks, three days, coming out respectively on the 2nd and 5th of January.

Mr. Carrington mentioned that he had known two collectors in the north, who were very successful in rearing this insect by artificial means, and used to get all the perfect insects out before Christmas; and made similar remarks in reference to *Deilephila galii*, Schiff.

Mr. South said he had on one occasion obtained a pupa from Dartford, which he left in the sand it had already burrowed into in the larval stage, and the perfect insect from which emerged in June of the following year.

Mr. South exhibited *Noctua castanea*, Esp., and var. *neglecta*, Hüb., and made the following remarks:—

“This insect is described, as you will know, in Stainton’s ‘Manual,’ under Hübner’s name of *neglecta*, as ‘pale grey (with a faint ochreous tinge) or reddish,’ and again under the same name in Newman’s ‘British Moths,’ as varying ‘from ochreous grey to brick-dust red.’

“I show this evening examples of the species from the New Forest and two localities in Perthshire. The New Forest specimens are grey, with an ochreous tinge, and are true *neglecta*. Those from Perthshire, on the other hand, are either grey, with a reddish tinge, or of a decided chesnut colour. The chesnut-coloured specimens are the *castanea* of Esper, and the reddish tinged grey examples connect the two named forms.

“The species occurs on heaths throughout Central and Western Europe, but is more generally represented by the ochreous grey form, *neglecta*. *Castanea* (which, by the way, is Knagg’s *helvetina*) is almost entirely confined to Germany and Britain.

“The larva, which feeds on heather and bilberry, is sometimes brown and sometimes green, but each form is ornamented

with identical markings of a darker colour, and has pale dorsal and sub-dorsal lines. The two larval forms have no correspondence with the two varieties in the perfect state.

“As far as I know the variation of the larva of a species of Lepidoptera is quite independent of variation in the imago. Take *Mamestra persicariæ*, L., for example. I select this species because most of you will have probably bred it. You will know that there are two distinct and constant forms of the larva, one green in colour and the other brown. I never got any but typical *persicariæ* from such larvæ. There is a variety of the imago (*unicolor*, Staudinger) in which the reniform stigma is filled up with brownish instead of white. The South of Turkey is given as a locality for this form, but it may occur elsewhere.

“To return to *Noctua castanea*. I may say that the form *neglecta* is widely distributed throughout Britain, but my knowledge respecting the distribution of *castanea* proper is very limited. I have only received it from Scotland. It is reported to occur in the New Forest, but I have never seen examples from that district.”

Mr. Carrington remarked that during his collecting experience in Scotland, he took a long and interesting series of this species, the chesnut-coloured variety being a little in excess of members of the type, and he noticed, when gathering the larvæ, that they varied somewhat; but he did not think there was any connection with the variation of the larvæ and that of the imago, as he had bred both forms, viz., *neglecta* and *castanea*, from each variety of the larvæ. He had found the larvæ feeding on sallow.

FEBRUARY 4th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Chaney exhibited a pretty form of *Hydræcia nictitans*, Bork., and said it was bred from one of two pupæ found by him under a stone on the Saltings at Cliffe, in the county of Kent, July, 1884.

Mr. E. Joy exhibited a sub-diaphanous variety of *Vanessa io*, L., from Folkestone, several sub-diaphanous varieties of *V. urticæ*, L., and a dwarf form of *Lycæna icarus*, Rott., the coloration of which was somewhat similar to that of *L. corydon*, Fb.

Mr. W. A. Pearce exhibited a North American butterfly, of the genus *Papilio*.

Mr. A. G. Rose exhibited a fine variety of *Epinephele hyperanthes*, L., taken at Box Hill in August last, in which the ocelli on the upper side, instead of being of the ordinary form, were identical with those usually confined to the under side of this species.

Mr. South exhibited short series of *Emmelesia albulata*, Schiff., from the Vaud Canton, Switzerland, and the following counties and districts in Great Britain: Kent, N. Devon, Dumbarton, Rannoch and the Shetland Isles. He said that the Swiss examples represented the form usually found on the Continent, and were the true *albulata* of Schiffermüller. None of the British specimens were exactly identical with those from Switzerland, the principal point of deviation being their smaller size, but in the matter of coloration there was also a notable difference. Although one or two individuals of the Kentish series exhibited a tendency to the ochreous grey colour of Continental specimens, the majority from England and Scotland were decidedly grey, whilst most of those from the Shetland Isles were either drab or brownish grey, with but faint indications of the usual markings. These last were the var. *thules*, Weir; and the grey forms referred to were Staudinger's *griseata*. Mr. South was of opinion that if all the representatives of *E. albulata* in the Shetlands had been of the abnormal colour of a large proportion of the specimens occurring in those isles, they might not have been recognised as pertaining to that species, but as some of the individuals still retained the characteristic markings of *E. albulata*, their specific identity stood revealed. He also referred to a pure

white form of the species (var. *hebudium*, Weir) which is said to occur among specimens of the usual British type in the Isle of Lewis, one of the Hebrides, or Western Islands of Scotland.

In conclusion he said that he held the opinion that a restricted habitat, and the close inter-breeding consequent thereon, had much to do with the production of local forms.

Mr. Rose made some remarks on this species which he had observed in Norway.

Mr. Wellman exhibited a varied series of *Oporabia filigrammaria*, H.-S.

Mr. J. T. Williams exhibited a very beautiful banded variety of *Nyssia hispidaria*, Fb.

Mr. T. R. Billups exhibited *Agapanthia lineaticollis*, Don., from Lincoln; *Callidium variabile*, L., and *Strangalia 4-fasciata*, L., both taken at Chobham, July, 1885, and read the following notes:—

“These three species of Coleoptera belong to the sub-order *Longicornia*, Latreille, this immense family numbering already nearly 4,000 known species, comprising some of the largest, most showy, as well as the most destructive insects of the Insect Fauna. Their eggs are introduced into the cracks in the bark of plants or trees by the long extensive tip of the abdomen. The larvæ are long, flattened, cylindrical, fleshy and often footless whitish grubs, armed with strong sharp mandibles, adapted for boring like an auger in the hardest woods, and live from one to three years in their burrows before transformation; at the end of which time they construct a cocoon of chips at the end of their burrows, the head of the pupa lying next to the thin portion of bark left to conceal the hole.

“*Agapanthia* is often taken on thistles, to the blossom of which it is much attached.

“*Callidium* is mostly met with on old trees, and some-

times fences; while *Strangalia* is met with on umbelliferous flowers and is generally distributed."

Mr. West (Streatham) exhibited a Coleopteron found at one of Messrs. Protheroe & Morris's sales of bulbs. Mr. Billups said it was a beautiful species of the genus *Cionus*, doubtless from Central America, and had probably been packed with the bulbs sent for sale.

FEBRUARY 18th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Tugwell exhibited specimens of the probably new species of *Crambidæ*, together with allied species of the same genus, viz.: *Crambus inquinatellus*, Schiff., and *C. contaminellus*, Hb., from Lancashire. Mr. Tugwell said he first took it at Deal in 1877,—he believed the time of appearance was July and August, and he referred to an article by Mr. Tutt in last month's "Entomologist" on this *Crambus*. Mr. Adkin also exhibited an example of this moth, taken in July, 1882, at Deal, and for the purpose of comparison, specimens of *C. inquinatellus*, *C. geniculæus*, Haw., and *C. contaminellus*, Hb., from Preston; and said Mr. Tutt had taken the species in question in some numbers at Deal, Mr. Coverdale had found it at Shoeburyness, and it was believed to have been taken at Brandon in Suffolk. It had been suggested that the species was *C. poliellus*, Tr.

Mr. Rose exhibited comparative series of *Bryophila perla*, Fb., from Lea Bridge and Eastbourne; *Boarmia repandata*, L., which he stated to be the typical form found in the Black Woods at Rannoch; and a variety of *Acidalia emarginata*, L., taken at Herne Bay. Mr. Tugwell, referring to this variety, said he did not think it was an unusual form of the species, as he had bred several of a like character. Mr. Carrington said the specimens of *B. repandata* were the Rannoch form of the species, which was quite distinct from any of the southern forms.

Mr. T. W. Hall exhibited series of *Cleoceris viminalis*, Fb., and *Xanthia fulvago*, L., both bred from Derbyshire larvæ. Mr. South remarked that the series of *X. fulvago*, were very fine; one or two of them looked like dark forms of *X. flavago*, Fb., and were probably an instance of hybridism between the two species.

Mr. T. R. Billups exhibited the following Coleoptera, viz.: *Meligethes exilis*, Sturm., from Tenby; *Anthicus schaumii*, Wol., from Weymouth, and *Hydrobius perrisi*, Fair., *Mycetoporus nanus*, Grav., and *Omalium rugulipenne*, Rye, from Hartlepool; also three species from West Africa belonging to the family *Cetoniidæ*: *Ceratorhina morgani*, White, *C. grallii*, Buq., and *C. hornimani*, Bates.

MARCH 4th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Frohawk exhibited a long and varied series of the imago of *Melitæa aurinia*, Rott., coloured drawings of the larva and pupa, and also specimens of an ichneumon bred from the pupæ. Mr. Frohawk said he had received a quantity of the larvæ of this species from Church Stretton, in Shropshire, and had been very successful in rearing large numbers of the imago, the larvæ feeding on honeysuckle. Mr. Billups remarked that the species of ichneumon exhibited was *Apanteles glomeratus*, Gr., and parasitic on a large number of butterflies.

Mr. Tugwell again exhibited specimens of the supposed new *Crambus*, for which Mr. Tutt had suggested the name *cantiellus*. Mr. Tugwell said, that when he last exhibited this moth, he had not seen the Blackheath form of *C. contaminellus*, Hb., but he had since had an opportunity of seeing this form, and felt so convinced that it was the same form as the Deal insect, that he saw Mr. Stainton upon the subject, with the result that there was no doubt the Blackheath *contaminellus* was identical with the new *Crambus*! Herrich-Schäffer, in his

work, figured the Lancashire form of *contaminellus*, both male and female, very minutely under this name; whilst Hübner, under the same name, figured most correctly the Deal insect. Now there was evidently two different representations of either two forms of the same insect, or probably, two distinct insects, both having been named *contaminellus*; and it was certain that the Deal insect had been figured before under this name.

Mr. South suggested that Hübner's name, being the prior one, would have to be adopted for the Deal and Blackheath insect, and the Lancashire insect would consequently be without a name.

Mr. E. Step exhibited a case of birds' eggs, containing thirteen species, taken in the neighbourhood of Leith Hill, among which were the Red-backed Shrike (*Lanius collurio*, L.), the Great Titmouse (*Parus major*, L.), and the Moor Hen (*Gallinula chloropus*, L.)

Mr. A. E. Cook exhibited mounted specimens of the following birds from Hampshire, viz. :—the Kingfisher (*Alcedo ispida*, L.), the Great Spotted Woodpecker (*Picus major*, L.), and the Green Woodpecker (*Gecinus viridis*, L.). From the remarks of several members it was gathered that the Kingfisher was to be seen at, among other places, Blackheath and Lewisham; and both Woodpeckers were commonly to be found at West Wickham and Richmond Park, and not unfrequently in Kensington Gardens.

MARCH 18th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Henderson exhibited *Ichneumon xanthorus*, Foerst., *Lacon murinus*, L., and a species of *Tenthredopsis*, from Lundy Island, off the Coast of Devon.

Mr. T. R. Billups exhibited *Orthoptera* and *Homoptera* from Natal and Borneo, and the following species of *Coleoptera*:—*Onthophagus gazella*, L., *O. marsyas*, L., and *O.* 4-

punctata, L., from Madagascar, and *Anthia sex-guttata*, L., from India. With reference to this last species, Mr. Billups said it belonged to the family of *Carabidæ*, or ground beetles, which delight in arid and sandy soils, in which they form shallow excavations and lie in wait for their prey. In manner and even in the figure of their bodies, they very closely resemble *Brosicus cephalotes*, L., which is found so abundantly on the sandy shores of our own coasts. The species appeared to be confined to certain districts of Asia and the African continent, and, although in many parts of the southern shores of Europe the vegetable and animal productions become strongly assimilated to those of Africa, up to the present, we have had no European example recorded.

Mr. R. South exhibited specimens of *Vanessa callirhoë*, Fab., and stated, that this species was closely allied to *V. atalanta*, L., and was found in India, China, Japan, and the Canary Islands. It was especially abundant in the Himalayas, occurring at an elevation of from five thousand to ten thousand feet. It had been introduced into Andalusia and the south of Portugal, and was consequently considered a European insect. The larva fed on the nettle, and, he had been informed, was very similar to that of *V. atalanta*, which species occurred sparingly in the Canaries; but as far as he knew, not in China or Japan. The pair exhibited were bred, among others, by Mr. J. H. Leech, who found the larvæ at Teneriffe, one of the Canary Islands. They were Godhart's *vulcanica*, and differed from eastern specimens in the tone of the red markings. The Indian insect, or *atalanta-indica* of Herbst, has orange-red bands.

Mr. Wellman exhibited dark forms of *Hypsipetes sordidata*, Fb., from Barnsley, and said the larvæ had probably fed on heather.

Mr. A. W. Mera exhibited dwarf forms of *Lycæna ægon*, Schiff., *L. icarus*, Rott., and *Vanessa cardui*, L.

Mr. R. Adkin exhibited reddish forms of *Tæniocampa gracilis*, Fb., which, he said, he understood were bred from

larvæ obtained somewhere in the Kentish marshes, the imago being very different from the ordinary Kentish form. Mr. J. T. Carrington said he had taken this form of *T. gracilis* in the New Forest, but it was really the Rannoch form of the species, and no doubt occurred throughout the whole of Scotland. It was a singular fact that this form should appear in Scotland, where the fauna was to some extent boreal, then miss the whole of the Midlands, and occur in the New Forest, and apparently in Kent; and it would be very interesting to ascertain how the divergence came about.

Mr. E. Joy read notes on collecting Lepidoptera at Wicken Fen, and exhibited specimens of some of the species taken, including *Papilio machaon*, L., *Calamia phragmitidis*, Hb., *Meliana flammea*, Curt., and *Hyria muricata*, Hufn.

APRIL 1st, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. S. Stevens exhibited *Asteroscopus nubeculosa* Esp., which had remained over three years in pupæ.

Mr. South exhibited a fine series of *Hybernia marginaria*, Bork, and the var. *fuscata*, bred from ova received from Mr. Harrison of Barnsley. Mr. South stated the larvæ were fed on hawthorn; the first specimen emerged on the 26th of February and the last on the 22nd of March, the greater number coming out about the 19th of the latter month. Mr. Tugwell also exhibited a series of the same species, together with the var. *fuscata*, and said that they were bred from some of the same batch of ova as those exhibited by Mr. South.

Mr. Billups exhibited the following Coleoptera; *Panagæus quadripustulatus*, Sturm., and *Lebia chlorocephala*, Hoff., taken in Headley Lane on the 22nd March, 1886. Also two species of Diptera: *Sciaria pulicaria*, Hoff., and *Trichocera regelationis*, L., bred from apples.

Mr. Billups also exhibited a living specimen of the Viviparous or Scaly Lizard (*Zootoca vivipara*, L.), and said

it was the smaller and more graceful of the two species of lizard found in Great Britain. It was common in this country, and chiefly found in dry sunny banks, thickets and copses. It was not so abundant on the Continent, but was found in France, Italy, Germany, and Switzerland, frequenting the pine woods in the latter country. Its motions were singularly varied and agile, and it darted on its insect prey with the velocity of an arrow, its sight as well as its hearing being most acute. The only other species in this country was known as the Sand Lizard (*Lacerta agilis*, L.)

Mr. Billups also called attention to a branch of the Stinking Hellebore (*Helleborus fœtidus*, L.), which he had found growing the previous week in Headley Lane, Surrey, and he remarked that it belonged to the order *Ranunculacæ*, or Crow Foot Family, and was known in many places as the Bear's-foot, Ox-heel, or Setter-wort. The plants of this order were distributed over the whole surface of the globe, and were all of them more or less poisonous, but the Hellebore appeared to possess the most powerfully poisonous properties of the whole family. The only other species found in this country was the green Hellebore (*H. viridis*, L.).

Mr. J. A. Cooper exhibited eggs of the following British birds: the Sparrow Hawk (*Accipiter nisus*, L.), the Water Hen (*Gallinula chloropus*, L.), and the Coot (*Fulica atra*, L.)

Mr. W. West, of Streatham, contributed a paper on "The Entozoa or Internal Parasites."

Mr. West began his paper by referring to the ancient records of the *Entozoa*, or internal animal parasites, and then passed on to the classification of the species.

The class Entozoa or Helmintha is divided into three sub-classes, viz., the *Sterelmintha*, *Cœlelmintha*, and *Anenterelmintha*, which are again divided into five orders, viz., *Turbellaria*, *Trematoda*, *Nematoda*, *Acanthocephala*, and *Cestoda*. These orders are further divided into nineteen families, and

there are seven others that have apparently no settled place, and are called particular types.

The first order, the *Turbellaria*, are recognized by vibratile cilia covering their bodies, which are composed of soft tissue, and are of various forms: some flattened, pear-shaped, others cylindrical, of enormous length, and jointed somewhat like tapeworms; they are capable of increase by the usual sexual methods and by fission.

The second order, the *Trematoda*, or Flukes, have soft roundish or flat bodies enveloping the visceral organs. They are small animals, the smallest being about one-hundredth part of an inch, and the largest varying from one to five inches in length. They undergo several metamorphoses, the earlier of which take place in ponds, or ditches, and damp pasture-grounds.

The common liver fluke (*Fasciola* or *Distoma hepatica*) gives rise to a disease called "the rot," in sheep; it is oviparous, and the action of water loosens the lid-like covering that the egg is provided with, and sets free a little wedge-shaped embryo covered with cilia. After a short active life it alters its form, and takes up its abode in some mollusc, where it becomes transformed into a cyst, and afterwards develops into a tadpole-like animal called a *Cercaria*, which, if swallowed by cattle, make their way to the liver, and after a time become converted into sexually mature *Trematoda*. Again they get restless, make their way to the intestinal canal, and eventually become expelled with the fæces.

Mr. West then went on to describe the anatomy of one of the *Distomidæ* which infest man; and called attention to one of the particular types, *Bilharzia*, which at first sight has the appearance of a round worm or leech. This resemblance is due to the edges being rolled inwards, forming a tube, as it were, in which the female is generally found embraced. She is a small filamentous-looking body, not nearly so large as the male. *Bilharzia* are found mostly in Egypt, and give rise to many serious complaints.

The third order, the *Nematoda*, or round worms, are of

various sizes, the smallest types are represented by the so-called vinegar and paste eels, whilst others have been seen several feet in length. About 550 species have been described in the eight families. About the best known is called *Trichocephalus dispar*, which belongs to the fourth family, the *Filaridæ*. The anatomy of this worm was minutely described, as also that of the well-known *Nematoid* worm, the *Trichina spiralis*, the cysts of which, when introduced into the stomach of an animal, attain their sexual maturity in about forty-eight hours, and the viviparous females become parents in about six days. The young then penetrate through and take up their abode in the voluntary muscles, where they become encysted, and remain coiled up within them, waiting to become devoured by some other animal. If not released, after a time they break up, and become transformed into carbonate of lime. Leuchart found in one ounce of muscle 325,000 individuals of this species.

The fourth order, the *Acanthocephala*, contains no types infesting man, although they have been found in mammals; birds and fishes are most troubled with them. They are small animals, having elongated bodies, marked by transverse folds. At the head is a long mouth or proboscis, armed with recurved hooks, and in the male there is a peculiar clasping organ to assist it in the sexual act. The embryo is a pear-shaped organism, and develops *within its own* interior a small *Echinorhyncus*: the original body becomes part of the new development, and only the old skin is cast off. When transferred to the body of another host it becomes sexually mature in about a week.

The *Cestoda*, the fifth order, comprises the so-called tapeworms, which are distinguished by their soft, flat, long bodies, divided into joints, the anterior of which forms the head and neck. The head, which is exceedingly small when compared with the length of the animal, is furnished with four suckers, and sometimes a double crown of hooks. The joints at the posterior end are capable of existing independently and of developing ova. *Cestoda* are found either in the larval or

mature condition in almost all animals, but mostly in the Carnivora. Man harbours no less than ten species.

If the mature joints or proglottides are administered to an animal, in twenty-four hours minute embryos are found in the blood, and are carried along to the liver, where they form a colony of cysts. After a time they escape by pushing their way through, take up their abode in other parts of the body, and undergo a second encystation, which takes place in about eight weeks. If these cysts are administered to some other animal, the larva is set free in two or three hours, and in three days shows indications of becoming jointed; in twelve days they are four inches long, and become sexually mature in about a month. The *Proglottides* are furnished with male and female organs of generation, but are not capable of self-impregnation, as was formerly supposed.

Mr. West then minutely described the anatomy and life-history of the most common one infesting man, the *Tænia solium*, and stated that they had been found 10 ft. 2 in. in length, and containing 825 segments. He also described the *Tænia echinococcus*, which causes one-seventh of the annual mortality of Iceland.

The *Tetrarhynchidæ* infest the marine vertebrata. Having described the life-history of this worm, Mr. West concluded by a few words of advice how to avoid becoming infested with Entozoa. The remedy is very simple; partake of no animal food but what is thoroughly cooked, nor any vegetables that have not been thoroughly washed or boiled. Butchers through their ignorance frequently infect themselves; they place the knife between their teeth that has been used to cut up a diseased animal, the ova thus get transferred to their stomachs.

The paper was well illustrated by diagrams and specimens of the various Entozoa under microscopes.

APRIL 15th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. A. W. Mera exhibited *Syntomis phegea*, L., bred from ova deposited by a female captured in Italy.

Mr. Wellman exhibited *Phoxopteryx upupana*, Tr.

Mr. Billups exhibited a curious construction which had been found by Mr. J. T. Williams under a stone in his garden at Foot's Cray. The formation consisted of about thirty or forty fusiform cocoons composed of a felt-like material, and arranged side by side, vertically and transversely, the whole forming a pear-shaped mass; each cocoon contained a larva which Mr. Billups said was certainly not Dipterous, nor Hymenopterous, but might probably be the larva of a species of Lepidoptera.

Several members concurred in this opinion.

Mr. A. E. Cook exhibited *Moloch horridus*, Gray, a species of *Agamidæ* from South Australia, and a living specimen of the Green Snake, *Natrix torquata*, Ray, taken at Sevenoaks.

MAY 6th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. G. Elisha exhibited a bred series of *Antispila pfeifferella*, Hb. Sta., with specimens of the mined leaves and the pupæ cases cut out from the same, and said there was a statement by Mr. C. Healy in one of the early volumes of the "Entomologist" (Vol. II., p. 129) that the larvæ pupated under the surface of the earth. Now he (Mr. Elisha) had bred a large number of the insects, and he found they invariably took their cases in between the decaying leaves, and not under the surface of the earth, as stated by Mr. Healy.

Mr. Wellman exhibited *Adela cuprella*, Thnb. Sta., from Wimbledon Common.

Mr. R. Adkin exhibited a series of *Endromis versicolor*, L., bred from larvæ reared in 1884; and he mentioned that from these larvæ nine moths emerged in 1885; one male and eight females; whereas the twelve that appeared this year were all males.

Mr. Step exhibited a specimen of *Morchella esculenta*,

Pers., found by Mr. B. W. Adkin at Wantage, Berkshire ; and said it was not by any means a common fungus in this country, most of those that were eaten in England being brought from the Continent.

Mr. Carrington remarked that he once found two specimens of this fungus at Box Hill, Surrey.

Mr. Carrington stated that during the Easter recess he had paid a visit to Selborne, the home of Gilbert White, and what was most noticeable was the backwardness of the season. The only lepidoptera seen were hibernated specimens of *Vanessa io* and *V. urticæ*, and examples of *Pieris napi* and *Diurnia fagella* ; and for four days' good work in a district which, under natural circumstances was one of the best localities in which to spend an entomological holiday, he thought this was a most meagre list. He mentioned that a bitch otter with two young were noticed in the neighbourhood of Selborne.

MAY 20th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. D. A. Cockerell exhibited a cluster of cocoons of a species of Ichneumonidæ from Constantinople.

Mr. J. Jäger exhibited *Aleucis pictaria*, Curt, and other Lepidoptera from the New Forest.

Mr. R. Adkin exhibited white males of *Spilosoma mendica*, Clerck, from the south of Ireland, about which he stated he hoped to say something at a future time.

Mr. Levett exhibited a bred series of *Ligdia adustata*, Schiff., from larvæ beaten in the neighbourhood of Shooter's Hill.

JUNE 3rd, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Tugwell exhibited some interesting forms of *Spilosoma menthrasti*, Esp., bred from ova received from Hartlepool.

Also a specimen of *Anosia plexippus*, L., taken on the 21st September, 1885, at Trevilly, by Mr. Harris Saundry.

Mr. W. G. Sheldon exhibited *Eupithecia pusillata*, Fb., and *Retinia turionana*, Hb., both from West Wickham, Kent.

Mr. Wellman exhibited living larvæ of *Eugonia autumnaria*, Wernb., *Acidalia emarginata*, L., and *Epione apiciaria*, Schiff.

Mr. W. West (Streatham) exhibited preserved larvæ of *Eubolia cervinaria*, Schiff., and *Xanthia citrargo*, L.

Mr. G. P. Shearwood exhibited a number of preserved larvæ, the various stages of several species being shown; among the species exhibited were *Phorodesma smaragdaria*, Fb., and *Aciptilia galactodactyla*, Hb., the latter taken on the Society's excursion to Horsley, Surrey, on 29th May last.

Mr. R. Adkin exhibited four specimens of *Saturnia pavonia*, L., bred from a nest of gregarious larvæ taken 21st June, 1884, at Chattenden, Kent; and found feeding on hazel; and which had fed up on hornbeam, remaining in pupæ until the present year; the colours of the imagines being particularly rich and bright.

Mr. T. R. Billups exhibited specimens of *Paussus favieri*, Fairm., found in nests of the ant, *Pheidole megacephala*, var. *pallidula*, F., by Mr. Lewis, in Portugal.

This gentleman also exhibited *Meteorus luridus*, Ruthe., bred by Mr. Bignell of Plymouth, from the larva of *Noctua brunnea*, Fb., twenty-three parasites emerging from one host. The only previously known specimen was a male in the collection of Mr. Bridgman, Norwich, the host being unknown.

JUNE 17th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited the following Ichneumonidæ :
Apanteles bicolor, Ns., bred from *Lithocolletis lantanella*, Schr. Stn. *Colastes braconius*, Hall., bred from *L. spinicollella*, Kol. *Limneria interrupta*, Gr., bred from *Sericoris euphorbiana*,

Frr. These three species were bred by Mr. Elisha. *Mesoleius sanguinicollis*, Gr., and *Pimpla brevicornis*, Gr., both bred from *Gracillaria stigmatella*, Fb., Stn., by Mr. Wellman. Mr. Billups also exhibited two species of Tenthredinidæ, viz., *Allantus viennesis*, Schr., and *Hylotoma cærulipennis*, Rtz., taken in copula at Hayling Island on the 7th June.

Mr. W. G. Sheldon exhibited a varied series of *Hepialus lupulinus*, L., taken at Riddlesdown, Surrey; also bred series of *Earias chlorana*, L., and *Crambus chrysonuchellus*, Scop.

Mr. Frohawk exhibited *Acontia luctuosa*, Esp., from Cudham.

Mr. W. A. Pearce exhibited a bred series of *Cucullia verbasci*, L., the larvæ having been taken at Mickieham, Surrey.

Mr. Jäger and Mr. J. T. Williams both exhibited *Erastia venustula*, Hb., from Horsham, Sussex; and the latter gentleman also exhibited *Acronycta alni*, L., and *Aphomia sociella*, Hb., bred from the cluster of fusiform cocoons found under a stone by him in his garden at Foot's Cray, a portion of which had been exhibited by Mr. Billups at the meeting on the 15th April last.

Mr. T. R. Billups exhibited large groups of the larvæ of *Hyponomeuta padellus*, L. Sta., which he said he had received from Gravesend, and he understood that an enormous amount of damage had been caused, both in Kent and Oxfordshire, by the ravages of this larva; the apple trees in these two counties being literally stripped of both the young fruit and leaves. In some parts of Oxford the owners of the orchards had adopted the plan of spreading sheets under the trees and beating the larvæ into them; but the difficulty was that in beating the larvæ off, the young fruit fell at the same time.

Some discussion then took place as to the probable cause of the appearance of this larva in such large numbers, and the best means to be adopted to exterminate them, in which Messrs. Adkin, Tugwell, Wellman, Chaney, J. T. Williams, West, and others took part.

Mr. W. West (Greenwich), exhibited a long series of a species of Coleoptera, belonging to the genus *Buprestidia*, taken at Suakim.

Mr. Step exhibited living specimens of the edible snail, *Helix pomatia*, L., from Ranmore, Surrey.

JULY 1st, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. South exhibited a specimen of *Melanippe fluctuata*, L., of a cream colour, the markings being reduced to almost vanishing point; this variety was taken on a fence in the neighbourhood of St. John's Wood.

Mr. Wellman exhibited *Thecla rubi*, L., and called attention to the absence of the white spots from the under-side of one specimen; a long series of *Eupithecia rectangulata*, L., comprising a light grey variety and several specimens of the var. *nigrosericeata*, Haw.; and a long series of *Aciptilia galactodactyla*, Hb., from larvæ taken at Horsley, Surrey.

Mr. Sheldon exhibited *Dianthæcia nana*, Rott., from Deal, and *Phoxopteryx derasana*, Hb., from Riddlesdown, Croydon.

Mr. T. R. Billups exhibited two living larvæ of *Boarmia repandata*, L., received from Mr. South, and which showed a curious arrangement of the cocoons of a species of Microgaster; Mr. South stated the larvæ spun a little pad of silk, then bent themselves into a bow on the twig, and the parasites began to creep out of the host and formed their cocoons under the arch.

Mr. Sheldon exhibited an egg of the cuckoo (*Cuculus canorus*, L.), found by him at Shirley Heath, Surrey, on the 26th June last, in the nest of a Meadow Pipit (*Anthus pratensis*, L.).

Mr. W. A. Pearce exhibited a coloured drawing of the Fly Orchis (*Ophrys muscifera*, Huds.), taken at Ranmore, on the occasion of the Society's excursion to Bookham.

JULY 15th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited specimens of *Cleptes nitidula*, Latr., taken at Benfleet, in Essex, on the 5th inst., on the umbelliferous bloom of the Common Cow Parsnip (*Heracleum sphondylium*, L.), and which he stated was probably the rarest of the twenty-two species comprising the family Chrysididæ. It had been taken in the New Forest and in Suffolk. Mr. Smith states that he once took a specimen near Lowestoft, and received one from Loch Rannoch. It will thus be seen it is a very local species, the male especially so, the specimen exhibited being the only male recorded as taken in this country.

This gentleman also exhibited the larvæ of *Geometra papilionaria*, L., and its parasite, *Apanteles rubripes*, Hal., and said it had been bred by Mr. Curtis and Mr. Bignell, commonly from the same larvæ; Mr. Harding had also reared it from *Vanessa urticæ*, L., and Mr. Cameron from *Pieris brassicæ*, L.

Mr. Jäger exhibited *Dianthæcia nana*, Rott., bred from larvæ obtained at Caterham, Surrey, and Teignmouth, Devon; those from the first-named locality feeding on *Silene inflata*, Sm., and those from Teignmouth feeding on *Silene maritima*, With.; *Dianthæcia cucubali*, Fues., reared on *S. inflata*; and bred specimens of *Botys terrealis*, Tr.; also several species of *Eupithecia*, bred from various flower-heads which had been kept in leno bags—a plan suggested by Mr. Carrington.

Mr. Gaskell exhibited a variety of *Ematurga atomaria*, L., of an almost uniform fulvous tint with only slight indications of the normal markings visible towards the hind margin. The specimen was taken at West Wickham, Kent.

Mr. J. T. Williams exhibited a specimen of *Cabera pusaria*, L., irradiated with black; a curious form of *C. exanthemata*, Scop., *Dasycera olivierella*, Fb., from Foot's Cray, Kent, and

a striking variety of *Abraxas grossulariata*, L. (Pl. I, fig. 2) bred from larva obtained in Mr. Hicklin's garden at Sidcup, Kent. The ground colour of this specimen was a full rich cream inclining to buff, the anterior wings having the usual basal blotch of orange with two black spots, not so large and distinct as in ordinary specimens. The orange median band was also very slightly dotted with black on either side, terminating on the costal margin with a more distinct blotch; the outer margin having six small but vivid black spots within the cilia; the posterior wings of the same ground colour, with a few minute black specks along the anal and outer margins, and none whatever in the median area.

Mr. T. Gibb, Junr., *Asthena blomeri*, Curt., *Hepialus velleda*, Hb., var. *carnus*, St., and a variety of *Melanippe montanata*, Bork., all taken in the neighbourhood of Burton-on-Trent.

Mr. R. South exhibited specimens of *Boarmia repandata*, L., bred from larvæ obtained this year from North Devonshire. He remarked that although several curious forms of this species had occurred to him in former years, the series (89 in number) bred this year, was by far the most interesting he had yet had an opportunity of studying, embracing as it did a greater range of variation and comprising some extraordinary examples of the *conversaria* form, together with numerous varieties of the typical form.

The specimens exhibited were selected with the view of showing the extremes in each phase of variation. In two examples of the *conversaria* form the ground colour was almost of the same dark shade as the central band; whilst two other specimens of the same form had respectively a pure white and creamy white ground colour, with exceedingly rich velvety black central bands.

Two of the specimens exhibited are figured Pl. I, Figs. 3 and 4.

Mr. South also exhibited a long series of *Aphomia sociella*, L., and with reference thereto stated that some of the specimens shown were bred from the portion of the cluster of cocoons found by Mr. Williams in his garden at Foot's Cray, which was exhibited at the meeting on the 15th April last; while the others were bred from a bundle of sticks from Dartford, so closely spun together by the larvæ that it required some force to separate them (the bundle of sticks was exhibited). He was of opinion that the cluster of cocoons found by Mr. Williams was the natural mode of pupation of the species; and the pupation among the sticks, a modification of this natural habit induced by the nature of the material the larva had to deal with in confinement. From the bundle of sticks he had bred ninety-six specimens, while from the small piece of the cluster found by Mr. Williams (which he also exhibited), he had bred twenty-one; and there were probably many more to emerge, as one had come out on his way to the meeting.

Several members contributed remarks on this species.

Mr. R. Adkin exhibited living larvæ of *Notodonta trepida*, Esp., reared from ova deposited by a female of this species taken on May 22nd, 1886, at rest on an oak trunk at Seal Chart, Kent.

The Secretary read a letter from Mr. Perkins of Wotton-under-Edge recording the probable capture by his nephew, of *Sesia andreniformis*, Lasp., at that place.

With reference to this insect, Mr. Carrington said it was one of the rarest of the British *Sesiidæ*. He had heard that in Germany it had been taken very freely by searching the flowers of the privet in July, and he determined to try and take it in the same way in England. He accordingly went to one of its old localities, near Gravesend, and searched for about an hour the only time the sun was visible, and during that period he saw one which he unfortunately failed to capture. He had very little doubt that

if the blossom of the privet was properly searched during the first fortnight in July, *S. andreniformis* would be taken.

AUGUST 5th, 1886.

J. JENNER WEIR, Esq., F.L.S., *Vice-President*, in the Chair.

Mr. T. R. Billups exhibited male and female specimens of *Cleptes nitidula*, Latr. (Pl. I, fig. 11), and read the following notes:—

“Shuckard in his very excellent monograph on the *Chrysididæ*, published in the ‘Entomological Magazine’ in the year 1836, speaking of the male of *Cleptes nitidula* says, ‘I can detect no difference between the insect I possess as the male of this species, and the male of the preceding, *C. semiauratus*, with the exception of the slighter exertion of the fifth abdominal segment, and the colour of the head and thorax being more blue.’ The late Frederick Smith, in his short but concise monograph, published some twenty-five years later—in the ‘Entomologist’s Annual’ for the year 1861—says, ‘the male I do not know.’ As Shuckard gives no other peculiarity or difference between the two species, I have taken some little trouble to search, but can find no other written or published description. This being so, it has led me to carefully examine a large number of the males of *C. semiauratus*, but structurally I can find no difference between the two species. As regards colour—which is not always a safe test—there is most certainly a distinct difference, and I am compelled to differ from both Messrs. Shuckard and Smith’s descriptions. They say of *C. semiauratus*, head, thorax, and basal joints of the antennæ bright metallic green, as also the coxæ and femora; while of the abdomen, Smith says, the apical margins of the third, fourth and fifth segments black. Shuckard says, the abdomen shining testaceous, with the marginal half of the third segment black, and the fourth and fifth of a steely-blue. From a large number of specimens of *C. semiauratus* examined by myself, the head, thorax and basal joint of the antennæ, as well as the coxæ and femora, are

a bright metallic blue, with, in some cases, a very faint approach to green; while the abdomen is shining testaceous, with the basal half of the third segment black, and the fourth and fifth metallic blue or violet.

“ In the male of *Cleptes nitidula*, the colour of the basal joint of the antennæ, head, thorax and femora is a bright golden green; while the first and second segments of the abdomen are obscure and also testaceous, the third, fourth, and fifth deep black, with no approach of a chalybeous reflection.

“ These few observations I think clearly prove that Shuckard had certainly not the male of *C. nitidula* to describe from, while Mr. Smith’s description would almost lead one to suppose—unless he had a number of specimens under observation—that instead of describing the male *C. semiauratus*, he was actually describing the rarer of the two species, viz., *C. nitidula*.”

Mr. Billups then called attention to four groups of Cocoons, from which he had reared a large number of *Microgaster flavipes*, Hall., and stated that this species of Braconidæ was parasitic in the larvæ of *Boarmia repandata*, from which it had been repeatedly bred by Kriechbaumer and Brischke on the Continent, and by Bignell and Cooper in this country. The whole of the *Microgasteridæ* were internal parasites, living in the body of a single victim larger than themselves, and in the case of some of the smaller species, issue in great numbers from the same caterpillar, forming their cocoons in clusters like a honeycomb, their heads, however, not being all turned the same way, the imago making its exit from both sides of the so-called honeycomb, which is always fixed up on edge. The following numbers which emerged from the cocoons exhibited, will give some idea of the fecundity of these parasites, 82, 66, 67, and 57, a total of 272 specimens from four larvæ of *Boarmia*, added to which there were in each cluster of cocoons a large number which perished, not being able to release themselves.

This gentleman also exhibited *Chrysis succincta*, L., taken at Chobham, Surrey, July 28th, 1886, on the bloom of the wild carrot (*Daucus carota*, L.), and stated that this rare species of the Chrysididæ was only recorded as having been taken some fifty years since by Messrs. Dale and Rudd, in Hampshire, and the late Mr. F. Smith had only met with it twice, and then in the same county.

Mr. W. West (Streatham) exhibited *Eugonia autumnaria*, Wernb., and bred specimens of *Ocneria dispar*, L.

A short discussion took place as to this last species not having been taken in England in the wild state for the last thirty years. Mr. Chaney stated that he took a female in a wood near Chatham about thirty years ago, and a friend (Mr. Walker), took a male at Chattenden about fifteen years ago.

Mr. Wellman exhibited three very fine specimens of *Dianthæcia albimacula*, Bork., from Folkestone ; series of *Epione parallellaria*, Schiff., and *E. apiciaria*, Schiff., both having been bred from ova.

With reference to the second of these insects (*E. parallellaria*), Mr. Weir said that he understood it was likely to become almost extinct in this country, as the place where it was now found would probably be destroyed ; and he referred to the burning by the Government of the herbage of the locality where *Zygæna meliloti*, Esp., used to occur, and the consequent almost total destruction of the species.

Mr. Carrington stated that as an old captor of this insect he should like to mention two or three facts as to its probable extinction, which he did not think was immediately possible. The best ground for the insect was a small piece of land covered with heather, detached from the common, and might be ploughed up at any time ; but the land was so poor, and so unlikely to be worth the trouble of breaking up, that it was not probable the locality would be destroyed. The insect, however, also appeared on a large tract of common land of four or five acres in extent. The best time in which

to take imagines in numbers was about seven o'clock in the morning, when the ground was wet with dew; after half-past nine the imago was only to be obtained by being kicked out. The larvæ fed on *Salix repens*, L., and both he and Mr. Prest had made many attempts to introduce the species to other localities, but without success.

Mr. Goldthwaite exhibited *Ematurga atomaria*, L., among which was a singular variety of the male; the ground colour of all wings being a bright orange, the usual transverse brown bands absent, but replaced on the forewings by several black blotches, so placed as to give the insect a very distinct and beautiful appearance. Also a xanthic variety of *Lycæna minima*, Fues., from West Horsley; and a long series of very dark forms of *Xylophasia monoglypha*, Hufn., which he stated was almost the only result of twelve days work in that locality.

Mr. C. Oldham exhibited a series of *Abraxas grossulariata*, L., bred from pupæ obtained from Cambridgeshire, showing a better range of variation than is usually seen in a number bred in the same hap-hazard way.

Mr. Carrington said that in the north of England, where varieties are more frequent than in the south, the collectors never hunted promiscuously, but went to particular localities where there was almost a certainty of getting those beautiful banded varieties that were to be found in the north, and it was extremely probable that these varieties were hereditary. Dark forms were more likely to be obtained when the larvæ were fed on blackthorn. There was a melanic variety of the larva taken in the neighbourhood of Shields, and as far as he knew was never taken elsewhere. The usual food plants of the larva were blackthorn, currant, and gooseberry, but it was not to be found so commonly on gooseberry as on currant. The larva had, however, been found feeding on *Cotyledon umbilicus*.

Mr. Weir remarked that the fact of this species feeding on the *Cotyledon* was very interesting, as it was a plant closely allied to the currant and gooseberry.

Mr. W. A. Pearce exhibited *Calligenia miniata*, Forst., from the New Forest.

Mr. J. Jenner Weir exhibited five beautiful varieties of *Argyunis paphia*, L., and said that after many years' experience, they were five of the most marked he had seen. All the specimens were females, one being the lightest he had ever taken, another as dark as the variety *valezina*, Esp., and was a melanic variety of *paphia*, properly so-called; also a perfect form of *valezina*, and a beautiful green form of the same variety.

Mr. J. H. Carpenter exhibited a larva of *Hepialus virescens*, from Tikitapu Bush, near Rotorua, New Zealand, with the fungus known as *Cordyceps robertsii*, growing from the neck of the larva.

Mr. W. A. Pearce exhibited a specimen of the Horned Toad (*Ceratophrys cornuta*, L.), from California.

Dr. C. M. Matthews, exhibited the flowers of what are known as the Green Dahlia and Green Rose.

Mr. E. Step exhibited *Planorbis albus* v. *draparnaldi*, Shepp., and *Zonites crystallinus*, Mull., from Moulsey Hurst.

AUGUST 19th, 1886.

J. JENNER WEIR, Esq., F.L.S., *Vice-President*, in the Chair.

Mr. W. G. Sheldon, exhibited bred series of *Eupithecia pimpinellata*, Hb., *Conchylis dilucidana*, St., *Grapholitha geminana*, St., *Ephippiphora cirsiana*, Zell., bred from thistle stems, *E. fænella*, L., and some interesting forms of *Xanthosetia zægana*, L., from Hackney Marshes.

Mr. J. J. Weir, exhibited several xanthic varieties of *Erebia epiphron*, Knock., *Epinephele ianira*, L., *Satyrus semele*, L., *Cænonympha pamphilus*, L., and a very pale form of *Polyommatus phlæas*, L.

Mr. J. A. Cooper exhibited a long series of *Argyrolepia badiana*, Hb., and said that both Mr. Stainton and Mr. Merrin gave the larvæ of this species as feeding in the stems

and roots of Burdock (*Arctium lappa*, L.); but he had searched carefully, and had been unable to find any larvæ either in the stems or roots, although he had found them plentifully in the seed heads of the plant, from which those now exhibited were bred.

Mr. Cooper also exhibited *Phorodesma smaragdaria*, Fb., bred from larvæ found in the Essex Salt Marshes. The larvæ being figured on Pl. 1. fig. 5.

Mr. Jobson exhibited *P. smaragdaria* bred from larvæ found in the same locality; *Erastria venustula*, Hb., bred from ova, and *Lobophora sexalisata*, Hb.

Mr. J. T. Williams exhibited an almost albino variety of *Acidalia bisetata*, Hufn., and a variety of *Larentia olivata*, Bork. (Pl. 1. fig. 1), having the whole of the base of the wings suffused as far as the median fascia.

Mr. Helps exhibited *Boarmia repandata*, L. var. *conversaria*, Hb., from the New Forest.

Mr. C. Oldham exhibited examples of the second brood of *Lycæna argiolus*, L., and ova of the same species laid on a twig of holly.

Mr. Frohawk exhibited *Timandra amataria*, L., bred from ova laid on the 7th July last, and coloured drawings of the larva and pupa.

Mr. Goldthwaite exhibited black forms of *Eupithecia rectangulata*, L.

Mr. W. A. Pearce exhibited a coloured drawing of *Hadena pisi*, L., and food plant.

Mr. Step exhibited growing specimens of the Round-leaved Sundew (*Drosera rotundifolia*, L.), and the Long-leaved Sundew (*D. intermedia*, Hayne), from Chobham.

SEPTEMBER 2nd, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited a rare species of Hymenoptera: *Tachytes unicolor*, Panz., taken at Hayling Island, on June 7th, 1886.

Mr. J. R. Wellman exhibited a box of Exotic Lepidoptera, which, he stated, had all been taken at sea; also living larvæ of *Cidaria picata*, Hb., and *Acidalia rusticata*, Fb.

Mr. W. G. Sheldon exhibited red and grey forms of *Noctua castanea*, Esp., bred from larvæ taken on Shirley Heath, Surrey.

Mr. Adkin stated he had frequently obtained larvæ of this insect from Shirley, but had never bred the red form of the species.

Mr. South exhibited varieties of *Lycæna corydon*, Fb., taken at Eastbourne, and he stated he had taken thirty-five specimens, which were all connecting links right up to the extreme forms he now exhibited; and he was of opinion that the real interest attaching to varieties was to show the links connecting extreme forms with types, rather than having the extreme forms only.

Mr. J. J. Weir said he quite agreed that it was necessary in arranging insects in the Cabinet, to graduate them, the extreme forms, and then the links connecting them with the type. It was a most singular thing that more varieties of *L. corydon* were taken this year by Mr. South than he (Mr. Weir) had taken in his life, although he had captured great numbers of the species at Lewes.

Mr. South also exhibited *Abraxas grossulariata*, L., and said that these again, as in *corydon*, were the extreme forms, but out of a large number bred this year he had all the connecting links between the ordinary and extreme forms. None of those he exhibited were very striking varieties, but they were just in that stage, that in a few more years, if bred from, some very striking varieties would be obtained. He wished it to be understood that he fully believed in varieties being perpetuated.

Mr. South further showed specimens of *Dicrorampha consortana*, var. *distinctana*, Hein., and remarked that, in 1881, he captured two specimens in North Devon, one of which

was sent to Mr. C. G. Barrett, who identified it as *distinctana* of Hein., only taken before at Vienna, until taken by him (Mr. South) in North Devon; and he thought that last year Mr. Machin had taken two specimens of a *Dicro-rampa*, which Mr. Barrett had also identified as *distinctana* of Hein.

This year, Mr. South added, he had bred fourteen specimens of *distinctana* from shoots of *Chrysanthemum* received from North Devon; and he had no doubt whatever it was a form of *consortana*, the reason being that the larva was identical with the description of larvæ of *consortana* he took some years ago at Shanklin, Isle of White, and the habits of both larvæ were also exactly similar.

Mr. J. J. Weir exhibited seven specimens of *Argynnis paphia*, L., and one specimen of *A. euphrosyne*, L., and drew attention to the white spots on the wings, which, he said, were not suffused spots, as seen in *Epinephele ianira*. It was a very curious thing that these spots should be so conspicuous. He had this year taken seven examples, and heard of several others having been captured. What could be the origin of these spots? Possibly the pupa had something on it which prevented the rays of light from colouring the insect; in nearly all cases the spots were symmetrical.

Mr. South said that in 1881 or 1882 he took some specimens of this insect with the spots, and it occurred to him at the time that they were probably caused by the sun's rays passing through a globule of water and falling on the pupa. In some cases the spots were symmetrical, in other cases anything but so; but, as a rule, they were not symmetrical. Mr. Carrington observed it was scarcely possible one drop of water would cause these spots, as the angle of light would be such as to concentrate the rays, and would leave a line instead of a distinct spot. He remembered one particular season, in the New Forest, when a great many were taken, some showing the spots in the centre of the wing, and in various other ways. It was not probable all these pupæ

were lying in the same locality. So far as he could gather, they were taken considerable distances apart, and he thought we ought to look elsewhere for the causes of these spots. He then referred to the cases of *A. betularia*, L., and *T. crepuscularia*, Hb., in which the variation has become permanent in certain localities. Several other members continued the discussion, and Mr. Adkin exhibited *Cleoceris viminalis*, Fb., a species which he stated had some little bearing on the question of permanent variation. From twelve larvæ sent him from Barnsley, he expected to rear only the black form of the species obtained in that locality; but among them he had bred one of the ordinary form of the species as found in the south of England. Mr. South said he had received forms of this species from Glasgow quite as dark as those from Barnsley. Mr. Sheldon contributed observations on collecting *T. crepuscularia*, in Derbyshire, from which, it appeared, that in some of the woods which had been thinned, the insect was generally found on the trunks of oak trees, and was the light form, whereas those found in another wood which was very thick, were very dark, and, in some cases, almost black.

Mr. J. A. Cooper exhibited *Axylia putris*, L., *Zonosoma orbicularia*, Hb., *Eupithecia subfulvata*, Haw., and *Tephrosia biundularia*, Bork., the latter bred from a female captured in June last, the larva having fed upon knot-grass.

Mr. T. R. Billups exhibited the following Coleoptera:—*Choragus sheppardi*, Kirb., from Broadstairs; *Trox sabulosus*, L., from Chobham; the delicate little longicorn *Molorchus minimus*, Scop., and *Mycetoporus longulus*, Mann., taken at Bookham, on the Society's excursion, June 26th; and the scarce *Panagæus quadripustulatus*, Sturm. Two local species of Hemiptera—*Phylus coryli*, L., and *P. avellanæ*, H. S., taken at the Society's excursion to Westerham, in July last, the immature form of *Temnostethus pusillus*, Schiff., *Microphysa elegantula*, Baer., from Broadstairs, and also the Homopteron *Ledra aurita*, L., from the same locality.

Mr. Billups read a note from Mr. Bignell, of Plymouth, in reference to some remarks made by him before the Society July 1st, concerning the larva of *Boarmia repandata* and its parasite, *Microgaster flavipes*, Hal.

Mr. South said it appeared to him that Mr. Bignell took especial exception to the statement that the larva of *B. repandata* "spun a little pad of silk." Probably Mr. Bignell thought that the silk on which the *Microgaster* formed their cocoons was referred to, in which case his contention would be valid, as it was certain that although the larva of *repandata* seems to be exceedingly attentive to its parasites, it does not carry its attention to the extent of providing a foundation for the erection of the pyramid of cocoons formed by those parasites immediately under its body. The object of the silken pad is evidently to enable the lepidopterous host to effect a secure hold with its anal claspers during the time it is bent in arch-like form, not only whilst the *Microgaster* larvæ are leaving its body, but for some considerable time after the parasites have housed themselves under the sheltering protection of its curved form.

SEPTEMBER 16th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. J. A Cooper exhibited a long series of *Zygæna filipendulæ*, L., showing marked variations of the border of the posterior wings, from North Devon.

Mr. Adkin exhibited *Lophopteryx cuculla*, Esp.

Mr. E. Joy exhibited a remarkable variety of *Epinephele ianira*, L.

Mr. Wellman exhibited series of *Acidalia bisetata*, Hufn., with very pronounced marginal markings, from Raindean Wood, Folkestone; long varied series of *Bryophila muralis*, Forst., from southern localities, and a specimen of *B. impar*, Warren, from Cambridge. Also *Dianthæcia irregularis*, Hufn.

Mr. W. G. Sheldon exhibited *Triphosa dubitata*, L., and *Agrotis agathina*, Dup., both taken at the flowers of heather on Shirley Heath, Surrey. Some discussion ensued as to rearing the larvæ of the latter species.

Mr. J. J. Weir exhibited a specimen of *Agrotis*, taken forty years since, which has not yet been identified; also a specimen showing some of the characteristics of both *Agrotis segetum*, Schiff., and *A. suffusa*, Hb.

Mr. W. West (Greenwich), a long and variable series of *Cryptocephalus pusillus*, Fab., from West Wickham, Kent.

OCTOBER 7th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Billups exhibited *Echthrus lancifer*, Gr., (plate 1, fig. 8), a species of *Ichneumonidæ* new to Britain, taken by him at Walmer in August last, and said that the genus appeared to be very rare, or at least, very little known in this country—hitherto being only represented by one species, *E. relucator*, L.; they appeared to be parasitic on wood-boring larvæ. Herr Brischke had bred members of the genus from *Sesia sphægiiformis*, *S. formiciformis*, and *Leucania obsoleta*; and no doubt if Lepidopterists, who bred the clear-wing moths, were to save the parasites which appeared in their cages, species of *Echthrus* would be found among them.

Mr. Wellman exhibited examples of second broods of *Melanippe tristata*, L., *Acidalia emarginata*, L., *A. rusticata*, Fb., and *A. strigilaria*, Hb., all reared from ova. It was remarked that a second brood of *A. strigilaria* was somewhat unusual.

Mr. J. Jäger exhibited specimens of *Callimorpha hera*, L., taken in the south of Devon, one the var. *lutescens*, Staud., having been taken by a signalman at Teignmouth. Also a number of forms of *Bryophila muralis*, Forst., from Dawlish, among which were some of a brownish coloration, and he stated that he found more of this form than any other.

Mr. J. T. Williams exhibited *Eupithecia linariata*, Fb., bred from larvæ taken in July, which were full fed and out within about fourteen days.

Mr. R. South exhibited yellow-banded forms of *Sesia culiciformis*, L., also *Mimæseoptilus zophodactylus*, Dup., and *M. bipunctidactyla*, Haw.

Referring to these plume-moths, Mr. South said that *Mimæseoptilus zophodactylus* is a smaller and more slender-looking insect than *M. bipunctidactyla*, but these characters are not in themselves sufficient to distinguish one species from the other. A more trustworthy feature is the white costal edging to the outer digit of fore-wing of *zophodactylus*.

Mr. South also exhibited series of *Thera variata*, Schiff., from Switzerland, England, and Scotland, and stated that the specimens from Switzerland were the true *variata*, and differed in colour from *obeliscata*, the form found in this country, and which, in his opinion, was the only form obtained here. The Scotch form, known as *obliterata*, was described by Dr. Buchanan White, and was a small and dark variety of *obeliscata*. A specimen of *Thera juniperata*, L., was also exhibited for comparison, as the coloration and character of the markings of *variata* were more nearly allied to *juniperata* than *obeliscata*.

Mr. Elisha exhibited *Agrotis ashworthii*, Dbl., and *Dasycampa rubiginea*, Fb.

Mr. R. Adkin exhibited the following species of Lepidoptera taken in East Sussex during the past season: Varieties of the undersides of *Lycæna icarus*, Rott., very closely approaching the variety *icarinus* of Scriba; and of *L. corydon*, Fb., *Lithosia griseola*, Hb., *Bryophila perla*, Fb., including an orange variety; *Stenia punctalis*, Schiff., *Amblyptilia acanthodactyla*, Hb., and *Diasemia literata*, Scop. With reference to this last species, Mr. Adkin stated that although occasionally met with in our southern counties, it appeared to be of by no means common occurrence. It was mentioned by Westwood as having been

taken in moist places in Darent Wood and the New Forest. Stainton, in his "Manual of British Butterflies and Moths," gives Lyndhurst, Newnham, and Sanderstead as localities. Several specimens were taken by Mr. Norcombe in Devonshire, in 1858, and a little later Mr. Reading captured about twenty-four near Plymouth; but Mr. C. G. Barrett reports it in some numbers from Pembrokeshire, and gives the date of its appearance as the first half of the months of June and August; and he subsequently mentions that after losing sight of it for ten years, he took about a score in 1881, and seventeen in 1884.

Morris figures this species (Pl. 54, No. 19); but the notes given under this number evidently refer to *Nascia ciliialis*, Hb., figured under No. 17 on the same plate; and if we assume that the figures have been transposed, as appears probable, we find that he adds Plymouth and Arundel to the above list.

Mr. J. J. Weir exhibited a variety of *Vanessa cardui*, L., from Grahamstown, South Africa, with a row of white spots on the primary and secondary wings, the latter having the nervures thickly edged with black, widening into blotches on the hind margin, and he stated that a similar variety was sometimes taken in England. A white and black specimen of *Colias electra*, from the same locality, showing that that species exhibited a similar dimorphic condition of the female to that which obtains in *Colias edusa*, Fb.; two specimens of *Lycæna corydon*, Fb., from Lewes, the fringes of all the wings of one being spotless white, and of the other inky grey. Mr. Weir then made a communication to the Society to the effect that Mr. F. F. Freeman, of Plymouth, had informed him that he had just seen a specimen of *Anosia plexippus*, L., taken by Miss Whipple at Downterry, on the southern coast of Cornwall. Adverting to a note of Mr. G. D. Hulst, "Entomologica Americana," ii. 104, August, 1886, in which it was stated that the name of this insect as given above is that which the British Museum gives to what the rest of the Lepidoptero-

logical world calls *Danais archippus*, Mr. Weir remarked that the genus *Anosia* was established by Hübner in 1816, and this insect placed in it under the name of *menippe*; but Linnæus, in 1758, had named the species *plexippus*, and it was not till 1793 that Fabricius named it *archippus*. All this is shown in Mr. Moore's admirable monograph of *Limnaina* and *Euplœina* in the proceedings of the Zoological Society, 1883, pp. 233-34. It was true that the name *plexippus* was erroneously applied to *Salatura genutia*, Cram. (1779), an Indian species, by several authors. Linnæus describes his species as American; but little attention was paid in his time to the geographical distribution of animals, and some of his followers misapplied the description. At all events, both the generic name *Anosia*, and the specific name *plexippus*, were long ago applied to this insect, the latter indeed for more than a century and a quarter.

Mr. E. Sabine exhibited a variety of *Papilio machaon*, L., which was especially noticeable on account of the attenuated character of the band on the hind wings. Also a number of varieties of *Zygæna filipendulæ*, L., taken in Kent, including several of the yellow form.

This gentleman also exhibited varieties of *Lycæna bellargus*, Rott., the specimens exhibited including a number of light forms and two black males. Mr. Sabine gave an account of how he took this extraordinary number of varieties, and said that they represented examples of both the spring and autumnal broods, and with the exception of one of the black males (which was captured in a previous year) were all taken during the present season. They were all found on a chalky soil; and he was of opinion that they were hybrids between *bellargus* and *corydon*, as on one occasion at the same locality, he took a male of *bellargus* in copula with a female of *corydon*.

Mr. Weir remarked with regard to these varieties that he thought the light specimens must be hybrids between the two species mentioned by Mr. Sabine, but the curious part of the

whole matter was that they had been taken both in the spring and autumn. As to the black males, which were taken in different years, he could only say that in the course of his experience, during which he had paid a great amount of attention to this species, he had never seen or heard of anything like it.

Mr. South, who stated he had also paid considerable attention to *L. bellargus*, concurred with Mr. Weir in his observations on Mr. Sabine's exhibit.

Mr. West, of Greenwich, exhibited two species of *Coleoptera* from Shirley, Surrey—*Balaninus rubidus*, Gyll., and *Erirehinus pectoralis*, Panz.,—the former taken on birch, and the latter on sallow.

Mr. T. R. Billups exhibited a species of Hydradephaga, *Colymbetes fuscus*, L., from which a Lepidopteron, most probably *Endrosis fenestrella*, Scop., had emerged; the pupa case being firmly attached to the body of the beetle.

Referring to this exhibit Mr. Billups said no doubt the egg had been laid between the elytra, and after its emergence the larva made its way into the body of the beetle, where its metamorphosis took place, finally making its exit from between the hinder part of the elytra, which had been gnawed away to allow of the escape of the imagire.

This gentleman also exhibited specimens of the very pretty and curious Birds'-nest fungus (*Cyathus vernicosus*), found growing in his garden at Peckham.

OCTOBER 21st, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited the following species of Ichneumonidæ; *Trogus lutorius*, Fab., and its rare ally, *T. alboguttatus*, Gr. (Pl. I, fig. 7), the former bred from *Chærocampa porcellus*, and the latter from *Sphinx ligustri*. Mr. Billups stated that both species had been bred by Mr. R. Adkin from larvæ taken at Dartford, Kent, and that this

genus of Ichneumonidæ contains nearly our largest species, being only eclipsed by the genus *Rhyssa*. It seems somewhat remarkable that both these species, which, until just lately, were the only recorded species in Marshall's List of British Hymenoptera, should be bred from larvæ taken in the same locality. The third species, *Trogus exaltatorius*, Panz., was described by Mr. Bridgman in a paper read before the Fellows of the Entomological Society of London, July 7th, 1886, from a specimen given to him by Mr. G. E. Bignell, of Plymouth.

Mr. Billups also exhibited a fine series of *Apanteles jucundus*, Marsh (Pl. 1, Fig. 12), both sexes being represented, as well as the cluster of cocoons from which they emerged. These little *Microgasterides* were bred from the larvæ of *Pieris brassicæ*, L., received by Mr. South from Ireland. This exhibit was especially interesting from the fact that there is no record of the insect having been reared previously, and in describing it last year, the Rev. T. A. Marshall, in his Monograph of the British *Braconidæ*, had but one specimen to work from, that being a female, taken by sweeping in Northamptonshire, the male being then unknown.

Mr. C. H. Watson exhibited *Acherontia atropos*, L., (bred) and *Catocala sponsa*, L., and *C. promissa*, Esp., from the New Forest.

Mr. Levett also exhibited *A. atropos*, taken on a fence in the neighbourhood of Greenwich.

Mr. E. Joy exhibited *Cidaria sagittata*, Fb., bred from larvæ taken in Wicken Fen, Cambridge.

Mr. Helps exhibited *Lasiocampa quercifolia*, L.

Mr. W. West (Streatham) exhibited two xanthic forms of *Bryophila perla*, Fb., from Margate.

Mr. W. G. Sheldon exhibited *Plusia chryson*, Esp., *P. festucae*, *P. pulchrina*, Haw., *Amblyptilia acanthodactyla*, Hb., and *Tortrix ribeana*, Hb.

Mr. Ficklin exhibited a long series of *Pædisca sordidana*, Hb.

Mr. J. Jäger exhibited a specimen of *Sphinx convolvuli*, L., taken at Starcross, South Devon.

Mr. L. Gibb, a specimen of *Argynnis aglaia*, L., taken at an elevation of 2800 feet above the level of the sea; varieties of *Lycæna icarus*, Rott., and other species from Scotland; also a long series of *Zygæna exulans*, Hoch., var. *subochracea*, White, from Braemar; and for the purpose of comparison, two examples of the Swiss form of this insect.

Mr. Tugwell also exhibited this species from the same locality, and an empty pupa case, made up among Crowberry, (Pl. 1, Fig. 6). He stated that the only difference between the Swiss form and the variety *subochracea* of White was that in the Swiss specimens the red was very much deeper in colour, and the scales were more dense.

Mr. Mera exhibited bred examples of *Eugonia autumnaria*, Wernb.

Mr. G. Elisha exhibited *Dianthæcia irregularis*, Hufn., bred by him this season.

Mr. Wellman exhibited a number of species, taken or bred by him during the season, among which were *Cidaria picata*, Hb., *C. silaceata*, Hb., and several *Acidalia*.

Mr. Shearwood exhibited preserved larvæ of a great many species including *Toxocampa pastinum*, Tr., *Stilbia anomala*, Haw., *Lithosia mesomella*, L., *Melanippe hastata*, L., *Abraxas grossulariata*, L., including the black variety, *Nyssia zonaria*, Schiff., *Cucullia chamomillæ*, Schiff., *C. absinthii*, L., *Nola albulalis*, Hb., *Deilephila galii*, Schiff., and *Asteroscopus nubeculosa*, Esp.

Mr. R. Adkin exhibited a bred series of *Acidalia inornata*, Haw., in reference to which he said there was a doubt in the minds of many as to distinguishing it from *A. aversata*, L. but he was of opinion that the spots in the fringes of the first-

mentioned species afforded a trustworthy distinction if the specimens were in anything like order.

Mr. Adkin also exhibited, on behalf of Mr. William Farren, of Cambridge, long series of *Bryophila muralis*, Forst., *B. impar*, Warren, and *B. perla*, Fb.—the first-mentioned from Folkestone, and the last two from Cambridge. Mr. Adkin stated that there had been some considerable discussion as to whether *impar* was a true species, or only a variety of *muralis*. He was pleased to have the opportunity of bringing Mr. Farren's exhibit to the notice of the meeting, and he would like to have the opinion of the members present upon this point. For the purpose of comparison with this exhibit, Mr. Wellman had brought his beautiful series of *muralis*, and Mr. Jäger the red forms of the same species, taken by him this year at Dawlish, and which had been already exhibited at one of the Society's meetings. Mr. Farren had asked him to call attention to the neater, harder, and more glossy look of *impar*, compared with *muralis*, and to the fact that the latter was generally larger; also that the reniform stigma, which extended almost across the fore wings, was filled up, and almost obliterated with black in *impar*, while at the anal angle was a blackish blotch always present in *impar*, but absent in *muralis*. The lines in *impar* instead of ending in spots on the costa, ran together, and formed a blackish edging along the costa; further, the wings in *impar* were not so ample as in *muralis*, and the fore wings were decidedly narrower than in that species. Although both varied considerably in colour, running from grey to a deep bluish green, the whole tone of colour was very different in the two—*impar*, both on body and wings, being peppered with black, and *muralis* with pale greyish brown.

Mr. Weir said the *Bryophila* was not a group to which he had paid very much attention; but looking at the habits of the whole genus, and the necessity for their resembling walls and old rocks, and at the light in different neighbourhoods, he could quite understand that local forms and races were almost

sure to arise, and it would be impossible to suppose otherwise. In the present state of the question, he felt disposed to say that *impar* was not a clear species, but it should be bred from the larvæ before we could speak with certainty. It appeared to him that it was only a dominant variety of the particular district in which Mr. Farren had taken the insect.

Mr. Tugwell said he quite endorsed what Mr. Weir had said, and that, in his opinion, it was simply a local form of *muralis*, and nothing more.

Mr. Wellman concurred in this view, as did several other members.

Mr. Carrington said he had never heard of any of the genus *Bryophila* having been reared from ova. He was of opinion that if ova were obtained it would not be such a difficult matter to rear the larva as was generally supposed; and if reared, it would no doubt clear up the disputed point.

Mr. Oldham made a communication to the effect that the Long Pond, in the Warren at Folkestone, had been destroyed by the erosion of the coast by the sea; and he exhibited a fossil of *Pecten beevori*, in a fine state of preservation, partially covered with iron pyrites.

NOVEMBER 4th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Billups exhibited seven male specimens of *Halictus xanthopus*, Kirby, a species of Hymenoptera-Aculeata, from Reigate, Surrey; and he stated that the whole seven were taken on one solitary bloom of thistle. The species was very local and appeared to prefer situations on the coast. It was occasionally plentiful at Hastings, Ventnor, Arundel, Littlehampton, Southend, and Deal, but had not been recorded so far inland as Reigate, nor taken later than the month of August. The date of the capture of those exhibited was the 30th October, and was probably without precedent, and only

to be accounted for by the mild and spring-like weather of the last two months.

Mr. West (Streatham) exhibited bred specimens of *Eubolia cervinata*, Schiff.

Mr. Wellman exhibited *Dasydia obfuscaria*, Hb., and *Eupithecia togata*, Hb.

Mr. A. E. Cook exhibited *Vanessa c-album*, L., from Wales.

Mr. Jäger exhibited a striking variety of *Hypsipetes ruberata*, Frr., taken at Brockenhurst, in the New Forest.

Mr. Carrington stated that this variety was not uncommon in Scotland, in which country there was only one brood, whilst in England there were two.

Mr. W. G. Sheldon exhibited dark forms of *Hypsipetes sordidata*, Fb., from Cadder Moss, Lanarkshire.

Mr. T. W. Hall exhibited short series of *Cerastis vaccinii*, L., and *C. spadicea*, Hb., which, he remarked, were exhibited not for their rarity, but rather to get an expression of opinion as to whether the two species were distinct or whether *spadicea* was but a somewhat uncommon variety of *vaccinii*. The specimens shown were chiefly from Epping Forest.

Mr. Adkin said it was one of those questions which Entomologists looked at from different points of view.

Mr. R. South exhibited *Gnophos obscuraria*, Hb., and read the following notes:—

“There are forms of *obscuraria* which run so close to varieties of other European species of *Gnophos*, that it is hardly matter for surprise that authors should have included such insects as *pullata* and *dilucidaria* in works on British Lepidoptera.

“As far as we know at present *obscuraria*, Hb., is the only species of the genus found in Great Britain. At the same time it is quite possible that the *pullata* of Hüb. is not really distinct from his *obscuraria*. The descriptions of the

larvæ of these insects are, in some respects, not quite identical but the insects themselves are very similar. Again, the variation of *pullata*, like that of *obscuraria*, ranges from a white or whitish form on the one hand, to a black or blackish form on the other.

“*Dilucidaria*, Hb., has a certain superficial resemblance to the paler form of *obscuraria*, but on a closer examination the structural differences of the two insects are at once apparent.

“By way of illustrating the variable character of *obscuraria*, in the ground colour of its wings more especially, I exhibit specimens from widely distant British localities. The first three are from Folkestone, and these in tone of colour lead up to the darker coloration of the New Forest and Perthshire specimens in the next row. The third and fourth rows are from North Devon and Lewes respectively.

“From these examples it will be seen that in each locality the species is represented by a different form, and each form seems fairly constant in its particular locality. The Folkestone, New Forest, and Perthshire specimens are more or less typical. The North Devon examples come near to, but are not quite, Staudinger’s var. *argillacearia*, and the Lewes insects approach the var. *calceata*, Staud.

“Mr. Jenner Weir, in an elaborate paper on ‘Variations in the colour of Lepidoptera,’ ‘Entom.’ xvi. 169–176, says (p. 173), ‘as an instance of a topomorphic variety, dependent, apparently, on the geological environment, I know of no better example than that of *Gnophos obscuraria*.’ With regard to the forms before you this evening it would be difficult to imagine coloration more suitable for each in its peculiar habitat than that which it possesses.

“In the production of these varied forms there is, I think, no question of food influence. The differences between the darkest and lightest specimens is simply one of more or less blackish pigment, and the amount of such pigment is regulated by the laws of natural selection and in-

heritance working in accord with the surroundings of the insect."

Mr. Rose exhibited *Lycæna virgaureæ*, L., from Norway; varieties of *Boarmia repandata*, L., from the Isle of Wight and Ambleside; and *Nudaria mundana*, L., which latter species had been plentiful on walls in the Lake District.

Mr. Adkin exhibited specimens of *Euchelia jacobææ*, L. in one of which the red markings were absent from the right wing.

Mr. Chaney exhibited the following species of Coleoptera: *Sphodrus leucothalmus*, L., from Peckham; *Molytes germanus*, L., *Agabus nitidus*, F., from Snowdon; and *Barynotus mærens*, F., from West Horsley.

Mr. T. R. Billups exhibited the scarce grasshopper, *Gomphoceros rufus*, Ch., from Reigate; a new locality for this species of Orthoptera; also the following species of Hemiptera:—*Corimelæna scarabæoides*, L., and *Sehirus morio*, L., both from Reigate. Mr. Billups stated that neither had hitherto been recorded from this locality, Messrs. Saunders, Douglas, and Scott giving London districts only for *S. morio*; and Purley Downs, Gloucester, Mickleham, and the sand hills near Burnham, for *C. scarabæoides*.

Mr. Billups also exhibited three distinct groups of miniature cocoons produced from larvæ mining the leaves of a plant of Columbine (*Aquilegia vulgaris*), growing in his garden at Peckham, and which, he stated, were most probably dipterous, or some species of Chalcid parasitic on the miner.

Mr. Billups then called attention to a note in the current number of "Science Gossip," recording the occurrence of a large flight of butterflies at Salzburg, Austria; and a short discussion took place as to this and similar flights which have been noticed from time to time, in which Messrs. Carrington, South, Williams, Adkin, and others, took part.

NOVEMBER 18th, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited a female specimen of *Prosopis punctulatissima*, Sm., taken at South Hayling, June, 1886, and said that this very rare short-tongued bee had hitherto only been recorded from Birch Wood, Kent, where it was taken some twenty-five years since by the late Mr. F. Smith.

Mr. Billups also exhibited two drawers of *Ichneumonidæ*, containing types of most of the genus from the *Ichneumonides* to the *Cryptides*; also large series of most of the *Chrysididæ*, showing his improved system of mounting these very fragile insects, and his new mode of labelling, obviating the necessity of keeping a journal.

Mr. R. Adkin exhibited *Ptilophora plumigera*, Esp.

Mr. R. South exhibited three instances of parallelism in the coloration of the female of *Lycæna icarus*, Rott., and *L. bellargus*, Rott., two being well-marked examples of their respective types, and one being a variety of *L. bellargus*, coming close to var. *ceronus*, Esper., but lacking the orange spots on the forewings. If these had been present it would have exactly corresponded with the variety of *icarus* exhibited by its side. There was also shown a curious form of the male of *Lycæna corydon*, Fb., with distinct ocelli on the forewings, and a specimen of *L. icarus* from the Isle of Hoy, having a strong tinge of the *bellargus* blue on the inferior wings.

Mr. W. G. Sheldon exhibited a specimen of the genus *Xanthia* which, Mr. South stated, was known in this country as var. *ocellaris* of *Xanthia gilvago*, Esp., and probably identical with *Xanthia ocellaris*, Bork.

Some discussion ensued, in which Messrs. South, Adkin, Carrington, Sheldon, and Williams, took part.

Mr. E. Step exhibited two species of fungi from Wimbledon Common: *Calocera viscosa* and *Peziza aurantia*.

DECEMBER 2nd, 1886.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Tutt exhibited, and drew attention to the close resemblance of, several species and forms of *Agrotis*. The exhibit comprised a number of *A. nigricans*, L., from Deal, Greenwich, and Cuxton; about 500 specimens of *A. tritici*, L., and var. *aquilina*, Hb., from several localities, and so-called Scotch *obelisca*, with specimens of *obelisca*, Hb., from Germany for comparison; also specimens of *agathina*, Dup., from Perthshire, and a very fine series of *cursoria*, Bork., from Sligo, among which were many interesting forms, some of them very like German *obelisca*. One peculiar specimen, among other curious forms of *tritici*, from Sligo, lent Mr. P. Russ, bore a superficial resemblance to *agathina*.

Mr. Tutt also exhibited, on behalf of Mr. Russ, *Epunda lutulenta*, var. *seidi*, Gn., together with a beautiful example of the var. *luneburgensis*, Frr., captured near Sligo.

Mr. Adye exhibited a melanic variety of *Hemerophila abruptaria*, Thnb., and a curious male variety of *Epinephele ianira*, L., having a conspicuous white blotch of irregular shape upon each of its four wings.

Mr. R. South exhibited a number of Rhopalocera, from the Amor Valley, Siberia. Among the species were *Lycæna cleobis*, Brem., *L. argiades*, Pall., *L. optilete*, Knock., *L. zephyrus*, Friv., *Argynnis selene*, Schiff., *A. selenis*, Ev., and *A. euphrosyne*, L.

Mr. R. Adkin exhibited *Cidaria reticulata*, Fb., bred during the present season by Mr. H. Murray, Carnforth, from larvæ found on *Impatiens noli-me-tangere*, L., near Windermere.

Mr. W. A. Pearce exhibited a coloured drawing of the larva of *Mamestra persicariæ*, L., feeding on willow.

Mr. Tugwell exhibited a number of insects from New Caledonia. Among these was a specimen of *Chærocampa celerio*, L., which he stated was exactly similar to the type found in this country. There were also in the box several species of *Syntomis*, allied to *S. phegea*.

Dr. P. Rendall exhibited a specimen of *Noctua festiva*, Hb., v. *conflua*, Tr., taken by him at sugar, in the New Forest, between the 20th and 28th July. He stated that during this time he took not a single specimen of the ordinary form of *festiva*, although this had been common about the 17th to 20th June. An interesting discussion then took place as to whether *conflua* was distinct from *festiva*.

Mr. Hall exhibited a specimen of the large green grasshopper, *Locusta viridissima*, taken at sugar. Mr. Tugwell said, that on the sandhills at Deal it was a very common experience, in the course of an evening's sugaring, to find this species, and he was of opinion that they came there to catch the moths that were attracted by such sugar, and he had frequently seen them attack and make a meal of even so large an insect as *Phlogophora meticulosa*, L. Mr. Billups said that this species of grasshopper was not at all particular as to its food. He had kept them alive by feeding them with small pieces of beefsteak or worms.

Mr. Billups exhibited a species of Coccidæ (or Plant Lice), *Aleurodes vaporariorum*, Westw., taken from a greenhouse at Snaresbrook, Essex, December 2nd, on the leaves of Tomato (*Lycopersicum esculentum*), where it had been doing an immense amount of damage to the plant, and read the following note :—

“This species was first described and figured by Prof. Westwood in the ‘Gardener’s Chronicle,’ 1856, page 182; but for a later description I would refer Members to the ‘Entomologists’ Monthly Magazine’ for this month, page 165, where the insect is more fully described by Mr. J. W. Douglas, to whom I am indebted for identification.”

Mr. R. South read a paper on British snake-like reptiles.

The author having briefly referred to Professor Huxley's division of the Zoological sub-kingdom Vertebrata into three primary sections, viz.: Ichthyopsida, Sauropsida, and Mammalia, made some remarks on the apparently incongruous grouping together of reptiles and birds in the section Sauropsida. He then proceeded to deal with the class Reptilia, and observed that of the four orders in this class represented by living forms in the present day, only two, viz.: the Ophidia and Lacertilia had representatives in Britain.

The three British Ophidians, and one snake-like Lacertilian were then discussed at some length.

DECEMBER 16th, 1886.

R. ADKIN, Esq. F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited three species of Ichneumonidæ, new to Britain:—

Bassus bizonarius, Gr. (Pl. I., Fig. 13), taken in his garden at Peckham, May, 1885.

Erromenus (*Trichocalymma*, Foerst.) *plebejum*, Wolds (Pl. I, fig. 10), taken at Dulwich, June 11th, 1885.

Perilissus triangulatus, Bridgm. (Pl. I, fig. 9). The male was taken in his garden at Peckham, May, 1885, and the female at Croxted Lane, Dulwich, May, 1885. He stated that he was indebted to his friend, Mr. J. B. Bridgman for the identification of these three new species, which he has fully described in a paper read before the Entomological Society of London, July 7th, 1886, and printed in full in the Society's Transactions for 1886.

Mr. Dobson exhibited wasps' nests of the genus *Odynerus*, found under a doorway in the New Forest.

Mr. Adye exhibited specimens of *Sphinx convolvuli*, L., taken at Christchurch, 1885; and he stated that although he had been out on upwards of forty nights, he had not seen a single example of the species this year.

Mr. Adkin, on behalf of Mrs. Hutchinson, exhibited a male specimen of *Stauropus fagi*, L., having female antennæ.

Mr. West, of Streatham, exhibited eggs of the Emu (*Dromaius novæ hollandiæ*).

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Members will greatly oblige by informing the *Hon. Sec.* of any errors or alterations in the above addresses and descriptions.

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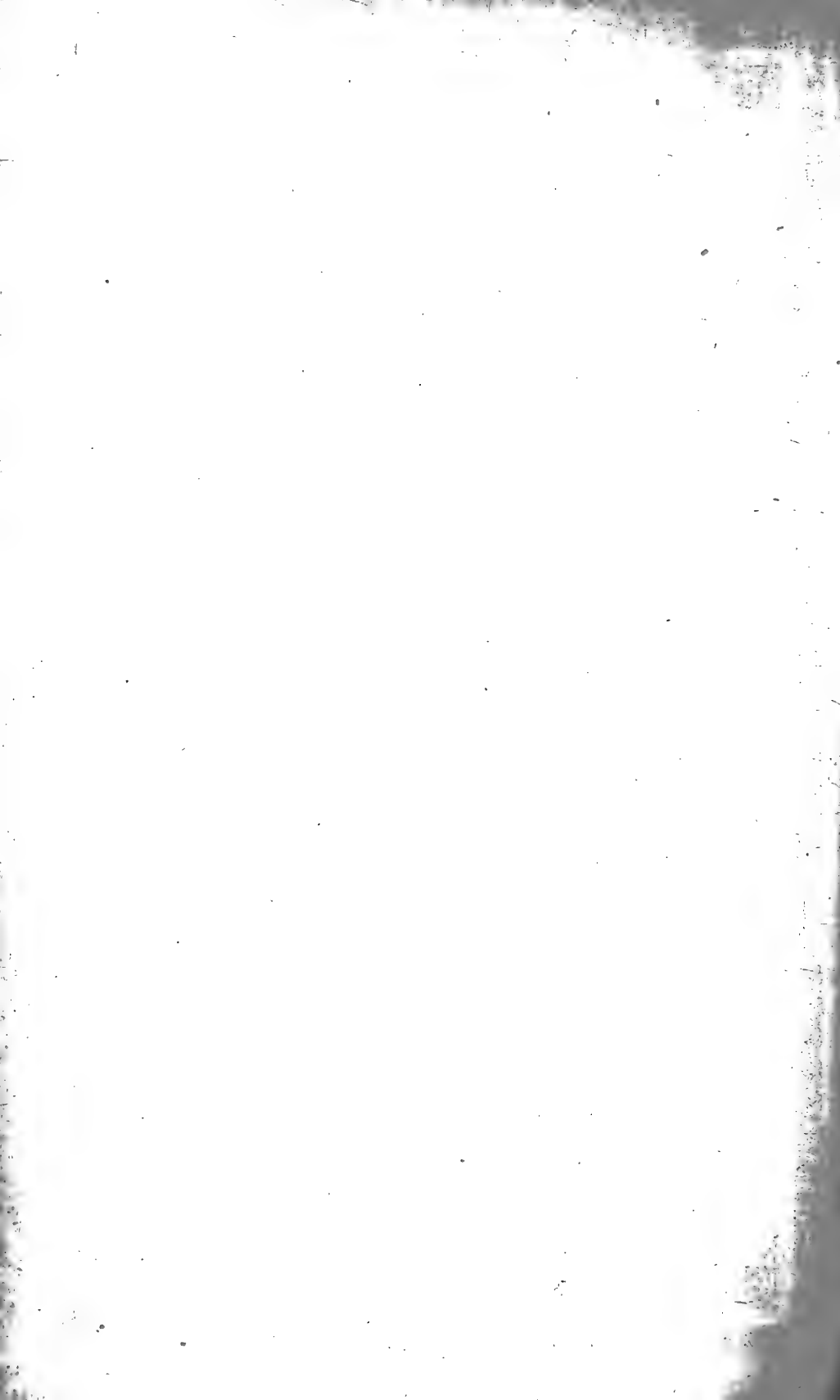
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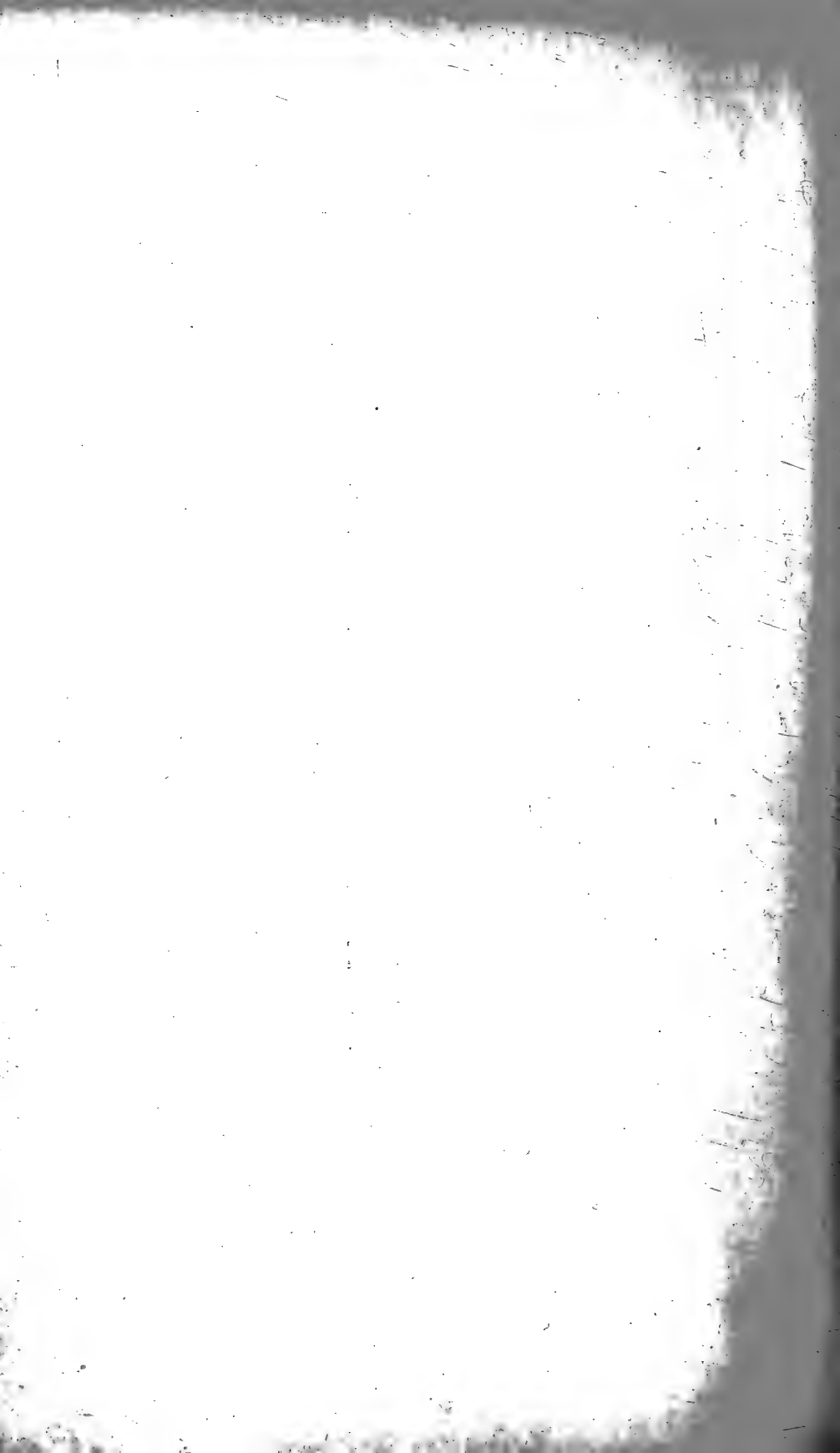




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PHYSICS DEPARTMENT

PHYSICS 311

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1. A particle of mass m moves in a circular path of radius r with constant speed v . Calculate the magnitude of the centripetal acceleration.

2. A car starts from rest and accelerates uniformly to a speed v in a time t . Calculate the distance traveled during this time.

3. A projectile is launched from the ground at an angle θ above the horizontal with an initial speed v_0 . Calculate the maximum height reached by the projectile.

4. A block of mass m is pushed up a frictionless incline of length L and angle θ by a constant force F applied parallel to the incline. Calculate the final speed of the block.

5. A satellite of mass m orbits a planet of mass M in a circular orbit of radius r . Calculate the orbital period T .

6. A spring with spring constant k is stretched by a force F . Calculate the displacement x of the spring.

7. A pendulum of length L is released from an initial angle θ_0 . Calculate the speed of the bob at the lowest point of its swing.

8. A block of mass m is pushed up a rough incline of length L and angle θ by a constant force F applied parallel to the incline. The coefficient of friction is μ . Calculate the final speed of the block.

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OF THE

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1887.

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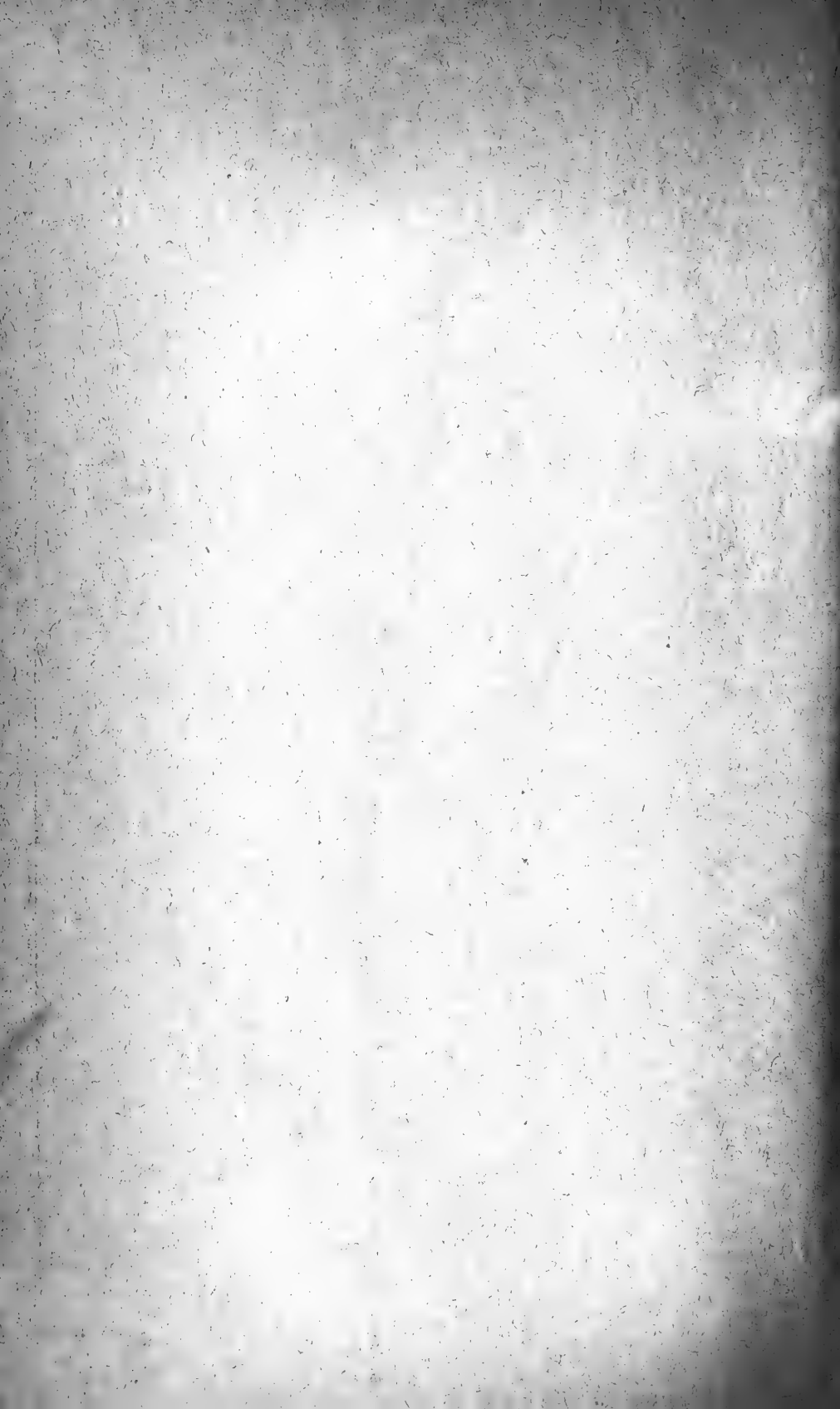
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FOR THE YEAR 1887,
TOGETHER WITH
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1880 ... A. FICKLIN.
1881 .. V. R. PERKINS, F.E.S.
1882 ... T. R. BILLUPS, F.E.S.
1883 ... J. R. WELLMAN.
1884 ... W. WEST, L.D.S.
1885 ... R. SOUTH, F.E.S.
1886 ... R. ADKIN, F.E.S.
1887 ... ,,

REPORT, 1887.

THE Council have again to congratulate the Members in this, their sixteenth Annual Report, on the continued prosperity of the Society, the year now fast drawing towards a close having been a most successful one. At the end of 1886 it was found necessary, for many reasons, to remove the headquarters of the Society to more suitable premises. The present rooms were then taken at a slight increase in the yearly rent; and as a result of the greater convenience and comfort, together with other causes, the Council can again report a large increase in the membership. When the last Report was issued, the number of Members on the books was 106; during the year 51 new Members have been elected, we have lost one Member by death, one has resigned, and the names of seven others have been erased from the books, leaving a total of 148 Members.

Owing to the increased membership, the exhibits have been more varied and numerous, a greater number of papers have been read, and, as a consequence of this, the average attendance of Members at the meetings has been better than it had been for some time past.

The financial position of the Society still continues satisfactory, as will be seen on reference to the Balance Sheet.

The following is a list of the additions to the Library:—

“The Entomologist” for 1887, and “The Zoologist,” for 1887.

From Mr. T. P. NEWMAN.

“The Entomologist’s Monthly Magazine” for 1887. From

Mr. MCLACHLAN.

“The Young Naturalist.” From Mr. J. E. ROBSON.

“The Charter, Bye Laws and List of Fellows.” From the
ENTOMOLOGICAL SOCIETY.

- "Thirty-six hours' hunting among the Lepidoptera and Hymenoptera of Middlesex." From Mr. S. T. KLEIN.
- A Scrap Book for Press Reports. From Mr. E. STEP.
- "List of Macro-Lepidoptera of East Sussex," "A Revision of genus Entomobrya," "Macro-Lepidoptera of Killarney," "Lepidoptera of Bristol District," "Science Monthly," 3 Parts of "The Hoosier Naturalist," "Notes from my Aquarium" (G. Brook), "Report of Observations of Injurious Insects" (Ormerod), Vol. I. of "The Naturalist" (1887), "Dragon Flies, Ants, etc" (Bath), a map of Rannoch on rollers, various papers, magazines, etc. From Mr. JOHN T. CARRINGTON.
- "List of Macro-Lepidoptera of East Sussex." From Mr. J. H. JENNER.
- "Genera of British Mosses" (Unwin), and "List of Macro-Lepidoptera of East Sussex." From J. JENNER WEIR.
- Part II. of "Transactions of the Essex Field Club," and "The Essex Naturalist," for 1887. From The ESSEX FIELD CLUB.
- "Manual of the Mollusca" (Woodward). From Mr. H. L. BOLGER.
- Six Copies of Paper on "Pedigree Moth Breeding." From Mr. F. MERRIFIELD.
- "Report of Agricultural and Horticultural Society of India." From Mr. W. H. MILES.
- "Animal Parasites" (Van Beneden); "Ants, Bees, and Wasps" (Sir John Lubbock); and "The Garner" for 1887. From Mr. T. R. BILLUPS.
- "The Naturalist's Monthly." From Dr. WILLIAMS.
- "Our Summer Migrants" (Harting). From Mr. FENN.
- "Abstract of Proceedings of the Metropolitan Scientific Association." From the ASSOCIATION.
- Plate for Society's Proceedings. From Mr. F. W. FROHAWK.

“Year Book of Scientific and Learned Societies;” “Science Gossip” for 1887; Vol. II. of Buckler’s “Larvæ of British Lepidoptera.” BY PURCHASE.

The Council take this opportunity of again thanking the respective donors to the Library; and at the same time they wish to express their thanks to Mr. Chaney for his services as Librarian, and the general feeling of regret that he finds himself unable longer to fulfil the duties of that office.

The following donations have been received for the Society’s collections, which are still under the care of Mr. W. WEST, of Greenwich:—

A pair of *Zygæna exulans*, from Mr. L. GIBB.

A number of species of Lepidoptera from Mr. R. ADKIN and Mr. R. SOUTH.

British Land and Freshwater shells from Dr. RENDALL.

Many species of Lepidoptera, Hymenoptera, Coleoptera, etc., collected in the neighbourhood of Colorado, from Mr. T. D. A. COCKERELL.

The following Excursions have been held:—

The Zoological Society’s Gardens on May 14th.
Conducted by Mr. J. JENNER WEIR.

Loughton on June 4th.
Conducted by Mr. C. OLDHAM.

Mickleham on June 25th.
Conducted by Messrs. STEP, C. A. BRIGGS, and T. H. BRIGGS.

Sevenoaks on July 16th.
Conducted by Mr. J. T. WILLIAMS.

The Annual Exhibition was held on the 16th of November, there being about 100 Exhibitors, and despite the exceedingly foggy weather, an attendance of about 1,000 visitors.

H. W. BARKER,

Hon. Sec.

THE SOUTH LONDON ENTOMOLOGICAL

BALANCE SHEET FOR

	RECEIPTS.	GENERAL
To Balance from last Audit, Dec. 16th, 1886		£ s. d.
„ Subscriptions and Entrance Fees		9 5 9
		39 16 0

£49 1 9

		PUBLICATION
To Balance from last Audit		1 5 0
„ Transfer from General Fund		12 0 0
„ Sale of "Proceedings"		2 0 0
„ Donations		2 18 0

£18 3 0

		LIBRARY
To Balance from last Audit		1 7 8
„ Library Fines		0 17 2

£2 4 10

		ASSETS.
To Balance, General Fund... ..	7 0 2½	
„ „ Publication „	1 6 0	
„ „ Library „	1 2 4	
„ Total Cash Balance	9 8 6½	
„ Estimated Realisable Proportion of Arrears	2 10 0	

£11 18 6½

Audited and found correct,

AND NATURAL HISTORY SOCIETY.

THE YEAR 1887.

FUND.

EXPENDITURE.

	£	s.	d.
By Rent	10	18	0
„ Transfer to Publication Fund	12	0	0
„ Purchase of Books	1	10	0
„ Postage and Stationery	5	11	9½
„ Exhibition Expenses (part only)	9	3	4
„ Printing	2	9	6
„ Sundries	0	8	11
„ Cash Balance in hand	7	0	2½
	£49 1 9		

FUND.

By Printing	16	17	0
„ Cash Balance in hand	1	6	0
	£18 3 0		

FUND.

By Binding	1	2	6
„ Balance in hand	1	2	4
	£2 4 10		

LIABILITIES.

By Rent due Christmas, 1887	3	3	0
„ Balance of Assets over Liabilities	8	15	6½

£11 18 6½

December 22nd, 1887.

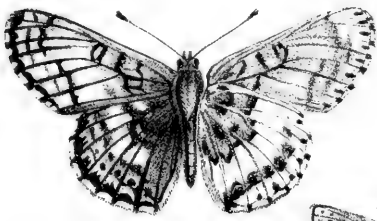
W. H. TUGWELL, }
J. W. TUTT. } *Auditors.*

PLATE I.

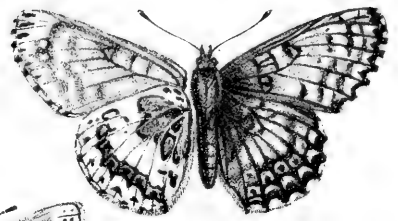
- Fig. 1. *Melitæa cinxia*, L., ♂, var. (upper and under surfaces),
page 65.
- „ 2. *Melitæa cinxia*, L., ♀, var. (upper and under surfaces),
page 65.
- „ 3. *Lycæna icarus*, Rott., ♂, var. (underside), page 62.
- „ 4. *Spilosoma menthastri*, Esp., var., page 77.
- „ 5.)
- „ 6.)
- „ 7.)
- „ 8. } *Spilosoma mendica*, Clerck., ♂ ♂, var. *rustica*, Hub. (Cork),
page 90.
- „ 9. }
- „ 10. }
- „ 11. }
- „ 12. *Spilosoma mendica*, Clerck., ♂, var. *rustica*, Hub. (Antrim)
page 90.
- „ 13. } *Spilosoma mendica*, Clerck., ♀ ♀, var. *rustica*, Hub. (Cork),
- „ 14. } page 90.
- „ 15. *Ephestia kühniella*, Zell., pages 20 and 58.

PLATE II.

- Fig. 1. *Phænus principalis*, Dup., ♂, page 54.
- „ 1a. Sectional view of Head and Thorax.
- „ 2. *Golofa hastatus*, Bur., ♂, page 52.
- „ 2a. Sectional view of Head and Thorax.
- „ 3. *Allantus marginellus*, Pz., ♂, page 55.
- „ 4. *Blennocampa alternipes*, Klug., ♀, page 55.
- „ 5. *Blennocampa aterrima*, Klug., ♀, page 55.
- „ 6. *Cheirōpachus quadrum*, Fab., ♀, page 55.
- „ 7. *Apanteles zygænarum*, Marsh, ♂, bred from *Melitæa aurinia*,
page 57.
- „ 7a. Cluster of cocoons, from which *A. zygænarum* was bred.
- „ 8. *Macrocentrus marginator*, Ns., ♀, page 50.
- „ 9. *Stilpnus deplanatus*, Gr., ♂, page 50.



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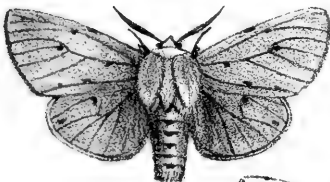
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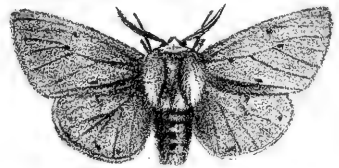
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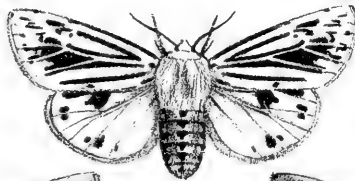
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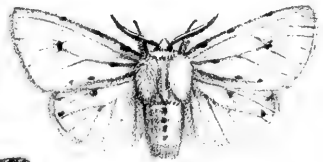
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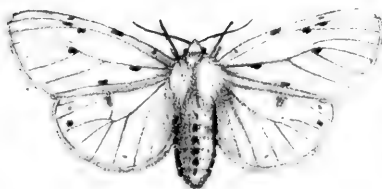
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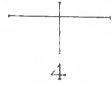


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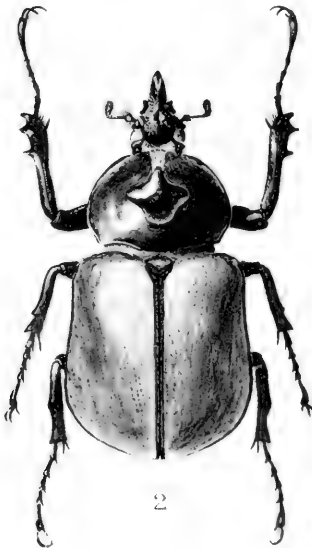




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PRESIDENT'S ADDRESS.

GENTLEMEN,

The time has arrived when it devolves upon me to discharge the final duty pertaining to the office to which you so generously elected me, for the second time, twelve months ago, by addressing you upon the progress of the Society during that period ; a duty with which I have pleasure in complying.

The past year has again been one of advancement ; and alterations of some importance in the conduct of the affairs of the Society have been made. In the first place, the nights of meeting have been changed from the first and third to the second and fourth Thursdays in each month. In the early days of our existence, it was, I believe, the custom to meet every Wednesday evening for the transaction of business ; but, presumably on account of the inconvenience of such an arrangement, the meetings were made fortnightly, and other alterations were from time to time considered necessary, until we found ourselves meeting regularly twice in each month, on the first and third Thursdays. But as the membership increased, it appeared that this selection was an unfortunate one, as these particular evenings clashed most annoyingly with the meetings of another and more learned Society. It was therefore deemed desirable to accept the exigence of the situation, and the alteration above referred to was duly accomplished at the commencement of the year ; and we are now, I believe, in the happy position of having meeting nights that we may call practically our own.

Then, again, the place of meeting has been changed. For some time prior to the close of the previous year, it was foreseen that a shift of quarters might not be disadvantageous, if suitable premises could be found. The Rooms we then occupied were hardly so comfortable as one could wish, and

occasionally the meetings were inconveniently crowded; in addition to this, we had no definite agreement as to our tenancy, and there was a possibility that we might be told at any moment to turn out; but the "last straw" was a notice of increased rent, and it was considered by the executive to be high time to inquire what other suitable accommodation existed. In their search they were fortunate in having the services of, as my friend, Mr. Weir, very aptly put it, "a man on the spot," in the person of Mr. T. R. Billups, through whose instrumentality our present Rooms were put before the Council on conditions that appeared to them to justify their bringing the matter before a Special General Meeting. This was done, and it was decided that the proposed move should be made; the concluding arrangements were got through, and the necessary agreement, the preparation of which was very kindly undertaken by Mr. T. W. Hall, was duly signed, sealed, and delivered; and on Thursday, the 10th February, the first meeting was held in these Rooms.

The question that will naturally present itself to your minds is, Have these changes proved advantageous to the Society? The Reports of the Council and various officers that you have already heard will, to some extent, have answered this; but it may be well, in passing, to examine some of the items touched upon more closely than is expedient in such reports. In the first place, is the position of our place of meeting as convenient as formerly? I think that you will all agree with me that it is so; and I venture to think, also, that it would be difficult, if not impossible, to find any locality offering greater facilities in this respect. Its close proximity to the stations of the Southern railways and trams render it especially suitable to the requirements of the large number of our members living south of the Thames, while its contiguity to the Monument Station of the Metropolitan Railway brings it within easy access of the districts lying in a more northerly direction; the Rooms themselves are, you will readily admit, a great improvement on any that

we have occupied in recent times, and present conveniences equal to the most exacting demands of the present position of the Society. Then as to our membership. The gross gain during the year is within two of fifty per cent. ; this does not, however, represent the actual increase in numbers. Of course there is the other side to be looked at—the losses that have to be deducted. No matter how great or strong a society may be, there must be a continual loss of members; the strongest society that ever existed would, unless continually supplied with new blood, in the shape of additional members, inevitably die out. Happily our losses have been inconsiderable. One member only has resigned, we have to deplore the death of one, and the names of seven have been removed from the books, leaving us at the present moment with a total membership of 148—a larger number, I believe, than has ever previously stood on the books of the Society.

The financial position of the Society, as you have already heard by the Treasurer's Balance Sheet, continues to remain sound. Although the actual cash balance in the hands of the Treasurer is not quite so large as at this time last year, the deficiency is accountable for in that we are now paying a somewhat increased rent; and many of our new members having been elected at comparatively recent dates, their subscriptions are not included in the present Balance Sheet. There is therefore good reason to believe that the Society is in this respect in an even stronger position than formerly.

The attendance of members at our meetings continues to be satisfactory, the average at the twenty-one meetings held in these Rooms being thirty-two; it must, however, be borne in mind, when considering these figures, that the twenty-one meetings do not represent the whole of the year; two that were largely attended were held in the old rooms in January, and of course this evening's numbers are of necessity omitted. On the other hand, the whole of the summer meetings, which never are very large, are included, and materially affect the result. It is satisfactory to know that the smallest attendance during the whole year was twenty, and this in the

height of summer, when the majority of the members are more busily engaged upon field than Society work. These numbers will be found to compare favourably with the records of even recent years ; and it is no great way that one has to look back to find a time when what was this year our smallest meeting would have been considered a splendid attendance.

The Exhibits at our meetings have again included objects in varied branches of Natural History, many of them in themselves of much interest, and frequently accompanied by carefully worked-out notes, which could not fail to materially increase their scientific value, and affording an opportunity for the discussion of matters relating to them not otherwise attainable.

The typical collections, under the care of our Hon. Curator, Mr. W. West (Greenwich), are maintained in good order, and have been enriched by the addition of specimens from some few of our members. Their efficiency would, however, be much increased were they more complete ; and I feel confident that there are many among our present members who only need to be informed of the state of the case to induce them to render the necessary assistance. If each member were to hand over to the Curator any spare duplicates that he may have of species that are wanting in the Society's collections, there would very shortly be few blanks left.

The Library has been improved by the presentation of sundry volumes and periodicals by members and friends of the Society, to whom our best thanks are due ; also by the purchase of others ; and various magazines that have been acquired in parts have been bound, and are thus in a condition to be of use to members. It was with much regret that I learned some few weeks since that Mr. W. Chaney, who has so efficiently filled the post of Honorary Librarian since the commencement of 1883, would be prevented by his domestic arrangements from again offering himself for re-election. To his energy and untiring attention the present satisfactory condition of our Library is largely due. If he had a fault, he erred in the smallness of his demands upon

the Society's funds; and during the five years that he has had control of the Library, the Council have had the satisfaction of knowing that whatever grants were voted to his department would be well spent; and I feel that in expressing to Mr. Chaney our high appreciation of his services, I am but echoing the sentiments of every member of the Society. In the ability of the gentleman whom you have chosen to succeed to this important post we have every reason to repose the utmost confidence; to Mr. Rice, library work is no new matter, and under his care our Library will doubtless continue to maintain its accustomed efficiency.

The preparation of the "Fauna of the South-Eastern Counties," to which I referred in my Address to you at our last Annual Meeting, has made less satisfactory progress than I then anticipated. Some good work has already been accomplished; but there remains much more to be done before any portion of it can be brought to a satisfactory issue. Material assistance may be rendered by the general body of our members to those more intimately engaged upon the work by preparing lists of the districts coming under their observation, and the particular orders that they make their study, and forwarding them to the Secretary. Until such lists are received in some numbers, it is impossible that any great portion of the work can be satisfactorily proceeded with.

The revision of the Society's Rules, to which I referred in my former Address, has been placed in the hands of a representative Committee, and the result of their labours will very shortly be brought before you for consideration and adoption.

A Cabinet Club that was started in 1886, with a view to enable members desirous of so doing to obtain a cabinet without any large immediate outlay, has progressed satisfactorily; seven shares have already been drawn, and the cabinets that have been delivered have met with approval. It is probable that the whole of the twelve shares will be allotted before the end of the coming year; and the promoters of the Club are to be congratulated upon having thus far successfully carried out their undertaking.

It is with much satisfaction that I note a considerable increase in the number of papers read before the Society, and our thanks are due to their respective authors for the great care evinced in their preparation. The various subjects dealt with will doubtless be treated in detail elsewhere ; it is therefore unnecessary that I should recapitulate them here.

Two novel features have also been introduced at our meetings, with a good measure of success. The one, a "Microscopic Evening," brought together some score or so of instruments, and afforded a fitting opportunity for members working on the more minute forms to compare notes, and proved a most interesting meeting to the general body of members. The other was an exhibition of Photo-Micrographic slides, by aid of the Sciopticon Lantern, by Mr. Smith, of the Sciopticon Company, to whom the thanks of the Society are due, for providing a most pleasant and instructive entertainment. And I trust that the success with which these first attempts were attended may induce further trials in a similar direction.

I am also pleased to note the receipt of an increased number of communications from our corresponding members, which have induced discussions of interest not only to the meetings at which they have been read, but doubtless to their senders also ; and I trust that our corresponding members will continue to avail themselves of the opportunities thus offered to ventilate their observations and queries to a still larger extent in the future.

During the summer months four excursions were held, as follows :—

May 14th, the Zoological Society's Gardens, under the guidance of Mr. J. Jenner Weir, who gave most interesting notes upon the various animals inspected.

June 14th, Epping Forest, Loughton to Chingford, when Mr. Oldham took charge of the party. Although the weather of the previous few days had been anything but promising, this particular day was very fine, and insect life was fairly abundant, but, as far as Lepidoptera was concerned, confined

to comparatively few species. It was noted that the Hornbeam (*Carpinus betulus*) was literally stripped of its leaves by the larvæ of *Cheimatobia brumata*, L.

June 25th, Leatherhead, Mickleham Downs, Headley Lane, conducted by Mr. E. Step, Mr. Billups, who was to have assisted, being unavoidably prevented by domestic affliction. Mr. C. A. Briggs very kindly undertook his portion of the programme, and piloted the company through a most productive-looking country, in which many interesting objects, Zoological, Entomological, and Botanical, were noted, and several good captures made.

July 16th, Sevenoaks, Knole Park, Fawke Common. Mr. J. T. Williams acted as guide, and led the way through some of the most promising parts of the district, pointing out the localities and objects of especial interest by the way, thus affording a pleasant and instructive time to those fortunate enough to be present.

On the whole, the attendance at these excursions was, to say the least, disappointing. In the case of that to the Zoological Society's Gardens, its smallness was no doubt, to some extent, to be accounted for by the date having unfortunately been fixed for the day on which the Queen visited the City; this counter-attraction proving too much for many who would otherwise have been present; but I am utterly at a loss to understand the apparent apathy shown, especially by our younger members, on the other occasions. I know of no more ready means of gaining information than these field-days; and I venture to hope that, should members be found willing to undertake the conduct of similar excursions in the future, as they have done in the past, often at considerable personal trouble, they will be much more liberally supported by the general body of members, so that the stereotyped party of a dozen of the present year may be very largely augmented.

The arrangements for the Annual Exhibition were made on a scale far exceeding anything attempted in recent years, and in the result proved successful beyond the most sanguine

expectations of those having charge of them. The Committee of Management were fortunate in having at their disposal a largely-increased room-space, and were thus enabled to provide and fully allot upwards of 1200 superficial feet of table-space for exhibits requiring that class of accommodation ; several larger objects found place in other parts of the building ; and in addition a room was set apart for the exhibition of Photo-Micrographic slides by aid of the Sciopticon Lantern, to which two large audiences were attracted. The thanks of the Society are due to Mr. Smith, of the Sciopticon Company, for thus providing a most interesting entertainment. The exhibits embraced objects in almost all Biological orders, and it is impossible for me here to enter into general detail ; but one or two special features should not be allowed to pass unnoticed. The gathering together of a vast collection of Lycænidæ from all quarters of our South-Eastern district, including probably all known forms, together with many from the Continent of Europe, could not fail to be of interest to many entomologists who have recently shown a disposition to enter into controversy upon this family, and it is to be hoped may have formed a common ground upon which to adjust their differences of opinion. The cases of exotics reared in the Zoological Society's Gardens, and exhibited by that Society, and the educational series arranged by Mr. S. L. Mosley, including the complete life-history of *Cecidomyia destructor*, Say., attracted considerable attention. A novel feature was the exhibition by Messrs. Geo. Neighbour and Son of improved Bee-keeping Appliances, illustrating the ease with which bees may be profitably kept, and their manner of working observed. A large table of Fungi, collected near Esher, on the Monday preceding the Exhibition, and arranged by Messrs. Carrington and Step, indicated a vast field open for profitable research, and appeared to be much appreciated. Among the large number of Microscopes that were set up, were several by Messrs. R. and J. Beck, in which the latest improvements in the arrangement and use of such instruments were seen to advantage. To our numerous

friends, and to the various Societies who contributed so largely to the success of the Exhibition by the loan of valuable objects, and in sundry other ways, our best thanks are due. And the readiness with which the general body of our members came forward to support the Committee in the arduous task that they had undertaken—many of them placing large portions of their valuable collections at their disposal, is deserving of all praise, and is but another proof of their earnestness in the Society's work. Of course such an Exhibition could not be carried through without considerable expenditure ; and although sundry members most generously took upon themselves the task of defraying the cost of various desirable accessories which tended much towards a successful issue, it required a substantial vote from the Society's funds to cover the actual necessities of the case. The question has been raised whether it is desirable that the Society should be put to so large an expenditure with this object. I have very carefully watched this point for some time past, and am fully convinced that the Exhibitions of the last few years, although admittedly a considerable tax upon the finances for the time being, have been, in the result, a decided source of strength to the Society ; there is little doubt that many whom we now number among our members have at our Annual Exhibitions realised, for the first time, the advantages of united action such as is offered by the Society ; and, further, many friends who have never previously bestowed much thought upon Natural History subjects, when once there, evince a lively interest in the exhibits, and some of them may be led to take up some branch as a study, and even become useful workers in the cause of Natural Science. This alone should be a strong incentive to us to continue our exertions in this direction ; and I trust that the day may be far distant when it is found necessary to abolish, or even curtail, this portion of our annual programme.

Since our last Annual Meeting the British Insect Fauna has received many additions, of which I propose to give some particulars, and, where possible, also references to the pub

lished records, which, I trust, may be of service to those wishing to inquire more fully into the circumstance of their capture.

Coleoptera :—

Homalota consanguinea, Eppelsheim, *Scopæus cognatus*, Muls. et Rey, *Bledius dissimilis*, Er., *Bythinus validus*, Aubé, *Micrambe abietis*, Payk., *Atomaria rhenana*, Kr., and *Læmophlæus pusillus*, Schön., are added to our lists by Rev. W. W. FOWLER, from specimens taken during the past few years, and now identified ("Ent. Mo. Mag." xxiv. 49).

Octhebius auriculatus, Rey., from the Isle of Sheppy, *Limnius rivularis*, Rosenh., found by the late Dr. POWER at Woking, and *Tropiphorus obtusus*, Bonsd., taken by Dr. SHARP in Dumfriesshire, were exhibited by that gentleman at the November meeting of the Entomological Society of London, having been recently identified.

Orthoptera :—

Periplaneta australasiæ, F.; Mr. R. McLACHLAN makes this addition from examples taken by Mr. BARRETT at Belfast in 1866 ("Ent. Mo. Mag." xxiii. 235).

Neuroptera :—

Holocentropus stagnalis, Albarda., a species of *Trichoptera*, is recorded as British by Mr. J. E. FLETCHER, who obtained the males by sweeping the water-plants growing in a pond at Grimley, Worcestershire, and the females by beating an adjacent hawthorn hedge ("Ent. Mo. Mag." xxiv. 43).

Apatania fimbriata, Pict., another species of *Trichoptera*, is added to our fauna by Mr. KENNETH J. MORTON, from specimens taken near Killarney, Ireland, as well as

Tinodes maculicornis, Pict., from the North of Ireland ("Ent. Mo. Mag." xxiv. 118, 136).

Hymenoptera :—

Nematus oblongus, Cam.,

„ *pallipes*, Fallén,

„ *fagi*, Zad.,

„ *laricivorus*, Zad. (Plymouth, C. G. Bignell),

Ægilips bicolorata, Sp. n. (probably from London district),

are contributed by Mr. P. CAMERON, F.E.S. ("Ent. Mo. Mag." xxiii. 193).

Tapinoma melanocephalum, For., an ant new to this country, was found by Mr. T. R. BILLUPS in the Palm House at Kew Gardens, and exhibited by him at our meeting on March 10th (see also Entom. xx. 184).

Strongylogaster macula, Klug., a species that appears not to have been previously noted in England, is identified by Mr. P. CAMERON from a specimen taken by Mr. McLACHLAN, in his garden at Lewisham, in June last ("Ent. Mo. Mag." xxiv. 45).

Lepidoptera :—

Parnassius delius, Esq. : the capture of a specimen of this butterfly by Mr. E. W. SCHWARTZ near Bangor, North Wales, in September, is reported by Mr. E. MERYWICK, who suggests that its presence in so unlikely a locality was probably due to man's agency rather than the laws of nature. Its range on the Continent appears to be confined exclusively to Alpine districts ("Ent. Mo. Mag." xxiv. 130, "Entom." xx. 301).

Polyommatus alciphron, Rott., = *hipponöe*, Esp., var. *gordius*, Esp., is reported as having been taken at Tiverton in 1886, by Mr. F. G. JOHNSON. There is no reason to doubt the *bonâ-fides* of the captor ; but in this, as in the previous case, further evidence is desirable before accepting it as an addition to the British Fauna ("Entom." xx. 173).

Notodonta torva, Hub. : this interesting and handsome species is added on the authority of Mr. C. G. BARRETT, who detected a single specimen among a series of *N. trepida*, Esp., in the cabinet of Mr. F. NORGATE, of Downham, Suffolk, who had reared it some six years ago from ova or larvæ that he found in Norfolk. The larva, which closely resembles that of *N. ziczac*, L., feeds on the Aspen (*Populus tremula*), and is full-fed in September. The species is widely distributed on the Continent ("Ent. Mo. Mag." xxiii. 276).

Acidalia immorata, L. Two examples (♂ and ♀) of this species were taken by Mr. C. H. MORRIS, of Lewes, flying over heather (*Calluna vulgaris*) near that town on 27th June last, and were exhibited at the Society's meeting by Mr. J. H. A. JENNER on 13th October. At the Entomological Society's meeting in November Mr. SAMUEL STEVENS exhibited a specimen of this species that he obtained some thirty years ago at the sale of Mr. Desvigne's collec-

tion, and which he had since kept in his cabinet as a doubtful species of the genus *Strenia*, Dup., or *Fidonia*, Tr. Mr. J. JENNER WEIR informs me that it is very probable that it was taken at Lewes by the late Mr. Hopley, who some forty years ago was a frequent correspondent of Mr. Desvignes; it is therefore by no means unlikely that all three specimens were taken on the same or closely approximate ground, but at periods separated by nearly half a century (see also "Entom." xx. 289).

Ephestia kühniella, Zell., appears to have been identified by Mr. G. C. BARRETT, from specimens received from Mr. W. THOMPSON, of Stoney Stratford, who had reared them from larvæ found feeding in a mixture of ground rice and wheat-meal in a bakehouse in that neighbourhood ("Ent. Mo. Mag." xxiii. 255). Mr. R. SOUTH informs me that some two or three years since he reared two moths from larvæ received in ground rice from a grocer's in London, which must undoubtedly be referred to this species. During the past summer the larvæ have been found in countless numbers in one of the dock warehouses in London feeding in American meal that had been brought to this country from Fiume, on the Adriatic, where it is probable they were introduced. The damage caused by them in this instance is very extensive, and there is the unpleasant prospect that if once fairly established the species may become one of our most serious insect pests. Happily within the last few weeks enormous swarms of *Braconidæ*, which are evidently parasitic on the lepidopterous larvæ, have been found in the neighbourhood of the infected meal, and will doubtless do much to mitigate the evil. Some of these larvæ were exhibited at the Society's meetings by Mr. T. D. A. COCKERELL when first discovered, and imagines bred from them have since been shown by other members.

Tortrix decretana, Tr., a species closely resembling the common *T. podana*, Scop., and with which it appears to have been confused by its captor, Mr. E. A. ATMORE, of King's Lynn, until extricated from a series of that species by Mr. W. WARREN, who gives a description of its distinguishing characters ("Ent. Mo. Mag." xxiv. 125).

Stigmonota pallifrontana, Z. This interesting addition to the British Tortrices is another of Mr. W. WARREN'S identifications, the specimens having been taken by Mr. W. THOMPSON some eight years since, probably by sweeping flowers of *Heracleum sphondylium*. The species somewhat closely resembles *S. internana*, Gn., in general appearance, and the larva is said to feed in the green pods of the

milk vetch (*Astragalus glycyphyllos*), being full-fed at the beginning of August ("Ent. Mo. Mag." xxiii. 232).

Butalis siccella, Zell., which so far as its occurrence in this country is concerned, appears previously to have been confused with *B. variella*, St., is identified by Mr. E. R. BANKES, who took specimens in June, 1886, near Weymouth, Dorset. On the Continent the larvæ have been found in sand-tubes several inches long, under both thyme (*Thymus*) and crowberry (*Empetrum*) ("Ent. Mo. Mag." xxiii. 275).

Gelechia (Lita) blandulella, Sp. n., a species closely resembling *L. maculea*, Haw., is described and named by Mr. J. W. TUTT from specimens taken by him on the Deal sand-hills ("Ent. Mo. Mag." xxiv. 105); and examples were exhibited at the Society's meeting on 25th August.

Gelechia semidecandrella, Sp. n. Under this name Mr. J. H. THRELFALL describes a species closely resembling *Lita maculiferella*, Douge., that he bred from larvæ feeding in the shoots, flowers, and seeds of the little mouse-ear (*Cerastium semidecandrum*), ("Ent. Mo. Mag." xxiii. 233, "Entom." xx. 65).

Elachista scirpi, Sp. n., is named and described by Mr. H. T. STANTON from specimens bred by Mr. W. H. B. FLETCHER from larvæ mining the leaves of the sea club-rush (*Scirpus maritimus*), growing in a ditch near Worthing, Sussex. The species was first taken by Mr. BARRETT in a salt marsh near Pembroke in 1875-6, but was then not distinguished from the closely-allied *E. rhynchospora*, Sta. ("Ent. Mo. Mag." xxiii. 253-4).

Doryphora quætionella, H-S., which appears to have been occasionally taken at Wicken Fen for some years past, and to have universally passed as *D. morosa*, Mühlig., is identified by Mr. W. WARREN ("Ent. Mo. Mag." xxiv. 104).

Nepticula woolhopiella, Sp. n., was bred by Dr. J. H. WOOD, of Tarrington, from larvæ found feeding in beech leaves, and described and named by Mr. H. J. STANTON ("Ent. Mo. Mon." xxiv. 62).

Diptera :—

Orimarga virgo, Ztt., an important addition to the British *Tipulidæ* ("Ent. Mo. Mag." xxiii. 205), and

Limnophila aperta, Sp. n. ("Ent. Mo. Mag." xxiv. 108) are recorded by Mr. G. H. VERRALL; while Mr. R. H. MEAD describes several new species of *Anthomyiidæ*, including

Polietes hirticura, from a single specimen taken near Bolton Abbey.

Hydrotæa similis, 2 ♂ from Douglas, Isle of Man, and

Homalomyia nigrisquama, ♂, from near Bicester and Ulverston. Mr. MEAD also makes some important corrections in Synonymy ("Ent. Mo. Mag." xxiii. 179, 250).

Hemiptera—Homoptera :—

In notes on some British *Coccidæ*, Mr. J. W. DOUGLAS describes new species as follows :

Ischnaspis filiformis ("Ent. Mo. Mag." xxiv. 21).

Lecanium beaumontiæ ("Ent. Mo. Mag." xxiv. 95).

Lecanium longulum ("Ent. Mo. Mag." xxiv. 97).

Orthezia insignis ("Ent. Mo. Mag." xxiv. 169).

Having thus noted some of the more important of the additions to our British lists, it may be well to glance briefly at some of our rarer species or occasional visitors.

Lepidoptera :—

Aporia cratægi, L. After its reported complete disappearance from Kent, the record of the capture of seven specimens near Sandwich on July 13th is interesting ("Ent. Mo. Mag." xxiv. 131).

Colias Edusa, Fb. A single specimen was observed by Mr. T. H. BRIGGS at Effingham on June 19th ("Entom." xx. 181), but the only record that I have received of an autumn capture is one near Carnforth, reported by Mr. H. MURRAY.

Vanessa antiopa, L. A specimen was seen by Mr. F. W. FROHAWK at Balham on 6th August ("Entom." xx. 322), and another by Mr. W. J. H. NEWMAN in Oxfordshire on the 14th of that month ("Entom." xxi. 12), but neither was secured.

Anosia plexippus, L. After being taken in increasing numbers for some years, is this year, so far as present records are concerned, conspicuous by its absence—a state of things that suggests a further trial of patience before accepting it as an acclimatized British subject.

Acherontia atropos, L., has been unusually scarce, whereas,

Sphinx convolvuli, L., has occurred throughout the length and breadth of the United Kingdom in considerable numbers.

Deilephila euphorbiae, L., is reported by Mr. G. C. BARRETT ; single specimen having been taken in his garden at King's Lynn ("Ent. Mo. Mag." xxiv. 114, 132).

D. livornica, Esp., was exhibited at the Society's meeting on April 25th, by Mr. HELPS. The specimen was taken in the beginning of February at Coles Cross in Somerset (about twelve miles inland), where it flew in at a cottage door, evidently attracted by light.

Chærocampa celerio, L., has fallen to the lot of Mr. H. MURRAY, of Carnforth.

Callimorpha hera, L., has again been taken in its accustomed locality in Devonshire by both Mr. W. F. DE V. KANE and Mr. J. JÄGER. Whatever may have been the origin of this insect in this country, there can now be no doubt that it occurs in this locality under natural conditions.

Catocala fraxini, L. A single specimen is reported by Mr. R. W. BOWYER to have been picked up on a path at Hertford ("Entom." xx. 306), and one by Mr. H. M. LEE, of Sutton, Surrey, who took it on a tarred paling on September 18th ("Entom." xx. 325).

Eupithecia extensaria, Freyer., has been turned up on the Norfolk coast by Messrs. A. E. ATMORE and G. C. BARRETT, who secured some nine examples in all. They were driven out of *Artemisia maritima*. The species does not appear to have been previously recorded for some years ("Ent. Mo. Mag." xxiv. 114).

Hymenoptera :—

Blennocampa atterima, Klug., and *B. alternipes*, Klug., two rare sawflies, were exhibited at the Society's meetings by Mr. T. R. BILLUPS, who took them at Chobham and Boxhill respectively.

Diptera :—

Cecidomyia destructor, Say., has been observed in greatly increased numbers in several parts of the country, and in some localities has created quite a panic among growers of cereals. Whether this pest is of recent importation, or whether it has long found a home within our shores, but escaped observation, appears to be a point on which those best calculated to form an opinion are not agreed ; but we have the satisfaction to know that several species parasitic upon it have already been discovered to be here, and further, that the average British climate has not yet been proved to be favourable to its continual and rapid increase (see "Entom." xx. 262, 317, 327).

During the year a very considerable amount of Literature bearing upon Biological subjects has been published. Two pamphlets, not previously noticed, are worthy of especial mention, as relating to matters closely connected with the work of this Society, I refer to the "List of Lepidoptera of West Sussex," by Mr. W. H. B. Fletcher, and the "List of Lepidoptera of East Sussex," by Mr. J. H. A. Jenner; which, if not perfect as recording every species that has occurred in the districts of which they respectively treat, are well worthy of careful perusal by all interested in the geographical distribution of Lepidoptera.

Among the more important of general works, I note the following:—

"Coleoptera of the British Isles," by Rev. W. W. Fowler. Vol. I., Adephaga—Hydrophilidæ, has been completed, the monthly parts having been issued to subscribers with praiseworthy punctuality. (London: L. Reeve & Co.)

"The Larvæ of the British Butterflies and Moths," by the late William Buckler, Vol. II. (The *Sphinges* and part of the *Bombyces*), being the Ray Society's vol. for 1886, was issued in March of the present year. The plates, if possible, excel in execution those of the previous volume, and the descriptions, consisting of Mr. Buckler's notes, with copious additions by the Rev. John Hellins, are probably the most important yet published. The work is edited by Mr. H. T. Stainton, and will doubtless prove a most valuable addition to our Entomological literature.

"The Cockroach: an introduction to the Study of Insects," by Profs. L. C. Miall and Alfred Denny, treats in popular language of the life-history of *Periplaneta orientalis* and its allies, and is illustrated by upwards of 100 drawings. (London: L. Reeve & Co.)

"Ants, Bees, Dragonflies, Earwigs, Crickets, and Flies," by W. Harcourt Bath, is a handy little volume, avowedly for beginners; it is liberally illustrated, and the explanations are clear and concise; it cannot fail to be a useful assistant

to anyone about to commence the study of these most interesting insects. (London: Swan, Sonnenschein & Co.)

“British Stalk-eyed Crustacea and Spiders,” by F. A. A. Skuse. In this work the author treats, in a simple form, of the structure, habits, and habitats of the orders referred to, the methods employed for their capture and preservation, and their classification, under which head the distinctive characters of the various families are briefly noted. This book, which is in uniformity with the last-mentioned, is illustrated with many woodcuts, and should prove a useful companion to the young collector, to whom, we are informed, it is especially addressed. (Same Publishers.)

“Rough Notes on the Birds observed during Twenty Years Shooting and Collecting in the British Islands,” by E. T. Booth, was commenced in 1881, and has been issued in parts at intervals; part XV., which has recently appeared, bringing it to a conclusion. The work is carefully illustrated, and contains many interesting and valuable notes relative to some of our rarer birds, not to be found elsewhere. (London: R. H. Porter.)

“Report on the Migration of Birds in the Spring and Autumn of 1886,” by a Committee of the British Association. The eighth annual report contains much information of considerable value. (Edinburgh: Macfarlane & Erskine.)

“British Birds Eggs,” by A. G. Butler. Parts IV.—VI. have been published, completing the work. (London: E. W. Janson.)

Geo. Bentham’s “Handbook of the British Flora.” A fifth edition, revised by Sir J. Hooker, has been issued. (London: L. Reeve & Co.)

“The Life and Letters of Charles Darwin,” edited by his son, Francis Darwin, will doubtless be a welcome addition to most libraries, and cannot fail to be of deep interest to all thinking men, and especially to those who have studied Natural History. (London: John Murray.)

“*Rhopalocera Niponica*,” by H. Pryer. An illustrated book on the Butterflies of Japan, in three parts, of which the first

part has been recently issued, although somewhat outside the work of this Society, is worthy of mention as being the first book of this description executed by Japanese Native Artists. The letterpress, which is in both languages, English and Japanese, as well as the plates, are printed on Japanese untearable paper. (China and Japan: Kelly & Walsh; London: E. W. Janson.)

The Obituary this year is a heavy one, and includes many familiar names—names that we shall long remember—and among them one of our own members,

WILLIAM FARREN, of Cambridge, who died November 21st. His chief attention was directed to Lepidoptera, which he commenced to collect at the early age of 10. He was one of the old school of Entomologists, and was familiar with the haunts of many of our fen species, some of which are now extinct. Some years since he almost abandoned active Entomological work; but recently, to some extent with a view of imbuing his son with a liking for his own favourite study, an attempt in which he was not unsuccessful, he took again to active field work, and was successful in re-organizing a very considerable collection of British Lepidoptera. He was an occasional contributor to the Entomological Journals, became a member of this Society in 1886, and had sent several interesting exhibits to our meetings. But his renewed career was of short duration; for some time past he had been in failing health, and he died of consumption at the age of 51.

JOHN SANG. Born at Darlington, March 3rd, 1828, died March 20th, 1887. From early life he appears to have had a taste for collecting insects, but it was not until he attained the age of 20 that he took up the study of Entomology in earnest. His retentive memory and his knowledge of the French and Latin languages, coupled with a natural talent for drawing and painting, were of great assistance to him in his favourite study, and contributed in no small way to his successful Entomological career. Brought up as a draper,

he was ultimately enabled to retire, and he then devoted the greater part of his time to the study of Insects, the Tineina being his especial favourites. But an unfortunate event happened. Having become security for a friend who failed, it became necessary for him to part with his magnificent collection, containing upwards of 30,000 specimens; and it was brought to the hammer at Stevens's in June, 1882. So untoward an event to a man nearing 60 years of age, would have been well calculated in the majority of instances to lead to despair, but his natural equanimity stood him in good stead even at so trying a time, and he set about finding a means of retrieving his losses, and proposed resuming business in a subordinate capacity. But his Entomological talents were too well known to be allowed to be lost to science, and he was accordingly offered the curatorship of Dr. Mason's extensive collections, which he accepted; in addition to which he was engaged in delineating, for that gentleman, numerous species of Coleoptera, his execution of the plates being exceedingly correct. He also again commenced the formation of a collection of Lepidoptera, in which he made considerable progress, as was evinced by the rapid diminution of his list of desiderata, which it was my privilege from time to time to inspect. He made several additions to the British Insect Fauna, one of them, *Gelechia sangiella*, being named after him. Although he had for some time been in failing health, there was, up to the time of his retiring to rest on the night of his decease, nothing to lead to the supposition that his end was so near at hand, and a letter that I received from him within a few hours of that lamentable event, was in his usual kind and genial style. He was found dead in his bed on the morning of Sunday, March 20th.

Rev. JOHN HELLINS, M.A., died May 9th, in his 58th year. He took his B.A. degree at All Saint's College, Oxford, in 1851. He was for some years master of Exeter Grammar School, and afterwards succeeded his father as Chaplain to the Devon County Prison, which appointment he held until some seven years ago, when he was compelled to retire on account

of ill-health. For upwards of thirty years his name has been well known as an Entomologist, and there are frequent notes from his pen in the "Entomologist's Weekly Intelligencer," and "The Entomologist's Monthly Magazine." He paid much attention to rearing Lepidoptera from the egg; and on the death of his friend and fellow-worker, the late William Buckler, he undertook the arduous task of supplying the text for the Ray Society's volumes to many of the figures left by that gentleman without descriptions. Since his lamented death this important work has been taken up by that able entomologist, Mr. W. H. B. Fletcher, of Worthing, whose occasional appeals for ova, larvæ, etc., to enable him to worthily complete this great work, are deserving of the liberal response of all interested in the life-histories of our British Lepidoptera.

JAMES MCGROUTHER. Died at Glasgow, February 4th, in his 23rd year. From boyhood he took much interest in Entomology, and the formation of the now flourishing "Clydesdale Naturalists' Society" was in a large measure due to his enterprise.

THOMAS WILSON, one of the oldest York entomologists, died April 17th, aged 51. He was a frequent contributor to the "Entomologist" and "Naturalist;" he paid considerable attention to the Tenthredinidæ, and at the time of his death was engaged upon a list of the Lepidoptera of Yorkshire.

ROBERT FRANCIS LOGAN, of Colinton, near Edinburgh, died July 28th, aged 60. From boyhood his attention was directed to the study of his native Lepidoptera, and during his later years he manifested a keen interest in the Coleoptera also. He contributed many articles to the various magazines.

ROBERT GRAY. Died at Edinburgh, February 18th. His chief study was the Birds of his native country, and to his pen we are indebted for "The Birds of Ayrshire and Wigtownshire," published in 1869, and his larger and more important work, "The Birds of the West of Scotland," published 1871.

JOHN GATCOMBE. Died April 28th, aged 68. He was born at Knowle, Somerset, but the greater part of his life was spent at Plymouth, where he paid considerable attention to the habits of Birds, the seasonal changes of plumage in sea-birds being his especial study. He contributed frequent notes to the "Zoologist" and other publications, his accurate knowledge of his subject rendering them of peculiar value.

W. C. UNWIN, of Lewes, died April 23rd, aged 76. During his life he successfully studied many branches of Natural History; he was a skilled microscopist and draughtsman. His chief published work, "Illustrations and Dissections of the Genera of British Mosses," was illustrated by his own drawings.

And now, Gentlemen, having thus briefly reviewed the events of the past year, I beg, in conclusion, to express to you my high appreciation of the confidence that you reposed in me in electing me your President for the second time. I am aware that such a proceeding was at variance with the usage of this Society, and I should have felt great reluctance in continuing to hold office had I not believed that in doing so I should have the hearty support and confidence of the whole body of members; a belief in which I have now no reason to think that I was deceived. I beg to tender you my sincere thanks for the courtesy that you have shown me on all occasions, and to the Council, and especially to our Honorary Secretary, I am indebted for much valuable assistance, at all times freely accorded.

It is with feelings of unmingled satisfaction that I vacate the chair in favour of Mr. Billups, whom you have this evening elected your President; his many good qualities are too well known to you to need any recapitulation at my hands, but of the one great necessary for success we have already had good evidence—that he has the true interests of the Society at heart. Under such leadership, and with your general goodwill and confidence extended to him, as it has been to me, we have reason to look forward to renewed progress and continued prosperity in the future.

ROBERT ADKIN.

ABSTRACT OF PROCEEDINGS.

JANUARY 13th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. R. Frere was elected a member.

Mr. J. M. Adye exhibited *Dasycampa rubiginea*, Fb., and *Acherontia atropos*, L., both taken at Christchurch, Hants 1885.

Mr. J. A. Clark exhibited a male specimen of *Hybernia aurantiaria*, Esp., and a female of *H. defoliaria*, Clerck., which he stated he had taken in copulation, and had obtained ova, which, however, turned out to be sterile.

Mr. E. Joy exhibited a variety of *Lycæna corydon*, Fb., similar to fig. 1, plate 1, of "Entomologist," for January, 1887.

Dr. Rendall exhibited *Ino globulariæ*, Hb., *I. statices*, L., and *I. geryon*, Hb., from Lewes. Also *Eucosmia undulata*, L., and called attention to the tufts in the inner margin of the hind wings.

Mr. T. R. Billups exhibited a species of Coleoptera, *Brachycerus imperialis*, L., and read the following notes:—

"These fine Beetles belong to the family of Weevils (Curculionidæ, Latreille), a family of vast proportions, numbering already some 640 genera, and considerably over 16,000 known species. They are to be found in all parts of the world, and range in size from the most minute forms, that require the aid of a magnifying glass to distinguish the order they belong to, up to others that put even our specimens of *Brachycerus* in the shade. They are very destructive, particularly in the larval stage, feeding on nuts, seeds, the root, pith, and bark of plants, leaves, or flowers, and especially the fruits. Some are leaf-miners, and others are said to make galls. The pre-

sent specimens are from Japan. The species is also found in Southern Africa (where it attains a larger size), and also on the shores of the Mediterranean. These insects are in great repute with the Bechuana tribes, who use them as amulets, stringing them together on strips of leather, and hanging them round the necks of their children, considering them efficacious in time of teething, and particularly useful in mitigating the various ills children are liable to. Latreille informs us that the women of Ethiopia string these insects together, and wear them round their necks as an amulet."

Mr. T. D. A. Cockerell exhibited the following Mollusca :—*Helix aspersa*, Mull., var. *lutescens*, *Helix hortensis*, Mull., var. *rufozonata*, which he stated had been found living together on a bank at Torquay by Mr. F. W. Wotton, of Cardiff.

JANUARY 27th, 1887.

R. SOUTH, Esq., F.E.S., *Vice-President*, in the Chair.

Mr. F. H. Barclay and Mr. C. Roberts were elected members.

Mr. J. Jenner Weir exhibited *Nilasera pirama*, Moore, and *N. amantes*, Hewt., from Ceylon; also a piece of amber containing three specimens of Chrysomelidæ, one of Coccinellidæ, and one of Orthoptera.

Mr. Billups exhibited living specimens of *Rhagium bifasciatum*, Fab., from Braemar, and said that the species belonged to Latreille's family of Longicornia. In the larval stage it lived in old decaying trees, such as fir, oak, etc., in which it made a cocoon of chips, attaining the imago state in the autumn, but not finally leaving the tree until the spring. The specimens exhibited were forwarded to a member of the Society, among a number of larvæ, in a canister of rotten wood, and no doubt in their transit through the post the cocoons were broken, which would account for the unusual appearance of the imago at this season of the year.

Mr. J. Jenner Weir contributed the following "Notes on the Comparative Rarity of Lepidoptera-Rhopalocera, once common in the neighbourhood of Lewes."

“ In presenting to the Society this evening a copy of my friend Mr. J. H. A. Jenner’s list of the ‘ Macro-Lepidoptera of East Sussex,’ I deem it a fitting opportunity to make some remarks on the present scarcity in that district of several of the species of *Rhopalocera* which, in my young days, half a century ago, were frequently, or even commonly, met with.

“ *Aporia cratægi*, L.—Mr. Jenner states, ‘ Formerly at Holmbush, Henfield.’ When about the year 1838 I first in earnest commenced to make a collection of the British Lepidoptera, I was visiting my relations, in the month of June, at Keymer, a parish situated between the Burgess Hill and Hassocks Gate stations of the London and Brighton Railway. I sent to my uncle, the late Mr. Auckland, of Lewes, for a net, and he very kindly gave me the first I possessed ; he was himself an entomologist, and I may say that it was mainly owing to him that I took up the study. As soon as I had obtained the net I went into a field at the back of the house, and the first insect I took was *Aporia cratægi*, and it was very abundant ; probably I might have very easily taken a hundred specimens. This by no means surprised me, as Mr. Auckland had often told me that he had always obtained it in that neighbourhood for many years in succession. Being a young beginner, and feeling sure of taking it in after years, I captured but a moderate number ; of these one still remains in my cabinet. A small mill-stream ran in front of the house, the sides of which were well-wooded, and here the insect abounded. I visited Keymer the next year, intent on taking more *A. cratægi* ; I saw but one, and this I still possess. For some fifteen years I was often at Keymer, but never saw the insect again ; and I believe that now I am the only Sussex entomologist living who has ever seen the species in plenty in that district ; and it appears from Mr. Jenner’s note that the insect is extinct in the county.

“ Mr. Auckland’s note, which I have before me, gives as localities, ‘ Chailey, May 30th, 1834 ; Newick, June, 1835 ; Lindfield, June, 1836.’ My own opinion is that in the earlier decades of the century a flight of this insect visited Sussex from some part of the Continent, and that our climate has

not been favourable to its permanent establishment, and that it has gradually become extinct.

“*Aporia crataegi* has disappeared almost entirely from the New Forest, where I have taken it myself, and where it was at one time very abundant. It first became rare in the eastern parts of the Forest; it probably still lingers in the western parts, where I have taken it of late years; but in 1886 I could not hear that one had been seen.

“*Leucophasia sinapis*.—Mr. Jenner’s note of this species is, ‘Very scarce, and apparently extinct in many localities where formerly found.’ This is quite in accordance with my own experience; it used to be taken by my uncle near Lewes in 1834, where it is now extinct; and although I often visit Abbot’s Wood, and have done so for years past, I never found it there. This appears to me to be a case of an indigenous insect becoming extinct in certain parts of Sussex, which, from the weakness of its flight, was not likely to have flown over from the Continent, as might have been the case with *A. crataegi*, a gregarious insect, which *L. sinapis* is not.

“*Melitea aurinia*.—Of this species Mr. Jenner’s note is, ‘Local and rare, Chailey and Ringmer.’ I have sought in vain for this insect in Sussex; it was at one time very abundant at Chailey, the home of my ancestors. I recollect that some school-children brought over to Mr. Auckland from Chailey a clothes-basket covered with pinned specimens of *M. aurinia*; there were about 400. Mr. Auckland’s note is as follows: ‘Abounded at Chailey from 8th May to June, 1834; I had sent me many hundreds.’

“*Vanessa c-album*.—Mr. Jenner notes it as ‘Very rare; once at Southover, Lewes; Guestling, rare; Tilgate.’ I have never taken this species in Sussex; but in the hop-gardens it was once common—so much so, that the peasants had a local name for it, *viz.*, the ‘silver bug.’ An aged relation of mine has often described the species to me as being very well known; but, although he made every endeavour between thirty or forty years ago to obtain the larva for me, he found it was extinct. He himself, a grower of hops, was very observant, and his testimony is therefore of value.

"*Vanessa polychloros*.—Mr. Jenner says, 'Local and less common than formerly.' I have scarcely seen this insect in Sussex for thirty years; it was at one time common near Lewes, and my series was taken at Keymer.

"*Melanargia galatea*.—Mr. Jenner says, 'Local, near Lewes (formerly); Firlie Beacon.' This is another singular case of the disappearance of a Lepidopteron once common near Lewes. At one time it appeared year after year at Oxsettle, near Lewes; I have not seen it there for over forty years. Mr. Auckland notes that this species was taken by him at Plashet Wood, Chailey, and Warningore Wood, in the beginning of June.

"*Pararge egeria*.—'Woods and shady lanes; not common, but generally distributed' (Jenner). This species is yearly becoming rarer. Mr. Stanton Hillman, of Lewes, informs me that he has not seen one for years. In my younger days it was common.

"*Lycæna ægon*.—'Local; Brighton, Hayward's Heath, Lewes, Chailey, Tilgate Forest' (Jenner). This insect was common at one time on Cliffe Hill, Lewes. I find in my notes that on June 8th, 1844, I took 15. Mr. Auckland notes it as found there during the months of July and August. It has now quite disappeared from that locality; I have not seen it there for at least forty years.

"With this I conclude my notes. As to the causes of the progressive rarity of the seven latter species mentioned I cannot hazard even a conjecture; but I feel tolerably certain that it has not been brought about by the entomologists, although in some instances man may be the cause, owing to the cultivation of the soil and the eradication of the food-plant of the species."

Mr. South said that, as Mr. Weir pointed out, *Aporia cratægi* very probably migrated here, occurred for several years, and then gradually disappeared. Mr. Tugwell said that he first saw *A. cratægi* alive some years since at Herne, a village near Herne Bay. His attention was attracted by a large white butterfly in an uncut grass field, and on entering

the field he discovered a pair of the species sitting on the grass stems *in cop*, and on looking round within a space of 25 yards he saw 20 or 30 such pairs, and took a good many of them; but on his going the next day, expecting to find the species on the wing, he failed to see a single specimen. Mr. Chaney remarked that *A. cratægi* was at one time very abundant near Rochester, and all over the Hundred of Hoo; in fact, commoner than *Pieris brassicæ*, and was to be taken on the wing, and also on the blades of grass; but the species had disappeared about the year 1871. *L. sinapis* used also to be common in a wood the other side of Chatham in the year 1856, but gradually became scarcer and scarcer, and about the year 1858 or 1859 disappeared altogether. Other species which were at one time plentiful in that district, but had since become extinct, were *M. athalia* and *L. sibylla*. The fact that *A. cratægi* was not found there now was very curious, as the species had been so widely distributed over a large tract of country, and the numerous food-plants were very abundant, and appeared throughout the neighbourhood. Mr. Carrington thought there was a general scarcity of butterflies all over England, and possibly Great Britain. His first experience of *A. cratægi* was in Yorkshire, in a rough place close to Stockton Forest, where it was very plentiful, and the same abundance was noticeable of *M. galatea*. In the year 1878 or 1879 there was a very severe winter, and the following summer both these species, with others, had utterly disappeared, and almost all the butterflies in the neighbourhood became so scarce that the local collectors had to get specimens from other localities to complete their series; and he felt certain that in the younger days of old collectors the butterflies occurred all over the country in numbers far exceeding anything that we know of now. Mr. Tutt said that, although he had never taken *A. cratægi*, he knew that in 1868 hundreds were captured near Chatham in a field used every month for a cattle fair, the larvæ being taken from the hedges surrounding the field. Mr. Frohawk mentioned that Mr. Wood, of Chatham, had told him a few years ago that he took the pupa of *A. cratægi* off the plum-trees in that district, and that the

species at one time occurred very commonly close to Strood station, and he believed it still occurred at Sittingbourne. Mr. Sheldon observed that, with reference to Mr. Carrington's remarks as to the severity of the winter he referred to being the cause of the present scarcity of butterflies, he was of opinion that it was a number of frosts and a number of thaws, each lasting a few days, which destroyed the pupæ of the different species, rather than a continued frost; and he called attention to some experiments which had been made with the object of clearing up this point. Dr. Rendall remarked that *M. athalia* had been very abundant in Abbot's Wood during the past year.

FEBRUARY 10th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. H. Collings and Mr. L. F. Hill were elected members.

Mr. S. Stevens exhibited a remarkable variety of *Vanessa atalanta*, L., and a suffused variety of *V. io*, L., which he stated were both bred by Mr. Smith, of Birmingham.

Mr. R. Adkin exhibited *Spilonota incarnatana*, Hb., which, he remarked, was a species said to occur among Burnet Rose (*Rosa spinosissima*, L.) on the coast; bred from larvæ taken in the heart of Surrey, forty miles from the sea, and although the accredited food-plant existed in some quantity in the locality, the bulk of the larvæ were found in shoots of Sweet Briar (*R. rubiginosa*, L.).

Mr. C. A. Briggs exhibited over 100 specimens of *Lycæna corydon*, Fb., including dwarfed forms, blue and brown forms of the female; varieties of the underside, in some the spots being absent, in others in excess of the usual number, and in some cases running into streaks.

Mr. R. South exhibited species of British and foreign *Lycenidæ*, and contributed notes, calling particular attention to a variety of *L. corydon* from Asia Minor, which, he said, as far as he could recollect, was similar to the males exhibited by Mr. Sabine at the Society's meeting on the 7th Oct., 1886.

Mr. Hall remarked that he had had an opportunity of examining Mr. Sabine's varieties, and thought they were very similar to the variety now exhibited. Mr. Tutt said he thought the specimen referred to was simply a very local form of *corydon*.

Mr. Kelsall, as a visitor, exhibited a living example of the black rat (*Mus rattus*), captured in Ratcliffe Highway, and stated that he understood the black rat was now very scarce in London, having been deposed by the Norwegian rat.

From the remarks of several members, it appeared that specimens of the black rat had been met with recently in several parts of London.

Mr. Cooper stated he had just received a specimen of the Peregrine falcon (*Falco peregrinus*, Tunstall), which had been shot at Brandon, in Suffolk.

Mr. Cockerell exhibited specimens of the following Mollusca:—*Succinea pfeifferi*, Rossm., and *Cochlicopa lubrica*, Mull., from St. Thomas, Ontario, Canada; and remarked that these species were also to be found very abundantly about London, and were distributed throughout the whole of Europe.

Mr. John T. Carrington communicated a paper on "Hibernation and Æstivation," in the course of which he said that before passing in review some of the orders most commonly known to hibernate, he would first call attention to the cause of this phenomenon. Experiments and observations proved that the torpid condition of hibernation was to be accounted for by the fact that respiration of the animals affected was regulated by the state of the activity of the muscular fibre. This activity was at rest in ordinary sleep, and when more "deadened" by cold or other influence, the respiration which would support actual vitality was brought to a minimum; hence the long winter's sleep known as hibernation. The period of this torpid condition was regulated by the susceptibility of the muscular tissue of various animals, and some which were looked upon as higher in organisation than others seemed more susceptible than those which were more frail when anatomi-

cally considered. Among the mammals of this country, hibernation was best exemplified in the winter sleep of the common hedgehog, and we got various conditions of hibernation until the habit was met with so slightly developed as in the hare, which slept in a partially torpid condition only during and after severe and cold snowstorms, in little cave-like hollows in the snow. During perfect hibernation all the vital functions were in abeyance. The temperature of the bodies of hibernating animals being nearly the same as that of the surrounding atmosphere, the whole winter sleep was greatly affected by temperature. After treating of the hibernation of many species of mammals, fishes, and reptiles, the antithesis of hibernation, known as *æstivation*, or the retirement in hot countries during great summer heat and long-continued drought of large numbers of animals, with almost identical appearances as in hibernation, was then described; and the case of an animal allied to the common hedgehog, inhabiting Madagascar, that *æstivated* for three months during the sub-tropical summer, in burrows, just as our small spiny friend hibernated during the winter months in Europe. Many tortoises, crocodiles, and serpents, also most land mollusca in hot countries, were said to *æstivate*. During the heat of tropical India, large numbers of fish were in the habit of retiring under the mud of their native pools as the water evaporated, and in that condition could remain apparently for an indefinite period; for ponds which had been dry for several years were found crowded with fine fish on water being again admitted, and softening the hard cake of mud which enveloped them. Animals which had been brought to Europe from the tropics, and which were in the habit of *æstivating* at home, generally *æstivated* in the colder climate at the proper season. This indicated that some other influence than cold or heat induced these periods of sleep, though certain temperatures necessarily favoured the conditions. Neither abnormal heat nor abnormal mildness would stop hibernation or *æstivation* respectively in some animals which were subject to their influences; when the time came round for the periodical rest, sleep they must. It did not appear to be

generally known that those animals which were subject to either hibernation or æstivation appeared to retire at intervals during their active life for a shorter sleep of, say, a couple or more days. Dormice did this, as did the hedgehogs, and probably many insects did the same. This habit was known as diurnation, or day-sleep, and appeared to be little understood. It must not be confounded with the retirement of land-shelled molluscs for the growth of the shell covering, as was their custom. In the vegetable world each of these periods of rest occurred. Most seeds either hibernated or æstivated, as did trees, by losing their leaves and by the downflow of the sap. To what extent seeds might be affected was doubtful; but there was no doubt vegetable life might be kept in abeyance for long periods by prolonging the condition of hibernation artificially. The pupæ of insects often laid over in that stage of their existence for three, four, or more years, thus hibernating the whole time as it were. This might to some extent account for special seasons of exceptional abundance and consequent destruction of vegetation by these unwelcome guests, which had only been remaining in reserve in one stage or other of their metamorphosis until a favourable event caused their emergence in abundance.

FEBRUARY 24th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. J. E. Kelsall, Mr. J. Lee, and Mr. E. B. Nevinson were elected members.

Mr. Tutt exhibited long series of *Tephrosia crepuscularia*. Hb., from Hungary, and remarked that he was unable to obtain any forms of *T. biundularia*, Bork., from that country, although he had received it from Germany. Mr. Tutt further showed specimens of Continental *Agrotidæ*, and, for the purpose of comparison, British forms of the same species. Also Continental *Acidalia perochraria*, Fisch., which he stated appeared in the British list of Lepidoptera, but on what authority he did not know. To him the specimens exhibited looked like intense forms of *A. ochrata*, Scop.

Mr. Tugwell said that Mr. Sidney Webb, of Dover, had in his cabinet British specimens of *perochraria* which had been taken by the late Mr. Weston near Merstham, Surrey.

Mr. R. Adkin exhibited specimens of *Notodonta ziczac*, L., *Dianthæcia capsophila*, Dup., *Aplecta prasina*, Fb., and *Eupithecia pumilata*, Hb., from Co. Cork, with examples of each of the species from the London district for comparison ; and pointed out that in all those from Ireland the markings were less clearly defined, and the general appearance of the insects duller and more suffused, than in the English examples.

Mr. Tugwell exhibited a dwarfed form of *Lycæna icarus*, Rott., and English and Scotch forms of *L. icarus*.

Dr. Percy Rendall exhibited land and fresh-water shells, including *Helix aculeata*, Mull., *H. pisana*, Mull., *H. virgata*, Da Costa, *Pupa umbilicata*, Drap., etc.

Mr. Cockerell exhibited *Succinea putris*, L., subsp. *S. parvula*, Drouet, a small species of the "*putris*" section of the genus, not previously recorded as British, collected by Mr. J. H. James at St. Columb, Porth, Cornwall ; also *Pisidium roseum*, Scholtz, from Putney, which he stated was not supposed to be a rare species, although not generally recognised when met with.

Mr. J. Jenner Weir read the following paper on "Melanism."

"I have read and carefully studied Mr. Dobree's very instructive paper on this subject, which appeared in the February number of the 'Entomologist,' pp. 25-28.

"So far as my limited knowledge extends, there is no connection between the tendency to melanic variation in Lepidoptera and the high latitude they may have been produced in ; but, on the contrary, I find that, so far as the Lepidoptera of Russia in Europe are concerned, of the 300 species I have received from the neighbourhood of St. Petersburg, from the late Mr. Field and Mr. Ersthoff, none show the slightest melanism.

"I am not, however, disposed to think that this fact 'destroys Lord Walsingham's latest and ingenious theory on this subject,' as Mr. Dobree states, but modifies it, and con-

finds the phenomenon to the higher latitudes of the British Isles, and to high altitudes.

“ Lord Walsingham’s theory of melanism in Lepidoptera was embodied in his address as President of the Yorkshire Naturalists’ Union, delivered on 3rd March, 1885, and was commented upon by me in the ‘Entomologist,’ Vol. xviii., pp. 81-87, to which I beg a reference.

“ It appears to me that Mr. Dobree has misunderstood Lord Walsingham’s theory of melanism, viz., ‘that a large expanse of white snow tends to produce it.’ Such was not my reading of the author’s theory in 1885.

“ I have refreshed my memory, and carefully re-read the address; and, as I understand the theory put forth, it was, shortly, that the dark coloration of Lepidoptera from both high latitudes and altitudes was of service to them, because, in such localities, ‘they require rapidly to take advantage of transient gleams of sunshine’ (*vide* p. 10 of the Address).

“ I have myself travelled in the Netherlands, Belgium, France, Germany, Switzerland, the Tyrol, Bohemia, Spain, and Italy; and in all these countries, except in the mountains, I have been struck by the extreme clearness of the atmosphere. In Bohemia, Italy, and Spain I found this to be the case in the greatest degree—in fact, in Bohemia I found, to my sorrow, one very hot day, that the town I could plainly see, and which I thought to be but four miles distant, was sixteen.

“ In the mountains of Switzerland and the Tyrol the clearness of the atmosphere was nearly as great, but constantly interrupted by dense mists and clouds; and it is precisely in these altitudes that melanism becomes rather the rule than the exception; many of the topomorphic varieties are melanic, and many of the Alpine species are very dark. *Pieris rapæ* var. *bryonia* may be given as an example of the former, and the male of *Melitæa cynthia* of the latter.

“ This uncertain condition of the weather is characteristic of the climate of the British Isles; the result is, that our indigenous Lepidoptera are, as a rule, darker in colour than the Continental; and the tendency to melanism increases northwards, till it may be said to culminate in the Shetlands.

“If I am correct in my views—and I think the facts I have brought forward are in accordance with Mr. Dobree’s—then it follows that in the British Isles and in the mountains of Europe it is essential to the imagines of Lepidoptera that they should rapidly take advantage of transient gleams of sunshine, and this the darkening of their coloration enables them to do.

“I have myself seen *Vanessa urticae* fall helpless in its flight when the sun passed behind a cloud in spring; and in the wet summer of 1879 the rapidly-flying *Argynnis paphia* was easily captured with the fingers, having taken refuge in the brambles when disturbed, because it was unable to fly. If this occurs in the south of England, it would be much more likely to occur in the more northern parts of these islands, and in the Alps.

“In conclusion, I cannot but express my admiration of Mr. Dobree’s excellent paper, which is a most valuable addition to the literature of melanism.”

Mr. George Smith, of the Sciopticon Company, then gave an exhibition of photo-micrographic lantern slides, being photographs of the enlarged image of the microscopic object printed from metal plates by the Woodbury process, the negatives having been furnished to the Company by Mr. F. H. Evans. The slides were thrown on a three-foot screen by means of the “Sciopticon” lantern, which was fitted with a dissolving apparatus for the purpose of changing the slides. The objects were illuminated by reflected, transmitted, or polarised light, and were remarkable for the extraordinary depth of focus obtained in the photographic negative. A large number were opaque objects, and among the most interesting slides were diatoms *in situ* on coralline; *Arachnoidiscus ornatus*; groups of the Foraminifera; *Polycistina*; *Ceratospyris ateuclus*; sponge spicules, *Echinus* spines, and examples of the class *Asteroidea*; spinnerets and jaws of the garden spider, *Epeira diadema*; parasites of the cat, horse, sparrow, humble bee, ox, elephant, etc.; *Cecidomyia pectoralis*, *Anagrus incaratus*, *Cynips terminalis*; spiracle and eye of *Dysticus marginalis*, L.

MARCH 10th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. D. J. Rice and H. H. Druce were elected members.

Mr. T. R. Billups exhibited specimens of an exotic Ant, *Tapinoma melanocephalum*, For., taken by him September, 1886, in the Palm House, Kew Gardens, on a species of palm (*Howea griesbachia*) from Tropical Australia. He remarked that the species was first described by Forel from Cayenne specimens. Since then the insect had been received from the Tonga Islands, and recently from Bahia and St. Thomas. Examples had also been met with in India, Oceania, Tropical America; and Forel found the ant on board one of the West Indian mail steamers; but this is the first recorded capture of the species in Europe. The number of exotic ants found in Kew Gardens by Messrs. Smith, Saunders, and himself was by this addition raised to seven species.

Mr. R. Adkin exhibited *Zanclognatha tarsipennalis*, Tr., and read the following note:

“From a Moth taken at Chobham on July 15th, 1886, I obtained ova which hatched on the 24th. Being desirous of quickly feeding up the seven young larvæ that were produced, they were placed upon knotgrass in a bottle, which was kept indoors. By October 8th one had fed up and pupated, and the imago emerged on the 30th of that month; the remainder did not, however, appear to be fully grown; and as they had made slight webs among moss that had been given to them, I concluded that they would hibernate, so, having placed them, moss and all, in a flower-pot with a small growing plant of bramble and some low plants, they were put out in a shed in the garden. No further notice was taken of them until March 1st, 1886, when the only larva visible was still in its web. On May 16th, six larvæ were still alive, and on 18th one had turned to pupa, and the last, two having died in the meantime, pupated early in July. The imagines appeared on June 16th, 17th, July 15th and 22nd respectively; the last

having been but two days short of twelve months in passing from the egg to the perfect state."

Mr. J. W. Slater exhibited two specimens of *Arctia caia*, L., with yellow hind wings, which he stated were bred, together with eight others, by Mr. Mutch, of Hornsey. A number of larvæ, obtained early last season, were fed, some on low plants, and others on leaves of the lime tree. The latter produced imagines of a colour quite different from that of those fed on the low plants. He should mention that Mr. Mutch is engaged in carrying out experiments of this kind; feeding larvæ on different food plants, and observing the effect produced, with a view to throwing some light on the genesis of colour. Mr. Adkin remarked that it was a much vexed question whether food had any effect on the colour. Mr. Wellman mentioned that he had bred numbers of *A. caia*, but had never succeeded in getting many varieties. Mr. South said that, with the view of rearing varieties of this species, he had tried feeding the larvæ on all kinds of plants, and had never yet succeeded in breeding any but typical *caia*; he had also tried feeding under various coloured glass, and in darkness, but with the same result. On several occasions, however, when he had picked up larvæ in the lanes, and had taken no trouble with them, he had bred some curious forms. Mr. Jenner Weir recollected reading of some very curious varieties having been obtained by feeding the larvæ on the onion, which seemed a strange kind of food. Mr. Tugwell said his experience was very similar to that of Mr. South. Mr. Carrington thought that if the larvæ of *A. caia* were fed from the egg there would be some difficulty in feeding them on lime, a tree which came into leaf late in the season, unless it happened to be a second brood, and it was well known that second and third broods of the species generally emerged smaller and usually very dark. Mr. Hall suggested it would be much more interesting if gentlemen undertaking these experiments were to exhibit the whole series instead of single specimens. Mr. Cockerell said it was singular that there should be a yellow form of most red species found throughout almost the whole of the Animal

Kingdom ; there was a yellow variety of most red shells, and yellow varieties of the *Zygænidæ*. It would seem that the red and yellow pigments were closely associated ; one would almost suppose one was merely a form of the other. Mr. Weir said that if redpoles were bred in confinement, the red colour of the head became yellow.

On behalf of Mr. C. A. Briggs, Mr. Carrington exhibited hibernating specimens of *Helix pomatia*, L., and stated that he once found this species in large numbers at Box Hill just coming out from hibernation. Those shown to-night were very dark, and were probably not British, which were generally larger and yellower. Mr. Weir remarked that the colour would depend on the geological formation ; he once had some very light specimens in his garden at Blackheath, and succeeded in getting a brood, and the shells of those bred there became very much darker, which he attributed to the smoke of London. Mr. T. D. A. Cockerell said the species in England was confined to the chalk, while on the Continent they were found more generally distributed.

Mr. E. Step read a paper upon "Mosses," of which the following is a brief summary. Taking the Common Hair Moss (*Polytrichum commune*) as a convenient type, he pointed out the general characters of root, stem, leaf, and fruit, their structure, and the generic and specific variations of these. Then, proceeding to the more important subject of reproduction, the fructification of *P. commune* was shown and described. At the summit of its stem *P. commune* bears a shaggy, extinguisher-like body (*calyptra*), beneath which is a squarish box, or urn. The calyptra removed, we find the angular box, or capsule, as it will be well to call it, is surmounted by a sort of lid (*operculum*), with a handle-like process in the middle. When the moss-fruit is ripe, the expansion of the capsule forces off the *calyptra*, and soon the lid follows. Whilst this has been going on the capsule has been losing its erect character, and gradually assuming a position at right angles to the long fruit-stalk. We can now see that the top of the capsule is a finely-ribbed ring, within which is stretched a thin membrane. Now this ribbed ring really consists of a

large number of blunt teeth bent over towards the centre of the mouth of the capsule. In consequence of their disposition round the mouth, the collective name of *peristome* has been bestowed upon them.

This peristome is not present in all mosses ; in certain genera it is always absent. But the majority of mosses possess it, and the character of the teeth is important in distinguishing various species. If the peristome is breathed upon, and viewed with a lens, the whole of the teeth will be seen to gently raise themselves until they stand in an erect position round the mouth of the capsule, and form a coronet.

A vertical section through the capsule will reveal a central pillar (*columella*), supporting a disc which accurately fits the mouth of the capsule and protects the tiny spores contained in the capsule beneath it. Those spores are individually almost invisible, but each one is capable of giving rise at length to a moss-plant, similar to that which produced it.

We have seen that warmth causes the peristome to erect itself ; and this seems to give us the clue to its use. It is composed of two separate layers of cells, each layer having hygroscopic properties differing from those of the other, so that when subjected to the influences of cold damp air the teeth close in and protect the spores ; but when the air is dry and warm they open out, and at the same time the columella lengthens and the disc is pushed up to a level with the tips of the teeth, so that the light spores are enabled to pass out between the teeth and get scattered by the wind. If the teeth opened in damp weather the spores would either drop out and fall upon the spot already occupied by the mosses, or they would cake together in the urn and refuse to come out. But opening when the atmosphere is dry, they fall out so finely divided that the slightest movement in the air will carry them to great distances, and keep them long suspended. But should the breeze carry them over moist surfaces, many of them will become attached and soon will germinate.

When the spore has absorbed sufficient moisture, the outer of its two envelopes bursts, thus allowing the inner one

to send out a tubular shoot, which, as it lengthens to form a rootlet, becomes divided by transverse partitions. Another shoot runs along the surface of the ground, and soon divides into two branches, which subdivide again and again, until, mingling with the similar branches from other spores, a felted mass of green hairs is formed. The next step in the building up of a moss is seen when small protuberances make their appearance on these hairs. Whilst these nodules are developing into buds, they are also sending minute rootlets down into the soil. The buds lengthen, and soon assume the character of a growing stem, clothed with leaves, and in due time terminated by the shaggy cap, which we saw on the parent plant, with the spore-urn beneath it.

In the Bog Mosses (*Sphagnum*) there is a slight difference, for instead of the bursting spore producing a slender thread, it broadens out to a little green scale, like a tiny liverwort, and from notches in its margin produces the buds which ultimately grow into the complete sphagnum plant, crowned by a number of the pretty red capsules, which in this order are always globular, and with the peristome entirely wanting.

Sometimes we may find specimens of the Hair Moss in which the summit of the stem does not bear a spore-capsule; instead, it ends in an expansion of pale-coloured leaves, which assume the form of a rosette. These particular leaves are very short and broad when compared with the lower leaves; there are several rows of them, and those of each succeeding circlet are smaller, until we reach the centre, where instead of leaves there are several club-shaped bodies called *antheridia*. These, when mature, are filled with a mucilaginous fluid, in which are an enormous number of little cells. The summit of the antheridium splits across, and the fluid with the cells pours out. Individually examined, these cells are seen each to contain a minute coiled-up organism, which may be roughly likened, as regards form, to a tadpole with a tail of great length ending in two long cilia. By the constant lashing of this tail, it frees itself from the mother-cell in which it originated, and swims through the surrounding fluid.

The history of the spore-capsule is, shortly, as follows.

Within a cluster of leaves at the tip of a moss-stem there was an organ (*archegonium*) somewhat similar to the pistil in some flowering plants. It consisted of a swollen portion near the base, surmounted by a long cylindrical body, perforated throughout by a narrow canal, which, when it reached the swollen portion, enlarged into an oval cavity. The tadpole-like bodies, which are distinguished by the name of *antherozoids*, find their way in at the upper end of this canal, and so into the oval cavity, where, by mingling with the contents (*oosphere*), they fertilise them. As the result of this process the oosphere (which is henceforth known as the *oospore*) assumes a spindle-shape, and increases in size. In time it develops a stalk from its lower end, and the growth of this tears away the upper walls of the archegonium-cavity, which ultimately become the calyptra. The oospore enlarges under the calyptra, and its interior becomes filled with the minute dust-like spores, which form around a central pillar—the *columella*.

As the capsule ripens, the upper portion becomes partially separated from it, and assumes the form of a lid to the vessel. We have seen that this lid (*operculum*), following the calyptra, is cast off when the spores are ripe, and the circle of teeth (*peristome*) then commences its work of distributing the spores.

“The time necessary for the formation of the capsule varies greatly in the different species, but is usually very long in comparison with the small size of the body concerned. The Pottiæ blossom in summer, and ripen their spores in the winter; the Funariæ are perennially in blossom, and have constantly sporogonia in all stages of development, each occupying for its completion probably two to three months. *Phascum cuspidatum* develops in the autumn, and ripens its spores in a few weeks before the winter. The bog *Hypna*, on the other hand, blossom in August and September, and ripen their spores in July of the next year; they often require ten months for the development of their capsules. *Hypnum cupressiforme* bears in autumn, at the same time, sexual organs and ripe spores, and hence requires one year. The

same length of time is required by *Philonotis*, and by some species of *Bryum* and some of *Polytrichum*, which blossom in May and June."*

The capsule is usually borne on a long slender footstalk, but in some species this is partially or entirely suppressed, the capsule peeping out from the enfolding leaves, as in *Daltonia*, *Cinclidotus*, *Diphyscium*, *Fontinalis*. Some species of *Grimmia*, when the capsule is full grown, hide it among the foliage. Though the general form of the capsule is more or less ovate, in *Bartramia* and *Phascum* it is spherical, in *Tortula* it is narrower, and of greater length; in *Polytrichum*, as we have seen, it is quadrangular, and in *Funaria* pear-shaped. The teeth of the peristome are *always* some multiple of 4—8, 16, 32, or 64—usually 16 or 32 in number.

Then, too, we should not omit to observe that the method by which the capsule opens is not in all species the same as we have described in *Polytrichum*. Sphagnum, for instance, opens by simply casting off the operculum; there is no peristome. The species of split mosses (*Andreæa*) have a lid to the capsule which does not separate from it; instead, the capsule opens by means of four slits in its walls, which extend almost to the base and the summit. In dry weather these slits open wide, and in damp weather close up. There is no peristome here. In the earth mosses (*Phascum*), again, there is no peristome; and the capsule does not open, the spores being liberated only by the decay of that organ.

There is also great variety in the size of the spores. According to Schimper, the spore of *Archidium* is $\frac{1}{5}$ th of a millimetre in size, and only sixteen spores are found in each capsule; whereas in *Dawsonia* the measurement of each spore is scarcely $\frac{1}{200}$ th of a millimetre. As a rule, the smaller the species of moss, the larger are the spores produced by it. Some of these spores, when sown under favourable conditions as regards the dampness of the soil, germinate in two or three days, and produce, first, the green felt-work, from which in about three weeks the true stem, clothed with leaves, begins to arise. This is true of *Funaria*, *Gymnostomum* etc.; whilst

* Klinggräff, quoted by Sachs.

those of *Sphagnum* do not germinate for two or three months. Should soil and atmosphere remain dry for some time after the spores have been sown, their germination will be so long postponed.

The concluding portion of the paper was chiefly concerned with the habitats, distribution, culture, and æsthetics of the moss-tribes.

MARCH 24th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. J. Stringer and J. W. Slater, F.E.S., were elected members.

Mr. Billups exhibited two rare species of Ichneumonidæ, the first being a male of *Stilpnus deplanatus*, Gr., which he bred from a larva case of a species of *Psyche*, found attached to the fence of his garden. The other species was *Apanteles tetricus*, Reinh., which he had reared from the bloom of the Common Thrift, or Sea Pink (*Armeria maritima*, Auct.). He stated that this rare species of Braconidæ, according to the Rev. T. A. Marshall, had hitherto only been recorded from Devonshire, where Mr. Bignell had reared two broods of six and seven respectively from the larvæ of *Epinephele ianira*, L. The Rev. T. A. Marshall also found a batch of about thirty cocoons attached to grass, near Teignmouth, where the larvæ of *Zygæna filipendulæ*, L., were very plentiful, one of which was most probably the host of the little *Apanteles*. Mr. Billups further stated that he was indebted to the kindness of his friend Mr. South, who presented him with the blossom which was collected in the Warren, Folkestone, for this rare addition to his collection.

Mr. Cooper exhibited a species of Ichneumonidæ: *Macrocentrus marginator*, N. sp., bred from a pupa of *Sesia sphegiformis*, Fb.

At the close of the ordinary business there was an exhibition of microscopical objects; Mr. Tutt showing wings of Lepidoptera, prepared and mounted by Mr. Coverdale and himself; Mr. W. West (Streatham), eyes of spider and other subjects; Mr. Medland, proboscis of blowfly, etc., also an

adaptation of the electric light for microscopical and surgical purposes.

Mr. Dadswell and Mr. Macer, who were present as visitors, also exhibited, the former botanical, and the latter entomological objects.

APRIL 14th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. C. A. Briggs exhibited a large number of *Lycæna bellargus*, Rott., including many forms of the male and female, dwarfed forms, and some remarkable varieties of the under side; also a pale yellow variety of *L. ægon*, L., and varieties of the under side of *L. icarus*, Rott., and *L. astrarche*, Bgstr., of which the following were the most important:—

Var. of *L. (astrarche) medon*, U. S.

Ground colour of all the wings pearly white, shaded in parts with pale ash colour. The marginal row of red spots very bright and distinct, owing partly to the absence of the usual outer row of black dots.

Except the central spot on each fore wing, and three spots—of which two are very minute—on each hind wing, the usual black spots are entirely absent.

The specimen was captured near Dover in 1878.

L. icarus ♂, U. S.

Very similar to the preceding. All four wings pearly white, shaded in parts with dark grey. All the black spots absent, except the central one in each wing. The red marginal band of spots normal, the row of black points outside them in the fore wings very faint, and the inner crescentic row unusually strongly marked.

Captured near Dover in 1879.

Mr. Goldthwaite exhibited living larvæ of *Pericallia syringaria*, L.

Mr. R. Adkin exhibited several pupa cases of *Eupæcilia ambiguella*, Hb., from the New Forest, and commented upon their similarity to the bark of the twigs and stem of the Alder Buckthorn (*Rhamnus frangula*), to which they were attached.

Mr. T. R. Billups exhibited the following exotic Coleoptera: *Megalosoma elephas*, Fab., from Guatemala; *Xylotrupes gideon*, L., Java; *X. dichitomas*, Fab., Philippine Isles; *Chalcosoma atlas*, L., Philippine Isles; *Archon centaurea*, Burm., Guinea; *Golofa hastatus*, Burm., Mexico; *G. eacus*, Burm., S. Columbia; and *G. porteri*, from same locality; also three specimens of the rare Lamellicorn, *Phæneus imperator*, Chev., from Chili. Mr. Billups also contributed the following interesting remarks in relation to his exhibit. The species of Lamellicorn Beetles shown belong to the family Dynastidæ, comprising some of the largest and handsomest of the beetle race, mostly inhabiting tropical regions, there being no English representative, although one species, *Oryctes nasicornis*, which is common on the Continent, is classed among the British Coleoptera. According to Lacordaire, the habits of the Dynastidæ were very similar, being seldom seen in the daylight, concealing themselves during the day, or at most, crawling in the depths of the woods. They came from their hiding places during the night, and flew about the trees, as Lacordaire thought, in search of food; but Mr. Billups thought Professor Westwood was more correct, his view being that they were in search of their mates. It was curious that, as the British Rove Beetles were sometimes found in ants' nests, so some of their monster exotic relatives were found in similar places.

Mr. E. Step exhibited a living example of the Slow Worm (*Anguis fragilis*) from Leith Hill, and made some remarks in reference thereto. Dr. Rendall asked whether this species had any means of reproducing its tail after it had been shed or broken off. Mr. J. J. Weir, in reply, said he had no positive proof as to the Slow Worm, but he once found an example of the Scaly Lizard (*Zootoca vivipara*) which had but a stump for a tail. He had kept it, and it had now produced as long a tail as he had ever seen; he was pleased to be able to prove this by actual experience, as not long since a doubt had been thrown on the subject in *Science Gossip*.

The Secretary read a letter from Mr. W. F. de V. Kane, containing a communication from an Indian correspondent as to

the capture in the Gerakphur Woods, India, of a large black moth—either a Geometer or a slender-bodied Bombyx—which produced a curious crackling noise when flying; the species did not come to light, and was quite invisible when flying. There was also a note as to the abundance of Emerald Moths in the same woods.

Mr. T. D. A. Cockerell read a paper on "Variation," printed in full at page 95.

APRIL 28th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. P. Russ was elected a member.

Mr. Helps exhibited a specimen of *Deilephila livornica*, Esp., from Coles Cross, near Crewkerne.

Mr. Lea exhibited *Pachnobia leucographa*, Hb., and other species taken in Herefordshire at Sallow.

Mr. South exhibited a male *Lycæna corydon*, Fb., and called attention to the distinct black discoidal spot on the fore wing; also a specimen of *Zygæna* from Folkestone, which he thought might probably be a hybrid between *filipendulæ*, L., and *trifolii*, Esp., as it had the characters of the last-named species on the upper surface, but beneath it was more like *filipendulæ*.

Mr. J. Jäger exhibited *Eupithecia pumilata*, Hb., bred from flowers of Clematis (*Clematis vitalba*, L.) and Hemp Agrimony (*Eupatorium cannabinum*, L.).

Mr. S. Edwards exhibited *Papiliomerope*, Cram. (♂ and ♀). Mr. Jenner Weir remarked that Mr. Edwards' exhibition of *Papilio merope*, Cram., and the two species or sub-species, *P. cenea*, Stoll, and *P. meriones*, Felder, was of great interest. The males of the three from Western Africa, South Africa, and Madagascar respectively, were exceedingly alike, yellow and black swallow-tailed butterflies; but whilst the female of *P. meriones* differed but little in colour, and not at all in shape from the male, each of the others had females without tails, and of quite a different shape from the males. As to colour, some of those exhibited of the true *P. merope* were black and white, closely resembling *Amauris niavius*, L.; another

was red and black, marked as, and closely resembling, an *Acræa*. The females shown of the South African sub-species (*P. cenca*) were equally varied. Some mimicked *Amauris dominicana*, Trimen, and another *Nebroda echeria*, var. *albimaculata*, Butler, being respectively black and white, and black, yellow, and white. Then there was a singular female, in which the upper wings were like *Amauris dominicana*, Trimen, whilst the under wings were ochreous, and looked more like those of an *Acræa*. It was as if Nature was halting and hesitating as to which species should be mimicked.

Mr. T. R. Billups exhibited the following exotic Coleoptera of the family Lamellicornes, or Leaf Horned Beetles, of the sub-family Scarabædiæ, amongst which were many rare and beautiful forms of the Genus *Phœnus*, *Onthophagus*, *Gymnopleurus*, and *Sisyphus*, the most noticeable being *Phœnus festivus*, L., *P. splendidulus*, Fab., *P. sapharinus*, Sturm, and *P. principalis*, Dup., all from Brazil; while *Onthophagus gazella*, Fab., from the Cape of Good Hope, *O. capella*, Kirby, from New Holland, and *O. tages*, Oliv., from Hispania, with *Gymnopleurus amœns*, Boh., from Port Natal, were remarkably fine specimens; also living British specimens of *Rhopalomesites tardii*, Curt., from Monaghan, Ireland.

Mr. T. D. A. Cockerell exhibited specimens of the following Mollusca: *Limax agrestis*, L., and var. *sylvatica*, Moq., *Amalia gagates*, Drap., var. *plumbea*, Moq., and *Arion bourguignati*, Mabille, found by Mr. T. R. Billups in lettuces received from Cherbourg.

Mr. J. E. Kelsall read a paper on "British Bats."

MAY 12th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. H. J. Turner, F. G. Fenn, and C. H. Morris, were elected members.

Mr. J. A. Cooper exhibited bred examples of *Aleucis pictaria*, Curt., *Macaria alternata*, Hb., *Asphalia ridens*, Fb., etc.

Mr. T. D. A. Cockerell exhibited the following mollusca : *Arion ater*, var. *glauca*, Colbeau ; *Arion ater*, var. *succinea*, Moq. ; *Arion ater*, var. *rufa*, L. ; *Arion hortensis*, Fer. ; *Arion subfuscus*, Drap. ; *Arion bourguignati*, Mab., found by Mr. George Roberts in his garden at Lofthouse near Wakefield ; *Scalaria pseudo scalaris*, Broc. from Mogador, collected by Mr. J. H. Ponsonby, which he stated might now be considered conclusively established as British, as six specimens had been found in recent years from widely different localities, viz., Scilly, North Devon, and Kent ; Miss Fair of Faversham had collected the six specimens referred to.

Also the following species found by Mr. T. R. Billups among lettuces from St. Malo :—*Arion ater*, var. *rufa*, L. ; *Arion subfuscus*, Drap., *Limax arborum*, B-Ch., *Limax agrestis*, L., *Limax agrestis*, var. *sylvatica*, Moq.

Mr. Kelsall exhibited an example of the Palmated Water Newt (*Lissotriton palmipes*, Bell.) and stated it was the rarest of the three newts found in Great Britain ; the females of the species shown were much easier to catch than the males. Mr. Billups said he once took a female specimen among water cress at Wallington, Surrey. Mr. Weir remarked that if the species were fished for with a worm it was possible to get as many males as females.

Mr. R. South exhibited the Snake's Head Lily or Fritillary (*Fritillaria meleagris*, L.) found at Pinner, Middlesex.

MAY 26th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. W. J. Holmes was elected a member.

Mr. T. R. Billups exhibited the following Hymenoptera, viz., *Cheiropachus quadrum*, Fab., *Blennocampa aterrima*, Klug., *B. alternipes*, Klug., and *Allantus marginellus*, Pz., and read the following notes :—

“*Cheiropachus quadrum*, Fab., a species of Chalcididous Hymenoptera, taken at Hayling Island, July last. This beautiful species is most probably parasitic on wood-

boring beetles, although Thompson refers it to the coleopterous genus *Colon*.

“*Blennocampa aterrima*, Klug., a very rare species of Tenthredinidæ, taken at Cobham in June last on the bloom of Solomon’s Seal (*Polygonatum multiflorum*), which was growing in profusion on the bank of the railway. This species of sawfly has not, I think, previously been found in this country since the time of Curtis, when it was taken at Putney by the present Earl of Ripon. Cameron gives as the food plant of the larvæ, *Convallaria multiflora*, and *C. polygonata*, and the continental range, Sweden, Holland, France, Germany, Italy, and Russia.

“*Blennocampa alternipes*, Klug., another rare species, was first taken by myself at Loughton, in Essex, by sweeping, and was described by Mr. Cameron in his monograph of British Phytophagous Hymenoptera, Vol. 2, page 220. I again met with it in Headley Lane, Mickleham, in May last, on the wild raspberry, on which the larvæ feed, eating holes from the underside of the leaves. Its continental distribution is Sweden, Germany, and France.

“*Allantus marginellus*, Pz., taken on Hayling Island, in July last, on the flowers of the Water Parsnip (*Sium latifolium* and *S. angustifolium*), on each of which it seemed equally plentiful. Cameron speaks of this species as being somewhat rare in this country. Mr. Smith found it in the London district. Stephens records it from Coombe Wood and Norfolk. Mr. Dale records it from Glanville’s Wooton and Whittlesea Mere, and Mr. Bignell has found it at Plymouth. At S. Hayling I might have taken hundreds. Its continental distribution, as given by Mr. Cameron, is Sweden, Germany, Switzerland, Italy, and Russia.”

Mr. Cooper exhibited *Spilosoma menthastri*, Esp., bred from pupæ obtained in the vicinity of Glasgow, and differing from our southern form in having the ground colour of a buffish yellow, very pronounced in some specimens. In all, the black spots on the upper wings were more or less elongated, forming streaks, and in some cases joined together, giving a netted appearance. They appeared to come from a local

race, every specimen having some trace of this peculiarity of marking.

Mr. S. Edwards exhibited twenty-nine species of *Papilio*, including *P. ascolius*, Feld., *P. ædipus*, Gray, *P. marchandii*, Boisd., *P. sarpedon*, L., *P. hippodamus*, Feld., *P. cloanthus*, Westw., *P. agamemnor*, L.

Mr. T. R. Billups exhibited, and made the following remarks upon, the under-mentioned species of Coleoptera:—

Living specimens of *Carabus auratus*, L., found in the Borough Market, in baskets of radishes from the south of France; this being the sixth year in succession that it has been found in London.

Cetonia floricola, Hbst., also living, found in a basket of Paper White Narcissus, from Bordeaux.

Blaps mortisaga, L., also from the Borough Market, being found in a box of Jaffa oranges, from Jaffa or Joppa, in the Holy Land. The Egyptian women are very fond of the larvæ of this curious beetle, which are roasted and eaten by them, and considered a great delicacy.

Mr. D. J. Rice exhibited the egg of the cuckoo (*Cuculus canorus*, L.) found in the nest of the hedge sparrow (*Accentor modularis*, L.), at Leith Hill, May 14; also eggs of Ring Ouzel (*Turdus torquatus*, L.) and Wryneck (*Jynx torquilla*, L.)

JUNE 9th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. H. E. Barren was elected a member.

Mr. T. R. Billups exhibited a number of living specimens of *Apanteles zygænarum*. Marsh, with their cocoons, which were of a pale sulphur-yellow. They were bred from the larvæ of *Melitea aurinia*, Rott. This rare species was first described by the Rev. T. A. Marshall, in his monograph of British Braconidæ, from two females and four males bred by Mr. Bignell from *Zygæna filipendulæ*, L. Mr. Billups also called attention to three specimens of the hyper-parasite, *Hemiteles fulvipes*, Gr., which he had reared from the same

batch of cocoons. The larvæ of *M. aurinia* were from Gloucester.

Mr. West (Greenwich) exhibited on behalf of Mr. Beaumont three fine varieties of *Abraxas grossulariata*, L.

Mr. R. Adkin exhibited, on behalf Mr. L. Gibb, a living larva of *Apatura iris*, L., recently beaten from Sallow near Brockenhurst.

Mr. A. W. Mera exhibited bred examples of *Fidonia limbaria*, Fb., and *Eupithecia venosata*, Fb., the latter having been two years in pupa.

Mr. T. D. A. Cockerell exhibited a number of larvæ found in flour in one of the London dock warehouses, together with some of the infected flour, and stated that there was very little doubt that the larvæ came from Trieste; the flour having been originally shipped from America to that port, and thence to London. It was now so full of larvæ that it was perfectly useless.

Mr. R. Adkin suggested that probably the species would turn out to be *Ephestia kihniella*, Zell., a warehouse pest that had recently been recorded from Stoney Stratford, Bucks.

Mr. T. R. Billups exhibited a species of Diptera, *Scatophaga lutaria*, Fab., in the act of destroying its victim, *Lucilla cæsar*, L. *Lasioderma testaceum*, L., a very destructive little Coleopteron, belonging to the family *Ptinidæ*, whose larvæ drill holes in furniture, old cabinets, and all sorts of vegetable substances, if dry. This exhibit consisted of a larva and three imagines taken from two cigars, a portion of a consignment of 7,000 from Calcutta, the whole of which were completely destroyed by the riddling of these little pests. The ginger root from the East Indies, Mr. Billups said, was particularly liable to the attacks of these insects; in fact, the importers calculate their loss annually at upwards of £3,000 on ginger from Cochin and Calicut alone. Also a number of specimens of *Pelophila borealis*, Pk., just received from County Armagh, Ireland, and taken by the Rev. W. F. Johnson.

Mr. Billups drew attention to the fact that at the

Society's Meeting of Nov. 4, 1886, he exhibited some miniature cocoons from some species of larvæ mining the leaves of a plant of Columbine (*Aquilegia vulgaris*, L.) There were three distinct forms of cocoon, and he had then stated that the host would most probably prove to be dipterous, or some species of Chalcid parasitic on the miner. The result proved to be as he had imagined. He then exhibited two dipterons of the genus *Phoridae*, Hal., *Phora flava*, Fall., and *P. pumila*, Meig. Also two species of Hymenopterous parasites, one being a Chalcid, and the other a specimen of *Aspilota ruficornis*, Nees., which he had since reared from the cocoons.

JUNE 23rd, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Oldham exhibited several species of Lepidoptera taken in the neighbourhood of Epping this year, among which were three specimens of *Chærocampa porcellus*, L., taken respectively at Theydon, Loughton, and Lords' Bushes.

Mr. J. R. Wellman exhibited specimens of *Lobophora viretata*, Hb., from Burton-on-Trent.

Mr. J. Jäger exhibited bred examples of *Eupithecia venosata*, Fb., which had been two years in pupa.

Mr. W. A. Pearce exhibited bred examples of *Eupithecia castigata*, Hb., from ova taken at Ranmore Common, Dorking, and *E. isogrammaria*, H. S., from larvæ feeding on *Clematis vitalba*, L., Box Hill, Surrey.

Mr. West (Greenwich) exhibited larvæ and cases of *Coleophora palliatella*, Zinck., and *C. currucipennella*, Fisch., the former found on oak at West Wickham, and the latter on oak, sallow, and aspen.

Mr. D. J. Rice exhibited eggs of the Night-jar (*Caprimulgus europæus*, L.) from Leith Hill, Surrey.

Mr. H. J. Turner exhibited three Orchidaceous plants, viz.: *Cephalanthera grandiflora*, Bal., *Listera ovata*, Br., *Aceras anthropophora*, Br. Also an example of *Lilium martagon*, L., with sixteen buds, and flowers of *Ajuga chamæpitys*, Schreb., all taken in Headley Lane, Mickleham.

JULY 14th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. T. R. Billups exhibited three species of Exotic Hymenoptera ; *Xylocopa violacea*, L., *X. latipes*, Drury, and *Taiscolia hæmorrhoidalis*, Fab., and read the following notes :—

“*Xylocopa violacea*, L. (Europe), and *X. latipes*, Drury, from Darjeeling.—The *Xylocopa*, or, as they are commonly and most deservedly styled, “Carpenter Bees,” have very powerful jaws, very much like wire-nippers in appearance, with which they are able to excavate tunnels of from one to two feet in length into solid wood, tearing out the material, chip by chip, very rapidly. Having completed a burrow, the female places at the extreme end a mass of pollen about the size of a large kidney-bean, upon which she deposits an egg. She then covers it with a thin layer of the chips which she originally cleared from the tunnel, repeating the operation until the whole of the burrow is filled with its cells. This genus is spread over all the warmer portions of the earth ; but no species has yet been found inhabiting Britain.

“*Taiscolia hæmorrhoidalis*, Fab. (Hungary).—This fine insect belongs to the group of Aculeate Hymenoptera, called *Scoliidæ*. They are chiefly found in the torrid parts of the world ; and the higher the temperature, the more plentiful the *Scoliidæ*. In some of the genera which belong to this group, the females are apterous, like the *Mutillidæ*. As the habits of these insects are well known, a short description of the economy of this species will answer for the whole. When the female is about to prepare for her future progeny, she seeks a dry sandy spot, and there makes a hole of some 16 or 18 inches deep ; she then goes in search of prey, which is generally the larvæ of some large lamellicorn beetle, such as *Oryctes nasicornis* (or, in some cases, locusts or grasshoppers). Having deposited them at the bottom of the hole, she lays an egg in close proximity. The egg is soon hatched, and the young larvæ at once begin to devour the beetle grub which the mother had placed there for food. The grub is always

large enough to last the *Scolia* larva throughout its first stage of existence ; and when the larva has demolished the grub, it prepares for its change by spinning an oval cocoon, in which it passes to the pupa, and afterwards to the perfect state. If any of our members would like to see these curious cocoons, I would call their attention to a very fine series brought from Florence, many of which are cut open to show the method in which the occupier is packed up within, and are now on view in the insect-room at the Museum of Natural History, South Kensington."

Dr. Rendall exhibited *Acidalia rubiginata*, Hufn., *Eupithecia coronata*, Hb., *E. plumbeolata*, Haw., *Lithostege griseata*, Schiff., *Agrophila trabealis*, Scop., L., all taken at Thetford.

Mr. E. Joy exhibited *Erastria venustula*, Hb., from Epping.

Mr. J. R. Wellman exhibited *Dicranura furcula*, L., and *Eupithecia togata*, Hb., from Perthshire.

Mr. Jäger exhibited *Dicranura bifida*, Hb., bred from ova obtained from a moth taken at Shepherd's Bush ; also fine series of *Scotosia vetulata*, Schiff, and *S. rhamnata*, Schiff., bred from larvæ taken in the north of London. Mr. Jäger stated that these species had been very abundant in the larval stage. The owner of the field in which the buckthorn occurred having cut down the greater part of the bushes, those that were left yielded a far better percentage than usual.

Mr. J. T. Williams exhibited *Heliothis dipsacea*, L., *Hydrelia uncula*, Clerck, and *Agrophila trabealis*, Scop., from Suffolk.

Mr. Tugwell exhibited three specimens of *Dicranura bicuspis*, Bork., bred from pupæ found at Tilgate Forest ; two of the pupæ cases were also shown, one being on the bark, and the other on a twig of birch. Also specimens of *Sesia spheniformis*, Fb., from the same locality, and varieties of the larvæ of *Cucullia chamomillæ*, Schiff., taken at Hither Green Lane, Lewisham, the specimens ranging in colour from white to a brilliant pink.

Mr. S. Edwards exhibited a variety of *Abraxas grosulariata*, L., bred by Mr. A. W. Dods from a larva taken

near Edmonton, in which the white ground colour was so thickly sprinkled with minute black atoms as to give the insect a decidedly smoky appearance; the black markings normal, but the yellow rather more intense than in the type.

Mr. R. South exhibited varieties of *Lycæna icarus*, Rott., from Ventnor, Isle of Wight, among which were (1) a male with distinct black spots on the margin of hind wings, a form Mr. South said he had received from Ireland and Scotland, but had not previously seen from any part of England; (2) several females much suffused with blue on the upper surfaces of the wings, one example being especially noticeable on account of its brilliant hue and the absence of discoidal spots; (3) some interesting underside aberrations of the confluent and obsolete types. One of these last is figured in Plate II. (fig. 3).

Mr. J. Jenner Weir exhibited some specimens of *Pieris oleracea*, Bois., from Hudson's Bay, and stated that there was a disagreement between the American Entomologists as to whether this species was identical with *Pieris napi*. In his opinion it was not. Mr. Scudder was very desirous to obtain the larvæ and pupæ of British *P. napi*, and Mr. Weir would be glad to obtain any such for transmission to America, for comparison with *P. oleracea*.

Dr. Rendall exhibited eggs of the Hawfinch (*Coccothraustes vulgaris*, Fleming), from Hertfordshire, together with examples of the brown variety from Switzerland.

Mr. South said that he had this season bred a considerable number of *Hemerophila abruptaria*, Thnb., and had been much interested in watching the construction of the cocoon. The nodular processes on the twigs of lilac exhibited were the cocoons of this species. In a state of nature it would probably be as difficult to detect one of these cocoons as it certainly is to find those of the *Dicranuridæ*. The construction of these pupal chambers by the *Hemerophila* larva was a most interesting performance to witness; and as he had kept the larvæ when nearly or quite full-grown in a large glass cylinder, he had some favourable opportunities of watching certain stages of the operation. Unfortunately, the earliest stage—

that of forming the silken envelope—did not come under observation ; but he had frequently seen a larva engaged in lining the interior of its tenement with fragments of the bark from the lilac stem. This it does in a most methodical manner, and never once, as far as he could see, fails to place the minute chip of bark in proper position, with the rough exterior surface outwards.

Mr. E. Step asked whether any member had observed the effect produced on other animals by the acrid secretion from the back of the Toad. A young Jay (*Garrulus glandarius*, L.) in his possession had recently, with a full crop, eaten two young toads, without exhibiting any ill effects. The following day, however, when its crop was all but empty, it had swallowed two others, with a very different result. The toads were very small, and but a day or two removed from the tadpole stage ; but their immediate effect was to cause the bird's eyelids to close, and its bill to gape persistently. These symptoms were followed by violent convulsive movements of the legs and wings, and the rapid turning of continuous somersaults. The bird seemed completely intoxicated, and to have lost all control over these strange movements of its limbs. There were short periods of inaction between these fits, during which the creature lay on its back, with the beak gaping and the eyes blinking. The paroxysms gradually became less violent, and after about an hour from the commencement of the attack, the Jay was able to perch. For the rest of the day, however, he remained in a stupid condition, making no movement and uttering no sound. By the next morning he seemed to have recovered his usual health and spirits. Mr. Step had little doubt that, had the toads been larger, they would have caused death.

Mr. J. Jenner Weir said he could not speak from experience, but Mr. Bond had told him that he once had a Heron that was killed through eating a toad, although the latter was vomited almost immediately after it had been swallowed.

Mr. Billups called attention to the unusual abundance of the larvæ of *Pieris brassicæ* in the neighbourhood of West Ham, Essex, the whole of the cabbages in that neighbour-

hood having been destroyed by them, although cauliflowers growing in the same fields had not been touched. In the discussion that followed, several other members stated that they had noticed numbers of larvæ in different districts, and reference was made to the unusual number of *P. rapæ* this year.

JULY 28th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

The Rev. W. F. Johnson, F.E.S., was elected a Corresponding Member.

Mr. W. West exhibited specimens of *Apamea ophiogramma*, Esp., taken flying over Ribbon Grass in his garden at Streatham, and remarked that two years ago he showed some larvæ found on the same clump of grass, which were not identified at the time, but were thought by several members to be the larvæ of this species. Unfortunately he was unable to rear these larvæ; having now, however, captured the species in considerable numbers flying over this particular clump, he thought it was probable that the larvæ then found were those of the species he was now exhibiting.

Mr. R. Adkin considered it would be much more satisfactory if Mr. West could again find larvæ, and rear the perfect insect.

Mr. J. T. Williams said that Ribbon Grass had been introduced into this country, but the larvæ of *A. ophiogramma* were said to feed on the roots and stems of species of *Arundo* which were to be found growing on the Greenwich marshes. The species used to occur sparingly on these marshes, and also on the Hammersmith marshes.

Mr. Tugwell exhibited bred specimens of *Apatura iris*, L., and pupæ cases of the same, the larvæ having been found at Brockenhurst.

Mr. T. W. Hall exhibited varieties of *Abraxas grossulariata*, L., one having a distinct yellow band on the hind wings. Mr. Hall said he had bred four distinct species of parasites, *Cassinaria vidua*, Gr., and its hyper-parasite, *Meso-*

chorus fulgurans, Hal.; *Hyctodissa lucorum*, Fall., and one specimen—a female—of *Paniscus cephalotes*, Holm.

Mr. W. G. Sheldon exhibited *Pempelia palumbella*, Fb., and *Bomolocha fontis*, Thnb., from Leith Hill; *Eupœcilia amandana*, H.-S., from Sanderstead, and with reference to this last species, said that it was usually described in books as rare, but he did not think it was so, as he had found it very commonly in the neighbourhood where he captured it. It appeared to have a flight lasting about two minutes, and two minutes only.

Mr. R. South exhibited two varieties of *Melitæa cinxia*, L., from the Isle of Wight, which varied from the type in the following manner:—Upper surface, fore wing: central line or band absent, hind marginal lines interrupted. Under surface, hind wing: the usual fulvous band towards hind margin much contracted, and showing a tendency to break up and form ocelli; a fulvous patch extending from base of wing to the external edge of usual basal band. Mr. South stated that the male was taken on the 11th June, and the female on the same spot on the 17th June. Both had just emerged, and were drying their wings at the moment of capture. (The two specimens are figured Plate I. figs. 1 ♂ and 2 ♀.)

Mr. E. Step exhibited the skin of a stoat (*Mustela erminea*, L.), taken on the Society's excursion to Mickleham.

Mr. W. G. Sheldon stated that he had recently seen a Kangaroo at Leith Hill, and asked if any of the members knew whether or not one or more of these animals had recently been turned out in that locality.

Mr. Rice had some recollection that three or four years back there was some talk of kangaroos having been seen on Leith Hill, and promised to make inquiries as to whether any were kept in that district.

Mr. Billups said that the Great Kangaroo and others of its kindred breed freely in this country, many British-born individuals existing in the Zoological Society's Gardens, and in private collections.

AUGUST 11th, 1887.

R. SOUTH, Esq., F.E.S., *Vice-President*, in the Chair.

Mr. C. H. Watson exhibited *Catocala promissa*, Esp., from the New Forest.

Mr. West (Streatham) exhibited *Sesia asiliformis*, Rott. (bred), and a variety of *Lycæna corydon*, Fb. This example was normal as regards the upper surface, but on the under side there was an almost entire absence of ocelli, the only remaining ones being the discoidal and another towards the hind margins of fore wings, with one or two on the hind wings. The black crescents on the margins of all the wings were strikingly developed. Also a variety of *Argynnis euphrosyne*, L., with two-thirds of the upper side black, and slight yellow markings on the outer third. The wings are much darker than usual, and the ordinary markings much more distinct and darker; the under side not showing any marked peculiarity.

Mr. A. W. Mera exhibited a series of *Thera simulata* Hb., from Ireland.

Mr. Fremlin exhibited some specimens of *Vanessa urticæ*, L., in which the normal bright red-brown colour was replaced by a smoky brown, and the black markings were inconspicuous. Further, the body and bases of the wings were without any of the usual hair-like scales, and the wings altogether seemed to be ill-developed. Mr. Fremlin considered the peculiar appearance of the specimens due to premature emergence, and added that the insects had possessed so little vitality that some of them were dead the day after leaving the pupa, and the others were in a moribund condition.

Mr. R. South exhibited a variety of *Triphæna comes*, Hb., with cream-coloured hind wings; a variety of *Vanessa io*, L., with a second ocellus; also a specimen of *Carpocapsa saltitans*, Westw., bred from the so-called "jumping seeds," from Mexico, exhibited by Mr. McLachlan at the Society's Annual Exhibition; and called attention to the aperture in the seed through which the insect had emerged. This aperture, he said, was provided with what seemed to be a hinged door, the construction of which appeared to be a marvel of neat

workmanship. Before the escape of the imago there was no trace of any convenient exit, and it was only by pressing the hard seed capsule between the finger and thumb that the existence of a perforation could be detected. Pressure caused the skin of the seed over the boring to become depressed, and so the situation of the hole was discovered.

Mr. J. R. Wellman exhibited *Dianthæcia albimacula*, Bork., forms of *Bryophila muralis*, Forst., and a yellow variety of *B. perla*, Fb., all from Folkestone; *Plusia interrogatoris*, L., from Perth; also dwarfed forms of *Aspilates gilvaria*, Fb., *Eubolia bipunctaria*, Schiff., and *E. limitata*, Scop., which he stated were all captured on the slopes of the hills near the Canterbury Road. It was remarkable that there should be so many undersized examples.

Mr. R. South observed that these small specimens were very interesting, and were no doubt to be attributed to the parched and stunted condition of the larval food-plants, owing to the unusually dry summer.

Mr. Barker, on behalf of Mr. G. A. Lewcock, exhibited a large series of Coleoptera, including a specimen of *Sericosomos brunneus*, L., from Esher; a long series of *Bembidium lunatum*, Duft. Mr. Lewcock has occasionally taken the latter singly on the banks of the Thames at Rainham, Essex; but during last season he captured about a dozen specimens one afternoon in August. The following species of *Donacia* were also shown (all taken during the year), and the accompanying notes read:—

Donacia versicolora, Brahm., and *D. dentata*, Hoppe, from the Basingstoke Canal and Farnham, obtained chiefly on the floating leaves of several water-plants. The best means of capturing these species is to submerge the resting-place, when, being deprived of the means of flight, the insects could be easily taken. *D. hydrochæridis*, F., from the stems of rushes, Basingstoke Canal; the best time to take it being early in the morning. *D. bicolora*, Tsch., Basingstoke Canal and Farnham, frequenting the yellow Iris; also to be swept at times from the low rushes. *D. thalassina*, Germ., Basingstoke Canal, Esher, Farnham, and Sunbury; generally common

where it occurred, on the low rushes, but could also be picked off the taller species of rushes late in the evening. *D. limbata*, Pz. from Wanstead Park, Essex, also Farnham and Sunbury; not common, chiefly on Iris and Sparganium. *D. semicuprea*, Pz., abundant in the same localities as the last species. *D. simplex*, F., found principally in running water, and not so commonly in Surrey as the two previous species. *D. vulgaris*, Tsch., Esher and Farnham; commonly on *Typha latifolia* about two years ago, but scarce this year. *D. clavipes*, F., Esher; not common this year. *D. sericea*, L., Esher, Sunbury, Farnham, and Rainham, Essex, commonly. *D. discolor*, Pz., seven or eight specimens swept from the marsh near the Basingstoke Canal. *Cryptocephalus lineola*, F., by sweeping at Esher. *Corymbites tessellatus*, L., Esher and Woking. *Telephorus lateralis*, L., and *Phyllobrotica quadrimaculata*, L., Farnham; *Malachius æneus*, Sunbury, four other species, occurring in Surrey, viz., *M. bipustulatus*, L., common everywhere; *M. viridis*, F., Farnham; *M. ruficollis*, moderately common at both Farnham and Esher; *M. pulicarius*, F., not commonly, at Esher only; *Cionus scrophulariæ*, L., common; *C. tuberculosis*, Scop., not common, Farnham; *Lebia chlorocephala*, E. H.; *Tanymecus palliatus*, F., and *Clytus mysticus*, L., all from Esher.

Mr. Rice said he had made inquiries as to the kangaroo which, at the last meeting, Mr. Sheldon said he had seen at Leith Hill, and had ascertained that it was the property of W. J. Evelyn, Esq., M.P., who turned some of these animals loose about five years since. A pair bred the same year, and some of their offspring were still living, but were rarely seen except by the keepers.

Mr. John T. Carrington added that he recollected the turning out of these animals being recorded in *The Field*.

The Secretary read a letter from the President recording the unusual abundance of *Pieris brassicæ*, L., and *P. rapæ*, L., in the neighbourhood of Eastbourne, Sussex, and calling attention to their settling in numbers around puddles in the freshly-watered roads of the town.

Mr. J. T. Carrington stated he had had many opportuni-

ties since the end of June of noticing the gradual increase in numbers of these species, and had seen about the beginning of the month immense numbers, principally of *P. rapæ*, on a bed of Lavender growing in one of the Brighton squares. He had not, however, heard of any unusual number of larvæ having been noticed in the Brighton district before the arrival of the swarms of imagines, and it was possible that these last were immigrants. The habit of drinking was not at all uncommon among Lepidoptera in hot countries.

Mr. South said *P. rapæ* had been unusually abundant in his garden at St. John's Wood, and he had frequently seen them on the watered roads of London. He quite agreed with Mr. Carrington that the appearance of these species in such numbers was to be attributed to immigration.

Mr. T. W. Hall said he had noticed large numbers settling in the moist ditches by the side of the railway at Ware.

Mr. Step thought that some of the members would recollect noticing on the occasion of the Society's excursion to Bookham, in 1886, a nearly dry pool, the margins of which were literally covered with bees drinking. Messrs. Wellman and Tugwell and Dr. Rendall also mentioned having seen great numbers of the two species of *Pieris*.

AUGUST 25th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Cooper exhibited *Argyrolepis æneana*, Hb., Haw., bred from larvæ found in South Essex.

Mr. J. R. Wellman exhibited *Noctua festiva*, Hb., var. *conflua*, Tr., from Perth, and *Plusia chryson*, Esp., from Newmarket.

Mr. J. W. Tutt exhibited a *Gelechia* of doubtful species; a short series each of *Depressaria yeatiana*, Fb., *Doryphora palustrella*, Dougl., *Crambus contaminellus*, Hb., *C. alpinellus*, Hb.; a comparative series of *Lita semidecandriella*, Threlfall., and a new species, *Lita blandulella*, Tutt.; dark forms of *L. marmorea*, Haw.; two specimens of *Melissoblyptus anellus*, Schiff., without the characteristic spots; and a very dark blackish *Depressaria*

belonging to the *heracliana* group, which cannot be identified as belonging to any of our known British species. The whole from the neighbourhood of Deal, and taken in the early part of August, 1887.

Mr. H. T. Dobson exhibited *Thecla quercus*, L., *Selenia tetralunaria*, Hufn., and *Eugonia erosaria*, Bork, all from larvæ obtained in the New Forest.

Mr. H. E. Barren exhibited a large specimen of *Polyommatus phlæas*, L., with unusually broad border to fore wings.

Mr. Tugwell exhibited *Boarmia abietaria*, Hb., bred from larvæ beaten out of yew, June 1st, 1887; the first imago emerging July 2nd, the last August 4th.

Mr. E. Sabine exhibited *Lycæna icarus*, Rott., males of varying blue tints, blue females, and a dwarf male barely $\frac{3}{4}$ ths of an inch in span, underside with confluent spots, and an underside of male, with left wings normal and right wings of the obsolete type; also males of *L. bellargus*, Rott., of various shades of colour, and females more or less blue; a fine series of probable hybrids, male and female, between *icarus* and *bellargus*; also forms and varieties of *L. corydon*, Fb., dwarfed, deep blue, grey, and other shades of the male, brown, blue, and other females, undersides of the males of the obsolete type, and fine examples of the streaked form. Mr. Sabine stated that, with the exception of the dwarfed *icarus*, all the specimens shown were taken during the season in one locality in Kent.

SEPTEMBER 8th, 1887.

T. R. BILLUPS, Esq., F.E.S., in the chair.

Mr. J. T. Williams exhibited a living specimen of *Sphinx convolvuli*, L., taken that morning on his bed-room window at Foot's Cray, Kent, and asked whether the species deposited its eggs in the autumn or following spring, as he had last year tried to obtain ova, but without success, and he knew of no records of the larva having ever been found in England.

Mr. J. T. Carrington, in reply, said that he did not remember hearing of the capture of any hibernated specimens

of this species. In the west of France it was quite common in some districts, the larvæ being found on the small bindweed (*Convolvulus arvensis*, L.), growing amongst corn, as many as forty or fifty sometimes being taken in one search.

Mr. J. T. Williams also exhibited a dwarfed specimen of *Drepana binaria*, Hufn., and said that the larva from which this specimen was bred, he obtained by beating in the New Forest; it immediately pupated. He attributed the smallness of this specimen and the number of dwarfs of different species he had met with during the season, to the dryness of the atmosphere and consequent dryness of the food-plants.

Messrs. Billups, Wellman, Carrington, and others concurred with Mr. Williams as to the cause of these dwarfed examples.

Mr. W. G. Sheldon exhibited long series of *Agrotis agathina*, Dup., and *Noctua castanea*, Esp., and var. *neglecta*, Hb., taken at Shirley on the flowers of heather, and remarked that *A. agathina* had occurred more freely this season than of late years, although he had only managed to obtain four larvæ in four nights searching.

Mr. J. T. Williams said this was a strange fact, as at one time in the same locality the larvæ were so common that it was easy to get upwards of a hundred of them in an hour.

Mr. E. Joy exhibited two melanic varieties of *Vanessa urticæ*, L., bred from larvæ found at Folkestone, one being normal on the left and melanic on the right side.

Dr. Rendall exhibited *Lobophora halterata*, Hufn., from Hounslow.

Mr. H. T. Dobson exhibited *Emmelesia albulata*, Schiff, var. *thules*, Weir, and a number of tortrices from the Shetland Isles.

Mr. J. T. Carrington exhibited a cocoon of *Dicranura vinula*, L., formed among cotton wool.

Mr. West (Greenwich) exhibited *Rhantus pulverosus*, Step., *R. notatus*, Berg., the red form of *Agabus bipustulatus*, L., *A. consperus*, Marsh, *Philonthus punctus*, Gr., all taken on the marshes near the river, at Erith, Kent.

Mr. J. T. Carrington exhibited specimens of the Hessian

Fly (*Cecidomyia destructor*, Say.), with infected straw, and remarked that his exhibit came from Gloucestershire, which he thought was as far west as the insect had yet been found. That it was likely to become permanently established in this country he considered very doubtful. The present year seemed to have been exceedingly favourable for its multiplication on account of the extreme dryness; he had heard it suggested that warm humid seasons were most suitable for its increase, but he thought this was exceedingly improbable, as in Russia and Central Europe, where it occurred, the summers were generally dry. After one or two wet seasons he had very little doubt that the species would disappear from Britain altogether. It was also probable that it had occurred in this country for a much longer period than was supposed.

Mr. Billups said that this last observation was correct, the species having been found as many as fifty years back, being brought here from Russia.

Dr. Rendall said that a farmer in Wiltshire, who was not an Entomologist, informed him he had found it in his wheat for a good many years.

Mr. T. R. Billups exhibited, on behalf of Mr. T. D. A. Cockerell, a box of insects collected at West Cliff, Custer Co., Colorado, at an altitude of about 8,000 feet above sea level. These included two species of Longicorn Beetles, *Criocephalus agrestis*, F., and *Leptura cribripennis*, Lac., also several species of Carabidæ, Histeridæ, Coccinellidæ, etc. Among the Hymenoptera were several species of Ants, including *Formica integra*, F., and several other species not in the National Collection. There were also two species of Ichneumonidæ, one of Cerцерidæ, two of Mutillidæ, and several other species apparently new to science. Besides these there were types of the local Diptera, Lepidoptera, Neuroptera, etc.

SEPTEMBER 22nd, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Mr. Jäger exhibited *Callimorpha hera*, L., and var. *lutescens*, Staud., from Starcross, Devon, and stated that he had obtained ova, and now had the larvæ feeding.

He also exhibited *Stilbia anomala*, Haw., taken near Tenby, on heather. These were all males, and Mr. Jäger said he had been unable to meet with the female of the species. The males, however, were fairly common one night, but afterwards very few were seen.

Mr. Adkin remarked that he understood this frequently occurred with this insect.

Mr. Sheldon exhibited *Xanthia fulvago*, L., and var. *flavescens*, Esp., and said they came from a valley in Derbyshire. It was remarkable that this valley alone of all the surrounding district produced, to a large extent, melanic specimens; in the neighbourhood the Lepidoptera found were generally of the light southern forms, while in this particular valley many species were almost black; for example, *Tephrosia biundularia*, Bork., *Thera variata*, Schiff., and others.

Mr. Cooper exhibited series of *Ephippiphora obscurana*, St., from Epping Forest, *Eugonia quercinaria*, Hufn., among which were many interesting dark forms; *Melanippe galiata*, Hb., examples of the second brood; dark forms of *M. fluctuata*, L., from Aberdeen.

Mr. Goldthwaite asked whether the specimens of *E. quercinaria* had been bred from an ordinary female, or from one showing any strong dark markings, as he had obtained a batch of eggs from a very dark female, and did not breed a single specimen worth calling a variety.

Mr. Cooper, in reply, said that the female from which the ova were obtained was so worn that it was impossible to say whether it varied from the ordinary form or not.

Mr. Goldthwaite exhibited varieties of the underside of *Lycæna bellargus*, Rott., including an underside of the male of the obsolete form.

Mr. Carpenter exhibited a number of *Argynnis paphia*, L., var. *valesina*, Esp., from the New Forest.

Mr. Weir said that this variety had been very plentiful this year in the New Forest, and Mr. Carpenter's box contained three very interesting specimens, one of which was very much smaller than the ordinary form, and the colour of the fore wings was more like that of the ordinary female *Paphia*; hind wings much darker, approaching closely that of *Valesina*. Another example was very dark, smoky-green in colour, the usual pale blotches in the fore wings being quite absent. And in the third specimen the pale blotches were unusually distinct and numerous.

Mr. Tutt exhibited *Melanthia bicolorata*, Hufn., var. *plumbata*, Curt., from Rannoch.

Mr. Oldham exhibited *Dicycla oo*, L., from Epping Forest, and stated that he had this season taken some twenty specimens in that locality.

Mr. Weir said it was very remarkable that Mr. Oldham should have taken so many as twenty *D. oo* at Epping, as the species had not occurred in any plenty in the New Forest for a number of years.

Mr. Tutt remarked that *D. oo* had been very common this year—it had occurred at Shooter's Hill, and very freely indeed around Bromley.

Mr. J. T. Williams said the species had occurred year after year at Fairmead Bottom, Epping Forest.

Mr. Skinner exhibited a specimen of *Deiopia pulchella*, L., taken at Dover, 1886, a bleached specimen of *Epinephele ianira*, L., from Herne Bay, Kent, and forms of *Zygæna filipendulæ*, L., having a pink shade of red instead of the usual crimson, bred from larvæ obtained from Caterham.

Mr. R. Adkin exhibited a specimen of *Anticlea cucullata*, Hufn., bred from a larva found on a bunch of *Galium* brought from Eastbourne.

Mr. Elisha exhibited *Gelechia hippophaella*, Schr., bred from larva in the shoots of *Hippophaë rhamnoides*, L., from the Sand Hills, Deal, *G. vilella*, Zell., bred from larva found in the seed heads of *Malva sylvestris*, L., from Southend;

Incurvaria capitella, Clerck., from larva feeding in the shoots of currant, Highgate.

Mr. J. Jenner Weir exhibited specimens of *Carpocapsa saltitans*, Westw., and remarked that one emerged in July, no more coming out until September. This gentleman also exhibited a living larva of the Ant Lion (*Myrmeleon europæus*, L. The example exhibited was taken by Mr. Weir at Fontainebleau in the sand-rocks, where the gradual disintegration of the rocks had formed a mass of sand; the ant lions were always found on the side most sheltered from the sun. The Myrmeleonidæ were found throughout the whole of dry Europe, and very plentifully in Australia. Mr. Weir then gave an interesting account of the habits of the species exhibited, as observed by him.

Mr. West, of Greenwich, exhibited eight species of Coleoptera—namely, *Haliphus confinis*, Step., *H. fulvus*, F., *H. flavicollis*, Sturm., *H. cinereus*, Aubé., *H. fluviatilis*, Aubé., *H. ruficollis*, De G., and *H. lineatocollis*, Marsh., and remarked that the genus only contained eleven species, and he had taken eight of these from one pond in the neighbourhood of Lewisham.

Mr. Billups, on behalf of Mr. Tugwell, exhibited a species of Ichneumonidæ, *Limmeria ensator*, Gr., and one of Braconidæ, *Macrocentrus linearis*, var. *pallidipes*, Gr., both bred from *Cucullia gnaphalii*, Hb., the species of Braconidæ being a very unusual parasite from such a host.

Mr. Billups, on Mr. Elisha's behalf, also exhibited an exceedingly fine specimen of *Rhyssa persuasoria*, L.

And on behalf of Mr. Turner, he exhibited two old wedges which had been used to fasten the chairs, holding the rails to the sleepers, on the London, Brighton and South Coast Railway between New Cross and Forest Hill, containing the nests of *Osmia rufa*, L., one of the most abundant of the bees found in England. Mr. Billups said this last exhibition was particularly interesting, as showing how the family *Osmia* adapted its cells to suit its surroundings. In hilly countries, or on the coast, it generally formed its burrows in the cliff or sandy bank, while in more cultivated districts it

would choose a decaying tree, preferring the stump of an old willow ; at other times it burrowed in the mortar of old walls, or availed itself of the lock of an old building, or a cavity in the flint stones used for garden walls ; in fact, the family seemed to have adopted the system of giving themselves as little labour as possible as regards their homesteads. Even musical instruments did not come amiss to them ; for in the National Collection at South Kensington there was a fife which was completely occupied by the cells of this bee. The genus contained probably sixty to sixty-five species, ranging over Europe, North Africa, the United States, Nova Scotia, and Hudson's Bay ; but only ten species occurred in this country.

Mr. West (Streatham) exhibited a number of Alpine plants, including Edelweiss, Alpine Rose (*Rhododendron hirsutum*), and *Alchemilla alpina*.

Mr. Goldthwaite said he had received a letter from Mr. Barclay, in which he stated that *Sphinx convolvuli*, L., was extremely abundant at Cromer, he being able to take dozens in an evening.

Mr. J. T. Williams said eighteen had been taken by a lad in a garden at Sidcup, Kent, flying over the white tobacco plant ; while a lad in the adjoining garden, not having any tobacco plants, had sugared for *convolvuli*, but without success.

Mr. Cooper said he had heard of several being taken in and around Stratford.

Mr. Tutt said it seemed general this year, as he had heard of captures in Somerset and Kent.

Mr. Sheldon said several had been seen at Croydon ; and many other members reported the appearance of this species in England.

Mr. J. Jenner Weir stated that he had recently seen in the Jardin d'Acclimation in Paris five hybrids, between the goat and sheep, four females and one male, presented to the Directors of the Gardens by the President of the Republic of Chili, which were said to be a cross between a he-goat and a ewe, the ram and two of the ewes being of a grey colour, the

other ewes being nearly black. He never recollected reading or hearing of similar hybrids ever having occurred in this country, although goats were frequently kept in neighbourhoods where sheep were bred in large numbers.

OCTOBER 13th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Dr. Rendall exhibited *Xanthia fulvago*, L., var. *flavescens*, Esp., and *X. flavago*, Fb., bred from willow catkins, gathered in the spring.

Mr. Tugwell exhibited a specimen of *Sphinx convolvuli*, L., taken at Greenwich, and varieties of *Spilosoma menthastris*, Esp., bred in Forfarshire by Mr. Kirk, one specimen (figured plate 1, fig. 4) being remarkably fine. Mr. Tugwell stated that in that district of Scotland there was a general tendency evinced by *menthastris* to vary the spots—coalescing so as to form streaks or dashes of black coloration, but in a less degree than in the specimen figured; the ground colour, too, being often darker than in our southern examples.

Mr. Levett exhibited two varieties of *Smerinthus tiliæ*, L., the central band in each being represented by a spot.

Mr. Fremlin said that at the meeting of the Society held in May last he exhibited specimens of *Vanessa urticæ*, L., showing immaturity. He had since bred others, which he now exhibited. The specimens had no hair on the wings, and were very dull in colour.

Mr. South exhibited four examples of *Argynnis selene*, Schiff., and one of *A. euphrosyne*, L., and read the following notes:—

“Specimen No. 1 is an aberration similar in character to that of *Argynnis paphia*, L., from the New Forest (figured Entom. xv., plate 1, fig. 3). The pale blotches are, however, confined to the fore wings of this specimen, and are, moreover, situated in a somewhat different position, being rather in the centre of the wing than towards the apex, as is the case in the variety of *paphia* referred to. The specimen was

taken by Mr. Robert Calvert, of Bishop Auckland, Durham, who kindly sent it to me, together with a most interesting series of *Argynnidæ* from his district.

“With regard to the probable cause of these pale patches of colour on the wings of certain *Argynnidæ*, I should like to say a word. At a meeting of this Society last year (September 2nd, 1886, Abstract, p. 55), Mr. Jenner Weir exhibited seven specimens of *Argynnis paphia*, and one example of *A. euphrosyne*, all of which had pale spots on the wings. In the discussion which ensued as to the origin of these spots, various suggestions were put forward, and I stated that I thought the sun’s rays passing through a globule of water and falling on the pupa might cause such kind of bleaching, as was seen in the specimen then exhibited. This summer, having a number of *Vanessa io* pupæ, I thought I would try a few experiments in the direction of my suggestion. As, however, I could not manage to get a drop of water into proper position, I had recourse to a reading glass of moderate power. Selecting nine pupæ of *io*, I divided them into three batches and concentrated the sun’s rays on the left, right, and both wings respectively of each batch. As soon as the subject operated on became aware of what was going on he gave a sudden jerk, and the treatment was at once suspended. The result of these experiments was not quite what I had expected, for the pupæ operated upon produced insects with crumpled wings on the right, left, or both sides, the injury being in each case on the side or sides which had been singled. I may now say that I don’t think the sun’s rays passing through water has anything to do with the white or pale spotted varieties adverted to.

“No. 2. An example of *Aselene* from Perth, in my collection, by the courtesy of Mr. S. T. Ellison, of that town.

“The peculiarity of this specimen lies in the fact that certain of the normal black markings are absent. I have several specimens in which the central angulated line is more or less attenuated, but this is the only specimen I have in which the central line has quite gone.

“Nos. 3 and 4 show the two extremes between which all my

examples of *A. selene* fluctuate in the character of their under-side ornamentation. On looking at the primaries of No. 3 it will be seen that the yellow colour which in No. 4 occupies only the tips of the wings, is spread over nearly the whole of the costal half of the wing, and is also continued along the hind margin to the angle. The brown bands on the hind wings of No. 4 are deeper in colour and less interrupted than in No. 3.

“No. 5 is a specimen of *Argynnis euphrosyne*. The dilated character of the lines in this compares curiously with example No. 2 of *A. selene*. Unfortunately I know nothing of the history of this specimen, except that it was one of a series of the species in the Stowell Collection, sold at Stevens’ some months ago.”

Mr. South also exhibited an apparently apterous specimen of *Zygæna filipendulæ*, L., bred from pupa taken at Folkestone.

Mr. Jenner, of Lewes, exhibited two specimens (male and female) of a species new to Britain—namely, *Acidalia immorata*, L., taken by Mr. H. C. Morris, of Lewes, on heather, in that locality, and remarked that Berce placed it in the genus *Strenia*, Dup.; but, following Staudinger’s arrangement, it came close to *Acidalia emarginata*, L.; the species was most likely to turn up on heaths, the larva feeding on *Calluna vulgaris*.

Mr. Jäger exhibited specimens of a species of Coleoptera which had been sent to him from Tenby.

Mr. Billups declared the species to be *Nebria complanata*, L., a very local species of Carabidæ, occurring only in the neighbourhood of the Bristol Channel.

Mr. West, of Greenwich, exhibited specimens of *Hydattius seminiger*, De G., from Lee, and stated that he had not met with this species for twelve years until now, although he had searched the district every year during that time.

Mr. Oldham exhibited a photograph of *Helix arbutorum*, var. *flavescens*, monstrosity *sinistrorsum*, taken this year at Ashwood Dale, near Buxton.

OCTOBER 27th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. W. H. B. Fletcher, M.A., F.E.S., and C. E. M. Ince were elected members.

Mr. C. A. Briggs exhibited varieties of *Lycæna corydon*, Fb., taken this year, among which were many dwarfed specimens, undersides of the obsolete type, others with the spots coalescing or partially absent, and several streaked forms.

Mr. Ince exhibited an aberrant specimen of *Argynnis paphia*, L., in which the spots on the under surface of the left superior wing had united and formed an irregular-shaped blotch in the centre of the wing.

Mr. Sheldon exhibited living larvæ of *Eupithecia expallidata*, Gn., and of *Rhodoplæa consociella*, Hb., and with reference to the latter, stated that he was not aware this species hibernated in the larval state. It appeared, however, to feed in the same way in the autumn as in the spring; and towards the approach of winter it spun a few threads together, in which, no doubt, it hibernated.

Mr. Cooper remarked that he had during the past week, while searching for the larvæ of *Cryptoblabes bistriga*, Haw., made the same discovery as Mr. Sheldon, having found several colonies of the larvæ of *R. consociella*, and he had not the least doubt this species hibernated as a larva. As far as he knew, the fact had not been recorded, and he thought it was a most interesting discovery.

Mr. Tutt observed that he believed the larvæ did hibernate, coming out to feed in the spring immediately the oak buds began to appear.

Mr. Tutt exhibited a cocoon of *Saturnia pavonia*, L., having two exits, and remarked that there was only one pupa inside, and that Mr. J. A. Clark, of Hackney, had informed him that he had recently had a similar cocoon of *Bombyx trifolii*, Esp. Mr. Tutt expressed an opinion that these cocoons might be more frequent than was usually believed.

Mr. Robinson, who was present as a visitor, exhibited *Tapinostola fulva*, Hb., *Plusia chryson*, Esp., bred from larvæ

found in Wicken Fen ; also a species of *Noctua*, which Mr. Weir thought was probably a variety of *Orthosia upsilon*, Bork.

Mr. Step exhibited a number of photographs of Fungi, and remarked that it was most difficult to preserve this large group ; and not having time in which to sketch the different species, he had recourse to photography, the result in most cases being very successful, the exceptions being those of a red colour. The specimens from which the photographs were taken were all from Wimbledon Common, and comprised, among others, *Amanita muscarius*, L., *A. rubescens*, Pers., *Lepiota procerus*, Scop., *Clitopilus orcella*, Bull., *Clitocybe nebularis*, Batsch., *Armillaria melleus*, Fl. Dan., *Boletus scaber*, Fr., *Pholiota squarrosus*, Müll., *Russula heterophylla*, Fr., *R. emetica*, Fr., *R. nigricans*, Fr., etc.

Mr. J. Jenner Weir said he should like to make a remark on the rarity of *Pieris napi*, L., being desirous of sending ova to America, as mentioned by him at the meeting on July 14th last. He had spent a good deal of time in trying to take the species, but with very little success. Of the spring emergence he only captured one male, and of the autumn emergence he only took two worn females, from which he failed to obtain eggs ; he had not only failed himself, but friends who had tried to assist him had been unable to do so.

Mr. Carrington alluded to the extraordinary abundance of *Pieris brassicæ*, L., and *P. rapæ*, L., and remarked that he had not noticed a single specimen of *P. napi*.

Mr. Sheldon thought that *P. napi* was not so universally distributed as the other two species.

Mr. Cooper said he had written to a Scotch correspondent to get him a series of *P. napi*, but he had been unable to do so, although the other two species already referred to had been common ; he had himself taken two or three females but was unable to obtain ova.

Mr. J. T. Williams said *P. napi* had been very common at Foot's Cray, Kent ; and Mr. Tutt said it had appeared in immense numbers at Deal.

Mr. R. Adkin read the following "Notes on Collecting

at Eastbourne," and exhibited specimens of many of the species referred to:—

"The past summer has been so exceptional on account of the small rainfall, that any notes of observations with regard to insect life made during that period may be worth recording. I trust, therefore, that the result of sundry flying visits, extending over the month of August and first week of September, to the town of Eastbourne, and that part of the Sussex Downs situate between it and Beechy Head, in quest of Lepidoptera, may not be uninteresting.

"Perhaps the most noticeable feature was the unusual abundance of some species, and the comparative scarcity or complete absence of others. Many of the commoner Butterflies were much more common than usual; this was especially the case with *Pieris brassicæ*, L., and *P. rapæ*, L. A great deal has already been said on this subject, so much, indeed, that I feel some diffidence in again touching upon it; but there are one or two points that I should like to mention. In the first place, I have heard it asserted that this 'swarm of white's' included all three of our usual species. However this may have been in other localities, I cannot say; but my experience was quite the reverse. Of the many specimens that I examined, with a view to satisfying myself as to their identity, and perhaps with a faint hope that in so promising a locality I might perchance turn up a veritable British *daphnoidice*, L., there was not one single specimen of *napi*, L.; but *brassicæ* and *rapæ* occurred in about equal numbers. Then as to the probable cause of their great abundance: the immigration theory offers such an easy solution of the question that it is hardly to be wondered that we are apt to jump at it, and consider the matter thus definitely settled. But should we not also look at other possibilities? I do not for one moment doubt the probability of a certain number of individuals reaching us from the other side of the channel; indeed, there appears to be good evidence that such is the case. But if my information is correct, these species are not usually more abundant there than with us; and if that is so, we can hardly suppose that any contingent would be likely

to arrive on this side of the water, either in spring or summer, large enough to account for the unusual numbers seen this year. But, assuming that from some cause these insects are unusually abundant on the opposite coasts, so as to be able to migrate in numbers to this country, might not the same causes which favour their abundance there apply equally on this side, without the intervention of migration? Probably under ordinary conditions considerably less than 10 per cent. of the ova deposited by the parent produce imagines, their enemies are so numerous that it almost seems wonderful that any escape. But let us suppose that by a combination of circumstances some of these enemies are held in check for a season. Should we not then have an unusual abundance? It appears to me that such a state of things is by no means impossible, and that the question is one well worthy of further impartial investigation.

“ Among the other butterflies noted were *Satyrus semele*, L., and *Epinephele ianira*, L., both very common, many of the latter being considerably under the average size; *E. tithonus*, L., *Pararge megæra*, L., *Cænonympha pamphilus*, L., *Polyommatus phlæas*, L., *Lycæna icarus*, Rott., *L. bellargus*, Rott., and *L. corydon*, Fb., all in considerable numbers, together with a few *Argynnis aglaia*, L. With regard to *L. corydon* and *bellargus* some diversity of opinion appears to have existed as to whether these two species were usually to be found flying freely together, and I was certainly under the impression that the former was almost, if not quite, over before the latter began to appear at any particular place; but my observations this summer lead me to quite the opposite conclusion. On my first visit to the Downs (August 1st), *corydon* was flying very commonly; and on each successive visit, up to the 21st, a similar state of things was noted. On that day a male was taken just emerged from pupa, but up to this time no *bellargus* had been seen. On the 28th another freshly emerged male *corydon* was observed, and both sexes were flying abundantly, many of each being in perfect condition. On this day I saw my first *bellargus* (2 ♂). On September 2nd a heavy storm swept the coast, and broken weather continued for

several days ; but on visiting the locality again on the 16th, I found both species commonly. Many of the *corydon* were still quite fresh, and some of the *bellargus* were decidedly worn ; indeed, there was little to pick between the two species as to condition : they were flying freely together, and resting on the same flowers. It may not be out of place here to mention that on September 1st Mr. E. Sabine sent me for inspection some thirty or forty pill-boxes, each containing a living *L. bellargus* or *L. corydon*, all taken on the previous day, and called my attention to the fresh condition of many of the latter species ; he also wrote that the second brood of *bellargus* commenced to appear on August 8th ; and on September 9th, he further wrote, saying that the two species were still flying, but owing to the recent rough weather, each was in considerably reduced numbers. Yet there were among each some specimens "evidently not long out of the pupa." His experience, therefore, appears to agree pretty closely with my own, except that the date he gives for the appearance of *bellargus* is considerably earlier than that on which I observed it ; but this may be accounted for by the difference in locality—his being inland, while mine was on the sea coast.

"My observations of the markings of these species were confined chiefly to *corydon*, and more particularly to the arrangement of the spots of the underside. Variation was very frequent, probably one in ten of the specimens examined varying in a greater or less degree from the normal type, but always in one of two directions ; on the one hand, the basal spots, especially the lower one, have a tendency to become elongated towards the centre of the wing, sometimes joining the lower one of the central row, and thus forming a band or blotch near the inner margin ; while, on the other hand, the tendency is towards a disappearance of the basal spots, which in some cases are altogether absent. These forms of variation are, I believe, by no means confined to this particular locality or to this one species, but are to be found as commonly both in *bellargus* and *icarus*, indeed, of the last-named I took examples in which each was well defined. I am aware that this is a subject that has already received considerable

attention, and that some, well able to form an opinion, possibly far better than I am, have declared that there is "nothing in it;" yet, if we are to accept the theory of evolution, surely the frequency of these forms of variation in particular directions must have a significance.

"Among the Heterocera the number of species that fell to my lot was much smaller than I anticipated. During the earlier part of the time, *Zygæna filipendulæ*, L., was fairly common, and some specimens were in very good order, evidently not long from pupa; they were, as a rule, below the average size, and in the majority of them the spots were united in pairs. *Macroglossa stellatarum*, L., was on the wing in September; and on the 8th of that month I took a female *Hepialus sylvanus*, L., rather a late date, I believe, for this insect. The Noctuæ were not particularly well represented, the only species met with at all commonly being *Miana bicolora*, Vill. (*furuncula*, Tr.), which occurred in countless numbers and endless variety during the greater part of the time.

"Of the Geometræ, *Eupithecia oblongata*, Thnb., *Melanippe galiata*, Hb., *Eubolia bipunctaria*, Schiff., and *Aspilates ochrearia*, Rossi., were the most common. *Acidalia marginepunctata*, Göze., was in some numbers at rest on a rough stone wall on the sea front; and among them I secured one in which the inner two-thirds of the base of the fore wings are clouded with black. A few specimens of *Gnophos obscuraria*, Hb., that were obtained, showed no variation from the usual grey coast type.

"Among the micros, *Stenia punctalis*, Schiff., appeared in its usual numbers, and, as is generally the case at that time of year, in wasted condition. *Crambus geniculeus*, Haw., literally swarmed; and of a *Phycis*, probably *adornatella*, Tr., a few specimens were seen. The Pterophori were represented by *Pterophorus monodactylus*, L., of which a solitary example occurred on September 8th.

"Of the species that appeared to be less common than usual three are especially worthy of mention. *Bryophila muralis*, Forst., and *B. perla*, Fb., of which I found but one and three specimens respectively, although I searched dili-

gently for them at every suitable opportunity, and *Crambus tristellus*, Fb., which was quite a rare insect. With regard to the scarcity of this last I am unable to offer any explanation; but the small numbers of the two *Bryophila* noted may, I think, be to some extent accounted for. The walls on which they occur have for the most part not been built many years; in many instances they are covered with compo, thus affording but a poor footing for the lichens on which the larvæ of these species feed; and in addition to this, many of them, owing to their position on the sea front, receive the full force of the mid-day sun. It appears to me far from impossible that the unusually dry season may have deprived the lichens of the moisture necessary for their growth, and caused them to dry up; this would be especially the case during June and early July, the time when the sun has its greatest power, and also when the larvæ, being nearly full fed, would require the greatest amount of nourishment, and being deprived of it, they would die. Many of the walls that I examined, on which I knew that I ought to have found a considerable growth, appeared, while the dry weather lasted, to be bare of any covering save dry dust; but after the storm, before mentioned, which thoroughly saturated everything exposed to the weather, the lichens appeared to assume new life, and within a few days presented their usual appearance.

“Altogether my summer holiday could hardly be regarded as a success so far as the number of specimens captured was concerned, and the utter absence of many species that one would usually expect to meet with in the locality was disappointing; but such experiences, although they may not enrich our cabinets, may suggest material for future reflections, and thus not be time wasted.”

NOVEMBER 10th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. A. M. Keays, J. H. A. Jenner, F.E.S., and A. Robinson were elected members.

Mr. Tugwell exhibited English, Scotch, and Irish forms

of *Boarmia repandata*, L., the Scotch specimens from Rannoch, and the Irish specimens from Culleenamore.

Mr. J. A. Cooper exhibited a curious form of *Hadena dentina*, Esp., red forms of *Noctua glareosa*, Esp., and *N. castanea*, Esp.

Mr. H. H. Druce exhibited a melanic variety of *Vanessa urticae*, L., taken in Mexico, the hind wings being almost black.

Mr. Sheldon exhibited a series of about 25 *Tephrosia biundularia*, Bork., from Derbyshire. The most noticeable variety was a specimen having the two right wings melanic, the left upper wing streaked with white, and the lower wing of a light colour.

Mr. J. A. Clark exhibited a number of *Polyommatus phlæas*, L., with preserved larvæ, and remarked that the eggs from which the specimens were bred were obtained from a female taken in Epping Forest; some of the larvæ pupated in the leaves on the ground, and some of them partly in the ground. The majority of the larvæ were not, as stated in Mr. Buckler's book, of a green colour, but had three pink stripes.

Mr. Mera exhibited varieties of *Arctia caia*, L., being examples of a second brood, the ova having hatched in June of this year. The specimens shown were stated to be the pick of 150.

Mr. Kenward also exhibited varieties of *Arctia caia*, L., one having yellow hind wings; and reference having been made to the remarks made by Mr. Slater on the occasion of a similar variety being exhibited at the meeting held March 10th last, Mr. Kenward stated that the larva from which the present specimen was bred had not been fed on leaves from the lime tree, but on the low growing plants which the species usually fed on in a state of nature.

Mr. West, Greenwich, exhibited *Dytiscus marginalis*, L., *D. circumflexus*, L., and *D. punctulatus*, L.

Mr. T. R. Billups exhibited *Astynomus ædilis*, L., from Chobham, and *Strangalia aurulentia*, F., taken at Warnham.

NOVEMBER 24th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. J. Reindorp and W. H. Whiffen were elected members.

Mr. Adye exhibited *Sphinx convolvuli*, L., *Catocala promissa*, Esp., *C. sponsa*, L., *Xylina ornithopus*, Rott., *X. semibrunnea*, Haw., and *X. socia*, Rott., all taken this year in the neighbourhood of the New Forest.

Mr. C. A. Briggs exhibited an aberrant female of *Arctia caia*, L. This specimen had the fore wings cream colour, with the usual brown replaced by darker cream colour everywhere except in the centre of the wing, where there were six small irregular brown spots, and another at the base, fringe light brown. Hind wings orange scarlet, with the usual dark blue spots replaced by faint orange-coloured ones. Body, orange scarlet, without the usual dark bands. On the U. S. all the wings are dark cream colour, shaded with pinkish orange, with three small dull black spots in the centre of each fore wing. Bred some years ago by the late C. H. Longley.

Mr. T. R. Billups exhibited a cocoon of a South American moth. The pupa was about the size of *Chærocampa porcellus*, L., and contained a large number of Chalcididous parasites, of the genus *L. micra*, in all 139 perfect specimens, 19 immature, and 9 larvæ—a total of 167 specimens, showing the enormous fecundity of this family of Ichneumonidæ.

And on behalf of Mr. Mosley, cases illustrative of the life histories of the Hessian Fly (*Cecidomyia destructor*, Say.), and of the Carrot Fly (*Psila rosæ*, Fab.), arranged for educational purposes.

Also, on behalf of Mr. Bignell, a case of galls and gall-flies, containing many rare species, including *Spathogaster baccarum*, Ol., *S. aprilinus*, Ol., *S. vesicatrix*, etc., *Ostreus fumipennis*, Ol., and *O. lenticularis*, Ol., *Aphilotrix sieboldi*, Hg., *A. radialis*, F., *A. corticis*, L., and *A. albopuncta*, F., and many others; and read the following notes:—

“There are many hundred forms of galls. The celebrated naturalist, Mayo, thirteen years ago, described and figured

ninety-six kinds on the oaks of Central Europe, all but two of them being produced by different species of gall-wasps.

“Of the nine orders belonging to the class Insecta, few contain gall-makers, Collembola, Thysanura, Orthoptera, and Neuroptera being the exceptions. The present known number of gall-making insects compares thus with Britain and the Continent of Europe:—

	Europe.	Britain.
<i>Cynipidæ</i>	128	58
<i>Tenthredinidæ</i>	12	8
<i>Tineina</i>	8	2
<i>Cecidomyidæ</i>	176	76
<i>Mycetophilidæ</i>	1	1
<i>Trypetidæ</i>	11	5
<i>Muscidæ</i>	5	2
<i>Curculionidæ</i>	12	8
<i>Aphididæ</i>	12	8
<i>Psyllidæ</i>	12	1

Mr. Fenn exhibited the following shells, collected by Mr. T. D. A. Cockerell on the Niagara River, a few hundred yards above the Falls, on the American side. *Planorbis bicarinatus*, Say., *Pisidium abditum*, Hald., *Limnæa palustris*, Mull., *Cochlicopa lubrica*, Mull., *Planorbis parvus*, Say., *Conulus fulvus*, Drap., and said that these six species belong to the circumpolar fauna, and are found in Europe and America, and all of them have occurred within a few miles of London, *Planorbis parvus*, for instance, in the Thames, and the other five species on Barnes Common.

He also exhibited Caddis cases of a doubtful species of *Helicopsyche*, a genus of Trichoptera, received from Mr. Cockerell, and read the following note:—

“The Caddis cases are from Divide Creek, Garfield County, where they were common on the under surface of boulders in the middle of the stream. Their resemblance to the shells of *Valvata* is extremely close, as anyone who is familiar with the common British *V. piscinalis*, or the American *V. sincera* will admit.”

Mr. Step mentioned that among the collection of Fungi,

made by Messrs. Carrington and Billups at Esher, and shown at the Annual Exhibition, were three rare species, viz., *Polyporus schweinizii*, Fr., *Sparassis crispa*, Fr., and *Tremellodon gelatinosum*, Pers.

Mr. R. Adkin exhibited a series of *Spilosoma mendica*, Clerck., including males varying in ground colour from creamy-white to smoky-brown, and females of the usual white form, bred from ova from Co. Cork; males of the creamy-white shade taken at light at Antrim; and bred males and females of the usual English type, for comparison, and read the following notes:—

“This interesting form of the male *mendica* appears to have been unobserved in Ireland until within the last two or three years. It was brought to my notice in the spring of last year by my esteemed correspondent, Mr. H. McDowall, then residing at Passage West, Co. Cork, who very kindly sent me a couple of specimens; and having previously seen nothing at all resembling them from other districts I determined to investigate as far as possible so curious a case of dimorphism; and as my friend also sent me ova I was at once placed in a position to prosecute my inquiries. These ova agreed closely with some that I obtained from the London district for the purpose of comparison; in due course both lots hatched, and the larvæ were fed up in separate cages, side by side. I was curious to note whether so marked a difference in the imago would be in any way reproduced in the larva; but a close and frequent examination of them during the time they were feeding up, proved that it was not, and I could detect no greater difference between the two batches than between individuals of the one or the other; they pupated in a similar manner, and in the spring of the present year produced the specimens now exhibited.

“With regard to the distribution of this form in Ireland, Mr. McDowall informs me that the parent moth was taken in West Cork, flying over the herbage on a rocky hillside about ten o'clock on a June morning, and that the only other example that has come under his notice was a male of the creamy-white shade that was captured some thirty miles dis-

tant from the place where the female was taken, but in the same county. From the Rev. J. Gordon Holmes, of Antrim (to whose generosity I am indebted for the two males from that locality), I learn that during the months of May and June he took at "light" in Antrim three specimens in 1886 and five in the present year, one of which was almost pure white, and appears to agree with the variety that Hubner figures under the name of *rustica* (Hub., 1790, Vol. 2, plate 50, No. 150), and for which he gives the locality of Eastern Hungary. Mr. W. F. de V. Kane (who has very kindly furnished me with sundry notes on this subject) verifies another capture in Co. Cork, a male, resembling in shade the darkest of the Irish specimens exhibited, that was taken by Mr. Chas. Donovan in or before the year 1885. We have thus distinct records of this form of the male from the North-Eastern and South-Western counties; females have been taken in Co.'s Dublin and Waterford, but as they were not bred from, it is impossible to say to which variety they should be referred, and the species appears to be altogether unrecorded from the West. In the list of the Lepidoptera of Ireland, by Mr. Edwin Birchall, published in the Entom. Mo. Mag, 1866, *Mendica* is inserted with a note, "Mr. Greene's list," which would lead to the supposition that Mr. Birchall had no personal knowledge of its occurrence. This list referred to was drawn up by the Rev. Joseph Greene, and published, together with one by the Rev. A. R. Hogan, by the Dublin University Zoological and Botanical Association in or about the year 1857, and was, I am informed by Mr. Greene, compiled in a large measure from information supplied to him by others; and it is not unlikely that the capture or captures that led to the name appearing in the list may have been, like those from Dublin and Wicklow, females. We are, therefore, without any definite record of the usual black form of the male having been observed, and it appears to me to be exceedingly probable that the light-coloured male alone occurs in Ireland."

DECEMBER 8th, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. W. White, F.E.S., A. J. Hodges, T. H. Leech, F.L.S., F.Z.S., etc., G. H. Verral, F.E.S., F. Grut, F.L.S., F.E.S., F. J. Winkley, E. A. Waterhouse, H. A. Yardley, and G. B. Routledge, were elected members.

Mr. Sheldon exhibited examples of the spring and summer broods of *Scoparia angustea*, St., and stated that he found the larvæ of this species in the neighbourhood of Croydon early in February last, the imagines from which emerged in the following March. About the middle of August of the same year he again took the larvæ and pupæ of this insect in the same locality, the imagines emerging the same month. This was, therefore, conclusive evidence that the species was certainly double brooded in the Croydon district. The examples of the spring brood were more sluggish, and also much smaller than those of the summer brood.

Mr. Ince exhibited a comparative series of *Nepa cinerea*, L., and remarked on the variety in colour of the abdomen, ranging from red in some specimens to black in others.

The following note from Mr. T. D. A. Cockerell was read by Mr. Fenn:—

“From observations made during the last few months, it would appear that cases of mimicry are unusually prevalent in the Colorado Rocky Mountain Region, some of them being very remarkable. *Vanessa antiopa* is one of the commoner butterflies, but is nevertheless considerably exceeded in numbers by one of the *Locustidæ*, which it closely resembles on the wing. This grasshopper is nearly of the same size as the *Vanessa*, and has its lower wings of a black colour, with a broad yellowish-white border, the general effect of the coloration being similar to that of *V. antiopa*. Its manner of flight is also somewhat similar. Of course, on close examination the two insects appear totally different, and to anyone who has seen them in a cabinet only it may appear incredible that one could be mistaken for the

other; yet I have little doubt that this is a remarkable case of mimicry, either on the part of the *Vanessa*, the grasshopper being the more abundant of the two; or possibly (if it should prove that the latter is the most susceptible to the attacks of birds) a mimicry of the butterfly by the Orthopteron for the sake of protection; the resemblance being so close on the wing that I have more than once been deceived by it for a moment.

“It is favourable to the last of these suppositions, that all the *Locustidæ* are excessively variable in the colour of their wings, while *V. antiopa* is known to be very constant; also, it is hard to suppose that the *Vanessa*, first acquiring these protective colours in the region inhabited by this particular grasshopper, should have spread to Europe and other parts, and existed there for so long a time without losing in some degree its there useless peculiarity, which, after all, is unusual in the group to which it belongs.

“Further observations will, I hope, tend to clear up the question as to the precise relationship of these two insects; and meanwhile, as the case possesses some interest, I venture to bring the matter before the members of the Society, in the hope that they may be able to throw further light upon it, and particularly I would ask, is any similar case known in Europe?”

DECEMBER 22nd, 1887.

R. ADKIN, Esq., F.E.S., *President*, in the Chair.

Messrs. H. Hayward, F. E. Pow, F. S. Pilkington, M.D., W. R. Hickin, H. J. Smith, C. Kedgley, F. Livesey, E. A. Fitch, F.L.S., F.E.S., G. T. Porritt, F.L.S., F.E.S., J. A. Smith, W. Turpin, J. Butterfield, J. Eckersall, S. Mosley, W. Farren, and the Rev. Canon Fowler, M.A., F.L.S., F.E.S., were elected members.

Mr. C. B. Smith, who was present as a visitor, exhibited a lilac-coloured variety of *Lycæna icarus*, Rott., and an hermaphrodite specimen of *L. corydon*, Fb., taken at Blandford in July last.

Mr. A. C. Smith, who was also present as a visitor, exhibited a fine irradiated variety of the underside of *Lycæna icarus*, Rott.

The remainder of the evening was devoted to the Annual General Meeting for receiving the reports of the Council and Officers, and the election of Officers and Council for the year 1888, a list of whom will be found on the title-page of this part of the Proceedings.

VARIATION.

Read April 14th, 1887, by T. D. A. COCKERELL.

ALL the characters by which organisms are classified may be supposed to have arisen in variation, and being continued by transmission and fixed by natural selection, to have gradually become typical of a genus, species, family, or class.

Such peculiarities will have been, early in their history, inconstant, and easily influenced by external conditions, although their present condition is, in many cases, one of extreme constancy, even to the extent of proving harmful or absolutely destructive to the organism when new circumstances arise.

In classification, obviously, the most valuable and important characters are those which have been thus fixed, so that the old causes of their existence no longer influence them, or are necessary for their continuance, while new influences, which would perhaps have been unfavourable to their production, do not now materially affect them. Hence it has come to pass that most naturalists have hitherto studied only such characters as are so far independent of the influences that first formed them as to be constant under new conditions, and sufficiently so to be taken as typical of species or genera. Seeking the origin and cause of these fixed characters, it is often possible to show clearly enough how they are adapted to external circumstances, giving their possessors advantages in the struggle for existence in many ways; and from this it may be argued with sufficient reason that the cause of this or that peculiarity was the advantage it gave to the species, and its development on that account by natural selection. It is indeed as though one were looking at a picture, knowing nothing of the method of painting, yet noting how it represented familiar objects, reasoning that whoever painted the picture, and however it was done, the painter at least had those objects before him or in his mind at the time—that his desire to imitate them, in fact, was the cause of the result now seen upon the canvas.

Such a study, and such conclusions, are, so far as they go, interesting and valuable; but one feels some sense of dissatisfaction at these results alone, and seeks to know not only the broad reason of the change that has gradually taken place, but also the details of the process and the conditions under which it first occurred. These details, comparable in our analogy of the picture, to the mixing and laying on of the colours, their blending and changing in the progress of the work, one superseding another or mixing with it, changing its whole tone—all these may be traced in such forms as we call varietal, indicating thereby their inconstancy and susceptibility to the influence of new conditions of existence.

Generic and specific differences are nearly always, if traceable to their cause, found to have been or to be in some way useful to their possessors; but as regards varietal characters, I think it not unlikely that we shall, when we have a sufficiency of facts before us, be able to separate them into two broad classes, the progressive and the retrogressive. I think this distinction will have to be very carefully made, and that once decided in any case it will be all-important in the history of the form, since it will simply mean whether it is the commencement of a new and vigorous race, more favoured than its ancestors, or a sign that the species cannot surmount the difficulties of the new influences, and will lose vigour or succumb.

Having said so much, I will now try to put before you a few of the special kinds of variation that have most interested me, and endeavour, where I can, to point out their causes. Roughly, for convenience sake, we may take them under the heads of colour, form, size, and substance.

First of all, colour-variation. Little or nothing being known of the vast majority of animal pigments, it becomes more especially difficult to ascertain the manner in which these variations arise, or the immediate cause of their production. Perhaps the simplest form of variation under this head is *albinism*, or the lack of colour. Albinism, in some form or other, appears to occur almost universally throughout all classes of coloured organisms, and is doubtless in

some degree inherited. True albinism, I imagine, would be the non-development of pigment altogether, such cases as the white stoat in winter and the white mountain hare being of a different nature. Or, to take another illustration, a white man is not an albino, though true albinos, with white hair and pigmentless eyes do occur, both among the white and dark races of mankind. Albinos in the mammalia and birds are frequent, and I need not specify instances. Among the fishes I have note of white specimens of *Rhombus lævis* and *Pleuronectes flesus*.

With the mollusca it is by no means unusual to find specimens in which the colouring matter is entirely absent from the shell, and these albinisms are invariably found together, indicating that the peculiarity is transmitted to the young, though coloured specimens have been bred from albino parents.

The conditions that induce albinism in the shells of mollusca are at present unknown; albino varieties seem on the whole to be more prevalent on chalky soil than elsewhere; but here a question arises as to whether all these so-called albinos are truly so at all. To take a typical instance of what I mean—in *Hyalina cellaria* the usual form is pale brown—but there is a variety, not very uncommon, in which the shell is pale greenish, while another form has a milk-white shell. Now, many other species have what are called albino varieties, of the milk-white kind, and many others have colourless or pale-coloured semi-transparent ones; and at first sight it seems not improbable that the transparent forms are the only true albinos, lacking pigment altogether, and that the opaque white varieties owe their whiteness to some white pigment. Yet, on the whole, I am inclined to class them all as albinisms, and attribute the milk-white appearance merely to a deposit of carbonate of lime.

In a collection of shells I received some time ago from Kerry, I was much struck by the fact that, although there were specimens both of the coloured and pale or colourless forms of *Hyalina excavata*, *Pupa anglica*, and others, all the typical or coloured specimens were from the mainland, while

all the pale and albino forms came from Valentia Island and from Beginniss Island, close to Valentia. Also, in a collection from the great Skellig Island, twelve miles off the Kerry coast, there were numerous examples of *Hyalina alliaria*, nearly all of which were without pigment. Here, it may be, the exposed situation had something to do with the formation of these varieties; but never having visited the localities it is not easy to suggest what physical causes may have been at work in the matter.

I have not been able in any case to discover that albinism of the shell is of service to the individuals in which it occurs; on the contrary, in the case of *Helix aspersa*, I believe that the white examples are more easily seen, and so more often destroyed by birds.

Hence it would seem that albinism is, on the whole, retrogressive, scarcely, perhaps, equivalent to mere disease, because congenital, and transmitted, and not harmful to the constitution of the organism—due to some hitherto unexplained conditions, and arising under these conditions in any, or almost any, pigmented species.

Yet there is one genus at least in which—whatever its value to the species—albinism seems to have become a progressive and developing character. This is the genus *Hyalina*, to which I have already referred. In *Hyalina cellaria* and *H. nitidula*, white varieties are rare enough to be classed as aberrations or occasional sports; but *H. excavata* has the colourless form much more frequent, while *H. pura* is as common colourless as coloured, and lastly, *H. crystallina* is always and constantly albino. Here, certainly, it looks as though we had before us various stages in the development of white species from coloured ones, through the transmission of a peculiarity which first arose as a mere chance aberration.

These, that I have spoken of, are albinisms of the shell, in which pigment glands on the mantle have not developed, and so the shell has not been coloured; but albinisms do occur in the slugs, in which the pigment is quite wanting from the skin, such, for instance, was a pure white example

of *Limax agrestis* I found at Bedford Park, and a white *Testacella scutulum* found at Gibraltar, where the typical coloured form seemed not to occur.

Pascal described a very curious variety of *Limnæa palustris* found in France, in which the soft parts, instead of being darkly pigmented as usual, were semi-transparent and yellow, while the buccal mass could be seen through, of a vivid rose colour. This, apparently a case of non-development of pigment in the soft parts, though the shell was fully pigmented, remained unique, until my brother and Mr. F. G. Fenn went down to Herne Bay a year ago, and brought back a number of *Physa fontinalis* exhibiting precisely the same peculiarity of a transparent yellow animal, with the pink buccal mass showing through. It is notable that the albinism of the shell of *P. fontinalis* occurs at Herne Bay, but these with the pigmentless soft parts had normal coloured shells.

True albinisms among the Lepidoptera are very rare, though cases of pale patches on the wings and partial arrest of the development of pigment are not uncommon.

Specimens of *Epinephele ianira* and *E. tithonus*, in which the prevailing colours are sienna-brown, dark brown, and the black of the ocelli, will sometimes be found to lack entirely the last two pigments, leaving in their place a very pale ochre-yellow. Also, specimens are found in which brilliant and metallic colours are replaced by white, such as *Polyommatus phlæas*, var. *schmidtii* and *Lycæna corydon*, var. *albescens*. Then there are the pale females of *Colias*, such as *C. edusa*, v. *helice*, *C. erate*, v. *pallida*, and *C. aurora*, v. *chloe*, and also various pale local varieties which occur in both sexes. Probably these pallid varieties are caused, not by the absence of the pigment-elements, but an arrest in their development. Anyone who has bred *Geometra papilionaria* from the pupa cannot fail to have noticed the curious change that takes place from brown to green in the wing-pigment, while the insect is still within the pupa-case, but is just about to emerge. Similarly, *Pseudoterpna cytisaria* sometimes appears pale brownish, and sometimes green, and it is said that, all being at first brown, only those that emerge in fine weather

develop the green colour. Various Orthoptera, as the common *Blatta orientalis*, emerge from the pupal skin white or very pale, and only acquire the dark brown colour on the hardening of the epidermal tissues. So I think it not unlikely that the white patches in the *Satyridæ*, the white spots on the New Forest *Argynnis paphia*, and perhaps most of the pale and semialbine forms have arisen, not because the pigment was absent—that is to say, could not have developed because the elements of its formation were wanting—nor because the once-formed pigment has been bleached in places, but because, from some at present unknown cause, there has been an arrest in the natural course of development of the colour-granules. In the vertebrata the remarkable and often localised effects of atrophy or disease of portions of the nervous system are well known, and it is just conceivable that some analogous cause may produce some of the effects I have described in the invertebrata; but such a theory seems at present impossible of proof, and so is, at the best, nothing more than a rather wild speculation, though it may be that some proof exists unknown to me.

There is no doubt, however, that animal pigments can and often do change materially after their formation; but such changes seem only to occur after the death of the part or the organism, or at any rate as a sign that the individual is beyond the period of the greatest vigour and fullest life.

Flowers, more especially yellow ones, as some of the *Cruciferae*, will fade white, and this process may not unlikely be one of the breaking up of a complex yellow pigment into some comparatively simple form that appears white, perhaps the same, or nearly the same, as is seen in those *Cruciferae* which normally have white flowers. Insects after death will fade considerably on exposure to light for a long period, and this, too, seems to be possibly due to a breaking up of the pigments into simpler compounds. Certain cases of paleness of colour or apparent albinism may be due to these causes, and it will be necessary to be very careful to discriminate between these and the true albinisms. For instance, *Helix nemoralis* has a white variety; but a long

series of this species in the British Museum, supposed to represent that variety, are every one of them bleached white, having been originally yellow!

Various chemicals, too, alkalis especially, will bleach or change the colour of animal pigments; ammonia, for instance, will change the white of some Lepidoptera to yellow; and in many ways it appears that the constitution of these pigments is very unstable, and that they are easily changed from one form into another.

A scarlet-red or pink pigment is very general through many classes of animals—I mean, for instance, the red of *Arctia caia* and the *Zygænæ*; of some birds of the genus *Fringilla*, as the chaffinch; of the toad *Bombinator*; and of the bivalve shell *Tellina balthica*, and the gasteropod *Helix nemoralis*.

Now, in nearly every, if not every case, in which this peculiar red pigment occurs, there is an occasional variety in which the red is replaced by yellow; and further, there are very frequently normally yellow species in the same genus.

Arctia, for instance, has the species *caia*, which is normally red, but has a yellow aberration (such as those lime-fed ones we saw exhibited here at a former meeting), and *villica*, which is normally yellow, tinged on the abdomen and under side with red, except in the variety *fulminans* from Syria, which has the yellow of the underwings wholly replaced by red.

A variety of *Zygæna filipendulæ*, in which the red is replaced by yellow, is not very uncommon, and has been taken at Box Hill in our district, as well as at Cambridge and elsewhere. *Zygæna trifolii* has also presented a similar aberration; and a variety of *Chærocampa porcellus*, which might be called *lutescens*, having the pink replaced by yellow, was obtained in Perthshire. Similarly, in the genus *Sesia*, there are red-belted species and yellow-belted species, and a variety of *S. culiciformis*, in which the abdominal band is normally red, was found with a yellow band instead, thus resembling the normal colour of others of the genus.

Calligenia miniata, again, is normally pale red; but a variety was found at Lyndhurst in which the red was replaced by a bright lemon yellow.

Among the mollusca, *Tellina balthica* has both yellow and pink varieties; and *Helix nemoralis*, as is well known, is almost as frequently red as yellow, sometimes even commencing life as red, and after a certain period producing a new shell-growth of vivid yellow, as was the case in a young specimen I received from Truro; and it is notable that the yellow portion corresponded with the thickening of the shell and formation of a temporary lip after the first period of growth.

In the curious genus of toads called *Bombinator*, we have *B. igneus*, with a red belly, and *B. bombineus*, with a yellow belly, occurring in Europe; while it would appear that in Japan there occurs a species, similar in all respects to *B. igneus*, except that it has a yellow belly. Lastly, the red of the chaffinch (*Fringilla cælebs*) is sometimes replaced by yellow; and Mr. Jenner Weir told us here the other evening that redpolls, when bred in confinement, lost the red colour on their heads, and assumed yellow in its place.

What, then, is the meaning of all this? how is it that red pigment is so readily replaced by yellow, and by no other colour? perhaps an analogy from inorganic nature may help us. Take a solution of mercuric chloride or corrosive sublimate, and another of iodide of potassium, mix them carefully, putting not too much of the iodide, and you will get a scarlet-red precipitate—the red iodide of mercury—dry this carefully to a soft red powder, place some on a piece of paper, and warm it gently over a lamp; immediately it becomes of a vivid yellow, losing all trace of the original colour. Now scrape the yellow powder thus obtained with the blade of a knife; it at once resumes again its original scarlet colour, and appears as before.

What has happened is this: mercuric iodide has two forms, one red, the other yellow, both identical in composition, but differing presumably in some arrangement of the molecules at present unknown to us. The red form is the

most stable—probably the least complex—and is the usual form of the salt, but under certain conditions—those of heat—the yellow colour is assumed by a new arrangement, which, being unstable, readily breaks up into the red variety on friction. Suppose, now, that the red and yellow animal pigments described above are merely two forms of the same; and that the yellow being the simpler, the red develops only under certain conditions, which we do not know, and has a tendency, under unfavourable circumstances, even after it has become almost fixed by inheritance, to degenerate into the yellow form, as in the case of Mr. Jenner Weir's redpolls kept in confinement.

I think this analogy is not too far-fetched, and the facts seem to me to bear very strongly in its favour, though I would have many more facts recorded and many more careful experiments in breeding made before accepting this or any other speculations on so difficult a question as proved. One other important matter remains under the head of colour-variation, that of melanism, or in less degree, darkening and suffusion of the markings. This subject has been a good deal under discussion of late, and various theories of the cause of melanism have been brought forward. I, for my part, attribute it rather to some atmospheric influences—either directly to the effects of moisture in the air, or to something coincident with moisture. It seems possible, though I am not sufficiently a meteorologist to say whether it is so, that a moist atmosphere might hold in solution gases which a dry atmosphere would destroy or not absorb. If this is so, is it not conceivable that something of this kind may have a hand in the production of melanism? When a room is crowded with human beings more than it rightly should be, it is not unusual for each one there to go away with a violent headache, produced by the exhalations of the people in the room. Frequently, this is attributed to the effects of the carbonic acid gas given out in breathing; but experiment has shown that the quantity of this gas is by no means sufficient to produce the effects felt, and it is therefore necessary to suppose that some gas exists in the

human exhalations, too small in quantity to be discovered, yet sufficiently powerful to produce most noxious effects upon the constitution. Is it possible that some analogous phenomenon is the cause of melanism, that some gas is present in minute quantities in moist atmospheres, perhaps produced by chemical combination from other and harmless gases, and this is powerful enough to darken the pigment of animals and produce melanism? or should we attribute it to the direct effects of moisture alone, or to some other cause?

Examples under the head of melanism are quite familiar to you, and I will not enumerate them, but mention only one case that struck me a good deal when I first read of it. It is the *Arvicola amphibia*, var. *ater* MacGillivray, or the Black Water Vole. This variety differs only from the type in being black instead of brown, in fact, a melanic form. It occurs commonly in some of the northern counties of Scotland, where the brown typical form is rare; while in the south of Scotland and some parts of England it is found rarely, the brown being the prevalent form in those districts. Surely this variety, considering its geographical distribution, must be classed with Scotch melanism generally, as due, probably at any rate, to the same cause; yet considering the habits and nature of the animal, it is not very easy to imagine how the same cause could have so influenced water-vole, slugs and Lepidoptera.

I have said so much about colour varieties that there is hardly time to speak of varieties of form, size, and texture and I will therefore be as brief as possible. Of form-varieties one of the most curious is that of reversion of the normal position of the parts in species in which the sides are not alike; for instance, some men have their hearts on the right instead of the left side, with the other organs correspondingly reversed. Reversed flat fish are sometimes taken; the peculiarity has occurred for instance, in *Solea vulgaris*, *Rhombus lævis*, *R. maximus*, and *Pleuronectes fesus*. Shells of Gastropods, in which the spire is dextral, will have sinistral aberrations; and others, in which the spire is normally sinistral,

present dextral specimens, though these are very rare. Bivalve shells, too, sometimes have the valves reversed, and with them of course the soft parts of the animal. The curious thing about these reversed varieties, at any rate among the Gasteropoda, is that the peculiarity is not only transmitted to the offspring, thus producing colonies of sinistral-shelled forms, but that the localities in which one species is found reversed, generally produce similar aberrations in allied species also. At first sight it seems natural enough that a peculiarity should occur in any district in all allied species, rather than in any one alone; but when we consider that this is a variety that arises, and can only arise, in the earliest stages of the embryo, and cannot be altered or influenced by its external influences after its formation, it does seem most remarkable that one spot on the Yorkshire coast should produce reversed examples of two species of *Helix*, and that a single lane near Bristol should be peculiar for the occurrence in it of several sinistral examples both of *Helix aspersa* and *H. hortensis*.

Varieties of size arise generally from unusually favourable or unfavourable conditions. Dwarfed varieties occur where food is scanty and the conditions of life are bad; and if you want a good example of that you need only examine the poorer parts of London, and observe the effects of ill-circumstances on our own species, how that the average height and weight is less than normal, and monstrosities are common, and the average age is less than thirty years; not by any means because they are fittest to survive so, but because the circumstances are so ill-suited to the species, that although they do not cease to live, they live only half a life, or less.

So again, observe the pond-snails, *Limnæa stagnalis*, in a little pond on Chislehurst Common, crowded together, lacking food, so that one day when an old newspaper was blown into the pond, they immediately set to and devoured it, for it was the best food they could get. These snails, what with the crowding and the lack of food, are dwarfed, scarcely half the normal size of the species, and some of them are distorted into a curious scalariform monstrosity—analogous, I imagine,

to the disease called rickets, that is prevalent among human beings under corresponding circumstances.

Lastly, varieties of texture: these are generally the direct result of physical conditions, and have no very great importance; shells found in limestone districts are for instance thicker than those on other soils, on the average. Some, from their inability to procure or assimilate carbonate of lime, will be thin, fragile, and almost membranous; and like results arise in other animals from similar causes. One word at the end in defence of the much-abused varietal names. I would not hesitate to apply a name to any variety of sufficient distinctness to be recognised, nor do I quite understand why one should not do so. People say, how shall we remember all these names?—but what they mean is, I won't bother to study the characters of these varieties; for you may be sure that they could not get on without the names if they wished to speak and write of varieties. Take our own species, in which we have actually named every individual! isn't that horrible—what a *host* of names—how are we to remember them? Well, we remember those we like, and for the rest, their names serve as a surer means of finding them than any description. If you ask me to find you Ebenezer McNabbles, I look him up in the directory, which corresponds to a hand list of species and varieties, and probably enough I find him; but, if you tell me of a tall man, with a long beard, short hair, green eyes, a pimple on his nose, and so on, I am likely to wander about some time and make many enquiries before I come across him, if I do so at all. So it is with varieties; one can remember a variety once seen, and associate it with a certain name—and others can do the same; but the imperfections of language are far too great to make it convenient or even possible to go on the principle of describing a thing every time it is mentioned, not to speak of the waste of time and space in so doing.

Now I have finished. The subject is so extensive that I have been able only to skim over the surface of a few aspects of it, and touch upon one or two questions that had presented themselves to me. I look forward to the light that you, who

have had more experience than I, will be able to throw upon these matters, and hope that some of the difficulties that have appeared to me, and doubtless to others, may be cleared up in the discussion to-night.

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LIST OF MEMBERS.

YEAR OF
ELECTION.

- 1882 ADKIN, R., F.E.S., Wellfield, Lingards Road, Lewisham, S.E.
1886 ADKIN, B. W., Brandon House, Morden Hill, Lewisham, S.E.
1886 ADYE, J. M., Somerford Grange, Christchurch, Hants.
1888 AULD, H. A., 2, Plassy Road, Catford, S.E.
1887 BARCLAY, F. H., Leyton, Essex.
1884 BARKER, H. W., F.E.S., *Hon. Sec.*, 83, Brayard's Road, Peckham, S.E.
1887 BARREN, H. E., 46, Lyndhurst Road, Peckham, S.E.
1886 BEAUMONT, A., F.E.S., 30, Ladywell Park, Lewisham, S.E.
1888 BILLUPS, P. C. C., M.D., 163, Friern Road, East Dulwich.
1877 BILLUPS, T. R., F.E.S., *President*, 20, Swiss Villas, Coplestone Road, Peckham, S.E.
1886 BLANDFORD, W. F., Trinity College, Cambridge.
1874 BLISS, A., F.E.S., Pennenis, Trewsbury Road, Sydenham, S.E.
1873 BOLGER, H. L., The Tiger's Head Inn, Chiselhurst, Kent.
1887 BOUTTELL, C. S., 7, Irene Road, Fulham, S.W.
1886 BRADY, C., 3, Tanners End, Edmonton, N.
1887 BRIGGS, C. A., F.E.S., Surrey House, Leatherhead, Surrey.
1887 BRIGGS, T. A., M.A., F.E.S., Surrey House, Leatherhead, Surrey.
1887 BUTTERFIELD, J., 110, Lewisham Road, S.E.
1886 CARPENTER, J. H., 15, Loughborough Road, Brixton, S.W.
1877 CARRINGTON, J. T., F.I.S. *Vice-President*, New Broad Street House, New Broad Street, E.C.
1872 CHAMPION, G. C., F.E.S., 11, Caldervale Road, Elm Park, Clapham, S.W.
1872 CHANEY, W. C., 96, Bird in Bush Road, Peckham, S.E.
1887 CLARK, J. A., F.E.S., The Broadway, London Fields, E.

YEAR OF
ELECTION.

- 1879 CLODE, W., 47, Phillimore Gardens, Campden Hill, W. (*Life Member*).
- 1886 COCKERELL, T. D. A., West Cliff, Custer Co, Colorado, U.S.A.
- 1876 COLE, W., F.E.S., Laurel Cottage, Buckhurst Hill, Essex.
- 1884 COLLETT, E. P., F.E.S., 19, St. John Street, Manchester.
- 1887 COLLINGS, H., 30, Wickham Road, St. John's, S.E.
- 1884 COOK, A. E., 31, Lower Road, Rotherhithe, S.E.
- 1884 COOPER, J. A., 1, Sussex Villas, Harrow Road, Leytonstone.
- 1885 CROKER, A. J., 33, North Street, New Cross, S.E.
- 1886 DAY, G., 19, Garlick Hill, E.C.
- 1887 DISTANT, W. L., F.E.S., M.A.I., 1, Russell-hill-road, Purley, Surrey.
- 1884 DOBSON, H. T., 3, Sycamore Villas, New Malden, Surrey.
- 1884 DOWNING, J. W., 59, Lupus Street, Pimlico, S.W.
- 1887 DRUCE, H. H., 43, Circus Road, St. John's Wood, N.W.
- 1886 DUNNING, J. W., M.A., F.L.S., F.Z.S., F.E.S., *Patron*, 12, Old Square, Lincoln's Inn, W.C.
- 1886 EDWARDS, S., F.E.S., Kidbrooke Lodge, Blackheath, S.E.
- 1877 ELISHA, G., F.E.S., 122, Shepherdess Walk, City Road, E.C.
- 1886 ENOCK, F., F.E.S., 12, Parolles Road, Upper Holloway, N.
- 1887 FARREN, W., 14, King's Parade, Cambridge.
- 1887 FENN, F. G., Syon Lodge, Isleworth.
- 1872 FICKLIN, A., Norbiton, Surrey.
- 1887 FITCH, E. A., F.L.S., F.E.S., Brick House, Maldon.
- 1887 FLETCHER, W. H. B., M.A., F.E.S., Fairlawn House, Worthing, Sussex.
- 1887 FOWLER, The Rev. Canon, M.A., F.L.S., F.E.S., The School House, Lincoln.
- 1886 FREMLIN, H. S., 1, Margaret Street, Cavendish Square, W.
- 1886 FROHAWK, F. W., 9, Downton Road, Balham, S.W.
- 1884 GIBB, L., 185, High Street, Lewisham, S.E.
- 1886 GIBBS, T., Jun., Brethby, Burton-on-Trent.
- 1885 GODWIN, F., 88, Carlisle Street, Edgware Road, W.
- 1885 GOLDTHWAITE, O. C., 2, Grove Villas, Grove Road, Waltham-stow.

YEAR OF
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1888. GOULD, A. E. D., 61, Cornwall Road, Notting Hill, W.
1887. GRUT, F., F.L.S., F.E.S., 9, Newcomen Street, Southwark, S.E.
1886. HALL, T. H., 35, Thorne Road, Albert Square, Clapham, S.W.
1884. HALL, T. W., F.E.S., 3, New Inn, W.C.
1888. HAWES, F. W., 14, Dovecote Villas, Wood Green, N.
1887. HAYWARD, H., 53, Fenwick Road, Peckham, S.E.
1884. HELPS, J. A., Newstead Lodge, Westhall Road, Forest Hill, S.E.
1886. HENDERSON, J., 58, Romola Road, Herne Hill, S.W.
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1878. HICKLING, G. H., Landon Cottage, Elm Road, Sidcup.
1887. HILL, L. F., 39, Belsize Park Gardens, N.W.
1887. HODGES, A. T., 2, Highbury Place, Islington.
1880. HODGSON, A. E.
1887. HOLMES, W. J., 190, Bermondsey Street, S. E.
1887. INCE, C. E. M., 11, St. Stephen's Avenue, Shepherds Bush.
1886. JÄGER, J., 180, Kensington Park Road, Notting Hill, W.
1888. JAPP, A. H., LL.D., 48, Fitzroy Street, Fitzroy Square, W.
1887. JENNER, J. H. A., F.E.S., 4, East Street, Lewes, Sussex.
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1887. JOHNSON, Rev. W. F., Winder Terrace, Armagh, Ireland.
1886. JOY, E., 15, Brownswood Park, South Hornsey, N.
1886. KANE, W. F. DE V., M.A., F.E.S., M.R.I.A., Sloperton Lodge, Kingstown, Co. Dublin.
1887. KEAYS, A. M., A.S.T.E., M.S.A., 11, Burch Road, Rosherville, Gravesend, Kent.
1887. KEDGLEY, C., Hibernia Chambers, Borough, S.E.
1887. KELSALL, J. E., Toynbee Hall, E.
1884. KENWARD, J., 5, Carlton Road, Sidcup.
1888. KNIGHT, E., 2, Lichfield Grove, Finchley, N.
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1884. LEVETT, C., 104, Malpas Road, Brockley, S.E.,
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1885. LOWRY, P. H., 8, Winslade Road, Brixton Rise, S.W.
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Farnboro', Kent.
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Tooting, S.W.
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1885. MERA, A. W., 1, Lothian Villas, Capel Road, Forest Gate, E.
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Calcutta, India.
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1880. MONTIERO, Senor A. DE C., F.E.S., 72, Rua do Alacrine,
Lisbon.
1887. MORRIS, C. H., School Hill, Lewes, Sussex.
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1880. PERKINS, V. R., F.E.S., Wotton-under-Edge, Gloucestershire.
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1886. WALSHINGHAM, THOMAS DE GREY, The Right Hon. Lord, M.A., F.R.S., F.L.S., F.Z.S., F.E.S., etc., *Patron*, Eaton House, Eaton Square, S.W.
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1888. WARNE, N. D., 8, Bedford Square, W.
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1872. WILLIAMS, J. T., 5, Woodland Villas, Foots Cray, Kent.
 1886. WINDYBANK, A. J.,
 1887. WINKLEY, F. J., 4, High Street, Borough, S.E.
 1886. WRIGHT, W. H., Secretary's Department, Somerset House,
 Strand, W.C.
 1887. YARDLEY, H. A., 4, Borough High Street, S.E.

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 Smiles, S. .. Life of a Scotch Naturalist. 2 Copies.

- Thoteau, H. D. Summer.
 Van Beneden, P. J. ... Animal Parasites.
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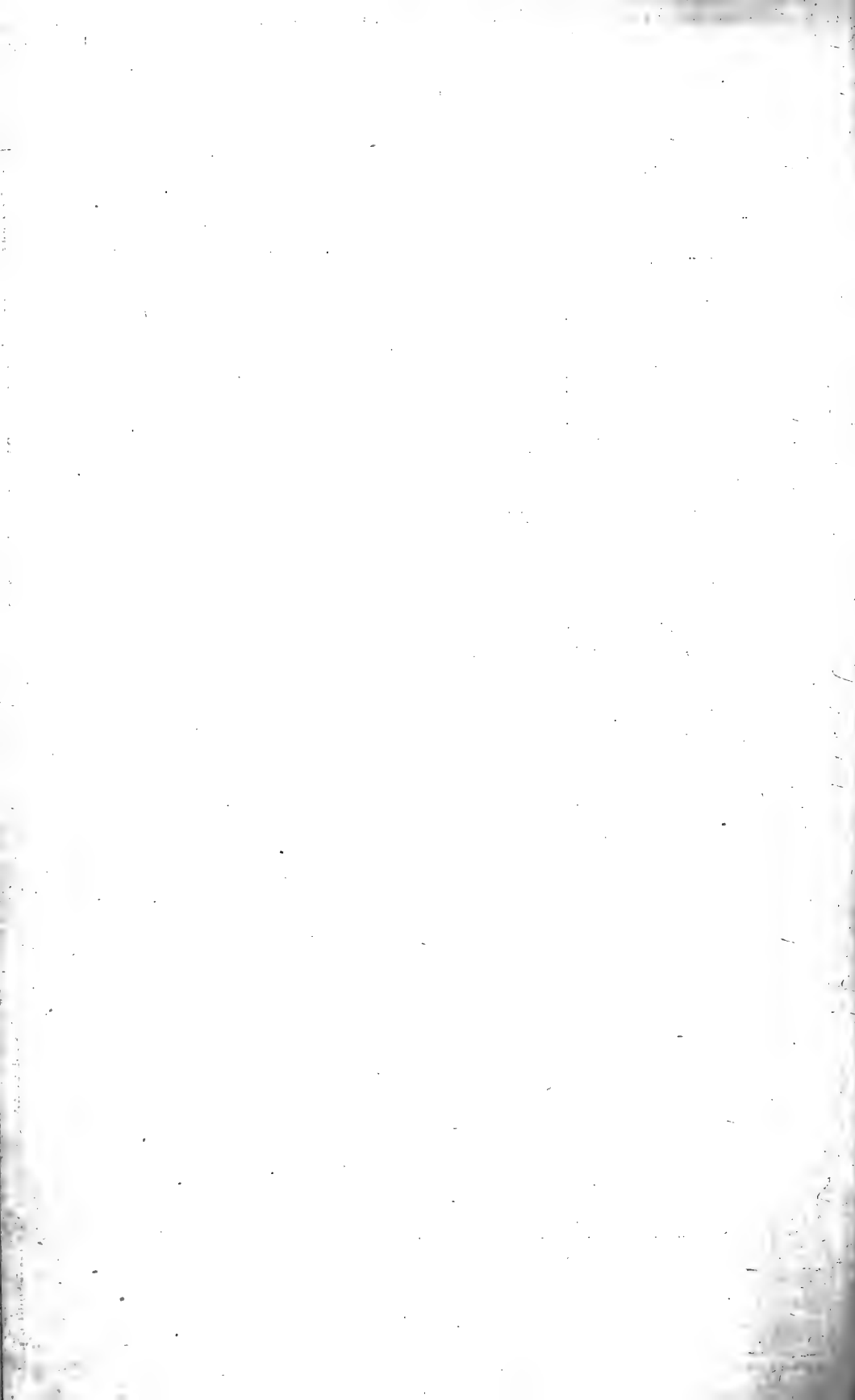
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Entomological and Natural History

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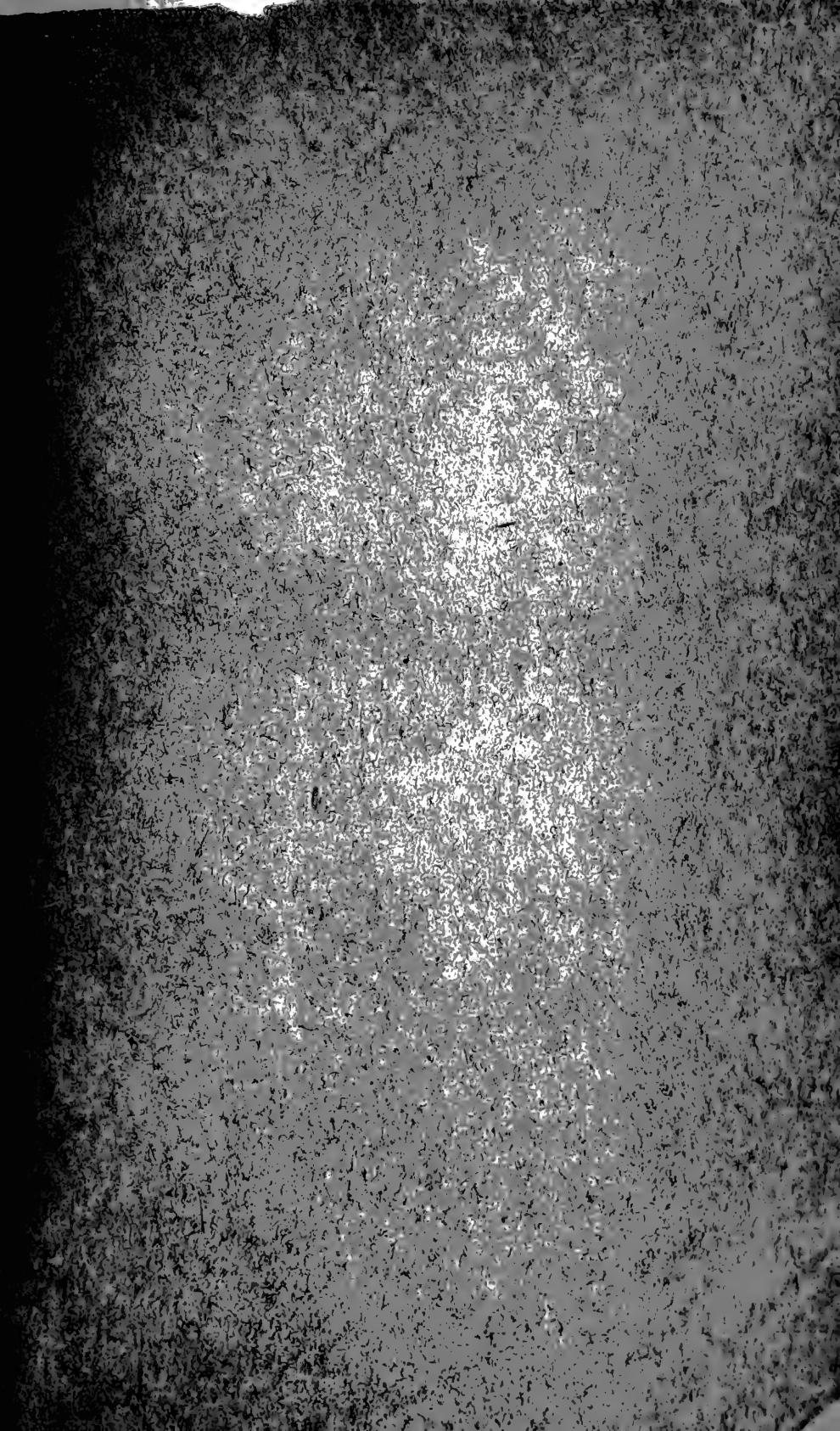
Will play the following Selection of Music during the Evening :

ZAMPA	<i>Herold.</i>
CONSOLATION	...	...	...	...	...	...	<i>Dussek.</i>
ALLEGRO VIVACE (from Concerto in F)	...	...	...	...	...	...	<i>Dussek.</i>
THREE MELODIES	...	...	...	...	...	...	<i>Stephen Heller.</i>
CARMEN	...	...	...	...	...	...	<i>Sydney Smith.</i>
TARENTELE	...	...	...	...	...	...	<i>Stephen Heller.</i>
RIPPLES ON THE BURN	...	...	...	...	...	...	<i>Rockstro.</i>
TANCREDI	...	...	...	...	...	...	<i>Rossini.</i>
HOME, SWEET HOME	...	...	...	...	...	...	<i>Thallerg.</i>
GUILLIAUME TELL	...	...	...	...	...	...	<i>Rossini.</i>



LADIES' RETIRING ROOM - - ON THE SECOND FLOOR.

GENTLEMEN'S CLOAK ROOM - - ON THE GROUND FLOOR.



1888. MEETINGS

OF THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY

At the SOCIETY'S ROOMS, The Bridge House, London Bridge, S.E. On the Second and Fourth Thursdays in each Month. Rooms open at 7; Chair taken at 8 p.m.

JAN.	12, 26.	FEB.	9, 23.	MARCH	8, 22.
APRIL	12, 26.	MAY	10, 24.	JUNE	14, 28.
JULY	12, 26.	AUG.	9, 23.	SEPT.	13, 27.
OCT.	11, 25.	NOV.	8, 22.	DEC.	13, 27.

COUNCIL MEETINGS on the *Second* Thursday in each Month at 6.45 p.m.

The ANNUAL EXHIBITION will be held on the 17th and 18th October.

The ANNUAL GENERAL MEETING will be held on Thursday, January 24th, 1889, at 7.30, for the Election of Officers and other business.

EXCURSIONS.

May 12.—The Zoological Gardens, Regent's Park,
Conducted by Mr. J. JENNER WEIR.

May 26.—Horsley, Surrey.
Conducted by Mr. HELPS,
L.S.W.R., Waterloo Station, train at 2.32 p.m.

June 23.—Weybridge, Surrey,
Conducted by Mr. JOHN T. CARRINGTON,
L.S.W.R., Waterloo Station, train at 2.17 p.m.

July 14.—Westerham, Kent,
Conducted by Mr. JOHN T. CARRINGTON.
S.E.R., Charing Cross, 2.15 p.m.
Cannon Street, 2.25 ,,
London Bridge, 2.28 ,,

Sept. 22.—Kew Gardens, Surrey,
Conducted by Mr. T. R. BILLUPS.

Oct. 13.—Fungus Outing,
Conducted by Mr. E. STEP. Particulars to be announced later.

THE ABSTRACTS OF PROCEEDINGS FOR 1885 & 1886

Are still in print, and may be had on application to the Librarian.

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