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TWENTY-THIRD REPORT

(1880)

OF THE

EAST KENT

NATURAL HISTORY

SOCIETY,

ADOPTED AT THE

ANNUAL MEETING

Held at Canterbury, on January 28th, 1881.

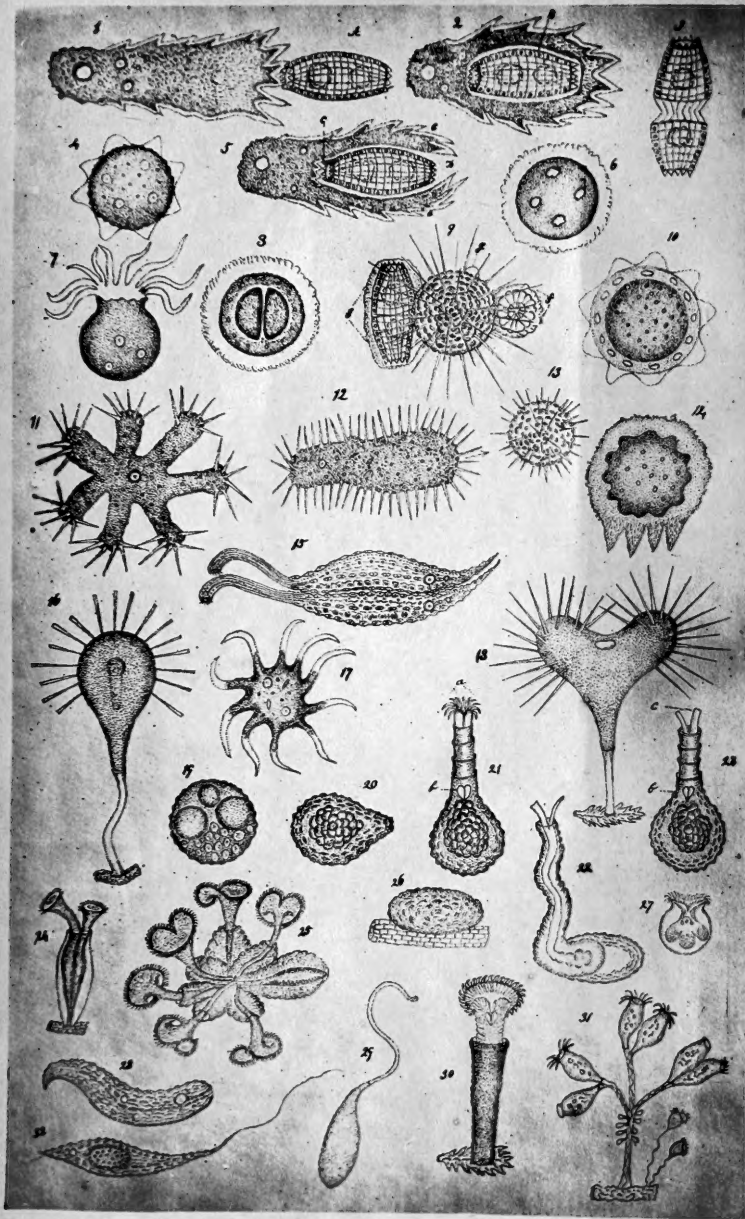


Canterbury:

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HELD AT CANTERBURY,

ON 27th JANUARY, 1881.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1881.

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EAST KENT NATURAL HISTORY SOCIETY.

REPORT OF THE COMMITTEE FOR 1880.

The meetings of the Society in the early part of the year, under the presidentship of Colonel Cox were well attended ; and particularly*noticeable were the fine geological collections laid upon the tables at those meetings by Stanley Cox, Esq. More especially interesting to the naturalists of this district were the polished sections of flints from the chalk, showing the various forms of fossil sponges and their allies, described in a paper read before the Society by Colonel Cox, and published with the transactions for this year.

The Committee feel that the Society are much indebted to G. Dowker, Esq., F.G.S., for his able paper "On the changes that have taken place in the coast line and rivers of East Kent since the Roman occupation of Britain," forming, as it does, an important record, not otherwise existing, of the highest geological importance.

Among the Geological papers, one of much interest was read by A. S. Reid, Esq., B.A., of St. John's College, Cambridge, "On the formation of Red Rocks." It is regretted this gentleman only furnished an abstract of his paper.

In the Physical department, W. H. Hammond, Esq., of Milton Chapel, contributed a paper, the importance of which cannot be overrated, "On the value of Phosphates in the soil." This was illustrated by a series of ably conducted experiments.

The Committee hope that the Physical and Chemical departments of Science may be more fully brought forward during the ensuing year than they have previously been.

The Botanical department has not been so well represented as the Committee could have wished. The lady members are particularly requested to give encouragement to this most beautiful of the sciences by bringing wild flower bouquets to the meetings during the summer months, remembering that plants which by some are regarded as most insignificant, not unfrequently constitute the most interesting scientific specimens.

An exception to the neglect that has been experienced in this department is the paper "On the Coca Shrub," read by Donald Baynes, Esq., M.D., M.A., F.R.G.S., at the May meeting.

The Microscopical department has been ably represented by the original work of our Hon. Assistant Secretary, Mr. J. Fullagar, whose painstaking investigations and beautiful delineations of natural objects make our Association known far beyond the locality that gives name to the Society. Mr. Fullagar's researches are published with the transactions, illustrated by a frontispiece of actual drawings, from the microscope of living objects, copied photographically by the well-known photographer, Mr. Bateman, of St. George's Street, Canterbury, to whom the Society are indebted for 150 copies, with which Mr. Bateman has generously presented it.

Entomology is represented by a paper "On Ants," by Colonel Horsley, R.E., by whom the microscopical section has through the season been ably supported with sustained interest by the beauty and variety of objects shown under his microscope.

Thanks in this respect are also due to many members of the Society, among whom, conspicuously, are A. Wetherelt, Esq., Mr. H. Dean, and Mr. E. B. Hayward. For many miscellaneous objects of interest the Society's thanks are due to Miss Terry and other members, whose contributions are recorded with the minutes of the Society.

It is regretted that there were no out-door excursions by the Society during the year. This was partly owing to many of the members having been absent during the summer months. The sympathy of the Society is warmly expressed for the President, Colonel Cox, whose illness and domestic afflictions rendered it impossible for him to take an active part in the proceedings of the Society.

During the past year there were two deaths among the Members, and three resignations, and seven new Members were elected, thus making the number on the books, and liable for subscription for 1880, 92 Members, or two in excess of the previous year. Of these, 58 Members have paid their subscriptions for that year, and 34 have not as yet done so. There are 12 Members defaulters for 1879 also, and others as far back as 1874, who have taken no notice of the yearly reminders, nor have they expressed their desire to have their names removed from the list of Members.

As regards funds, the subscriptions for 1880 have, as stated above, been paid by 50 Members, amounting to £25 17s. 0d., up to the 17th January, 1881. No arrears have been paid, so that the above mentioned sum, added to the balance remaining in January, 1880, viz., £5 3s. 2d., make £31 0s. 2d. the total receipts for the year under review. The expenditure, as will be seen by the Financial Statement, has exceeded this sum by £8 12s. 10d. The grant to the Library amounted to £10 1s. 4d., the particulars of which outlay will be found in the Report of the Hon. Librarian. An unusually large sum is charged for printing the Report of 1879, viz., £11 10s. 0d. This is, however, accounted for by the insertion therein, in extenso, of Captain McDakin's very interesting and instructive "Outline and Index to the

Geology of East Kent," whereby 40 additional pages were added to the said Report. In other respects the expenditure has not exceeded that of previous years.

The subscriptions in arrears, from 1874 to 1880 inclusive, amount to £29 0s. 0d., but a considerable portion of this sum, the Committee fear, is not likely to be ever paid. They do hope, however, that those Members who are in arrears for 1879 and 1880 will pay their subscriptions without delay, and thereby assist to wipe out the deficit, viz., £8 12s. 10d. shown in the Financial Statement.

In conclusion, the Committee feel that the cordial thanks of the Society are due to its officers; to the President, Colonel Cox; to the Hon. Secretary, G. Gulliver, Esq., F.R.S.; to the Hon. Assistant Secretary, Mr. J. Fullagar; to the Hon. Treasurer and Librarian, Colonel Horsley, R.E.; and to G. Rigden, Esq., M.R.C.S., for his kindness in auditing the accounts.

REPORT OF THE LIBRARIAN FOR 1880.

The sum at the disposal of the Librarian from the general funds of the Society during the past year amounted in all to £10 1s. 4d., which was expended as follows:—

| | £ | s. | d. |
|--|---|----|----|
| 1. In the purchase of new books | 4 | 7 | 3 |
| 2. For periodicals | 4 | 8 | 6 |
| 3. Binding 10 vols. of previous year's periodicals | 1 | 5 | 7 |

The low state of the Society's funds did not admit of a larger sum being spent in the purchase of new books. Those purchased were as follows, viz. :—

1. Darwin's *Movements of Plants*, 1 vol., 8vo., 1880.
2. Sir J. Lubbock's *Wild Flowers in relation to Insects*, 1 vol., 8vo., 1875.
3. W. Saville Kent's *Manual of the Infusoria* in six parts, Super-Royal 8vo., 1880, of which three parts have been received.
4. *The Midland Naturalist* for 1878, 1879 and 1880, and the January number of 1881. N.B.—No. 25 wanting.

The undermentioned work has been received from the Ray Society in return for the annual subscription of one guinea, viz. :—

Vol. III. of the *Copepoda*, by Professor G. S. Brady. for 1879.

The Society acknowledges with thanks the undermentioned pamphlets, viz. :—

The *Journal of the Royal Microscopical Society* for 1880, presented by that Society; and "*Nature*" for 1880, presented by G. Rigden, Esq., M.R.C.S.

FINANCIAL STATEMENT, 1881.

RECEIPTS.

| | £ | s. | d. |
|---|-----|----|----|
| Balance, January, 1880 | 5 | 3 | 2 |
| Subscriptions for 1880, received up to 17th January, 1881 | 25 | 17 | 0 |
| | 8 | 12 | 10 |
| Balance (deficit) 21st January, 1881 | | | |
| | £39 | 13 | 0 |

EXPENDITURE.

| | £ | s. | d. |
|---|-----|----|----|
| Rent of Room, No. 6, High Street, for one year | 15 | 0 | 0 |
| Fire Insurance on Library, &c. | 0 | 6 | 9 |
| Subscription to Ray Society | 1 | 1 | 0 |
| Contribution to Library | 10 | 1 | 4 |
| Hon. Assistant Secretary, Petty Cash | 1 | 7 | 10 |
| Ward, for Printing Report for 1879, and Postage Cards | 11 | 12 | 6 |
| Carriage, P.O. Order and Postage | 0 | 3 | 7 |
| | | | |
| | £39 | 13 | 0 |

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

Examined and found correct, January 22nd, 1881 :—
GEORGE RIGDEN.

Canterbury,
January, 1881.

LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

VERTEBRATA.

- Bell's British Quadrupeds, 1 vol., 8vo.
Cassell's Book of Birds, 1 vol., 4to.
Couch's Fishes, 4 vols., 8vo., 1862-66.
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.
Munro's Structure of Fishes, 1 vol., folio, 1785.
Nitsch's Pterylography, 1 vol., 4to., 1867. Ray Society.
Parker's Structure, &c., of the Shoulder Girdle and Strenum in the Vertebrata, 1 vol., 4to., 1868. Ray Society.
Swainson's Birds, 2 vols., 12mo.

PAMPHLETS.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Moschus, Tragulus and Orycteropus.
——— Memoirs on the Blood of Lamna Cornubica.
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.
——— On the Muscular Sheath of the Œsophagus of the "Aye, Aye," (Chiromys Madagascariensis)
——— On the Fibres of the Crystalline Lens of the Petromyzoini.
——— On the Œsophagus of the Red Horubill.
——— On the Œsophagus of Sauropsida and other Vertebrata.
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.
——— On the Measurement of the Red Corpuscles of the Blood of Batrachians.
——— Sketches of the Spermatozoa of Petromyzon.
Hammond, W. H., On the Structure of the Red Blood Corpuscles, &c.

INVERTEBRATA.

- Allman's, G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with Burmeister's Trilobites.
——— Monograph Gymnoblastic, or Tubularian Hydroids, parts, 1 and 2, folio, 1871-72, Ray Society.
Baird's Entomostraca, 1 vol., 8vo., 1850, Ray Society.
Baker's Natural History of the Polype, 1 vol., 8vo., 1743.
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.
Bowerbanks, Dr., Monograph of British Spongiadæ, 3 vols., 8vo., 1864-66-74, Ray Society.
Brady's, G. S., Monograph of the Copepoda of British Isles, 1 vol., 1878, Ray Society.
Buckton's, G. B., Monograph of the British Aphides, vols. 1 and 2, 8vo., 1876, 1879, Ray Society.
Carpenter's Foraminifera, Ray Society, 1 vol., folio, 1862.
Curtis on Farm Insects, crown 8vo., 1 vol., 1860.
Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.
Denny's Monographia Anoplurorum Britannicæ, 1 vol., 8vo., 1842.
Douglas and Scott's British Hemiptera, Heteroptera, 1 vol., 8vo., 1865, Ray Society.

- Forbes', Professor E. British Naked Eyed Medusæ, 1 vol., 4to., 1848, Ray Society.
- British Star Fishes, 1 vol., 8vo., 1841.
- Gosse's British Sea Anemones, &c., 1 vol., rl. 8vo., 1860.
- Greene's The Insect Hunter's Companion, 12mo., 1863.
- Hanley's Larmarck's Shells, 1 vol., 8vo.
- Huxley's Oceanic Hydrozoa, 1859, 1 vol., crown folio, Ray Society.
- Johnstone's British Zoophytes, 2 vols., 8vo., 1847.
- Kirby's British Bees, 2 vols., 8vo., 1802.
- Kirby and Spence's Introduction to Entomology, 4 vols., 8vo., 1823-29.
- Lowne's, B. T., M.R.C.S., Anatomy of Blow Fly, 1 vol., 8vo., 187.
- Lubbock's, Sir John, Collembola and Thysanura, 1 vol., 8vo., 1873. Ray Society
- Martyn's, T., English Entomologist, 1 vol., 4to., 1792.
- McIntosh's, W. C., M.D., British Annelids, part 1, 1873, crown folio, Ray Society.
- ditto, part 1 continued, 1874, Ray Society.
- Morris's British Butterflies, 1 vol., crown 8vo., 1864.
- Newman's Butterflies and Moths, 1 vol., crown 8vo., 1874.
- Pritchard's History of Infusoria, 1 vol., rl. 8vo., 1861.
- Reeve's British Land and Fresh Water Molluscs, 1 vol., 8vo., 1863.
- Smith's Diatomaceæ, 2 vols., rl. 8vo., 1853.
- Staveley's British Insects, 1871, demy 8vo.
- Turton's, Dr. W., Land and Fresh Water Shells, 1 vol., 8vo.
- Westwood's Butterflies of Great Britain, crown, 1 vol., 4to., 1855.
- Modern Classification of Insects, 2 vols., 8vo., 1839-40.
- Westwood and Humphrey's British Butterflies, &c., 1 vol., 4to., 1841.
- Williamson's Recent Foraminifera, 1 vol., 4to., 1858, Ray Society.
- Wood's Common Shells of the Sea Shore, 1 vol., 12mo., 1865.

PAMPHLETS.

- Bates' Phasmidæ.
- Broeck, A., Crustacea Amphipoda Borealia et Arctica.
- Fullagar, J. G., On the Development of Hydra.
- Gulliver's, G., F.R.S., Sketches to Scale of the Auditory Organs of Molluscs.
- Hammond's, A., Comparison of the Metamorphosis of the Crane-fly and the Blow-fly.
- Lubbock's, Sir J., Chlæno.
- Munn's, Major, Bee Keeper's Magazine, one part.
- The Apiary.
- Oysters, Cultivation of, at Arcachon, 1876.
- Sars, Michael, Memoirs des Criniodes Vivants.
- British Moths, Nocturnal.
- Geometræ.

BOTANY.

- Bentham's Hand Book of the British Flora, 2 vols., 8vo., 1865.
- Berkeley's Cryptogamic Botany, 1 vol., rl. 8vo, 1857.
- British Mosses, 1 vol., rl. 8vo., 1863.
- Fungology, 1 vol., rl. 8vo., 1860.
- Brewer's, J. A., Flora of Surrey, 1 vol., 8vo., 1863.
- Brown's, R., Miscellaneous Botanical Works, 2 vols., 8vo., Ray Society, 1866, and 1 vol. Atlas of Plates, 1868.
- Clarke's Common Sea Weeds, 1 vol., 12mo.
- Cowell's, M. H., Floral Guide to East Kent, 1 vol., 8vo., 1839 (2 copies).
- Darwin's, Chas., F.R.S., Forms of Flowers, 1 vol., 8vo., 1877.
- Insectivorous Plants, 1 vol., 8vo., 1875.
- Dillwyn's British Confervæ, 1 vol., 4to., 1809.
- Evelyn's Silva, 2 vols., 4to., 1786.
- Gatty's, Mrs., Atlas of British Sea Weeds, from Professor Harvey's Phycologia Britannica, 1 vol., 4to., 1863.
- Harvey's. Professor, Synopsis of British Sea Weeds, 1 vol., 12mo., 1857.
- Henfrey's Elementary Botany, 2nd edition, by Dr. Masters, 1 vol., 8vo., 1870

- Hooker's *Jungermannia*, 1 vol., 4to., 1816
 Jacob's, *Faversham Plants*, 1 vol., royal 12mo., 1777
 Leighton's *British Lichen Flora*, 1 vol., 8vo., 1872
 Lindley's and Moore's *Treasury of Botany*, 2 vols., 8vo.,
 Loudon's *Encyclopædia of Plants*, with 2 supplements, 2 vols., rl. 8vo., 1811-55.
 Masters' *Vegetable Teratology*, 8vo. Ray Society
 Mayer's *Geography of Plants*, Ray Society, 1 vol., 8vo., 1846.
 Pulteney's *Progress of Botany in England*, 2 vols., 8vo., 1790.
 Ralf's *Desmidia*, 1 vol., crown 4to., 1848.
 Reports and Papers on Botany, Ray Society, 1 vol., 8vo., 1846.
 Smith's, G. E., *East Kent Flora*, 1 vol., 8vo., 1829.
 Ditto, Sir J. E., *English Flora*, 4 vols., 8vo.
 Wilson's *Bryologia Britannica*, 1 vol.

PAMPHLETS.

- Blytt, A., *Phanerogamer of Brenger*.
 Brown, R., F. R. S., *Organs of Orchidaceæ*. 1831.
 Ditto, *Pollen of Plants*, 1828.
 Gulliver, G., F. R. S., *Crystals in the Testa of the Elm and the Character of the Epidermis of the Tway-Blade*.
 ——— Notes on Lemnaceæ and the Raphidian Character of Plants.
 ——— Sphæraphides in Urticaceæ and Leonurus.
 Hall and Woodhouse, Misses, *Orchidaceæ found near Eastbourne*
 Miller, C. T., *On a New Fungus*.
 Woodhouse, Miss, *Adoxa Moschatellina*.

PERIODICALS.

- The *Phytologist*, vol. 3, 1859

GEOLOGY.

- Burmeister's *Trilobites*, 1 vol., 4to., 1846, bound with Amans's *Freshwater Polyzoa*, 1856.
 Conybeare and Phillips' *Geology*, 10th edition, 1 vol., 8vo., 1822
 Lyell's *Principles of Geology*, 2 vols., rl. 8vo., 1867-68.
 Ditto, *Elements of Geology*, 1 vol., rl. 8vo., 1865
 Phillip's, Professor, *Manual of Geology*, 1 vol., 8vo., 1855.
 Ramsay's *Physical Geography of Great Britain*, 1 vol., 8vo., 1864.
 Southall's, J. C., L.L.D., *Epoch of the Mammoth*, 1 vol., 8vo., 1878
Memoirs of the Geological Survey of Great Britain, 2 Nos.

PAMPHLETS.

- Carruthers, *On Osmundites Dowkeri from the Eocene of Herne Bay*
 Dowker, G., *On the Chalk of Thanet and East Kent*.
 Owen, *On the Skeleton of an extinct Sloth, Mylodon Robustus*, 1 vol., 4to., 1842
 Portlock's *Geological Report on Londonderry. &c.* 1 vol., rl. 8vo., 1843
 Whitaker's, W., *List of Works on the Geology, Mineralogy, and Palæontology of the Hampshire Basin*.
 ——— *Introductory Lectures School of Mines*, 1851-53.

PERIODICALS.

- The *Geological Magazine*.
 The *Geologist* from 1852.
Quarterly Journal of the Geological Society from 1864, vols. 20.

MISCELLANEOUS.

- Barclay On Life and Organization, 1 vol., 8vo., 1822
 Beale, Lionel S., F. R. S., How to Work with the Microscope. 1 vol., rl. 8vo., 1880
 Busk's Reports on Zoology, Ray Society, 1 vol., 8vo., 1843, 1844,
 Carpenter's Comparative Physiology, 1 vol., rl. 8vo., 1851.
 Dallas's Animal Kingdom, 1 vol., 8vo.
 Davis On Preparing and Mounting Microscopic Objects, 1 vol., 12mo.
 Gosse's Evenings at the Microscope,, 1 vol., 8vo., 1859.
 ——— Marine Zoology, 2 vols., 12mo., 1855-56
 Hart's, Rev. H. M., World of the Sea, 1 vol., rl. 8vo., 1869.
 Houghton's Three Kingdoms of Nature, 1 vol., 8vo.
 Hewson's, W., F. R. S., Works, edited by G. Gulliver, F. R. S., 1 vol., 8vo., 1846
 Jones', Rymer, Outlines of Animal Kingdom, 1 vol., 8vo., 1861
 Knapp's Journal of a Naturalist, 1 vol., 8vo., 1830.
 Leach's Zoological Miscellany, 1 vol., 8vo., 1814
 Lubbock's, Sir John. Bart., F. R. S., Scientific Lectures, 1 vol., rl. 8vo., 1879
 Moseley's, H. N., F. R. S., Notes by a Naturalist, on H. M. S. Challenger, 1 vol.,
 rl. 8vo., 1879.
 Newport's, G. Miscellaneous Works, 1 vol., 4to.
 Owen's Comparative Anatomy, 3 vols. rl. 8vo., 1866.
 Pulteney's Life and Writings of Linnæus 1 vol., 4to., 1805.
 Quekett's Lectures on Histology, &c., 2 vol., 8vo., 1852-54.
 Rusticus's Natural History of Godalming, 1 vol., 8vo., 1849.
 Siebold on Parthenogenesis, 1 vol., 8vo., 1857.
 Swan's Nervous System, 1 vol., 4to., 1864.
 Thompson's Wyville, Depths of the Sea, 1 vol., 8vo., 1873.
 ——— Second Voyage of the Challenger, 2 vols., 8vo., 1876.
 Wallace's, G., Malay, Archipelago, 2 vols., 8vo.
 Wallace's, G. Distribution of Animals, 2 vols., rl. 8vo., 1876.
 Wells' Essays by and a Memoir of his Life, 1 vol., 8vo., 1818
 White's Gilbert, Natural History of Selborne, 1 vol., 8vo., 1875.
 Micrographic Dictionary, 1 vol., with vol. of plates.

PAMPHLETS.

- Guldberg et Waage's Etudes sur les Affinités Chimiques,
 Gulliver, G., F. R. S., Review of Works by Goodsir and others..
 Kingsford, T., Reminiscences of Animals, Birds, Fishes, and Meteorology, 1 vol.
 8vo.
 Newport, G., F. R. S., Ten Papers by, 1 vol., 4to.
 Reade, Rev. J. B., F. R. S., The Diatom Prism, &c.
 Saxe, S. A., Le Glacier de Boinon.
 Wallich, Dr., Seven papers by.
 ——— Eight papers by.
 Ten papers from the Royal University of Christiana.
 Seven papers ditto ditto ditto.

PERIODICALS.

- Annals and Magazine of Natural History.
 Journal of the Royal Microscopical Society, 1879.
 Land and Water, 9 vols., 1866-70
 Magazine of Natural History, from 1859. except vol. for 1862.
 Monthly Journal of the Royal Microscopical Society.
 Natural History Review, vol. 3, 1863, and vol. 4, 1864.
 Natural History Repertory, 1865.
 Nature, 6 vols., 1875 to 1879, 4to.
 Quarterly Journal of Microscopical Science, from 1859, except vol. for 1862.
 Quarterly Journal of Science to 1869.

Science Gossip, 1870 to 1876, 4to., 7 vols.
 Zoologist from 1843 (vol. for 1862 incomplete).

REPORTS.

Cardiff Naturalists' Society Report and Transactions.
 Croydon Microscopical Club, 6 Reports.
 Eastbourne Natural History Society, 1871-72, 1874-5, 1875-6.
 Folkestone Natural History Society, 1871.
 Ditto Microscopical Club, 1871.
 Linnean Society of Bordeaux, 1876.
 Quekett Microscopical Club, June, 1874.
 Wellington College Natural Science 1872-3, 1873-4, 1874-5.
 West Kent Natural History Society, 1871-2.
 ———— Microscopical and Photographic Society.
 Zoological Society's Report of Council, 1877.

PERIODICALS TAKEN IN BY THE SOCIETY.

Annals and Magazine of Natural History.
 Geological Magazine.
 Publications of the Ray Society.
 Quarterly Journal of the Geological Society.
 Quarterly Journal of Microscopical Science.
 Science Gossip.
 The Zoologist.

The Librarian requests that Members taking Books or Periodicals from the Library will be careful to enter the same in the book kept on the table for the purpose, with the dates, "when borrowed" and "when returned."

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| Gogarty, H. A., Esq., M.D. | Wingfield House, St. Georges Place |

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EAST KENT NATURAL HISTORY SOCIETY.

TITLE AND OBJECTS OF THE SOCIETY.

The objects of the EAST KENT NATURAL HISTORY SOCIETY shall be the Collection and Diffusion of Practical and Theoretical Knowledge respecting Natural History, in all its Branches, both in relation to the particular District and the General Science.

RULES AND REGULATIONS.

MEMBERSHIP.

1.—The Society shall consist of Ordinary, Honorary, and Corresponding Members, and of Associates.

2 —Every candidate for admission into the Society as an Ordinary Member must be proposed in writing by two Members, and the election shall be by show of hands or by Ballot, taken at any Meeting of the Committee, or at a General Meeting—one negative in five votes to exclude.

3.—The annual Subscription to be paid by Ordinary Members shall be Ten Shillings ; the Subscription shall become due on the 1st of January in each year, and shall be paid in advance for the current year. Any Member neglecting to pay his Subscription for three months after it is due, shall be applied to by the Treasurer or Secretary, and if the Subscription remain unpaid for three months after such application, he shall cease to be a member of the Society.

4.—The Committee shall have power to admit, without ballot, on the nomination of two Members, any Lady who shall be desirous of becoming an Ordinary Member, and her Subscription shall be Five Shillings. This rule shall apply also to such sons, brothers, and

nephews of Ordinary Members, as may be regularly resident in the same house with those Members.

5.—Any person distinguished for their researches in Natural History, for their liberality to the Society, or for their connection with similar Societies, may on the recommendation of the Committee, be elected Honorary or Corresponding Members of the Society, provided they do not reside within the district; such Honorary and Corresponding Members shall not be subject to any of the expenses of the Society, and shall have no vote in its affairs, nor be entitled to take books out of the Library, or to the Reports and Notices.

6.—In order to cultivate the study of Natural History, among individuals of the class of Mechanics, &c., residing in the district, the Committee shall have power to admit individuals of that class as Associates, provided they shall first communicate some information or observation on Natural History, exhibit such specimens or present them to the Local Museums, as shall by their merits satisfy the Committee. Such Associates shall enjoy the privileges of Honorary Members.

MANAGEMENT AND BUSINESS MEETINGS.

7.—The affairs of the Society shall be conducted by a Committee of Management, which shall consist of a President, Vice-Presidents, a Treasurer, and an Honorary Secretary, with not less than six Members, who shall all be chosen at the Annual Meeting. Three Members of such Committee shall form a quorum. The Meetings shall be held at four o'clock p.m. on the first Saturday in every month, and at such other times as the Secretary may deem necessary. At any regular meeting including a sufficient number of Committee-Members, they may then and there declare themselves and act as a Committee in the ordinary business of the Society.

8.—An Annual Meeting shall be held at four o'clock p.m., on the last Tuesday in January, in each year, at Canterbury, for the purpose of electing the officers for the current year, receiving the Annual Statement of Accounts, and Report of the Committee, and conducting the general affairs of the Society. In case of necessity, the Committee may alter the hour, posting due notice thereof in the Society's room.

9.—Special General Meetings may be summoned by the Committee, or by the Secretary, on the requisition (in writing) of any six Members of the Society, the specific purpose of the Meeting being stated in the notice, which shall be sent to each Member not less than one week before the time of such meeting.

10.—All questions discussed at the Meetings shall be decided by a majority of votes; and if upon any question the votes shall be equal, the Chairman of the Meeting shall have the second or casting vote.

11.—In the event of any vacancy occurring in the Officers or Committee between the Annual Meetings, the same shall be filled up by the Committee. The two Members who have been longest thereon, and have attended the fewest meetings thereof, during the preceding year, shall go out by rotation at the Annual Meeting.

12.—In order to facilitate the objects of the Society, the Committee shall be empowered to appoint any Member a Local Secretary for the town or district he may reside in. Such Local Secretary shall be *ex-officio* a Member of the Committee.

SCIENTIFIC MEETINGS AND EXCURSIONS.

13.—The Meetings of Scientific Business shall be at Seven o'clock p.m. on the first Wednesday of every month, at Canterbury; also extra Meetings at such place and time as the Committee shall have posted due notice of in the Society's apartment. Each Member to have the right of introducing a Visitor at these Meetings.

14.—There shall be ordinary Excursions on the Afternoon of the day of each evening Scientific Meeting, and at other times, if the Committee so appoint, time and place to be duly notified in the Society's room by the Committee; and Special Excursions at such times and places as may be approved by the Committee, who shall consider written suggestions of Members on the subject.

15.—Minutes of the proceedings of all Meetings shall be entered by the Secretary in a book kept for that purpose.

16.—The Secretary to give seven days' notice of Special Excursions to every member, stating the time and place thereof, &c.

LOCAL OR DISTRICT MEETINGS.

17.—To promote still further the objects and interests of the Society Local Secretaries and Members are invited to organize Meetings or Excursions in their district, and to give notice of the same to the General and all the Local Secretaries, stating the time and place of Meeting, and what particular subjects are to be brought forward.

COLLECTION OF SPECIMENS.

18.—The Society, as soon as it may possess sufficient means, shall

endeavour to make a Collection of Objects of Natural History, both with a view of forming a Museum and distribution of Duplicate Specimens according to the Regulations to be adopted by the Committee.

LIBRARY.

19.—Only Books and Periodicals connected with Natural History are to be purchased by the funds of the Society, and the number and particular books of this class to be purchased shall be determined by the Committee.

20.—All the Books and Periodicals shall be kept in some convenient place, so that Members shall be able to refer to them or take them out under such regulations as the Committee from time to time may think proper to make.

21.—Members are also invited to lend Books for the use of the Library, reserving to themselves the full right of ownership; such Books to be under the care of the Committee, and not allowed to be taken out of the Library.

22.—In order to allow the Librarian to examine the Books they must all be returned to the Library and none taken therefrom during the first week in every June.

ABSTRACT OF MONTHLY SCIENTIFIC MEETINGS.

FEBRUARY.

*Phosphates and Superphosphates, by W. H. Hammond, Milton
Chapel, Canterbury.*

When phosphorus is burned it gives off dense white fumes, which are a combination of phosphorus with the oxygen of the air. This compound is known as phosphoric anhydride or dry phosphoric acid; it never occurs pure in nature, but always in combination with a base, the resulting compound being known as a phosphate, and phosphates are essential to the well-being of all the higher orders of both the animal and vegetable kingdoms.

The most important phosphates are those of lime, magnesia, iron, alumina, potash, and soda, and one or more may be found in nearly every part of the bodies of the higher animals. It has been computed that ten lambs will take away 90lbs. of phosphate of lime per annum, that 40 gallons of milk take away one pound of phosphate of lime, and that every year a cow takes off a farm as much phosphoric acid as is contained in half a hundred weight of bone dust. Bone alone contains more than 50 per cent. of phosphate of lime. Plants, too, require large quantities of the phosphates.

| | | | |
|---------------------------------|---|-----|----------------------------------|
| The ash of Wheat grain contains | } | 46 | per cent. of phosphoric acid. |
| Barley | " | 32 | " |
| Oats | " | 20 | " |
| Maize | " | 44 | " |
| Rice | " | 50 | " |
| Peas | " | 35 | " |
| Beans | " | 35 | " |
| Wheat, straw & chaff | " | 5½ | " |
| Potatoes | " | 18 | " |
| White Turnips | " | 17 | " |
| Swedes | " | 15 | " |
| Mangolds | " | 15½ | " |
| Meadow hay | " | 6½ | " |
| Clover | " | 10 | " |

In all these ashes the phosphoric acid is combined mainly with potash.

It has also been computed that an average crop of—

| | | |
|-----------------------|--------|------------------------------|
| Wheat takes off about | 20lbs. | of phosphoric acid per acre. |
| Barley | 22lbs. | „ |
| Oats | 22lbs. | „ |
| Beans | 36lbs. | „ |
| Turnips | 50lbs. | „ |
| Hop flowers | 30lbs. | „ |

These figures show how very important phosphoric acid is to both plants and animals, and in the natural order of things the animals get their phosphates from plants: some is soon returned to the soil, and some is stored up in the animal bodies to be again used up by plants when the animals die and decay. It will be noticed how by our system of agriculture, which is an artificial system, a large quantity of phosphoric acid, as well as other essential plant constituents, are annually taken off our fields never to go back, and the quantity of valuable plant food, which annually goes down our drains and out to sea, is simply appalling, viewed in a pecuniary sense. A portion of the phosphoric acid goes back to our land in the shape of farm yard manure, but if the fertility of our fields is to be kept up we must also get a supply from other sources, the principle of which are bones, bone ash, coprolites, apatite and guano.

Fresh Bones, as I mentioned before, contain more than 50 per cent. of phosphate of lime. They are seldom used fresh, but have generally been boiled to extract the fat and the gelatine. The phosphate of lime in bones, even if they are used without any Chemical treatment, is valuable, as it very slowly becomes soluble and in a state fit for plant food, and the organic matter by decaying gives off ammonia, which also is of great use to plants. Bones do good in most soils for a number of years after they have been applied.

Bone Ash is imported in large quantities from South America. It contains from 60 to 70 per cent. of phosphate of lime.

Coprolites are found in many geological strata; the best come from the Greensand or Cambridgeshire, and they are also found in Suffolk, Bedfordshire, Buckinghamshire, Kent, and in France. Cambridgeshire coprolites contain from 50 to 60 per cent. of phosphate of lime. Suffolk and French 45 to 55 per cent.

Apatite with its varieties, phosphorite, osteolite, etc., is found in Spain, Norway, and in America, some of the best apatite from Spain contains over 90 per cent. of phosphate of lime.

Guanos are also a source of phosphate of lime. They may be divided into two classes—Ammoniacal and phosphatic. Peruvian guano belongs to the former class and should yield about 12 per cent. of ammonia, as well as about 20 per cent. of phosphate of lime. Good Peruvian guano is a very valuable manure applied in its natural state.

The most important phosphatic guanos are Mexillones and Sombrero, the latter contains from 70 to 80 per cent, of phosphates of lime, iron and alumina. It comes from Sombrero Island in the Gulf of Mexico, it is supposed to be a fossilised guano and is often known as Sombrerite.

In nearly all of the substances above-mentioned, the phosphates are in such a very insoluble condition as to be almost worthless as manure in their raw state, and it is to Liebig we owe the process by which these phosphates are made soluble, or in other words converted into superphosphates. Liebig showed that if phosphate of lime which is composed of three molecules of lime, combined with one of phosphoric acid, is treated with a strong acid such as sulphuric, two molecules of the lime are taken away to form gypsum, and the rest of the lime and phosphoric acid are left in a very soluble state.

When bones have been treated by this process, not only the phosphate of lime made soluble is of value, but also that part which remains only partially acted on by the acid still has about the same value as raw bone. A good bone superphosphate should contain about 20 per cent. of its bone earth made soluble, and about 10 per cent. of insoluble phosphate. The organic matter should yield from two to three per cent. of ammonia.

In superphosphates which are made from bone ash and mineral matter alone,—and it has been stated that more than half a million tons are used in England alone every year,—the phosphates which have been made soluble are the only ones which are taken into account in valuing them. By far the greater quantity of superphosphates which are used are made entirely from mineral matter, and as they vary a good deal in quality I will give an easy and comparatively inexpensive method of getting at their value. We are often told that it is quite unnecessary for a farmer to be able to analyse a manure, that all he has to do is to go to a respectable dealer and he is sure of getting a good article, but as most dealers are not manufacturers they must be at the mercy of the makers. A sample which was offered in Canterbury market as one of the best superphosphates, price £6 5s. per ton, I found to contain only $6\frac{1}{2}$ per cent. of phosphates made soluble, instead of 25 or 26 per cent. It also contained 25 per cent. of sand. Samples, too, which are guaranteed to contain a certain quantity of soluble phosphates, are often considerably under the mark.

The following is a list of the apparatus and solutions which will be required:—

A small pair of scales and weights, a 500 decem flask, 50 decem pipette, a burette with glass stop cock graduated to tenths of a decem, a five decem pipette, wooden burette holder, a small flask, small glass funnel, packet of filter paper, packet of blue litmus paper, a glass rod with half an inch of India rubber tubing on one end, a mortar and pestle, watch glass, spirit lamp, methylated spirit one pint, wire gauze four inches square, retort

stand, a dinner plate or porcelain slab, half ounce of ferrocyanide of potassium in powder, half pint of acetic mixture, half pint of caustic potash 10 per cent. solution, half pint of acetic acid and, half pint or a pint of the standard solution of uranium nitrate, one decem to be exactly equal to $\cdot 05$ of a grain of phosphoric acid, or $\cdot 10915$ of a grain of bone earth made soluble. This solution must be kept in a well stoppered bottle in a dark place, the bottle must be well shaken before using the solution, and every care must be taken that it does not get altered in strength by the addition of water or any other fluid.

The first thing to be done in analysing a superphosphate is to get a fair sample, this is best accomplished by taking a good handful out of several bags and well mixing in a basin, taking care to break down all lumps. When it is thoroughly well mixed about a table spoonful is to be taken out and well beaten and ground in the mortar till it is in a very finely divided state, it will generally get in a creamy or pasty state during this operation.

Exactly one hundred grains of this sample are then to be very carefully weighed out. This is best done by hanging the scales up to the ring of the retort stand, putting a watch glass and the weights (if the apothecaries' weights are used, the dram and two scruples will make up one hundred grains) in one pan, and exactly counterpoising the other with small shots and pieces of paper, the weights are then to be taken out of the watch glass and enough superphosphate added to exactly counterpoise the shots.

The weighed superphosphate is then to be carefully transferred to the clean mortar and well ground with a little cold water, allowed to settle about a minute and then poured down the pestle on to a filter paper, which must have been folded and placed in the glass funnel and wetted, The glass funnel should be suspended in one of the rings of the retort stand with its stem just in the mouth of the 500 decem flask. If the solution should run through thick at first it must be returned to the filter till it comes through clear and bright. This grinding with cold water and pouring off must be repeated about three times and all the superphosphate must be washed out of the mortar on to the filter. When all the solution has run through, the filter is to be filled up with clean water about twice, waiting each time till the filter is empty, when this has all passed through we may be sure that all the soluble phosphate is in solution. In all these grindings and washings only enough water should be used to fill the 500 decem flask three parts full.

Our solution now contains all the soluble phosphate of lime with probably some iron if a mineral superphosphate, now add a small piece of blue litmus paper to the flask, the acid phosphate quickly turns it red, now add some caustic potash till the paper is again quite blue, mix thoroughly by shaking the flask, this makes our solution very thick, having thrown down all the phosphate of lime and iron. Now add acetic acid till the turbidity is

almost completely dissolved and our bit of paper again quite red. If it is a mineral superphosphate there will remain some phosphate of iron undissolved in the acetic acid, but if it is a pure bone the acetic acid will make it quite clear again. Fill the flask up to the mark with cold water, mix thoroughly by shaking, and put it on one side till the phosphate of iron has all settled at the bottom. The upper portion of the solution having now become quite clear, it is ready for the completion of the analysis. Take the pipette which holds fifty decems, and which should be quite dry and clean or else be rinsed out with a little of the solution, insert the point in the solution, but be careful not to stir up the deposit, and draw it full with the mouth, then immediately place a wet finger on to the top so as to close the aperture, then gradually lower the solution admitting a little air till the fluid is down to the mark on the neck. Remove the pipette full of the solution to the small flask, take the finger away and let it empty into the flask, blow out the last drop, and add five decems of the acetic mixture to the little flask.

Now light the spirit lamp, and place it under one of the rings of the retort stand, which should be lowered down to the flame, on the top place the small piece of wire gauze and on this the small flask, and let the contents almost boil.

While this is doing get the burette, and if it is quite dry fix it in the burette holder and fill it with the Uranium solution, then lower the solution till the bottom part of the curve which the solution makes is just level with the 0 or Zero line on the burette. If the burette is not dry wipe it out with a stick with a bit of rag on the end, and then rinse it out with two or three decems of the Uranium solution and throw them away.

The burette now being ready, and the solution hot, let a few decems run into it and stir well with the glass rod. It will generally be safe to let 10 decems run in at once, then take out a drop with the glass rod, put it on a white surface such as the bottom of a dinner plate and push into it a little of the Ferro-Cyanide of Potassium powder with the other end of the rod; no change should take place. If a deep chocolate colour should appear the superphosphate is a very poor one, and another 50 decems of the solution must be taken out, heated and treated as before, running in fewer decems of the Uranium at first.

We will suppose that no colour was given on first testing, then keep on running into the flask Uranium solution one decem at a time, testing with Ferro-Cyanide after each addition, and occasionally warming the flask till at last a chocolate colour is given, then note down how many decems have been used. This first titration is a good guide as to the quantity which will be required in the next, which is to be the exact one.

We will suppose that a deep colour was given when we had used 16 decems. Now empty the little flask, rinse it out, and

put into it another 50 decems of the phosphate solution, and 5 of the acetic mixture, fill the burette to Zero and run into the flask while cold nearly 15 decems of the Uranium solution and heat. When hot test it with the Ferro-Cyanide, and then keep on adding the Uranium solution two drops at a time, and testing till the faintest chocolate blush is seen. Heat and test again, if the blush is not now seen we must add another drop or two and test again. Note down exactly how many decems and tenths it took before the blush remained permanent. We will suppose that $15\frac{1}{2}$ decems were used, that is 15.5 for one-tenth of the whole quantity of phosphate solution, this multiplied by ten equals 155, or the number of decems required for the 100 grains of superphosphate. Then as each decem of uranium is equal to .10915 of a grain of phosphate of lime made soluble; 155 multiplied by .10915 gives 16.918, which is the amount of soluble phosphate in 100 grains of the sample taken, or what is the same thing, the per centage.

If there was a residue, insoluble in acetic acid, of phosphate of iron, we must add one and a half per cent, as the average quantity, which has been found by careful experiments of bone earth made soluble, which this phosphate of iron is equal to. Some chemists take no notice of this phosphate of iron, but I believe it is generally thought right to reckon it in as it was originally soluble in cold water.

To show how near the truth we can get by this plan I will give a few examples of superphosphates analysed as above, and also with the most exact instruments and with very great care. The phosphate of iron was filtered off and weighed in a very delicate balance and calculated into its equivalent of phosphate of lime made soluble in the exact method.

No. 1, a mineral manure. By exact method.
 12.00 soluble phosphate.
 1.29 } soluble phosphate equivalent in the phosphate of iron
 } found.

13.29
 By above plan :
 12.00 soluble phosphate
 1.50 added on for phosphate of iron.

13.50

Difference between the two methods : .21, or about two-tenths of a per cent.

No. 2, a mineral manure. By exact method.
 18.82 soluble phosphate.
 1.59 } soluble phosphate equivalent to the phosphate of iron
 } found.

20.41

By the other plan :
 18·55 soluble phosphate.
 1·50 added.

20·05

Difference: ·36, or nearly four-tenths of a per cent.

No. 3, a pure bone superphosphate and therefore containing no phosphate of iron.

By exact method :
 35·29 soluble phosphate.

By the other plan :
 36·23 soluble phosphate.

Difference about 1 per cent.

It will be seen from the above analysis that the method is quite accurate enough to tell a farmer whether his superphosphate is good or bad without going to the expense of a professional chemist's analysis every time he buys a few tons. But if he finds by his own analysis that his manure is not what it should be he should then have it analysed by a professional, and if he has bought the manure with a guarantee that it contains a certain amount of soluble phosphate, which should always be done, he can recover.

Before I conclude I will say a few words about the value of the constituents of manures per unit.

| | |
|--|-------------------|
| Soluble phosphates in bone manures are given | |
| by Sibson at | 4s. 6d. per unit. |
| Ditto in mineral superphosphates | 4s. " |
| Insoluble phosphates in bones or guano.... | 2s. 6d. " |
| Ammonia | 20s. " |

I am inclined to think the values given for soluble phosphates are too high, for good mineral superphosphates could be bought last spring in Canterbury market at 3s. 10d. per unit, and those containing 25 per cent. of phosphates made soluble came to £4 15s. 10d. per ton (that is 25 times 3s. 10d.) Much more is often charged for the same quality.

The so-called precipitated phosphates or phosphates which have been made soluble, and are supposed to have gone back partially into the insoluble state, I have taken no notice of, for the reason that chemists are not at all agreed about them and there is no reliable method of estimating them. The written description of the method of analysis makes it appear rather complicated, but it is very simple and easy when put into practice, and if anyone should find any difficulty on trying it, I shall at all times be glad to give any assistance I can.

PAPER BY COLONEL COX ON SPONGIDÆ.

March 3rd, 1880.

Colonel Cox said :—The great improvement which has (comparatively speaking) recently taken place in the construction of microscopes, both as regards penetrating power, more perfect illumination, clearer definition of outline and advanced mechanical arrangement, has led to the discovery of the life history of some of the lowest types of organised beings (hitherto unknown to science) and to our now reading, with a more accurate knowledge, many of those important physical changes brought about by their agency, and which daily play no very inconsiderable part in the topography of the Globe.

Thus, for instance, the microscope has made us acquainted with a minute class of organised beings called Polyps, some of which construct the great coral reefs of equatorial oceans, in time to be formed into islands, soon to be clothed with luxuriant vegetation, and rendered fit for human habitation—whilst another, the spongidæ, teem in the shallows between high and low water mark as well as in the great depths of the ocean, the latter living we may almost say irrespective of the influence of climate and light and the astounding pressure of some twelve thousand feet of water.

Polypœ or Zoophytes, animal plants as they are sometimes called, are divided by Mantel into three classes.

Porifera or Spongidæ—Animals whose dwellings are perforated by tubes or canals to allow of a free current of water from which the Polypœ draw their nourishment—passing through the mass of sponge, tentacles absent :

Polipifera.—Coral animals.—Groups of Polyps armed with tentacles, permanently united by a common integument, each animalcule having an independent existence ;

Brayozoa.—Molluscan animals such as the Flustra.

My object this evening is not to speak of Zoophytes in general but to confine my remarks simply to the order Spongidæ and in that class only to the Keratosa.

The Porifera or Spongidæ are divided into the Keratosa.—Sponge having a horny or fibrous habitation—such as the sponge of commerce.

Calcarea.—Habitations generally composed of lime as in the Grantia.

Silica.—Homes built up of silica or flint as the Euplectella Speciosa.

Before referring to the fossil remains of sponges of a bygone period, revealed to us by the workings of quarries, gravel pits and the detritus of disintegrated rocks and composing the shingle of our sea beaches, I have thought a short description of a sponge would render my remarks on the fossil Fauna of this order more intelligible.

The Spongia Communis or Sponge of Commerce I have therefore selected to illustrate the general character of the

Porifera as it is familiar to all, being an article brought into almost daily use for one purpose or another in our domestic economy. By so doing I hope to render the observations on some of the siliceous spongidæ clear and more intelligible—but first I must call your attention to a diagram which shows the great difference that exists between the state of the living sponge and that which we are accustomed to see when it has been prepared, bleached and purified and then imported as an article of commerce.

In its growing state it has a fleshy (or gelatinous) appearance and when cut into has some resemblance to a piece of liver or lung. Its surface is studded with innumerable small openings or pores through which a current of water is continually flowing along tubes and canals which intersect and honeycomb the body or the sponge in all directions. These lead direct to the oscula or larger orifices seen on the outer surface; the first are called the inhalent pores, the latter, the exhalent mouths. As the water flows along the tubes it affords nourishment to the zoophytes—for this sarcode or fleshlike substance is composed of myriads of minute organic cells supported on a fibrous skeleton, each one of which is a perfect and independent organism. After this it bears all effete matter along with its current, to be finally expelled through the oscula.

How or by what means this flow of water is produced, sustained and expelled is not clearly ascertained. Some physiologists as Dr. Bowerbank, assert that it is by means of minute ciliæ lining the canals. The pores of stomata, as they are sometimes called are more or less fringed with spicules; these are so arranged, that, whilst admitting water they prevent obnoxious matter from entering with it to the injury of the animalcules. They have the power of opening and closing their valvular mouths. Many sponges live between high and low water mark, so that when the tide is out the animals by closing their apertures, retain sufficient fluid in their tubes to sustain life until the flood returns, to again submerge them.

There is also another singular property connected with these pores. Whilst examining the amœba in its young state by the aid of a microscope they are sometimes found to entirely disappear from the field of view and fresh ones open in a different place. I have mentioned the word "amœba" and as it forms the sarcode or gelatinous part of the sponge, I will now endeavour to explain its nature and use.

The sponge animalcule is simply a living cell or cyst possessing the power of secreting a gelatinous substance in which it resides. The young zoophytes expelled from the spongy mass as spores through the oscula are furnished with ciliæ or minute vibrating hairs, by means of which they swim freely about, until they finally settle upon a spot to grow and fructify. Their ciliæ are now lost to sight, they throw out their secretions and as the cells rapidly divide by gemmules, and these gemmules again go

through the same process, increasing the gelatinous mass, they build up their future home, which is permanently fixed. This low organised gelatinous substance is called the amœba; in its young state this mass is sometimes termed "proteus" from its remarkable power of changing its form and place. Dr. Carpenter in his "Principles of Physiology" gives us a very good diagram; and then he proceeds to say "This movement is accomplished by the continual changes of form that take place in its body, the typical figure of which may be termed globular, but which may assume almost any shape whatever. The change of form seems due rather to actions taking place in the interior of the cell than to any irritability of the cell wall; for if the movements of an amœba be attentively watched the extension of the gelatinous body in any particular direction (so as to form one of the digitate prolongations) will be seen to be preceded by the setting of a current of the moving molecules within the cell in that direction, to which current the protrusion of the cell wall is really due. A continuation of the same current distends the prolongation, and the whole mass of the body is gradually carried onwards (so to speak) into it, so that its place in the field of the microscope is slowly changed." But this movement ceases with the growth of the sponge. From its simple gelatinous constitution a framework of fibrous tissue is next constructed to support the amœbic or sarcodæ matter (for this substance is one and the same), and constitutes a huge colony of living atoms, each with an independent existence, but all uniting in the construction of their common home. Sponges, therefore, as we have observed, increase by spores and by gemmiferous reproduction, that is, new cells or buds protrude from the sides of the parent cells which at length separate as perfect animalcules. I may here mention that sponges have a great tenacity of life, as a natural result of their organisation, and the sponge fishermen have availed themselves of the fact that a piece of sponge may be cut up without destroying its vitality, so they now propagate sponges in general, but especial attention is paid to the cultivation of the more valuable species, and thus another branch is added to our social industries.

The range of the living spongidæ extends almost everywhere, both in fresh and salt water, but the Mediterranean and the tropics more especially supply our markets. Great numbers are sent from the Bahamas; these are however coarse. The finest come from Turkey, particularly from Smyrna. The method of preparing them for commerce is simply by squeezing out the amœbic or sarcodæ matter, then washing them and allowing them to dry and sweeten under the sun on the dry sandy shores, which fully accounts for the quantity of minute sandy particles found in all new sponges.

(Some living sponges and a fine series of dried ones were exhibited on the table. An oyster supposed to be over fifteen years old was also shown; its surface was partially coated with

Aleyonum digitatum and *serpulæ*. The latter during the evening expanded their beautiful polyps, some scarlet, some bright blue.)

From the living spongidæ we will now turn to that of Fauna buried beneath the stratified rocks of untold ages. From its simple constructed life it took its dawn at a very early period of the world's history. Fossil sponges may be found in every strata from the Silurian to the latest deposits of the tertiaries. But on the threshold of our enquiries into these fossil sponges we have great difficulties to contend with, inasmuch as the delicate organisation of many of them has been so metamorphosed by pressure, infiltrations of silica, and other mineral substances, as almost to destroy their original type.

There is one specimen in particular to which I must call your especial attention, and which, if one can judge from external appearance, closely represents the common sponge of commerce. I picked it up on the beach at Bexhill, and on passing the evening with my friend Dr. Bowerbank, the erudite author of "British sponges," I placed it before him. He was much struck with the appearance, pronouncing it unique, and expressed a strong desire to see it again when polished. Alas! on my next return to Hastings with the chosen gem, I found that he had passed away, and we visited his grave in the picturesque churchyard of Hollington. The following is a description of this rare specimen:—It is polished and partially transparent, nearly three inches in length, of an egg shape form rather flatter below where we find the root; from it the keratose structure rises around the upper surface, anastomosing in all directions. A number of fibrous like filaments terminating on the surface may represent the pores and the tubes leading from them, whilst five large distinct oscula are seen with radiating fibrous structure extending from each, which after a time blends with the striæ proceeding from the adjoining ones, thus uniting the whole in a reticulated net work. This specimen I have named after our great authority on British sponges, "*Spongia Bowerbankii*."

From the brief remarks I have made respecting the anatomy of one species of the Porifera or Spongidæ, you will now understand that all sponge life is entirely supported by currents of water passing through their various systems, be they keratose, calcareous, or siliceous. I regret to say that at present we have no thorough classification on this subject to which I can conscientiously refer you. I have long been most anxious to arrange my siliceous fossils in some definite order, but know not where to apply for satisfactory information. I have visited the British and other Museums, but came away without obtaining the needful information.

Mantel in his "Medals of Creation," states, "I have selected a few genera for the illustration of the subject, and

shall describe them under the names that are most familiar to the British scientific collector. Doubtless sooner or later some competent naturalist will undertake the elucidation of this department of Paleontology, and construct a classification and nomenclature based on natural characters; till then the student will find it hopeless to attempt to learn the ever-varying names of genera and species applied to the Porifera and Polypifera by different observers."

The last form of siliceous structure to which I shall call your attention this evening is one very interesting and to which Mantel makes no reference. Tubes seem to proceed from a mass of spongy matter, ascend the foot stalk and then divide into minute fibres which surround the periferæ of the fossil. Some of these are of single type whilst others are branched specimens. And now I will reserve, for another paper, the consideration of these siliceous fossils from the chalk. That they come from the chalk I have not the slightest hesitation in affirming. The shingle beach invariably points to the nature of the rocks adjoining and from which they originate by the gradual decay and breaking down of these barriers to the inroads of the sea, and by the wear of atmospheric influences, and as my collection has been gathered from the base of the Dover Cliffs—principally Shakespeare—from Hastings and the neighbourhood of Beachy Head, and from the High Port Cliff between Ventnor and Bonchurch, I think my assertion is fairly borne out. The chalk cliffs are essentially of organic structure; the same source from which they sprung is now at work revealed to us by the deep sea dredgings of the "Challenger," for from a depth of 12,000 feet they brought up a chalky ooze filled with foraminifera, sponges, and a variety of other organic substances. The forms dying become enveloped in this deposit to be in time impregnated with silex so when that far distant time shall bring these fresh deposits to the surface, either by an alteration of the oceans depth or by volcanic action the future geologists of untold ages may, if records be preserved, compare the ocean fauna of to-day with the forms then introduced from new fields of discovery, for, wherever civilisation makes its home, there science, the handmaiden of human thought and reflection, will also uphold the progress of mental culture and investigation by keeping the records of the past, and now, by the diffusion of knowledge through the press, we have no fear that the human race will again be subject to such an irreparable loss as the burning of another Alexandrian library, which is said to have contained 700,000 precious volumes and thus destroyed much of the ancient records of Egypt, Greece and Rome.

PAPER BY A. S. REID, Esq., ON THE FORMATION OF RED ROCKS.

May 5th, 1880.

Mr. A. S. Reid, B.A., of St. John's College, Cambridge, said :—The chief red sedimentary rocks in England are the red slates of the Lower Cambrian, the red sandstones of the Old Red Sandstones, the basement and top beds of the carboniferous formation, the greater part of the Permian and Trias, the red chalk of Hunstanton and Specton, and the red crag of the East Coast. All these are coloured by the same pigment, the red peroxide of iron, but the method of its introduction is different in different rocks. Putting aside rocks that are coloured red by means of over-lying rocks or from being derived from the decomposition of hornblendic rocks, &c., we may make three classes. (1) Prof. Ramsay has shown that in inland seas and lakes red sediments are likely to be formed by the evaporation of bicarbonate of iron in contact with the air, and its precipitation in the form of peroxide, which as an insoluble red sediment forms a film round the quartz granules of the sandstone, or is intermingled with the argillaceous material of shales. The preservation of ripple-mark, foot-prints, sun-cracks, and worm tracks, and the occurrence of pseudomorphs after rock salt, and thick beds of salt and gypsum, all point to inland sea conditions, while the unfossiliferous state of the beds or the occurrence of a dwarfed marine fauna help to establish the fact that the greater thickness of the rocks enumerated above was deposited in inland seas or lakes. (2) The Challenger investigations have shown us that a red clay is being formed at the present day in depths greater than 2,500 or 3,000 fathoms in our oceans. This deposit is derived either from the decomposition of volcanic materials or the ultimate residue of foramenifera tests, dissolved by carbonic acid. (The method of deposition of this sediment, &c., was described.) Some geologists consider the red slates of the Harlech and Llanberis group to have been deposited thus; the author of the present paper considers that the fact that they are interstratified with grits militates against this theory. Prof. Sir C. Wyville Thomson is inclined to believe "from a consideration of their structure and embedded organic remains that none of the old formations were laid down at so great depths." Some of the Cambrian beds were, however, laid down at great depths. Deep sea crustaceans are often either blind or have abnormally large compound eyes to adapt them to their gloomy life. A genus of trilobites (*Æglina*) occurs in the Arenig rocks of England possessing extremely large eyes; and J. E. Marr, F.G.S., mentions the fact that in Bohemia, in beds of Menevian age, there are two species of *Iilœnus*, of which the one possesses huge compound eyes while the other is totally blind.

The Red Chalk of Hunstanton was probably homotaxial with the Cambridge Greensand or nearly so; this latter rock is

thickly charged with glauconite. Professors Bonney and Seeley have suggested that the red colouring matter (peroxide of iron) of the red chalk of Hunstanton was derived from decomposition of glauconite. (The question of the probabilities of the glauconite having been decomposed after or during the deposition of the rock, was discussed.) The author of the present paper had, while examining sections of the Hunstanton Rock under the microscope, discovered that certain facts (which he now detailed) which led him to consider the opinion of Professors Bonney and Seeley was in a high degree probable.

Specimens were shown of Hæmatite, Specular Iron, Glauconite, Glauconite altered by heat, Hunstanton Rock, Bognor Rock, and Cambridge Greensand: diagrams of *Cystosoma Neptuni* and *Æglina binodosa* and microscopic slides of Hunstanton Rock, Cambridge Glauconite marl, and Glauconitic chalk from Antrim were exhibited to illustrate the paper. A series of slides illustrating the decomposition of Olivine to form Serpentine was also shown, and Prof. Bonney's description of the process was read.

PAPER BY DR. DONALD BAYNES, M.A., F.R.G.S., ON
THE COCA SHRUB.

May 5th, 1880.

Dr. Donald Baynes, M.A., F.R.G.S., said:—The Coca shrub belongs to the order of Erythroxylaceæ (sapindales.) There are several species, some of them yielding useful products, as for example:—*Erythroxylon suberosum*, from which is obtained a brownish dye. The young branches and leaves of the *Erythroxylon areolatum* are said to be cooling, and when mixed with benne oil form a refreshing liniment for the head. The bark is also used as a tonic. (Ainslie ii. 422.) The bark of the *Erythroxylon anguifugum*, is thought to be an antidote against snake-bites in Brazil.

But, the *Erythroxylon coca*, so called from the Indian "Khoka," signifying a tree, or plant, is by far the most important plant of this order. It is a shrub from 5 to 20 feet in height. The leaves are a delicate bright green, lighter on the under surface, usually smooth, alternate, and from 1 to 3 inches in length. The distinguishing characteristic of the leaf is, however, two arched lines, one on either side of the midrib, which meet at each extremity; these marks or lines are caused by the folding of the leaf in the bud. The flowers are small, whiteish or greenish, and the fruit is a one-seeded, oblong berry, about the size of a pea.

This plant is found wild, and is cultivated in several of the South American States, notably in Peru, Bolivia, Equador, and Brazil, &c. The leaves are the part used, either chewed, or taken in the form of infusion as tea. The gathering, curing and

packing requires great care, as they lose their active properties when bruised. When dry, they are packed in parcels of about 24lbs. weight, and are worth about 25c (1s.) a pound. The Indians, the chief consumers of this drug, formerly held it in superstitious reverence, calling it the divine plant, and consider it as a sort of sanctuary of their God; they put the leaves in the mouth of the dead, as a propitiatory offering, formerly it was only used by the kings, priests, and those whose virtues, or actions in war, or otherwise, rendered them worthy to be thus rewarded. By degrees, however, this plant came into general use, and is now the chief stimulant and narcotic of the Indian, and one much used by him. Like tobacco and alcohol, it may be, and indeed is, useful and healthful in moderation, but very disastrous in its effects when taken in excess. Those who use the coca generally chew the leaves, rolling them up in a ball, and adding a little quick-lime or wood ash to them, by means of a slip of wood or needle carried for the purpose. This addition brings out the taste, strength and flavour to a great extent. The chewing is speedily followed by a copious supply of greenish saliva, part of which is swallowed and part ejected. When one supply of leaves is exhausted a fresh ball is prepared. The Indian lies down, or rests in some other way, during this process of chewing, which usually lasts from ten minutes to half-an-hour, according to the quantity of work to be done, or the amount of fatigue undergone; his period of rest is taken two or three times a day. After finishing the chewing, the Indian gets up, lights a cigarette, and returns to his labour, strengthened and refreshed. An Indian chews about an ounce of the leaves in the twenty-four hours. There is no doubt that this plant, used in moderation, is most useful in enabling a person, to endure prolonged exertion, fatigue, hunger, and cold; many would perish on the march across the Andes were it not for this drug. Like everything else, the use of coca may be abused, and in that case has very disastrous results, and curious to say the abuse is generally seen among the "whites" (if, indeed, one may so call the swarthy Brazilian, Bolivian or Peruvian &c.) As it is an Indian habit, the Bolivian, or Peruvian gentleman is ashamed to indulge in it before others, he therefore retires to his room, and chews his coca in solitude.

If the habit grows on him, and he gives himself up to excess he retires to the woods for days, and indulges in his beloved drug. He is now considered as lost by his friends, and is looked upon as an irreclaimable drunkard is with us; any one giving up in this way to the habit, soon leaves the towns and societies of civilized men, and betakes himself to the woods and Indian villages, there to drag out the remainder of his miserable existence. He is called a "coquero," and becomes an object of contempt and loathing to his friends. The result of chewing to excess is a yellow skin, pale lips, sunken eye, an unsteady gait, distressing dyspepsia, and eventually, dropsical swellings, boils

and death. On the other hand, when taken moderately, it is harmless, and even conducive to health, especially to those living in want and exposure. Coca chewers are usually very long-lived.

Coca has two very important properties: First, It lessens the necessity for food, and gives great endurance in fatigue. The Indian toils day after day, in the tropical sun, or carries heavy burdens long distances, having only a handful or so of maize as food; he however works well and is cheerful, if not deprived of his coca. In fact, it may almost be made a substitute for food.—Secondly—The leaf, either chewed, or taken as an infusion, prevents the difficulty of respiration felt in ascending the Andes. This fact has led to its trial in some forms of chest complaints.

Though it is true that all writers, and all those who have either used the drug, or seen it used in its native clime, abundantly testify to its wonderful powers in assisting respiration while crossing the Andes, &c., in supporting and sustaining the vital powers while undergoing severe and protracted exposure and labour without sufficient food or rest yet, experiments tried in England, and elsewhere, go to prove that the wonderful powers attributed to it, are nearly all, if not entirely wanting. Weston, the pedestrian, in a letter to the "Lancet," states that in his case it was worse than useless, and, in fact, attributed to trying it, a fit of vertigo which seized him during one of his feats.

Mr. Dowdswell made some very extended experiments with it, at the laboratory of the University of London, and concludes that his results are at the best—negative. On the other hand, some claim to have seen benefit follow its use. One gentleman, in a letter to the "Lancet," although disclaiming any benefit from its use in increasing his powers of endurance, states that it had a wonderful action on his nervous system. It seems this gentleman was extremely nervous while shooting and usually missed his bird, however, after taking the coca his nervous system seemed so fortified, that his game bag, instead of remaining empty as usual, was soon well stocked.

Now how can these discrepancies be explained, that in Peru, Bolivia &c., the results are so marvellous, while in England and elsewhere they are so slight and unsatisfactory. The following two causes will, I think, account for the difference:—

1st. That the Peruvians and other tribes keep the best leaves for themselves, and export the inferior ones, as it is well known the Chinese do, in the exportation of tea.

2nd. That the sea air must in some way affect its efficacy as it is supposed to do in the case of the *canabis indica*, the value of which in tetanus is strikingly impaired. To get the full benefit of the coca leaf in Europe, I should be inclined to advise that an extract should be made of the leaves on the plantations, this, at any rate, would insure against any effect the sea air might have.

I will conclude this paper, by giving some instances where in

Brazil and Bolivia I have known benefit to follow the use of this plant.

It to a certain extent replaces food. It acts as a stimulant, like alcohol, but with more lasting effect, and is not followed by depression. It is very useful in convalescence after exhausting diseases. It is useful as a tonic, and may be employed where quinine and bark disagree. It is a powerful restorer of the vital forces; it has given much satisfaction as a curative in many forms of dyspepsia.—It is said to have a special action on the vocal cords, strengthening the voice while singing.

It is much used, and with great benefit, in various pulmonary affections.

PAPER BY COL. HORSLEY ON THE "EGGS" OF EMMETTS OR ANTS.

June 2, 1880.

Colonel Horsley on exhibiting a microscopical slide showing the "eggs" of emmetts, or ants said. In truth, however, these so-called "eggs" are simply the cocoons, in which the insects are passing their pupal state before emerging in their winged condition. It is only the perfect males and females which possess wings, and these only retain them for a brief period of their existence. As soon as they gain sufficient strength, they fly upward in the air, where they seek their mates, and soon descend to earth. The males, having nothing further to do, speedily die; but the females begin to make provision for future households. They begin operations by getting rid of their wings, which are no longer needed, and this they effect by pressing the ends of the wings against the ground and then forcing them suddenly downwards. The wing then snaps off at the joint. Besides males and females there are "neuters," or workers, which play a very important part in the economy of ant life. The neuters have no wings. The females after returning to the nest labour diligently until sufficient workers are hatched to set them free from "menial" offices. Their principal business from this time is the laying of eggs, which are received and tended with the greatest care by the workers. These carry them from the place where they are dropped and carefully deposit them in suitable chambers, moistening them, it is said, from their own mouths. According to Mr. Hubner, the workers, or nurses, bestow the most assiduous attention upon the eggs, daily removing them to those parts of the nest of which the temperature is most suitable. When the time for its perfection arrives, the larva, having spun its own cocoon, is not only extricated by the workers from its silken shroud, but even receives their assistance in divesting itself of the delicate membrane which still has to be stripped from its body. The slide shows two workers and several cocoons in different stages of development —Colonel

Horsley also exhibited a slide showing "nettle cluster cups," and read the following short paper thereon:—A very pretty *Æcidium* is far from uncommon on the petioles of the leaves and on the stem of nettles, distorting them very much, and in such situations flourishing, apparently more vigorously than when occupying the under surface of the leaves. In the latter situation the clusters of peridia are small, seldom exceeding a dozen in a spot, but several spots may be found on the same leaf. On the stem they are clustered around for upwards of an inch in length, and their bright orange colour in such a situation renders them very conspicuous objects. The peridia are always packed closely together upon a thickened base, and offer but slight variations in form, save that they widen slightly at the mouth, so as to become nearly campanulate. The spores are orange and very profuse. The specimen on the slide is a small portion of an *Æcidium* on the stem of a nettle, and shows the clusters of peridia filled with orange spores.

On the Changes which have taken place in East Kent in the Coast and River Valleys since the Roman occupation of Britain.

A PAPER BY G. DOWKER, F.G.S.

We will now proceed to give the historical evidences, or at least a brief summary of them.

At the eastern extremity of Kent is situate the Isle of Thanet, now however hardly to be called an island. But that it was formerly so is evident. Bede, in his Ecclesiastical History, writes—"Thanet, divided from the other land by the river Wantsum, which is about three furlongs over and fordable only in two places.* On the north and south entrances to this strait were two noted Roman stations—Regulbium and Rutupium, sometimes called Rutupiæ, and now seen in the noted camps of Reculver and Richborough. Ammianus Marcellus, a Roman historian, relates that Lupicinus, with troops, arrived at Boulogne; there he collected a fleet, and having embarked his troops, set sail with a favourable wind, and arrived at Rutupiæ, a station on the opposite coast. There are numerous other mentions of Rutupium as a seaport, it being the usual landing-place from the Continent. In the Anglo-Saxon chronicle it is related that in 1052 Harold and his father (Earl Godwin), with a great fleet, went from Dover to Sandwich." And they went to North Mouth, and so towards London. This North Mouth was the Reculver end of the Wantsum estuary. When Richborough ceased to be used as a port we have no direct evidence. But Stonar and Sandwich—Lundenwich very early in Saxon times assumed its place. Sandwich under the Normans became one of the Cinque Ports, though they are not mentioned collectively in Domesday; Dover, Sandwich, and Romney occur as privileged ports. But in Edward IV.'s reign, 1100 to 1135, the Head Ports were Hastings, Sandwich, Dover, Romney, Hithe, Rye, and Winchelsea.† Boys' History of Sandwich says "That the Cinque Ports were originally safe and commodious harbours is clear from their name, as well as from their history. It is, however, curious to advert to the alterations that have taken place in these once famous havens, Hastings, Romney, and

* Bede, Ecclesiastical History, chap. i, 25.

† Boys, p. 769.

Hithe have entirely lost their rivers." The privileges of the Cinque Ports were so advantageous to their inhabitants that it was natural that adjoining places wished to share in them. Hence we find they embraced the following limbs in Kent, viz.: Fordwich, Deal, Walmer, Ramsgate, Sarre, Folkestone, Faversham, Margate, St. John's, Goresend, Birchington, St. Peter's, Kingsdown, Ringwold, Old Romney, Dingemars, Ofwardstone, Westheath, and Tenterden. It was ordered that certain ships and men, equipped for war, should be found by each port, the limbs evidently helping their quota either in men or vessels.

Domesday, doubtless, furnishes us with important information, but its map is without value, and its description of natural features meagre in the extreme. The value of the names of places furnish the most important evidence. With regard to the frequent use of the term Salterns, or Salt Pans, they are generally associated with the hundred not the village, and where situate is not easy to determine. They evidently related to a period when salt-water flowed up to them. If we now refer to the other great Roman port—Portus Lemanis, we find equally striking illustrations. The exact position of this port is still an open question, but we can determine nearly its position from the important Roman road that led to it. This road, known to this day as the Stone Street road, leads from Canterbury to near Hythe. Again, one of the Cinque Ports. The fourth Itinera of Antoninus, from Londinium to the Portus Lemanis reveals the character and importance of this ocean fortress. The historical sources from which we glean the slight notices which enable us to identify the immediate neighbourhood of Studfall Castle as the Portus Lemanis, are Ptolemy, the Geographer; the Itineraries of Antoninus; and Richard of Cirencester, the Notitia.* In the former, the port of Lymne is placed 68 miles from London: in the latter, Lymne is approached from the west by way of Reguum (Chichester) and Anderida (Pevensey). The station next to Pevensey is written "ad Lemanum," at a distance from the haven of Anderida 25 miles, and from the haven of Lymne 10 miles. The river Lymne of Richard, of Cirencester, is evidently the river Lymne of the Saxon chronicle described as in East Kent, at the end of the great wood called Andred's wald, and connected with Appledore. A.D. 893, according to the Saxon chronicle, a great army of the Danes came from the district of Boulogne, "and they came with 250 ships into the mouth of the Lymne."† Some grants of King Egbert and Ethelbert mention localities which can now be identified, which seem to indicate Romney as Limen mouth. Some tiles have been found at Studfall Castle (Lymne) with inscriptions which Mr. Roach-Smith, the anti-

* Quoted by C. Roach Smith, "Antiquities of Richborough, Reculver and Lymne," p. 235 and p. 17.

† See same Chronicle.

quary, interprets "Classarii Britanice," or British Marines, and refers them to a period when such a Roman force was stationed here. Lymne, or Studfall Castle, though a Roman fortress, is believed to be a later part of the Roman period, erected, as Mr. Roach-Smith surmises, to repel the invaders, the Saxons.* A most interesting relict was discovered built in the Roman Castle of Lymne, giving evidence of its having been removed from some other locality nearer the sea, and having attached to it marine animals as the barnacles, proving that, at one period, it had been covered with the sea. This was a Roman altar with an inscription, which states that Aufidius Paulena, prefect of the British fleet, erected this altar. This would seem to show that some other and earlier Roman building was erected nearer the sea, by which it had been probably overwhelmed, and the stones removed to build this later Roman camp. And the mention of these classarii point to a British-Roman fleet that was maintained at these stations.

If we trace the historical evidences of later times, they all point to great coast changes and corresponding alterations in the valleys once flooded by the sea. On the north and west of Kent the sea has made inroads, sweeping away the shore and cutting back the coast. These changes have been greatest where the strata was of a softer nature, as that from Sheppy to Reculver, where London clay is the chief component of the cliffs. But historical data here only indicate the rate of waste on the coast by comparison of distances certain places were from the sea-shore. In Sheppy it was computed that fifty acres were lost between 1810 and 183—. Minster Church,† now near the coast, is said to have been in the middle of the island in 1780. Reculver Church was, in Leland's time (Henry VIII.'s reign), nearly one mile from the sea. In the Isle of Thanet the waste of the chalk cliff has been very great. On a farm belonging to Bedlam Hospital, eight acres were lost in twenty years preceding 1830. It has been computed that the average waste of cliff between the North Foreland and the Reculvers (a distance of about 11 miles), is not less than two feet per annum. The chalk cliffs on the south of Thanet, between Ramsgate and Pegwell Bay had, on an average, lost three feet per annum during the ten years preceding 1830. At Pegwell Bay the loss during the last thirty years has been much greater. I have a sketch I made about thirty years ago, showing a large space covered with grass between the present cliff and the sea, which now washes the base of the cliff!

An obscure tradition has come down to us, that the estates of Earl Godwin, the father of Harold, who died 1053, were situate where now the Goodwin Sands are found; and there seems every probability that this was an island, being formed exactly

* Report on Lymne by C. R. Smith.

† See Lyall's Prin. p. 523.

like the adjacent coast at Richborough, as was determined by borings undertaken by the Trinity Board in 1817; and it has been supposed they were overwhelmed by the flood mentioned by the Saxon chronicle as occurring in 1099. In connection with this presumed Goodwin Island, I may be permitted to refer to a most interesting memoir, written by Mr. Gosslet, in the "Revue Scientifique," and published in 1878 (which was presented to me by the author), in which he describes the changes that have taken place on the opposite coast since the Roman period in the plains extending from St. Omer to Dunkirk and Calais, and which the French Savans had concluded had been recovered from the sea since the Roman period. Recent excavations within this area have proved that the Romans occupied the entire area, which contains numerous coins, works of art, and pottery of great extent, which had been covered by an eruption of the sea which had remained over the land for some centuries, leaving a considerable deposit of sea-sand and marine shells which had lived in the area, having both valves and the syphons upward. The sea has since left the area, and it has been covered with vegetation and a Flemish town erected on it. M. Gosslet summarises his researches, as proving, firstly, that, at the time of the Roman invasion, Flanders was not covered by the sea. Secondly, the marine invasion is not anterior to the end of the third century of the Christian era. Thirdly, the sea had retired from a great part about the ninth century. Fourthly, the sea never advanced as far as St. Omer.

On the north-west of East Kent, in the marshes of the Medway, near Sittingbourne, are found the remains of very extensive Roman potteries, which contain numerous specimens of a peculiar Roman pottery, known as Upchurch ware, as they have been found in the most abundance in the Upchurch marshes, now covered by the tide. These extensive potteries were, at the Roman period, dry land; they are now buried some five feet below high water-mark by the sea.*

In my mention of Romney Marsh, I alluded to the sea having flowed up so far as Appledore, and that the Roman Castrum contained an altar built into the walls of Lymne, which had been removed from some other place, presumably the Portus Lemanis. Between this station and Romney a tract of land exists, now protected from the sea by the Dymchurch wall, and in and within this area Mr. Elliot has found remains of potteries similar to those in the Upchurch marshes.† I saw a Roman vessel in Romney, found in the St. Mary's marshes, and the evidences point to these having been dry land to a considerable extent during the Roman period. In a report on the excavations on the site of the Roman Castrum of Lymne, by Mr. Jas.

* Wanderings of an Antiquary, J. Wright, p. 163.

† See Report of Excavations at Lymne and Romney Marsh (C. Roach Smith and Mr. J. Elliot).

Elliot, published in 1852, an ideal map is given of the ancient Romney Marsh. Mr. Furley read a paper on the same subject at the last meeting of the Kent Archæological Society. In Mr. Elliot's plan, he presumes the great sea-wall from Romney to Appledore to have been a Roman erection, at least so I read his map; and the present Rother probably had its chief exit at Romney. However this may be, we know that the change in the direction of the sea currents has had the effect of quite altering the coast-line, cutting back and removing an ancient shingle bank, and destroying the town of Winchelsea, in the reign of Edward I. It must be remembered that a great part of Romney Marsh is at the present time below high water-mark, and were it not for the shingle and sea defences it would be flooded at every high tide; the same remark applies to a great portion of the marshes at St. Nicholas in Thanet, and the valley of the Stour.

If we now trace the historical data relating to the Stour and Rother valleys, we shall find various facts showing the rate at which they have been recovered from the waters that once flowed over them.

I propose to consider, in the first place, the Stour valley. The River Stour takes its rise from two sources—one the chalk hills near Hythe, at Postling Church, where the river thence flows to Ashford; another branch there joining it from the hills at Lenham, and from thence it flows through Canterbury and formerly entered the estuary of the Wantsum at Stourmouth, but now follows the eastern valley and, turning at right angles near Sarre, flows through the Minster marshes to Richborough and thence to Sandwich, where it is again deflected, and, flowing eastward of Stonar, finds its way out at Pegwell Bay. It is almost certain that the Stour was navigable to Canterbury in early times, though much reliance cannot be placed on the statement of Somner* that this circumstance is corroborated by the finding of bones and teeth at Chartham about 17 feet deep, and supposed to be those of an hippopotamus, or river-horse; or from the circumstance "that at Westbere there were found, on sinking a well at a very great depth, oysters and other like shells, together with an iron anchor sound and unimpaired," and the same being told of another anchor dug up at Browndown, above Canterbury westward. It is necessary to guard against the usual inferences that have been repeatedly quoted, because in those days Geology was little known; and all fossil shells, such as those we now find in Thanet and Woolwich beds in this neighbourhood, were considered as evidence of the presence of the sea in recent times.† With regard to the anchor, it was probably dipped at the bottom of a well, where grappel-irons are often found now—if indeed

* Ports and Forts in Kent. Wm. Somner, 1698.

† Battley's Somner, Chartham news, p. 188.

the supposed anchor was an anchor at all. At an early period water-mills were erected on the river, and these have had the effect not only of raising the present water-level of Canterbury but also the ground; and at eight feet or more below the present surface we find Roman remains and buildings, one of which was discovered in St. Margaret's Street and another in Sun Street a few years back, and in Burgate Street a fine tessellated pavement was found in 1868.

The mills date back to as far as Stephen's reign, Abbot's mill and King's mill for instance.* In 1739, near Jewry Lane, a Roman Mosaic was found four feet below the level of the street. Some of the Roman buildings discovered in the City were apparently placed on piles of wood driven into the ground.†

In Henry VIII.'s time a scheme was started for rendering the Stour navigable from here to the sea. Fordwich, as one limb of the Cinque Ports, next demands our attention. It was doubtless, as its name implied, a ford of considerable importance, and the Roman road from Canterbury to Reculver seems to have crossed the Stour at this place. It was navigable, as it may still be said to be, from the sea, and doubtless conveyed all the heavy merchandise for Canterbury. From Fordwich to Grove Ferry the Stour winds its way through marshes, but little above high-water mark, and for the most part unembanked except only a low river wall—except in the case of Stodmarsh, where high embankments have shut out the waters of the Stour for many ages. It takes its name from the Saxon word *Stode*, signifying a mare or marsh, and was given to St. Augustine's Monastery in 693 by Lothane, King of Kent. There were rights of free warren, and were from the sea attached to it.‡ These early *inned* lands were, as we shall presently find, protected from inundation by their embankments, and thus prevented from that accumulation of soil which has raised the surrounding marsh lands.

Below Grove Ferry the ancient Stour emptied itself into the Wantsum. I propose, in the next place, to trace some of the historical data which mark the great changes in this area.

Lambarde, in his *Perambulations*, says—"Bede hath mention of a water in Kent, running by Reculver, which is called Genlade. This name was afterwards sounded Yenlade, which is one mouth of Wantsume. That water, which now sundereth the Isle of Greane from the hundred of Hoo, hath two such mouthes—the one of which, opening into the Thamyse called the North-mouth, is called North Yenlet: and the other, receiving the fall of Medway, is called Colemouth." The entire course of

* Thom. Chronicle relates King Stephen gave to the Abbot of St. Augustine the Mill which he had within the city near Eastbridge.

† Hasted's History of Canterbury, 187.

‡ Hasted's History of Kent.

this route, as far as Northmouth, was technically within the liberty of Sandwich.* Sir Stephen de Pencestre, Lord-warden of the Cinque Ports (1269), made an official perambulation of the boundaries. The vein ran thus:—"First beginning at the Stone Cross, at the west part of the town, near the causeway or common road between Sandwich and Ash, which cross is within the liberty; and from thence, going along *close by the river-side*, to Northmouth, everywhere by the line of high-water mark, at spring-tide; and then returning along the other margin of the river on the opposite side, through Sarr and Boxley in Thanet, to the shore at the passage, directly against the cross of Henebergh;* and from that cross straight on the opposite side to the sea; and thence along the sea-shore to Stonore, including the whole town of Stonore and the marshes within Henebergh, which are within the precinct of the liberty of the aforesaid; and on the other side of the river crossing over Pepesness, and thence to a stream that runs into the river called the Gestling, by the Thief Downs, where persons condemned within the liberty are buried alive; and so going along that stream to a marsh called Holberg, belonging to the lord of Poldre."† This sketch of the perambulation of the boundaries within the jurisdiction of the Cinque Ports, which boundary extended to *high-water mark* which formed the boundary, would give us a fair idea of the water-way of the Stour towards the port of Sandwich in the 13th century if we could identify all the places there mentioned.

I have examined with much care the marshes between Sandwich and Reculver, with a view of tracing any spots, mounds, or walls mentioned by the early writers of this neighbourhood; and I communicated numerous notes to the late honorary secretary of the Kent Archæological Society, in the year 1866, in connection with the account of the Castrum at Richborough, a notice of which you will find in VIII. vol. of the Kent Archæological Society's proceedings, but the former of these notes were not published. I also sent to Canon Scott Robertson further notes on these marshes in 1879 in connection with Richborough and Ebbs-fleet, and notes on the marshes near Reculver 1878 on the same subject, neither of which were published. The hon. secretary of the Society has, however, published his own views on the subject in the XII. vol. of the proceedings of our Kent Archæological Society, which appears under the head of "Thanet Insulation," some of which opinions I cannot endorse. Cannot Scott Robertson bases his opinions entirely on documentary evidence; whereas I have sought for proofs in support of the documentary evidence in the nature of the marsh soil and its surroundings,

In the Anglo-Saxon Chronicle it is stated (A.D. 1029)—
 "This year King Canute came to England, and as soon as

* Boxley Priory had possessions in Woodnesboro.

† Not far from Stonar—Boys' "Sandwich," 536.

he came he gave to Christ Church, Canterbury, the haven of Sandwich and all the dues arising from it ;” where it is stated the gift extended on either side of the haven—“ So that lo ! when the flood is at the highest, and all at the fullest, if a ship be floating so nigh the land as mightest may, and a man standing in the ship have a taper in his hand, etc., the boundary being as far as he could throw it.” He also gave the small boat and ferry of the haven, and the toll of the vessels. It will be part of our duty to enquire at what period this Wantsum estuary silted up, and what was its extent in Roman times—on both which subjects a great deal of misapprehension occurs. Firstly, the extent of this estuary in Roman times. Bede’s Ec. His., B. 1, c. 25, states—“ Thanet divided from the other land by the river Wantsum, which is about three furlongs over, and *fordable only in two places*, for both ends of it run into the sea.” I would first observe many authors of note doubt Bede’s topographical knowledge of places in East Kent. But if the Wantsum was then three furlongs wide, it was nevertheless fordable in two places ; so it could not have been very deep, and we have no intimation where it was three furlongs wide. In the same chapter Bede states—“ In this island (in Thanet) landed the servant of our Lord, Augustine and his companions, being, as is reported, forty men.” This is stated in one place to have been at Ebbs-fleet, where *Hengist* and *Horsa*, conquerors of Kent, are likewise said to have landed. Thorne states Augustine landed in Thanet, in *loci qui dicitur* Ratesburgh. I have drawn your attention to this, because the notion has generally been accepted that the landing-place in Thanet thus early mentioned was from Pegwell Bay to Ebbs-fleet, and this and other circumstances have led to a belief that the whole space between Sandwich and Ebbs-fleet was at that time covered by the sea. An old map engraved in Dugdale’s Monasticum, and one in Lewis’s history of Thanet, have given rise to these erroneous views.* My friend Alderman Brent still, I believe, entertains this notion. I shall in the next chapter show the error of such a view on Geological data. I now only give Historical data of these. Firstly, Stonar, just opposite Sandwich, has been in the Isle of Thanet from the earliest historical period. Then the word Fleet meant a harbour, not in our now accepted term, such as Ramsgate Harbour, but was a landing place situated within a river, so that vessels in early times sailed into these rivers and made their fleets in places far removed from the influence of the tidal waves. In 1267 we mentioned a boundary of the Port of Sandwich near, Holbergh, belonging to the Lord of Poldre. This Poldre is a Dutch name, implying land protected from the sea by embankments ; and it would imply that thus early the Dutch were employed to embank, or gave their

* See also a short dissertation on the antiquities of the two ancient ports of Richborough and Sandwich by Mr. John Lewis, proceedings of Royal Society of Antiquaries, 1744.

own name to embankments in existence. It would seem that for a long period a water passage, embanked, existed between Sandwich and Minster for the passage of vessels, for in 1242 the Prior and Chapter of Christ Church, Canterbury, entered into a composition with the Abbot and Convent of St. Augustine respecting their respective possessions at Sandwich, Stonar and other places in the neighbourhood. The Prior and his Chapter granted to the Abbot and Monks a free passage by Sandwich river to Menstre flete, reserving their maritime dues from such vessels as shall cast anchor in the said river before the fleet, etc., but they reserve to themselves to be free from dues hereafter and stipulate that the Abbot shall not fill up or destroy the fleet. This is shown by a presentment made in 1313, "That the water-course called Minster flete used to run from a branch of the river to the village of Minster, to which place vessels resorted with various merchandise . . . that the King took tonnage in of the flete till Roger, Abbot of St. Augustine, the predecessor of the present Abbott stopped up the water-course to the King's damage, etc. The Abbot alleged that the current of the said flete ran through his own ground, and that on account of a raging tide, his predecessor in expectation of his lands being drowned, by which he would lose the profit of one thousand acres."* The jury find that the flete is part of the King's stream, running through the Abbot's lands, and used to be so wide that two coggers might turn there clear of one another. That before filling up the said flete the Abbot made walls for the defence of their land, which wall had been since neglected. In Boy's "Sandwich" it is stated, in 1365 a great inundation of the sea from Cliffsend to Stonore occurred, so that the town of Stonar was almost destroyed, and it and all the levels between Canterbury and the sea were in danger of being overflowed; whereon Sir Ralph Spignornel and others were directed by King's commission to enquire, and endeavour to secure houses and land, &c.

In 1558 is a suit to the Queen to amend; in 1548 the same stream is stopped up; and in 1559 commission.†

Rogers cut the Haven; the town will raise a thousand marks; a cunning and expert man of waterworks to be sent for from Flanders—he came. In 1653 a committee appoint to improve the Haven. In 1775 Sandwich petitioned against the bill for draining the general valleys by a new cut.

I believe the Wantsum ceased to be navigable for merchandise from Sandwich to Reculver (Northmouth) after the 12th century. Mr. Scott Robertson disputes this, and adduces the following facts:—† Stow says, A.D. 1269, "The River Thames being frozen, the merchandise from Sandwich was obliged to be taken to

* Boys's History of Sandwich.

† See Boys, p. 688.

‡ See *Archæologia Cantiana*, Vol. XII., p. 338.

London by land instead of by sea"—hence he concludes the merchandise had hitherto been sent through the Northmouth. Next he quotes the bounds of the Liberty of Cinque Ports in 1267. Next he quotes the Act of Parliament in the year 1487, which permitted the erection of Sarre bridge, stipulating that "it must be of such a length and height that boates and lighters may pass to and from at any time hereafter when the water shall happen to increase, and be sufficient." Mr. Scott Robertson hence concludes that about 1460 the Wantsum was tolerably navigable.

With regard to Stow, if Sandwich were the chief port of the South-East of England in his time, merchandise may have been re-shipped to London round Thanet the same way as the barges now do. The bounds of the Liberty of Sandwich prove nothing as to the exact state of the river at that time. The Act of Parliament of 1485 about Sarre bridge has just those provisions which the Commissioners of Sewers now insist on in reference to bridges, which always provide a great excess of water-ways beyond the present requirements.

But against all this we have the very important negative evidence that we find no record since the Saxon time of the use of this Northmouth to the Sandwich navigation; though the records of Sandwich, which have been collected by Mr. Boys from the earliest times, and embrace a vast amount of information touching all that relates to the navigation, are quite silent on this head.

OBSERVATIONS ON THE INHABITANTS OF A FEW DROPS OF WATER BY MR. J. FULLAGAR.

This water was obtained from the bottom of a small glass aquarium, in which three gold-fish had lived for over four years. On placing some of it under the microscope, in a shallow glass cell, I found it to be full of living organisms, among them being a large number of amœbas. For two months I was much interested in observing their many changes and strange movements. For the better understanding of my paper upon them, I have prepared sketches of some of the forms and changes they pass through.

The amœba presents the simplest form of organic life, and is typically represented by a microscopical particle of sarcode, or micogelatinous, organic matter, possessing within itself the power of growth, of assimilation of extraneous substances, of movement by means of irregular and ever-changing offshoots from itself, termed "variable processes," and capable of multiplication by the severance of portions of itself. Thus I have seen under the microscope a mass of amœban matter divide itself into seventeen separate animals, and pass out of the field of the microscope in different directions. They present no definite or constant figure, although it is possible to distinguish different amœbas by the more frequent outline they exhibit, or figure of their pseudopoda. The sarcode of which they consist is naked and homogeneous; a movement of granules is perceptible, and vacuoles are almost always distinguishable; and one, two, or even more contractile vesicles are seen in some specimens. The variable processes, which are the only means of locomotion, have frequently been called false feet, and, as they are characteristic of the class, have given origin to the term pseudopoda, that is "false feet." The amœba is considered the lowest in the scale of animal life, and indeed it has nothing in common with other animals; yet it performs many of the vital functions of life, for which the higher orders of animals have recourse to an elaborate system of nerves, muscles, &c. They can move from place to place, can imbibe foreign matter as food, and digest it, have a certain degree of sensibility and feeling, and can seize and retain living animals as prey; they are ever slowly moving and changing their forms, so that at no time are there two exactly alike; nor indeed does any one of them retain the same form for any length of time, yet there is a similarity running through the whole of them; and, as one

author has truly said, when describing the amœba, "its shape is nondescript, it has neither mouth, teeth, fins, claws, hands, nor feet, properly so called, yet it is able to perform the functions of each and all of these members most efficiently, or rather it is endowed by the Creator in such a manner that it can dispense with them all, and yet fulfil its destiny in the economy of nature." These creatures are also remarkable for grasping, and folding themselves around other animalcules. In the same water there was also a number of the colep hirtus (Fig. 1, *a*). I have seen them place themselves in front of the amœba directly in the path that it was slowly travelling (Fig. 1, *a*). They appear to tear the gelatinous envelope of the amœba and extract the granules moving in that direction, which at times may be seen to pass into the body of the colep hirtus as food. After feeding for a time it would leave the amœba which would proceed on its journey forward without apparently sustaining any damage from the attack. As the colep hirtus is a very quick and fast-moving creature it did not appear possible that the amœba could capture it as prey, yet I had seen several instances where it was found in the interior of the amœba as food, I concluded at the time that this must have taken place after the death of colep hirtus, but on May 7th I saw that a large amœba had taken into its body a living one, and had entirely surrounded it, (Fig. 2, *b*). It was struggling to escape by rapidly revolving on its long axis, as it could not move either backward or forward; in a few minutes it suddenly ceased to move or exist, and evidently became the food of the amœba, and was dissolved or digested, the oval shape and outline of it remaining visible for some time in the amœba. The darker colour of the colep hirtus was however soon gone, evidently assimilated by the amœba, and rendered as translucent as itself. Since this I have observed the colep hirtus feeding on the amœba; they really appear to be aware that it is dangerous to remain too long doing so. Several times I have seen the amœba while the colep hirtus was intently feeding on the centre or front (Fig. 5, *c*), send forth two powerful processes one on each side (Fig. 5, *cc*) and inclose the colep hirtus in its folds. Sometimes the colep hirtus has remained in that position (Fig. 5, *d*) until there was but just sufficient room to escape by withdrawing backwards, but woe to it if once the processes close round it (Fig. 2, *b*). This observation proved to me the manner of capturing the living and fast swimming colep hirtus by the slow moving amœba. This act of the amœba in throwing out processes in order to get possession of the colep hirtus, shows a certain degree of intelligence (if I may so speak) that appears marvellous in creatures so low in the scale of animal life. After a little time a number of sun animalcules (actinophrys sol) made their appearance in the same cell and water. I counted over 30 at one time; as they increased in number the amœbas decreased, and I have reason to think that they are produced from the amœba, as several of the amœbas

have been seen to withdraw their pseudopoda and become globular in form (Fig. 4), and finally the pseudopoda disappeared altogether. (Fig. 6). In this state they remain for some time, after which the tentacles or spines peculiar to the actinophrys sol, are put forth. Fig. 13 shows them partly put forth. Fig. 9 shows them fully extended. In this form they are far more formidable enemies to the colep hirtus than the amœba, and indeed to every other animalcule in the cell, for if the colep hirtus or other animalcule come in contact with the spines of the actinophrys it is entangled by them and cannot escape, but is gradually drawn into the surface. It is not wholly absorbed into the body, but a transparent envelope is thrown round the victim (Fig. 9, *ff*), by which it is held while the process of assimilating the nutritious portions of the body goes on. This is a peculiarity of these *A. sols*, which of themselves are very small in comparison to what may be seen later of *A. sol* and *A. eichhornia* which are large and are capable of taking into their bodies animals of a greater size. These small ones only bring their prey to the surface of the body by the agency of their spines. I have seen three of the colep hirtus, each in a separate envelope, attached to one *A. sol* (Fig. 9, *ff*.) The contractile vesicle is seen at *g*. At times three or four actinophrys may be seen in conjugation, and when thus combined are enabled to hold several different animalcules as food. When full fed they again separate, and gradually withdraw their spines, and each of them divide in their centre into two kidney-shape bodies (Fig. 8). From this form I could not trace them farther, so as to ascertain what more changes might have taken place in their changeable life-history. A number of amœbas, of the shape Fig. 17, were at one time in the cell; some of them had a great many more pseudopoda than are represented in the sketch, and much less in size, but extended in length to more than twice the diameter of the body, and gracefully bent in all directions, very beautiful objects. Some of the amœbas after withdrawing their pseudopoda and remaining stationary for some time (Fig. 10) the centre becoming largely granulated, would again put forth their pseudopoda and travel on, bearing the granulated mass with them (Fig. 14). Some few of the amœba took the form of Fig. 11, the large and thick processes of which in the course of an hour were seen to withdraw and assume the form of Fig. 12, with the spines thickly set. They did not take on the form of actinophrys sol, but continued to move on slowly in the direction indicated by the arrow. This amœba put forth spines so very like to *A. sol*, that I think it most probable that it ultimately resolved into that form. Fig. 7 is the amoeba bilimbosa; Fig. 15 is the trachelocerca olor, showing the process of longitudinal self-division; this creature is shown in Prichard's work on the Infusoria, and is described there by an observer as having two heads, and named in consequence "trachelocerca biceps," but this was evidently a mistake, and most likely was

seen when the process of self-division was incomplete. I have also seen these creatures divide transversely. Fig. 16 and 18 are two acenatas; Fig. 18 has a stiff pedicle, and the spines are conical and pointed; Fig. 16 has a flexible stem, and the spines are largest at the extremities, they are said to be suctorial tubes by which nutriment is conveyed to the creature. In some species the spines are club shaped, in others they are pinnated. Fig. 24 is *vaginicola valvata*; Fig. 25 is a group of the trumpet animalcules; Fig. 17 is *perodina patina*; Fig. 28, a paramecium; Fig. 29, a specie of *trachelocerca*, the neck of which at times is extended to seven times the length of the body; Fig. 32, another form with flagellum; Fig. 31, the *epistilis*; Fig. 30, one of the *œcistis*.

A NEW ROTIFER, DESCRIBED AND EXHIBITED BY
MR. J. FULLAGAR, FOUND ON THE WATER-PLANT
RICCIA FLUITANS.

This was described in the Report of 1879, but through the kindness of Mr. Bateman, who undertook to photo some of Mr. Fullagar's sketches, it was thought worth while to insert it in the present Report with a somewhat fuller description of the rotifer, which the sketches will illustrate.

Figs. 19, 20, 21, 22, 23, and 26 in the photograph are those connected with the rotifer. I had for a long time in a vase a quantity of *riccia fluitans*, some of which was decaying, and the chlorophyl, or colouring matter, had left a portion of the vegetable tissues quite clear and transparent. On placing some of the decayed weed under the microscope on January 21st, I observed some round bodies, of an amber colour, in which were seen some globular forms of various sizes (Fig. 19). They gradually changed their form, and the round body slowly elongated and took the form in Fig. 20. The contents in the centre were seen to move and turn half round, backward and forward, a motion frequently seen in some rotifers and in the ova of many small animals. In about three hours after the round body (Fig. 19) had taken on the form of Fig. 20, a sort of tube or shaft gradually protruded from the pointed end, and displayed a row of rather long vibratile cilia rotating on the top (Fig. 21, *a*). The tube was quite as long as the diameter of the

oval-shaped body, and telescopic in its form, and could, under alarm, be quickly withdrawn into the body. After this alarm had subsided, the tube was again put forth, when at first a sort of horn, and sometimes two, were protruded at the top (Fig. 23, *c*), as a sort of feeler previous to again displaying the wheels of cilia. The jaws were placed at the bottom of the tube (Fig. 21, 22, *b*), and very plainly seen in motion, in the act of feeding. These rotifers appear to be lodged in the cellular tissues of the plant, and at times they protrude their ciliated lobes just out of the cell of the plant, while their bodies remain fixed. They are very small; I make them out to be only seven thousandths of an inch in length. I endeavoured to isolate some of them, and to get them clear of the decayed vegetable matter in which they were embedded; but this proved very troublesome, and I lost several in the attempt. The telescopic form of the tube was very plainly seen, either in the act of protrusion or retraction; at times the tube was withdrawn (the rotifer remaining in a state of rest for five or six hours), and then again put forth with the ciliated lobes, and continued to rotate for the same length of time, and sometimes I have known them to continue in motion for over twelve hours.

The last that I had under observation were four on one piece of the riccia. They kept alive and in motion without any material change until May the 1st, when they all withdrew the telescopic tube and remained on the weed. In this quiet state they continued for fifteen days, when they again put forth a long and transparent tube (Fig. 22), but no cilia, or wheels in motion, yet the two horns were very prominent at the top. The jaws were not visible as before, neither were the tubes of a telescopic form as at first, but they bent and folded themselves down in a worm-like form. In this state they continued for three days, and finally left the case and escaped into the water. I then lost sight of them entirely, the oval-shaped case out of which they came being left on the weed (Fig. 26). How the ova was first introduced into the plant I was not able to make out. I closely watched to see if they deposited anything in the form of ova, but could not discern that they did. As the weed, on which they had been, decayed and drooped to pieces, so also did the empty cases.

A description of these rotifers with drawings was forwarded to the Royal Microscopic Society for inspection, but it appears that no rotifer answering to these has hitherto been observed or noticed as being found in fresh water. The freir ampulla (of Claparède and Lachman) was pointed out to be the nearest in form to them; but that is a marine specimen, and the only resemblance it had was in the form of the telescopic tube. As soon as more living specimens can be obtained, they will be forwarded to the Royal Microscopic Society, as from the sketches and written description only, nothing definite could be made out respecting them.

On the Changes which have taken place in East Kent in the Coast and River Valleys since the Roman occupation of Britain.

A PAPER BY G. DOWKER, F.G.S.

SECOND PART.

In a former paper I traced the historical evidences that furnish us with so many data from which we may estimate the amount of these changes. You will remember we found Richborough a port and haven, and with Reculver marked the extreme ends of the estuary of the Wantsum, which insulated the Isle of Thanet. We drew attention to the sea, or arms of it, having come up to the cinque ports of Sandwich, Hythe, and Romney. We gave evidence of a former navigable river in Romney Marsh as far as Appledore in Saxon times; and to the north we traced the coast changes which have cut back the shore, leaving but little land between Minster in Sheppy and the sea and Reculver. It will now be my endeavour to show how these changes have been brought about during the last two thousand years,—by showing, firstly, the nature of the land composing this district; secondly, the effect of the atmosphere, rain, and rivers on such a soil; thirdly, the part played by the ocean in these changes.

I must premise that it is more philosophical to consider the action of the sea and the seasons to have been the same at the Roman period as at the present day, rather than invent any extraordinary catastrophies to account for these changes, and we have no warrant to favour the latter; and I believe the changes now taking place are fully sufficient to account for all the alterations that we are assured have occurred during this epoch. It may, nevertheless, be concluded as tolerably certain that the effect of cultivation, drainage, and the denudation of the country of forest trees, has had its effects in modifying the climate.

The area we are considering is composed of various geological strata, which have been illustrated in an instructive paper read before this Society, by Capt. McDaken, and which I should

wish you to refer to, as giving a more detailed account than it would be possible for me to accomplish in this paper.* I would only now treat of the physical aspect of the soils we shall meet with. On the north of East Kent the coast is chiefly composed of London clay as far as Herne Bay and Reculver, except the promontory of the Isle of Thanet, which we may consider as a dome-shaped elevation of chalk which rises from beneath the Thanet beds, which latter form here a synclinal or trough-shaped valley, and differ considerably in their structure, dependent on whether the upper or lower parts are exposed, the Thanet beds are clayey and compact in their lowest strata, and sandy and soft in their upper. These Thanet beds are followed by the Woolwich and old haven beds, the former almost entirely composed of sand, and the latter of sand and pebble beds. The synclinal of these lower tertiaries reaches from Reculver to St. Nicholas on the north, and from Pegwell Bay to Walmer on the south, and a continuation of the same strata seaward is marked by the Margate Sands on the north and the Goodwin Sands on the south. From Walmer to near Folkestone we find a continuous bed of chalk, the lower part of which is exposed beyond Dover as far as Eastwear Bay. Here the gault makes its appearance; this is quickly succeeded by the greensand series, reaching as far as Hythe, where the clayey beds of the Weald are met with; but the escarpment of the Hythe beds here terminates in the flat lands of Romney marsh succeed by beds of new strata of sea-sand and marsh soil, which is for the most part below the sea level.

The chalk, as you are aware, forms bold headlands but slowly washed away by the sea, but so soluble in rain-water that it is cut up into valleys. The lower bed, an impervious compact chalk, reposes on a thin bed of upper greensand, composed greatly of sand and very pervious to water; the gault beneath this is nearly pure clay, and is affected greatly by moisture and drought as in the London clay. These same strata are met with in the interior, the chalk forming a ridge of hills extending from Folkestone to Wye, where the river Stour cuts its way through, and forming the valley of the Stour from here to Canterbury on either side, which the chalk is nearly continuous. From Canterbury to Grove Ferry, however, we meet with the lower tertiaries on each side of the valley, composed, as I before stated, of various portions of clay and sand, the brow of the hills and some portion of the valley being covered with gravel of ancient date. The Stour valley from Grove Ferry to the sea is composed of alluvium of various depths, that is of mud deposited by the river over the ancient formation, and some part of this is largely composed of sandy clay, containing marine shells, chiefly cockles. One exception to this occurs near the coast at Sandwich, viz., an old sea-beach, which extends from

* See Natural History Society Proceedings.

Stonar to Pegwell, and the sand-hills composed of sea-sand. And from Hythe to Dungeness there are large accumulations of beach and sand—the former at Hythe and Dungeness, the latter at New Romney.

Such being the state of the country under our consideration, I will now proceed to discuss the question, how changes are wrought in it. The great agents at work in modifying the surface of the land are rain and rivers. Every drop of rain-water that falls on the land exerts first a solution of the soil (rain-water is the purest water formed naturally), and contains a certain portion of carbonic acid derived from the atmosphere, which renders it more powerful as a solvent of calcareous earth. The water which proceeds from springs and the drainage of the land is largely charged with matter in solution with carbonate of lime and silicates and iron in more or less quantity. The water from chalk springs generally contains from 18 to 22 grains per gallon of solid residue; while river-water contains from 22 to 29 grains per gallon. The mean of these analysis would be about the quantity of solid matter contained in the Stour water when quite clear and free from sediment. Mr. Homersham, the engineer employed by the Waterworks Company of Canterbury, calculated the Stour carried on an average 20 millions of gallons per day through Canterbury, and this would give a total of 3255 tons 5 cwt. per annum. It is then evident the river annually carries away a large quantity of solid matter. This calculation does not include the lesser Stour, or the numerous springs below Canterbury. Besides the quantity of solid matter thus held in solution, after rain, river-water contains a very large amount of matter held in suspension; the greater the current the more this is carried when a river thus charged with sediment overflows its banks, the water thus spread out diminishes its velocity and, consequently, carrying power—hence most of the matter held in suspension is precipitated on the land on either side of the river, and it annually adds to the height of the land thus flooded;—hence we find that lands that have been protected from inundation for a great number of years are lower than surrounding lands not so protected; while, on the other hand, land frequently flooded is gradually raised. A river which is embanked is prevented from the natural relief afforded by the expansion of its waters and deposit of its sediment, which, being thus confined within a narrow channel, carries its sediment as far as the velocity of its water is maintained. It must be borne in mind that the greater the depth of the water, the more will be its carrying powers—hence when, from any cause, it deposits its sediment, it does so along its sides. Rivers empty themselves into the sea; if the waters of the latter stood at one uniform height, the velocity of the water falling into it would be constant with the quantity of water in the river and the amount of its fall. But this is not the case; the sea-level depends on the height of its tide, which is influenced by the state of the moon

and direction of the wind. At high tide the descending water of the river is held in check, if not turned back; and at high water there is a point at which the water is quite stationary, and hence the matter held in suspension is then deposited. It is evident that when the water flows up a river, it carries its deposit upward also; and the more sudden the rise of the water, the greater its velocity and carrying power. At the mouth of the Stour the rise of the tide is 15 and 16 feet at the full; the change here from high to low tide would be very considerable: but, in considering its effect on the current of the river, we must remember the distance the water has to flow to reach the sea will very materially affect our calculation. Water, in flowing down a river or up, is retarded by the friction of the water at the sides and bottom of the stream—hence the greater the distance it has to travel, the less will be its velocity, other things being equal. At the present time, the distance the water of the Stour has to travel before reaching the sea from Fordwich is about 20 miles, the fall of the land being less than one foot per mile; the breadth of the river Stour averages less than 70 feet from Fordwich to Sandwich. The distance the water has to travel from the outside to the inside of the Stonar cut round by Sandwich is about seven miles, and it takes, on an average, $1\frac{1}{2}$ hours to traverse that length, so it is high water at one point just $1\frac{1}{2}$ hours later than the other (or when the water is falling at the mouth of the river; for the greater the distance the water has to travel, the less it will be affected by the tide. It follows that when the sea was nearer to Fordwich than it is at present, the greater must have been the difference between high and low water: such being the case, it also follows that the greatest deposit takes place near the coast. Rivers that have a tendency to shut out the influence of the sea in proportion to the deposit they form near their mouths and their distance.

Now, if we apply this theory to the Stour valley, we shall see that at the Roman period, when the sea flowed higher up, the deposit must have been greatest higher up also. Now we have historical evidence to prove that the Stour had then two mouths—one at Sandwich and another at Reculver; and as the tide is not high water at both places at the same time, there must have been a constant flow and ebb of water, or conflicting tides at the space intermediate; this conflict of the tides would greatly favour the deposit of silt—hence we perceive everything tended to block off the estuary of the Wantsum. We have no evidence to show that this closing of the one entrance was a sudden event, though any large accumulation of sand or beach may have accelerated the process during some special stormy seasons. We shall find, after the north mouth of the estuary was closed, the action of the tide kept pushing the south mouth of the river more and more eastward, till at the present time it nearly reaches Ramsgate Harbour. What I have said with respect to the action

of the River Stour in forming its deposit, holds good also with respect to the other rivers in Kent, and will apply to the Rother, which formerly flowed out at Romney.

But it will be necessary now to consider the effect of tides in the ocean as affecting our coast, and consequently the rivers' mouths. Confining our attention for the present to the neighbourhood under our consideration, we find, first, the tidal current along the shore runs, on the average, with greater velocity from west to east than in the contrary direction. The effect of the waves on the shore is constantly that of lifting up the sand and beach, and letting it fall again. If the direction of the current is greatest from east to west, we should find the beach travel in that direction; but we find that from Dover to Sandwich the beach travels from west to east. The waters of the Stour which, we will suppose, flowed out at Sandwich in former times, would thus constantly have a barrier growing from the west in the shape of shingle and sand; this would turn the mouth eastward, and it has had that effect, so that at present the river beyond Sandwich turns at right angles and flows towards Pegwell Bay. All references to old maps and descriptions of this part of the coast point to the same end. It would be going beyond the space allowed for this paper to enquire how this eastward current is brought about. But I would observe that the waters of the Straits of Dover must, before the Straits of Dover and Boulogne were so wide as at present, or rather before the land on either side had been so far cut back by the long-continued wearing of the sea's action, have presented a narrower channel for the exit of the rising tide by the Atlantic Sea. We must remember also that at a remote period—though geologically speaking, recent period—England was united to France; and also that the North Sea had, for its greater portion, been dry land. A large shoal, known as "The Dogger Bank," exists in the North Sea, which is now, at low water, very shallow, and the dredgermen bring up from it evidences that, at no very remote period, it had been dry land. Bearing these facts in mind, we see that a gradual widening of the Straits of Dover and a deepening of the North Sea at the same time must have brought about great changes in the width, velocity, and direction of currents produced by the tides. At the present time a north or north-east wind has a marked influence in heightening the tide in the Straits of Dover. We have only to refer to a tide table for our Kentish coast to see that there is a marked difference in the times of high water at, for instance, Whitstable and Deal. Now, if we imagine the tide flowing up Channel off Dover, it will have to travel round the Isle of Thanet before reaching Whitstable. The distance it has to travel will have a retarding effect on its height, as I before explained when treating of the rivers. The tide is caused, as you know, by the attractive influence of the moon and sun, and the diurnal revolution of the earth upon its axis will cause the maximum elevation of the tide-wave to travel; and if

the retarding influence of a narrow channel be interposed, it follows that the maximum tide will lag behind, if I may so express it. In my reference to the river Stour, for instance, at the mouth of the river the tide rises and falls from 10 to 11 feet, sometimes as much as 15; but at Grove Ferry, where the Ordnance mark of 18·7 above the mean sea level is but a short distance, and at nearly the level of the river banks, we have no corresponding rise or fall of water, in consequence of the distance the tide has to travel; for long before it was high water at Grove Ferry, the tide will have fallen very considerably at the mouth of the river. The same is the case with the tide in its progress through a narrow channel. I may refer you to what I said in my former papers on the historical evidences of change in our coast. A reference to old maps and documents prove that the mouth of the Stour was at one time much nearer Sandwich than at present, also that it went out to sea more westerly. Old maps of the Downs in Queen Elizabeth's reign show how great has been the change. The observations made by the engineers of the Trinity Board show how the beaches along the south coast of Kent have travelled more and more eastward. We know, for instance, how the beach has accumulated in front of Walmer Castle—how this beach has overtaken Sandown Castle—and is still extending eastward. In front of Sandown and stretching in an eastward direction to Pegwell Bay, nearly in a line with the present turnpike-road, an ancient beach extends, known as Stonar beach. On this beach the town of Stonar was built, dating probably to the Roman period. Had this beach been an eastward extension of the Dover and Walmer beach, the shore line must have ran at that time very far inside of the present sand hills to Word marshes, through which the present railway is laid, by Shoulden, Cottington, Hacklinge, and Word. I have met with no such evidences of beach sufficient to justify such a supposition; and if there had been, we must date back the event long antecedent to the coming of the Romans. I am inclined to view the Stonar beach as having had its origin from a westerly current bringing it from the shores of the Isle of Thanet, at a period antecedent to the Roman occupation.

In an exhaustive memoir on this subject by Mr. Redman,* he states, "Around the Isle of Thanet there is comparatively little shingle, the foreshore being invariably composed of a fine sand. Smeaton described the shingle as travelling from the eastward, and it is curious that along these shores very little is seen; and if that produced by the Isle of Thanet, after being carried into deep water, as it undoubtedly must be, is driven past Ramsgate to the westward, it is probably thrown ashore in the neighbourhood of Deal, and, joining the western supply, again travels eastward." I do not think it likely to be the case here; but if so, we have evidence of the contrary action of the current of

* Redman Alluvial Formations South Coast of England, p. 4.

the ocean. I would incidentally mention that there have, from time to time, been engineering schemes proposed for making a new cut from Sandwich to the sea; first of which was commenced in 1695, and never completed. It was then proposed to cut through the sand hills towards Sandown Castle, another plan was proposed in 1736; and the last of these projects is that known by the name of the Pegwell Bay Reclamation Scheme. There is no doubt whatever that if such a cut were made, it would bring the high water up so much further inland than at present as to jeopardise the whole level; and, to prevent such an event, a clause has been introduced into the scheme to compel the promoters to put in flood-gates to stop, if necessary, the inflowing tide. But the same causes at work will, in that event, still tend to obstruct the mouth of the river with sand and beach carried by the sea past Sandown Castle.

I may here digress to explain the action of the sea in throwing up a natural embankment to stay the progress of its waters. If we walk from Sandwich to the sea-shore by the nearest point, we shall traverse some two miles of sand hills, terminating may be by a shingle beach, which is considerably higher than the sea at its highest tides. How is this accumulated? I will try and explain. Let us wander on the shore where the sea is rough and watch the breakers; they run up the shore in a line directed by the prevailing wind and tide, charged with sand and stones, which the receding wave sweeps back with a peculiar rattling roar. If the stones are large and the sea rough, we shall find the larger are left on the top, the lifting power of the wave being very great. If we are bathing within reach of the breakers, we should find it very difficult to prevent them throwing us down and rolling us on shore. A body entirely immersed in water, you know, loses a great part of its weight. The waves have a great power when set in motion, and exerting that power on the sand and stones lift them up and dash them down again; but if the water moves meantime in any direction at right angles with waves, the stones do not drop in the same line, but are carried along the shore by the prevailing current. This action of the waves is only between the tide marks or the space between high and low water, perhaps extending at storms below the limit of low water. It is evident the stones are left at rest when they reach the shore beyond the influence of the wave. At neap tides this is short of the influence of the water at spring tides, at which time the beach accumulated below is again carried higher up, then the beach is ultimately left beyond the highest tidal level: during storms, should they occur at the highest tide, which is very often the case (as the moon exercises its influence on the atmosphere as well as the water), the beach carried by the storm reaches a much higher level than the highest mean level of the ocean. We thus find the sea forms a natural embankment against its further progress inland. During the trituration of the stones, the sand is formed and is carried in like manner. This

sand dries, and when the wind blows on shore is carried inland, where it accumulates like a snow-drift round any object that breaks the wind. On this sand many plants grow, notably several grasses and rushes that root into it—hence is formed sand hills, which gradually accumulate the sand, and form other natural sea defences. We thus see that a large extent of country below high-water mark is protected from the further action of the ocean. If now from any cause there is an alteration of the direction of the tide or ocean current, a part of the coast so protected is attacked by the waves; they first remove the talus of the beach, and thence undermined by the waves it is surely swept away; and such part of the coast may again be inundated by the sea. So well known and important is the preservation of this beach that groins are erected to help this accumulation, and thus protect the coast from the sea. When the sea-currents sweep along a coast, they are influenced by any projecting headland, and accumulate the beach on the outward and prevailing current side of the obstacle. In this way the formation of the Dover Harbour has favoured the accumulation of beach west of that point; the current, moreover, after passing the obstacle, is deflected inland, and thus, at St. Margaret's Bay, a former collection of beach is being removed towards Deal. It is very probable that a river emptying its waters into the sea, has an important modifying effect on these shore-currents, and consequently the accumulations of beach or sand. In this way the Stour's mouth may have protected the Pegwell Bay from accumulations. The tide runs eastward at the flow, or towards Ramsgate, at which time the water flows up the river. At the ebb the sea runs westward towards Dover, and at the same time the water of the river is emptying itself into the sea; so the river water constantly runs in the opposite direction to the prevailing current, which is eastward; and this would be an additional reason for regarding the Stonar beach as a drift from the eastward.

ROMNEY MARSH.

Let me now pass on to another part of Kent, where great changes have taken place since the Roman period, and where we have also historical data of the greatest interest. I have shown you in my former paper that the whole of Romney Marsh is below high-water mark, and that in consequence some have gone so far as to affirm that, in the Roman period, it could not have been dry land; while others have speculated on its having been cut up into islands. We have undoubted evidence that a river of considerable dimensions once emptied itself into the sea at New Romney, that being a port of great importance as one of the cinque ports. The historical period would bring us back to the Saxon times, or perhaps the Roman, as the port—perhaps Portus Lemanus. I am glad to find Archæologists are now too ready to learn something from the Geologist, though they are

rather loth to consider the geological data as conclusive evidence as the documentary. The Rother river once flowed by Appledore, and thence to sea at Romney. Along its course at some period a high embankment, supposed by some to have been Roman work, was erected, though by many it has been ascribed to the British. I have before pointed out how the sediment brought down by a river, is checked in its course as it approaches the sea by the influx of the rising tide. We are thus led to look to the highest and not the lowest land, as that through which such water ran. In a lake the case is different, here there being no running water—there is no sediment comparatively.

Let us now study the configuration of Romney Marsh. We have an area surrounded on the west, north, and east by high land; a considerable river, the Rother, takes its rise in Sussex and flowed into the sea by a circuitous route, by Appledore and thence to Romney, the latter part of its course through a district which had been reclaimed at some remote period from the sea, when and how I shall not now attempt to describe, but long anterior to the Roman period. If we went back to the events which had preceded that epoch, I should have to consider the subject in a much larger and deeper view, not only in this part, but over the whole region embraced by the English Channel. But I will ask you to assume that the whole area forming the Romney Marsh, consisting of deposits of sea sand and shells some fifty feet in thickness, and covering in some places an old forest bed, had long been deposited. At the Roman period great part of this was undoubtedly dry land.* If you read the history of Romney in the last vol. of Kent Archæological Proceedings, you will find abundant evidence to prove this. At present this low-lying district is protected from the sea from Hythe to Romney by a sea-wall called Dimchurch wall, which is an artificial embankment that had in Roman times no existence. From Lydd to Rye the marsh is now protected by a natural embankment, the Lydd beach, which has accumulated, and still continues to accumulate, at a very rapid rate, and is some three miles in width opposite Lydd. This beach is formed like that at Deal in the manner I before stated, the falls of the beach being now marked by the successive accumulations at the highest tides, forming parallel ridges. Such being the case, we should naturally conclude that between Romney and Hythe the district was most exposed to the ravages of the sea. But we are surprised to learn that over that entire area are churches and traces of man's erections, dating back to Saxon and Roman times. Did, then, the sea prey on the coast at that time as it does at present? The Dimchurch wall is a remarkable example of engineering skill, constructed and kept up at great expense to keep out the waves. I had some conversation with Mr. Elliott while at the Romney meeting of the Kent Archæological Society;

* Vol. XII. of Archæology Cantiana.

and he informs me the sea now attacks that portion of the marsh with increased vigour, and requires much expense to keep up the wall. We have this evidence that, at the present time, the energy of the sea is here greater than had hitherto been the case. When the marsh was surveyed for the Geological Memoir by Mr. Drew, he mapped the falls of the ridges of the beach, and showed that it had considerably altered its direction, and that the present beach was cutting back a former extension of the beach near Rye and redepositing it towards Dungeness; moreover, the beach at Hythe was in like manner cut off and was not deposited in the same direction. Now there have been various speculations relative to the remarkable collection of this beach; and it seems the most probable explanation that it owes its formation to some peculiar set of the tide, the present beach travelling like that at Dover from west to east. As there is no chalk cliff whence the flints composing this beach would be derived till we came to Beachy Head, it is evident that it has travelled a considerable distance in deep water, or at least some distance off the shore; and if we follow the three-fathom line in the Admiralty Chart of this part of the coast, we find that it tends across the bays of Pevensey and Winchelsea, about two miles from the shore, except when the coast-line is deeply indented, passing close to Dungeness and thence, crossing the Romney Bay, tends towards Hythe. It is recorded that the town of old Winchelsea stood on a spit of sand or shingle, said to have been three miles and three quarters off the new town, but its exact site is unknown. It was probably near where the mouth of Rye Harbour now is. This town was destroyed by an inundation of the sea in 1236, and subsequent irruptions of the sea in 1250. I before mentioned the probable effect of rivers flowing into the sea, changing or modifying the current, and it probably here made important alterations in the coast-line. The Rother had formerly flowed out at Romney, and I believe had likewise a mouth at Rye; it now enlarged its Rye arm and abandoned its way to Romney. Though this was brought about by the great floods of the 12th and 13th centuries, it is most probable that a change had been going on some time previously in the Channel, through which the three-fathom line extended; by the removal of some of the more extended headlands of the coast. We have seen the effect of a barrier thrown across the tidal way as in the case of Dover Admiralty Pier. The sweep round of the tide produced by this means, has caused the beach at the bottom of Castle Hill and St. Margaret's Bay to disappear, and travel still further eastward. If we look for a like cause and effect here, we have at Hastings a high ridge of hard rock, known as the high rock and Fairlight, round which the tide flowed, infringing on Winchelsea, where probably a shingle bank extended, obstructing the exit of the waters of the Rother by Rye; when this was finally destroyed by the storms of 1250, the beach at Holmestone, which probably indicated the promontory of the Ness,

was carried on to Dungeness and blocked the Rother at Romney. This promontory at Dungeness is now in like manner affecting the coast at Dymchurch and attacking the wall there. The position of the beach at Hythe shows it to have had a more seaward extension; and looking at all these facts, we have no difficulty in concluding that from Hythe to Romney a natural embankment existed in Roman times, protected by the coast-line here. The exit of the waters of the Rother must then have been westward of the town of New Romney, and the existing Dungeness beach had no existence. Such being the nature of the marsh, the erection of a sea-wall from Romney to Appledore effectually cut off the high tides from the eastern portions of the marsh. At or near the high lands forming the escarpment of the wealden beds towards Hythe, a certain quantity of water must have inundated the low lands at Burmarsh and adjoining low lands, but probably, not to a greater extent than at present, and they probably were all drained towards Appledore lake. Whence came the beach at Hythe? It is some distance from Dungeness, Romney sands intervening; the falls in this beach run at right angles to the present shore. The beach does not accumulate now; there is behind the beach a hatch of blown sand. These facts I mention, point to a considerable extension of the shore-line opposite Romney, and the mouth of the river must have been a considerable distance seaward of the town. Probably at that time beach extended eastward from the port of Romney to Hythe, forming a great natural barrier from the sea, as that of the present Dymchurch wall. I do not think any considerable river could have flowed at Hythe, as some have supposed, and formed that celebrated Portus Lemanus, unless indeed the river at Romney had two mouths, one of which, like that of the Stour, had flowed eastward as far as Hythe, as the Stour now flows into Pegwell Bay. Had there been any such river, it must have occupied the space where the Military Canal exists, in which case it has left no historical or other traces behind, and against such a river the Ree wall could have been no protection, supposing that to have been the work of the Romans. I have alluded to the Stonar beach as one that was anterior in date to the present beaches, and as having probably travelled from the eastward; this Hythe beach may be of like origin.

SHEPPY.

Let us now turn our attention to the north. The Thames and Medway unite their streams just before reaching the Isle of Sheppy, and they run through London clay beds for the most part. If we look at a map of that part of the Thames, you will see how its mouth is obstructed by various shoals and sand-banks; the shore-line also cut up into innumerable Isles. This London clay is a most unstable bed when subjected to the action of the waves, and, under atmospherical conditions, cracks

and slips, but is not readily dissolved with water. Clay absorbs moisture very readily, and expands very much during that process; on drying, it parts with its moisture readily, and contracts very much in so doing—hence, when London clay cliff is subject to alternations of moisture and drought, it is constantly in motion as far as these influences extend; though the London clay readily absorbs moisture when dry, it is anything but porous when saturated with moisture, but, on the contrary, is most impervious. So it happens that such shores (as those of Sheppy, for instance) are constantly falling into the sea, and, under the influence of its action, is washed away like sugar in water; for though not soluble, its particles are so small and light that they are most readily separated and carried away by the sea in suspension. It is no wonder, then, that we find a few centuries produce great changes in such a coast-line. Our historical evidences show great loss of the shore along this north side of Kent; whereas we have seen on the south rather a gain in some parts. That a further extension of the high cliffs at Sheppy, in a northerly direction, would exercise a most important influence in directing the current of the Medway river, and directing also the waters of the Thames, we must admit. I have few facts to guide me as to this coast in early times, but a map in Queen Elizabeth's reign shows that the Medway turned to the north by the Isle of Grain more than it does at present; also, that there was then a deeper and broader channel south of Sheppy and the Swale, while the marshes of Upchurch and Halstowe appear less subject to the water of the Medway than at present. However this may be, there must have been great changes since the Roman period of a minor character, which render it impossible to reconstruct the coast. The large discoveries of Roman remains, quite up to the marshes now inundated at high water, might indicate that the land was higher then than at the present time. But I have shown, when speaking of the Stour, that it was quite possible for land to be so low that it would be covered by the sea at high water, but yet, being distant from the sea-shore, to be protected by the length of its waterway. In the case of Sandwich and Canterbury, the sea has been getting annually further off; while in the case of Sittingbourne, it has been getting gradually nearer.

GENERAL CONCLUSION.

In my former papers I alluded to M. Goslet's papers on the Coast of Calais and St. Omer, as showing that, at the Roman period a large tract of land, since covered with water, had been used and populated by them. Then about the third century an invasion of the sea covered the area for six centuries; since, it had again been recovered from the sea, and Flemish towns built on it. Without our attributing this to any sinking and elevation of the land, we may find other causes might lead to such a state

of things. If you remember I showed how small a change in the contour of the coast had, by changing the direction of the tide, made great accumulations of beach to disappear; and that at present a great part of Romney Marsh might be laid under water by the destruction of the Dymchurch wall. You will realise the fact that tidal action has played a great part in these changes. In a paper on Cæsar's Landing-place, which I read before the Royal Archæological Institute, I pointed out what an important influence coast changes must have had on the tide, and that it was useless to take the data of the present tide-tables as our guide when speaking of events that occurred 2000 years ago. By the wear of the sea on the coast of the Straits of Dover, the Channel must have been considerably widened during so long a period. If we assume the Straits are now one mile wider than when Cæsar visited our shores, the tide which runs with a velocity of about three miles an hour up Channel, would carry more water into the German Ocean than a river a mile wide and 15 feet deep—such a current infringing on any part of the coast would make great changes. There are other changes also that have taken place in the German Ocean, which must have exerted immense influence on the tides when we remember that a north-east wind will materially lighten the tidal lever by forcing up the water of the North Sea. The travelling of beach in an eastward direction, shows that the set of the tide is more strong in that direction now on some part of the coast than formerly. At present the tide of Dover runs up Channel E.N.E. from about $1\frac{1}{2}$ hours before to 4 hours after high tides, and then turns to the westward to W.S.W. and runs nearly seven hours in this direction, and at an average of three knots at spring and two at neap tides. The tidal action governs the deposit of shingle on the shore, and thus we have in the former, elements that will change our coast-line, which, reacting on the tide, will cause an amount of change during the last 2000 years quite sufficient to account for these alterations we see. It is also reasonable to conclude like changes took place previous to the historical dates mentioned, but we are not at liberty to conclude those mutations were more rapid than those at present—and avoid the popular notion, that sudden and violent changes were the rule, not the exception. Archæologists are apt to overlook the element of time required, and thus conclude that the changes from what was at one period the state of the country, have all been brought about since the Romans came to Britain.

On the Development of the Trematoda

A PAPER READ BY G. DOWKER, F.G.S.

My excuse for bringing this subject forward this evening in place of the continuation of my former paper on Coast Changes is, that I have lately met with an extraordinary number of infusoria of a peculiar type, and exactly similar to another such swarm I found the year 1866, and that they are so difficult to keep alive any length of time. As a preface to my subject, I will give you the history of the animals I have met with. In the year 1866 and in the month of June that year, I observed a very peculiar appearance in one of my ponds. It was hot sultry weather. The pond in question had water lilies and aquatic plants in it, and I observed one evening all the vegetation covered with an opaque yellow substance, as if flower of sulphur in great quantity had been thrown into the pond. On examination, these proved to be innumerable infusoria, of leech-like form, which adhered together on the plants like swarms of bees. Being unable to determine to what class these animals belonged, I sent living specimens to Dr. Carpenter, and received in reply two letters, dated June 25, 1866, and July 30 of the same year. In the latter he states, "Your last little bottle afforded me the opportunity of carefully studying it; and I have also, finding it new to me, shown it to Professor Huxley. Its general characters are those of the turbellarian worms (to which the planaria belong), but its internal organization is so imperfect, and its diffidence so ready, that we are disposed to think it a *larval* form of some higher creature. Its nearest affinities seem to be to *opalina*, which is a parasitic worm of about the same grade of organization, and perhaps also a larval form." These infusoria I examined under the microscope, and made measurements and drawings of them, which I have by me. They appeared for some time in the pond before mentioned, but gradually disappeared, and have not appeared again since till this year—at least in such numbers, as I have carefully looked for them. They usually dispersed in the water in the day-time, but towards evening collected in the curious clusters or festoons on the weeds. There was no difficulty in collecting thousands of them on such occasions, uncontaminated with any other animalcule; and I kept numbers of them in bottles holding at least a quart of water, but I could not succeed in keeping them alive any length of time—they all shrank up into an oval egg-shape body and sank to the bottom of the vessel.

I will now give a description of these animalcule. They were about a fortieth of an inch in length, flat and ribbon-like, ciliated at the edges. They proceeded through the water with a

rotary motion, and occasionally doubled themselves into a figure of 8 shape; they were about 300th of an inch in breadth. There was a vesicle near the superior extremity, which showed a suctorial-shaped disk; at times when the animal was partially constricted this projected from the superior extremity. The body was filled with a yellowish opaque granular matter, showing no trace of organization. These animalcules I sought in vain for in the following summers, and it was only on the 15th of last month I met with the same animal again, presenting exactly the same appearance and occurring in equal profusion.

It was some time after my first acquaintance with these that I was reading an account of the development of the trematoda in Streenstrup's* "Alternation and Generations," and was much struck with the similarity of the animals there described, under the head of "*Cercaria Armata*," and figured in tab. 3, fig. 1a to 6a. So curious and wonderful are the transformations these animals undergo before they assume their final fluke-shape, the fearful ravages they commit in this form in destroying thousands of sheep; the sudden and mysterious spread of this disorder in particular seasons, and the very slight knowledge we possess of the larva forms and future development of these creatures, all combine to render this subject one of surpassing interest; and although I shall not, unhappily, be able to add much to what is already knowm, still I hope I may present it to you in sufficient clearness that you may understand the delicate nature of the enquiry. As before stated, on the 15th of last month I again found the infusoria in great abundance; this time they appeared in a gentleman's fountain, where are large growths of water lilies, aquatic snails, planaria, and leech. I found them assuming the same swarming form on the underside of the water lily leaves as on a former occasion, and they are in all respects identical with those I discovered in 1866. I therefore wrote again to Dr. Carpenter, mentioning my suspicion that they were connected with the trematoda. Dr. Carpenter suggested I should write and send specimens to Dr. Cobbold (the greatest English authority on the entozoa.) I did so, but unfortunately Dr. Cobbold writes that he has no time to examine the specimens, and cannot offer an opinion. He, however, refers me to his book on the entozoa, which I have consulted, without however finding any additional light cast on the subject of my enquiry from what I had read in Steenstrup's researches relating to the various phases these animais undergo. I will now, however, summarise these observations.

The best known form of the numerous family of the trematoda is the fluke or liver-place (*Distoma hepaticum*), or *Fasciola hepatica*, entozoon which inhabit the livers of sheep in particular situations, and especially in wet years, causing the disease called the rot which has this year and last been most

* See Ray's Society's Publication, 1845.

destructive to the sheep ; in many cases whole flocks having been destroyed by it. Similar forms are met with among all animals in the four higher classes, and among the lower the mollusca are equally infested by them. Several of these trematoda when young are not connected with any organ, but enjoy the power of free locomotion in water externally to the animal, which in their future state as entozoa they exist. In this condition they are provided with a locomotive organ, by means of which the animal propels itself through the water like a tadpole. In this larvæ state the trematoda are known to naturalists under the generic name of cercaria. The swimming movement of this Cercaria is very characteristic ; in performing it, the animal curves its body together into a ball by burying the head near the caudal extremity, and then elongating itself in sigmoid flexures, so that it presents the appearance of the figure 8. In this way they may be seen swarming about water-snails in great profusion. The reason for their keeping in the neighbourhood of these snails, is evident on placing them in water with these mollusks. After swimming about them for some time, they affix themselves by means of their suckers to the slimy integument, and finally work themselves into the snail, losing at the same time their caudal appendage. In this pupæ form they often may be found in the mantle of the snail in great abundance. How long they remain in this pupæ state is unknown. Steenstrup states that they do so not only for many weeks, but also many months. He states his observations were made on them in the months of July and August. In January following he noticed the change, in the animals escaping from their pupæ cases and assuming the Distomata form (A 8.)

The further advance of this fluke to a fully-developed animal as we know perhaps it may be determined from consideration of the other Distomata and Monostomata, in which the first stage of development has been shown by the observations of Siebold and others, our present information would lead us to conclude that it deposits ova, from which, either within the material body or without it, oval-shaped young proceed, which move about briskly in the fluid contained in the interior of the snail, or in the surrounding water, and bear no resemblance to their parent. In what way this progeny is transformed into a fluke, or as we know into a Cercaria, is as yet an unexplained mystery ; but this change can and does take place throughout only by the intervention of several generations, may be assumed as beyond doubt ; and if we examine attentively what is taught us by Bojanus, Baers, and Siebold respecting the development of the Cercaria, and interpret the phenomena thus presented in a natural way, we may to a certain extent penetrate the obscurity which involves the solution of this enigma. Whence comes then the free swimming Cercaria ? This question is answered by the observation of Bojanus, who states that this species is the same with those he saw swarming out from the "*King's yellow*

worms," described by him, and which occur in great numbers in the interior of snails, especially *Limnæus stagnalis*. It is, consequently, in these yellow worms, which are about two lines long, that the cercariæ (which are the larvæ of the actual fluke) are developed (4 a, plate 11.) *Cercaria armata* appears the nearest species I have found. There are, however, some points about these free swimming larvæ and *Cercaria* which appear to me still involved in obscurity.

In Dr. Cobbold's instructive work on the Entozoa, he thus summarises the known changes and reproduction of the *Fasciola hepatica*, or liver fluke:—

1. The *Fasciola hepatica*, or sexually mature liver fluke, is especially prevalent in sheep during the spring of the year, at which time it constantly escapes from the alimentary canal of the host, and is thus transferred to open pasture grounds.

2. It has been shown by dissection that the liver of a single sheep may, at any time, harbour several hundred specimens of the fluke, and it is certain that every mature entozoon will contain many thousand of minute eggs.

3. The escaped flukes do not exhibit powers of locomotion sufficient to prove them capable of undertaking an extended migration, but their movements may subserve the purpose of concealing them within the grass.*

4. The ova developed from the fluke eventually find their way into ponds and ditches. The free eggs at the time of maturity contained ciliated embryos capable of active progression.

5. The ciliated embryo, after a larger or shorter period of activity, loses its ciliated covering and becomes comparatively inert. It alters its form, and probably soon after gains access to the body of a fresh-water mollusc.

6. Once within the viscera of this intermediate host, the non-ciliated larva are called nurses, or spowcysts.

7. The nurse progeny, when fully developed, constitute the well-known cercariæ.

It is not certain whether the cercariæ are taken into the bodies of quadrupeds when the latter are drinking water or eating solid food, but it is probable that they are positively transferred in either way.

From the digestive organs of sheep or cattle, the cercariæ make their way to the liver and become encysted. The pupa thus encysted for many weeks, or even months, attains a higher organization, at last becoming converted into the sexually mature *fasciola hepatica*. Remarkable periodic outbreaks of liver rot are recorded by Simonds as occurring in England in

* All the living specimens of the sheep fluke died immediately after removal from the living animal, and I could keep none of them alive in water, they seem to require the warmth of the living animal.—G.D.

1809, 1816, 1824, 1830, 1853, and 1860. So much we learn from Dr. Cobbold's work.

I should be anxious to know if 1866 and 1865 had been characterised by a like outbreak.

In conclusion, I would observe that it is not certain that the infusoria I have found are identical with those I have referred to as described by Steenstrup; or is it certain that those he described were identical with those producing the liver-fluke in sheep; all that we can at present affirm is that they are more or less related to them. Indeed, on carefully reading Dr. Cobbold's work and the important one of Steenstrup, I am struck with the great uncertainty which exists on this subject. The distoma which Cobbold calls *fasciola hepaticum* has been most carefully figured and described, and Dr. Cobbold has figured and described other forms. The ova were figured by Lenckart, and in page 168 of Cobbold's work is figured a ciliated free swimming embryo of *fasciola hepatica* from Lenckart. But the former writes:—“*Up to this time at which I write, the subsequent changes which the embryo of fasciola hepatica undergoes are not clearly defined. Mozlinie and others have referred to certain of the cercariae and the higher forms of tremadode larvæ as the young of our fluke, but it cannot yet be positively asserted that we know the higher larval conditions of this parasite.*”

How far can we be sure that these larva forms are always developed? Are they the only forms in which the true fluke is ultimately produced? Do we know that the ova of the fluke, if swallowed by the sheep, will produce other flukes without undergoing a similar round of nurses and their offspring? Are the fresh-water mollusks the only animals that form the host of these infusoria? All these questions must be fully answered before we can be said to have arrived at a satisfactory knowledge of their history.

Again, the liver-fluke in sheep appears to have been prevalent at different seasons; but if they merely introduced the larvæ into their systems through the water they drank, there is no reason in particular why some seasons must have so prejudicially affected them, as every season there must have been sufficient in the water to effect this purpose; unless, indeed, the particular form in which they can be introduced into the animal is that of the *cercarian*, and that these are only produced at certain intervals. I have stated that in 1866 I met with this form in great abundance, and not again till 1880.

5 APR 1887



EAST KENT NATURAL HISTORY SOCIETY.

MEETINGS 1881—82.

SCIENTIFIC on WEDNESDAYS, at 7 o'clock.

| | | |
|-----------|----|-------|
| March | 2, | 1881. |
| April | 6, | „ |
| May | 4, | „ |
| June | 1, | „ |
| July | 6, | „ |
| August | 3, | „ |
| September | 7, | „ |
| October | 5, | „ |
| November | 2, | „ |
| December | 7, | „ |
| January | 4, | 1882 |
| February | 1, | „ |
| March | 1, | „ |
| April | 5, | „ |
| May | 3, | „ |
| June | 7, | „ |

N.B.—The Committee meet on the Saturday next following the date of the Scientific Meeting in each month.

ANNUAL MEETING,

TUESDAY, JANUARY 31, 1882, at 4 o'clock p.m.

The Scientific Meetings are held in the Society's Room, 6, High Street, Canterbury.

THE HISTORY OF THE

ROYAL SOCIETY OF LONDON

FROM ITS INSTITUTION IN 1660

TO THE PRESENT TIME

BY JOHN VAUGHAN

ESQ; OF THE SOCIETY

IN TWO VOLUMES

LONDON: Printed by J. Sturges, in Pall-mall, 1756.

By Authority, R. Baldwin, Printer, in Pall-mall.

ADAM SMITH

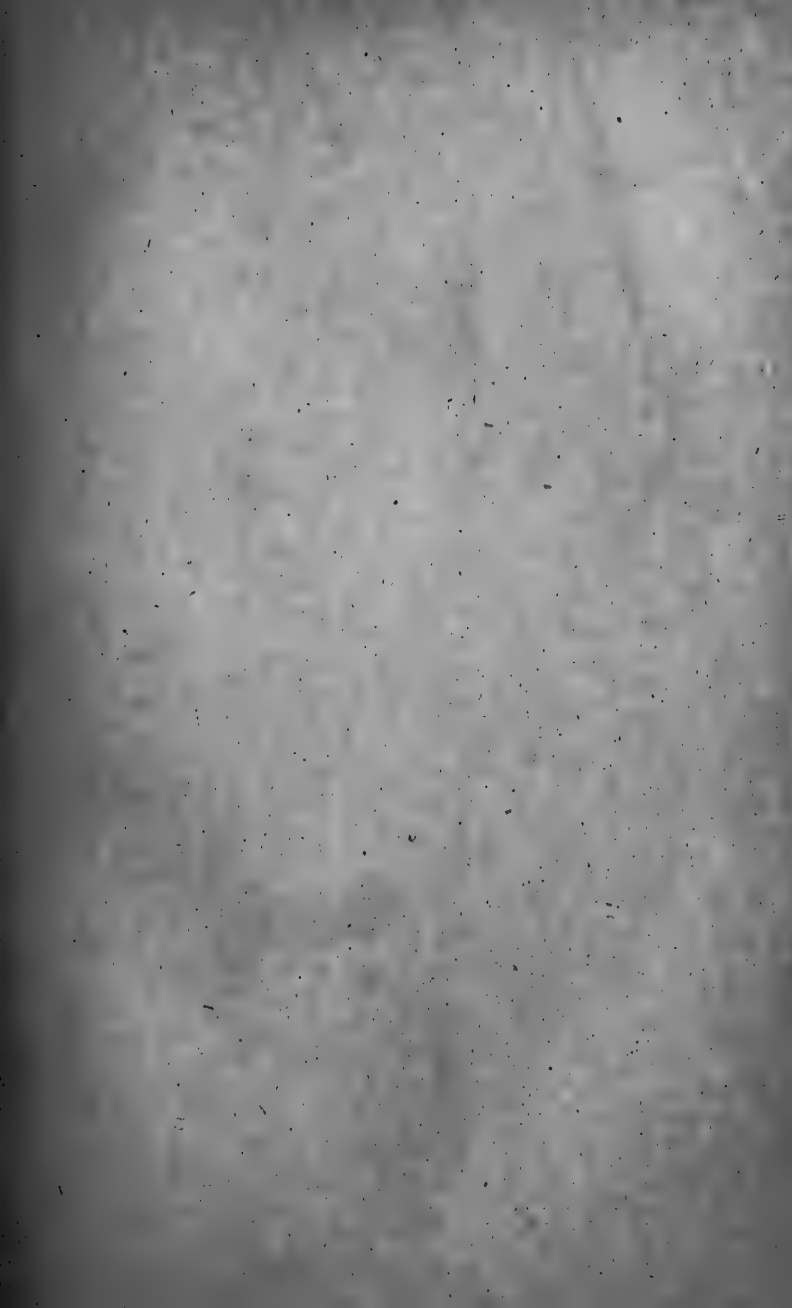
Author of the Theory of Moral Sentiments, &c.

Printed by J. Sturges, in Pall-mall, 1756.

Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

—
1881.





TWENTY-FOURTH REPORT

(1881)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

ON 1st FEBRUARY, 1882.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1882.

THE HISTORY OF THE

1881

EAST RIVER

GENERAL HISTORY

ANNALS OF

1881

ON THE FEBRUARY 1881



TWENTY-FOURTH REPORT

(1 8 8 1)

OF THE

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Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1882.

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| List of Books and Periodicals | 9 |
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| Table of Scientific Meetings on the fly leaf at the end of this Report. | |

EAST KENT NATURAL HISTORY SOCIETY.

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REPORT OF THE COMMITTEE FOR 1881.  
—————

The Committee have to congratulate the Society on the number and excellence of papers and addresses recorded with the Transactions for the year.

## BOTANICAL.

Some very instructive Botanical addresses were given during the year by James Reid, Esq., on Fungi. At the extra meeting on the 2nd of July, G. Rigden, Esq., M.R.C.S., exhibited a curious Fungus from New Zealand, and made some very interesting observations on the same subject. The Committee very much regret that they are only in possession of very scanty extracts of these lectures. The Society are also indebted to Mrs. Dean, of St. Mildred's, and Mrs. McDakin, for Botanical contributions, and hope that, during the summer months of 1882, specimens may be exhibited at each meeting. This is a department in which the Committee look to the lady members for considerable aid. It is very desirable that the representative flowers of the month should be laid upon the table at each meeting, either as botanical specimens (with labels attached), or decorative bouquets.

## GEOLOGICAL.

At the June meeting, a Geological paper was contributed by Dr. Boddy, of Birmingham, on the formation of Rock Salt.

At the July meeting, Arthur Reid, Esq., B.A., F.G.S., gave a lecture on the effects of water on various rock formations, entitled "The Life History of a Rain Drop."

On the 2nd of November, G. H. Nelson, Esq., M.A., F.R.G.S., delivered a very able lecture on "The relation of the Maastricht Beds of Holland to the Cretaceous Rocks of Kent."

At the December meeting, the President addressed the Society on "Extinct Elephants of Kent."

## MICROSCOPICAL.

In this department, the Society are indebted to Mr. Jas. Fullagar for his researches in the life history and development of Amœba. (See January, May, and August meetings).

Colonel Horsley, R.E., Mr. Reginald E. Horsley, Mr. H. Dean, Mr. Hayward, and Mr. G. B. Rosseter, have also been contributors in this department. (See Report of November meeting.)

## ZOOLOGICAL.

At the April and September meetings, Marine Zoology was well represented by two lectures on Barnacles, by Sibert Saunders, Esq., of Whitstable.

Mr. Reginald E. Horsley, at the special meeting, exhibited and made some observations on Marine Zoophytes from the Frith of Forth.

At an extra meeting on 29th of June, Colonel Horsley exhibited a living specimen of *Mya arenaria*, and marine zoophytes, captured at Whitstable the day previously, this

having been the only excursion made by the Society during the summer. It is to be regretted that excursions by a larger number of members have not been more frequent during the year. Judging, however, from the number of interesting specimens exhibited at many of the monthly meetings, smaller gatherings of two or three members for this purpose have been very successful, and, so far as actual scientific collecting goes, are to be preferred, although the more largely attended excursion meetings have a social value in promoting a taste for natural history.

#### FINANCIAL.

During the past year, there have been three deaths among the members, and four resignations. On the other hand, there have been four new members elected, besides seven others elected at the close of 1880, who paid their first subscription in 1881. The number on the books at the present time is 85, or seven less than the previous year. Of these 69 have paid their subscriptions for 1881; some also have paid up arrears of subscription for 1880, and one or two theirs for 1877, -78, and -79. There are still some defaulters, who take no notice of the yearly reminders, nor have they expressed their desire to have their names removed from the list of members.

As regards funds, the subscriptions for 1881, received up to 26th January, 1882, have amounted to £33 12s., in addition to which £8 5s. of arrears for 1877 to 1880 inclusive have been paid, thus making a total of £41 17s. available for the year under review. Deducting from this sum the deficit against the Society on the 21st of January, 1881, viz., £8 12s. 10d., there remained £33 4s. 2d. to meet the expenditure of the year, which, as shown by the Financial Statement herewith submitted, was not quite sufficient, there being

still a balance against the Society of £1 17s. 5d. The grant to Library amounted to £6 1s. 10d., the particulars of which will be found in the Report of the Hon. Librarian, There are yet £16 of arrears nominally due by members whose names are still on the list; but of this sum it is not likely that more than £2 will be recovered. Under these circumstances, and taking into consideration the falling off in annual income, owing to the loss of members by death, or otherwise, it is absolutely necessary to reduce the expenditure. This can only be effected by obtaining cheaper accommodation on the one hand, and lessening the cost of printing on the other. With the present income, it is quite impossible to purchase new books for the Library.

The Committee beg to express their deep regret at the continued illness of their Honorary and Assistant-Honorary Secretaries, and have, in accordance with the desire of these officers, prevailed upon G. H. Nelson, Esq., M.A., F.R.G.S., to undertake the office of Acting Honorary Secretary.

In conclusion, the Committee feel that the cordial thanks of the Society are due to its Officers; to the President (Capt. McDakin), to the Hon. Secretary (G. Gulliver, Esq., F.R.S.), to the Hon. Assistant Secretary (Mr. James Fullagar), to the Hon. Treasurer and Librarian (Colonel Horsley, R.E.), to G. Rigden, Esq., M.R.C.S., for his kindness in auditing the accounts, and to Mr. E. B. Hayward for his assistance at the monthly meetings.

The thanks of the Society are also due to the Members who have contributed papers during the year, as well as to those Ladies and Gentlemen who have made presentations to the Library; and especially to Miss Wray for her handsome donation of a large cabinet, with a collection of fossils, minerals, and shells.

## EAST KENT

# NATURAL HISTORY SOCIETY.

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### Report of the Librarian for 1881.

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The sum at the disposal of the Librarian from the general funds of the Society during the past year was £6 1s. 10d., which was expended as follows:—

- |                                                           |   |    |   |
|-----------------------------------------------------------|---|----|---|
| 1. For Periodicals.....                                   | 4 | 7  |   |
| 2. Binding 14 vols. of previous year's periodicals, &c... | 1 | 14 | 1 |

The low state of the Society's funds did not admit of any money being spent in the purchase of new books.

The undermentioned work has been received from the Ray Society in return for the annual subscription of one guinea, viz. :—

Buckton's, G. B., Monograph of the British Aphides, vol. 3, 8vo., 1880.

The Society acknowledges with thanks the undermentioned books and pamphlets, viz. :—

1. Cook's, M.C., Fungi, their nature and uses, 1 vol., 8vo., 1875, presented by James Reid, Esq.
2. Figuiers's, Louis, World before the Deluge, 1 vol., 4to., presented by R. E. Thompson, Esq.
3. Boddy's, Dr., History of Rock Salt, 1 vol., small 4to., presented by the author.
4. Nichol's Geology of Scotland, 1 vol., 8vo., presented by Rev. J. R. Martin.
5. Journal of the Royal Microscopical Society for 1881, presented by that Society.
6. "Nature" for 1881, presented by G. Rigden, Esq., M.R.C.S.
7. The Scientific Roll, Nos. 1 to 4, 1880-81, presented by the Editor, Alex. Ramsay, Esq.

# FINANCIAL STATEMENT, 1882.

| RECEIPTS.                                                     | £ s. d.  | EXPENDITURE.                                         | £ s. d.  |
|---------------------------------------------------------------|----------|------------------------------------------------------|----------|
| Subscription for 1881, received up to 26th January 1882 .. .. | 33 12 0  | Balance (deficit) 21st January, 1881 .. ..           | 8 12 10  |
| Arrears received to same date :—                              |          | Rent of Room for one year .. ..                      | 15 0 0   |
| for 1871 .. ..                                                | 0 10 0   | Fire Insurance on Library, &c. .. ..                 | 0 6 9    |
| “ 1878 .. ..                                                  | 1 0 0    | Subscription to Ray Society .. ..                    | 1 1 0    |
| “ 1879 .. ..                                                  | 1 0 0    | Contribution to Library .. ..                        | 6 1 10   |
| “ 1880 .. ..                                                  | 5 15 0   | Hon. Assistant Secretary, Petty Cash .. ..           | 1 7 6    |
|                                                               |          | Cross and Jackman for Printing Report for 1880 .. .. | 11 0 0   |
| Balance (deficit) 26th January, 1882 .. ..                    | 1 17 5   | New Account Book .. ..                               | 0 1 0    |
|                                                               |          | Carriage, P.O. Order and Postage .. ..               | 0 3 6    |
|                                                               | £43 14 5 |                                                      | £43 14 5 |

W. H. HORSLEY, COLONEL,  
Hon. Treasurer.

*Examined and found Correct :—*  
GEORGE RIGDEN.

Canterbury,  
January, 1882.



# LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

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## VERTEBRATA.

- Bell's British Quadrupeds, 1 vol., 8vo.  
Cassell's Book of Birds, 1 vol., 4to.  
Couch's Fishes, 4 vols., 8vo., 1862-66.  
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.  
Munro's Structure of Fishes, 1 vol., folio, 1785.  
Nitsch's Pterylography, 1 vol., 4to., 1867. Ray Society.  
Parker's Structure, &c. of the Shoulder Girdle and Strenum in the Vertebrata, 1 vol., 4to., 1868. Ray Society.  
Swainson's Birds, 2 vols., 12mo.

## PAMPHLETS.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Meschus, Tragulus and Orycteropus.  
——— Memoirs on the Blood of Lemna Cornubica.  
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.  
——— On the Muscular Sheath of the Esophagus of the "Aye, Aye," (Chiromys Madagascariensis.)  
——— On the Fibres of the Crystalline Lens of the Petromyzonii.  
——— On the Esophagus of the Red Hornbill.  
——— On the Esophagus of Sauropsida and other Vertebrata.  
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.  
——— On the Measurement of the Red Corpuscles of the Blood of Batrachians.  
——— Sketches of the Spermatozoa of Petromyzon.  
Hammond, W. H.. On the Structure of the Red Blood Corpuscles, &c.

## INVERTEBRATA.

- Allman's, G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with Burmeister's Trilobites.  
——— Monograph Gymnoblasic, or Tubularian Hydroids, parts 1 and 2, folio, 1871-72, Ray Society.  
Baird's Entomostraca, 1 vol., 8vo., 1850, Ray Society.  
Baker's Natural History of the Polype, 1 vol., 8vo., 1743.  
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.  
Bowerbanks, Dr., Monograph of British Spongiadae, 3 vols., rl. 8vo., 1864-66-74, Ray Society.  
Brady's, G. S., Monograph of the Copepoda of British Isles, vols. 1, 2, 3, 8vo., 1878, 1880, 1880, Ray Society.  
Buckton's G. B., Monograph of the British Aphides, vols. 1, 2, 3, 8vo., 1876, 1879, 1880, Ray Society.  
Carpenter's Foraminifera, Ray Society, 1 vol., folio, 1862.  
Curtis on Farm Insects, crown 8vo., 1 vol., 1860.

- Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.  
 Denny's Monographia Anoplurorum Britanniae, 1 vol., 8vo., 1842.  
 Douglas and Scott's British Hemiptera, Heteroptera, 1 vol., 8vo., 1865, Ray Society.  
 Forbes', Professor E., British Naked Eyed Medusæ, 1 vol., 4to., 1848, Ray Society.  
 ——— British Star Fishes, 1 vol., 8vo., 1841.  
 Gesse's British Sea Anemones, &c., 1 vol., rl. 8vo., 1860.  
 Greene's The Insect Hunter's Companion, 12mo., 1863.  
 Hanley's Lamarck's Shells, 1 vol., 8vo.  
 Huxley's Oceanic Hydrozoa, 1859, 1 vol., crown folio, Ray Society.  
 Johnstone's British Zoophytes, 2 vols., 8vo., 1847.  
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# EAST KENT NATURAL HISTORY SOCIETY.

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## TITLE AND OBJECTS OF THE SOCIETY.

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The objects of the EAST KENT NATURAL HISTORY SOCIETY shall be the Collection and Diffusion of Practical and Theoretical Knowledge respecting Natural History, in all its Branches, both in relation to the particular District and the General Science.

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## *RULES AND REGULATIONS.*

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### MEMBERSHIP.

1.—The Society shall consist of Ordinary, Honorary, and Corresponding Members, and of Associates.

2.—Every candidate for admission into the Society as an Ordinary Member must be proposed in writing by two Members, and the election shall be by show of hands, or by Ballot, taken at any Meeting of the Committee, or at a General Meeting—one negative in five votes to exclude.

3.—The annual Subscription to be paid by Ordinary Members shall be Ten Shillings; the Subscription shall become due on the 1st of January in each year, and shall be paid in advance for the current year. Any Member neglecting to pay his Subscription for three months after it is due, shall be applied to by the Treasurer or Secretary, and if the Subscription remain unpaid for three months after such application, he shall cease to be a member of the Society.

4.—The Committee shall have power to admit, without ballot, on the nomination of two Members, any Lady who shall be desirous of becoming an Ordinary Member, and her Subscription shall be Five Shillings. This rule shall apply also to such sons, brothers, and nephews of Ordinary Members, as may be regularly resident in the same house with those Members.

5.—Any persons distinguished for their researches in Natural History, for their liberality to the Society, or for their connection with similar Societies, may, on the recommendation of the Committee, be elected Honorary or Corresponding Members of the Society, provided they do not reside within the district; such Honorary and Corresponding Members shall not be subject to any of the expenses of the Society, and shall have no vote in its affairs, nor be entitled to take books out of the Library, or to the Reports and Notices.

6.—In order to cultivate the study of Natural History, among individuals of the class of Mechanics, &c., residing in the district, the Committee shall have power to admit individuals of that class as Associates, provided they shall first communicate some information or observation on Natural History, exhibit such specimens or present them to the Local Museums, as shall, by their merits, satisfy the Committee. Such Associates shall enjoy the privileges of Honorary Members.

#### MANAGEMENT AND BUSINESS MEETINGS.

7.—The affairs of the Society shall be conducted by a Committee of Management, which shall consist of a President, Vice-Presidents, a Treasurer, and an Honorary Secretary, with not less than six Members, who shall all be chosen at the Annual Meeting. Three Members of such Committee shall form a quorum. The Meetings shall be held at four o'clock p.m. on the first Saturday in every month, and at such other times as the Secretary may deem necessary. At any regular meeting including a sufficient number of Committee-Members, they may then and there declare themselves and act as a Committee in the ordinary business of the Society,

8.—An Annual Meeting shall be held at four o'clock p.m., on the last Tuesday in January, in each year, at Canterbury, for the purpose of electing the officers for the current year, receiving the Annual Statement of Accounts, and Report of the Committee, and conducting the general affairs of the Society. In case of necessity, the Committee may alter the hour, posting due notice thereof in the Society's room.

9.—Special General Meetings may be summoned by the Committee, or by the Secretary, on the requisition (in writing) of any six members of the Society, the specific purpose of the Meeting being stated in the notice, which shall be sent to each Member not less than one week before the time of such meeting.

10.—All questions discussed at the Meetings shall be decided by a majority of votes; and if upon any question the votes shall be equal, the Chairman of the Meeting shall have the second or casting vote.

11.—In the event of any vacancy occurring in the Officers or Committee between the Annual Meetings, the same shall be filled up by the Committee. The two Members who have been the longest thereon, and have attended the fewest meetings thereof, during the preceding year, shall go out by rotation at the Annual Meeting.

12.—In order to facilitate the objects of the Society, the Committee shall be empowered to appoint any Member a Local Secretary for the town or district he may reside in. Such Local Secretary shall be *ex-officio* a Member of the Committee.

#### SCIENTIFIC MEETINGS AND EXCURSIONS.

13.—The Meetings of Scientific Business shall be at Seven o'clock p.m. on the first Wednesday of every month, at Canterbury; also extra Meetings at such place and time as the Committee shall have posted due notice of in the Society's apartment. Each Member to have the right of introducing a Visitor at these Meetings.

14.—There shall be ordinary excursions on the Afternoon of the day of each evening Scientific Meeting, and at other times, if the Committee so appoint, time and place to be duly notified in the Society's room by the Committee; and Special Excursions at such times and places as may be approved by the Committee, who shall consider written suggestions of Members on the subject.

15.—Minutes of the proceedings of all Meetings shall be entered by the Secretary in a book kept for that purpose.

16.—The Secretary to give seven days' notice of Special Excursions to every member, stating the time and place thereof, &c.

## LOCAL AND DISTRICT MEETINGS.

17.—To promote still further the objects and interests of the Society Local Secretaries and Members are invited to organize Meetings or Excursions in their district, and to give notice of the same to the General and all the Local Secretaries, stating the time and place of Meeting, and what particular subjects are to be brought forward.

## COLLECTION OF SPECIMENS.

18.—The Society, as soon as it may possess sufficient means shall endeavour to make a collection of Objects of Natural History, both with a view of forming a Museum and distribution of Duplicate specimens according to the regulations to be adopted by the Committee.

## LIBRARY.

19.—Only Books and Periodicals connected with Natural History are to be purchased by the funds of the Society, and the number and particular books of this class to be purchased shall be determined by the Committee.

20.—All the Books and Periodicals shall be kept in some convenient place, so that Members shall be able to refer to them or take them out under such regulations as the Committee from time to time may think proper to make.

21.—Members are also invited to lend books for the use of the Library, reserving to themselves the full right of ownership ; such Books to be under the care of the Committee, and not allowed to be taken out of the Library.

22.—In order to allow the Librarian to examine the Books they must all be returned to the Library and none taken therefrom during the first week in every June.

# ABSTRACT OF PAPERS

READ AT THE MONTHLY

## SCIENTIFIC MEETINGS.

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JANUARY, 1881.

*Researches on the Amœba, by Mr. J. Fullagar.*

The paper was illustrated by some of those beautifully executed drawings of microscopic creatures for which Mr. Fullagar has become justly renowned. The drawings showed the remarkable series of changes of form observed in the case of some Amœbas which were found in connection with some of the singular water plant *Nitella*. The Amœba is regarded as presenting the simplest form of organic life. It consists of a microscopical particle of sarcode or gelatinous matter endowed with the power of movement and growth and the assimilation of food. The movement takes place by the throwing out of irregular and ever changing portions of its own substance, which are termed pseudopodia or false feet, so that the Amœba is constantly varying its form. The sarcode is naked and homogeneous. A movement of granules is perceptible and contractile vesicles are seen in some specimens. Lowest in the scale of animal life, if it be animal, the Amœba performs many vital functions without possessing the elaborate organs which higher grade living things require. It is truly remarkable that so low an organism should be able to move from place to place, seize, retain and digest as food active living animalculæ. It moves without limbs, eats without a mouth, and digests its food without a stomach. Its shape is a nondescript, no two are alike and no one retains the same form long. The Amœba captures in some mysterious way and surrounds with its own body moving infusoria. Mr. Fullagar has seen these gradually become enveloped, struggle to escape from their living prison in vain, and at last die and be

dissolved within the Amœban lump of jelly. Unwary animalculæ have to abandon hope when they once get within reach of the Amœba.

In an account of some changes witnessed in the Amœba and recorded by Professor Edwards of New York, he says he watched them for two days and noticed them pass from an almost glass-like clearness to a granular state in which the granules appeared to resemble densely packed oil globules. Then came a period of rest followed by a development into a regular ciliated animalcule, a Colpoda or Paramecium. Mr. Fullagar said his observations had not confirmed that of Professor Edwards, which, however, was likely to be correct. He alluded to the fact that Saville Kent in his new manual of the Infusoria places the Amœba as the central starting point of animal life.

In the case of the Arcella we have an Amœban within a shell, convex above, concave below with an opening for the pseudopodia. Amœbas also sometimes became encysted. Mr. Fullagar gave an account of the various changes which he had witnessed in the Amœbas he had under observation. His descriptions would of course be unintelligible without the drawings which illustrated them. On the conclusion of the paper a vote of thanks was passed to Mr. Fullagar for his valuable researches.

Mr. J. Reid expressed the pleasure it had given him to hear the paper. He thought it was desirable in the present state of knowledge of these lower forms of life to be very careful not to conclude that the Amœba was really an animal. There was so little distinction between the lowest forms of animal life and forms of vegetable life that it was unwise to be hasty in describing such organisms as the Amœba as belonging to one or the other kingdom.

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## MARCH.

Colonel Horsley exhibited a beautifully prepared specimen of Chirodota.

This genus belongs to the class Echinodermata and is allied to Synaptidæ. The Calcareous particles imbedded in the skin of the Chirodota are wheel-shaped when viewed with a microscope. One species is British, but they are mostly inhabitants of warm seas. In *C. Violacea*, a Mediterranean species, the skin is full of groups of broad, thin, hyaline wheels lying upon one another and connected by a fine thread. The wheels have five or six flat radiating spokes. The wheels are exceedingly small in the



Chirodota Lævis, and are arranged in groups. In the *C. Myriotrochus* they are imbedded in myriads, as the name implies.

Mr. Rossiter exhibited a living specimen of the *Æcistes Janus* from the pond on the top of St. Thomas's Hill, agreeing closely with the specimen figured in the Journal of the Royal Microscopical Society for February, 1881, obtained from Loch Lundie, and discovered by Mr. J. Hood of Dundee. The *Æcistes Janus* is a most striking addition to the Melicertidæ, forming a connecting link between the two genera *Æcistes* and *Melicerta*.

#### APRIL.

##### *Mr. Sibert Saunders on Barnacles.*

Mr. Saunders said that everyone who visited the seaside could become familiar with representatives of the Cirripedia, which so profusely cover stones, shells or woodwork left uncovered by the receding tide. These stalkless barnacles, or acorn-shells belong to the genus *Balanus*, of which there are many species. The Lepadidæ, or pedunculated Cirripedes, formed another important family, one species of which, known as the Goose Barnacle (*Lepas anatifera*), was formerly the subject of a curious fable. It was gravely asserted that it grew on a tree by the water side, and that living aquatic birds issued from it. Though the general outward appearance of these species is quite different, the structure of the contained animal is very similar. The Cirripedia occupy debateable ground between the Crustacea and the Mollusca. Many naturalists have associated them with the latter class, but it is now generally admitted that their proper place is with the Crustacea. Darwin ranks them as one of the main divisions of that class, and, tracing them through all stages of growth, shows that segments wanting in the mature animal exist in the larval stages. (Mr. Saunders showed under the microscope living specimens of the larva.)

Taking one of the stalked barnacles from which half the shelly covering had been removed, the included animal could be better examined. The whole shell with the peduncle consists of the first three segments of the head, firmly cemented to some substance, and modified into a carapace which encloses the mouth and the rest of the body. This, in reality the thorax, consists of two portions; one, a soft bag, called the prosoma, carrying the mouth and first pair of cirri; the other supporting the five pairs of posterior cirri, answering to the ambulatory legs of the higher crustacea. These are biramous, and are so

arranged that they form twenty-four long and flexible arms bearing spines or bristles, adapted for securing prey. They are thrown out and drawn in with great rapidity, like a many-fingered hand, and catch any suitable food that comes within range. (A large number of living specimens were on view, incessantly at work in the way described). The muscles regulating these movements are connected with a nervous system described by Darwin, as showing equal development with a decapod crustacean.

The living specimens of the larva of the *Balanus* have the appearance of an entomostracous crustacean. The oval body is covered by a dorsal shield; it is furnished with a single eye, and has three pairs of swimming legs. After the first moults, antennæ are developed. In the second stage the body is enclosed in a bivalve shell, the antennæ are aborted, and two fleshy projections appear which, in the next stage, develop into prehensile antennæ. In the third or pupal stage, the single eye has divided into two distinct eyes, and instead of three pairs of legs there are six.

In the last stage the mouth is but rudimentary, so that the larva cannot eat, and as soon as it has found a suitable substance it attaches itself by its antennæ, which have sucking disks, and undergoes its final change. (Mr. Saunders exhibited a wine bottle to which about two dozen full grown animals had attached themselves. It was found floating, being corked, and showed that the barnacle can adhere to the smoothest surface.) Darwin had traced, in the middle of the disk, cement ducts by means of which the creature can fasten itself to any substance. These ducts continue during the life of the animal to convey cement to the point of attachment. The shells of the pupa, eyes, &c. are moulted, and six pairs of cirri are formed, as well as the valves or capitulum of the mature barnacle.

In the case of the sessile acorn-shells, that portion of the head by which the animal becomes attached expands into a broad basis of calcareous matter. The valves are placed within a conical shell, and move up and down, opening for the protrusion of the cirri.

Mr. Saunders showed a variety of specimens, living and dead, to illustrate that the barnacle will attach itself to almost any substance. He doubted if the difficulty as regards ships' bottoms could be overcome.

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## JUNE.

*Dr. E. M. Boddy, of Ramsgate, on Salt, and the position it holds in Geology.*

Abstract salt, or chloride of sodium, is found in six different physical conditions but there are only three feasible explanations

of the origin of rock salt :—volcanic agency in conjunction with earthquake action ; marine explosion, or overflow of sea-water and subsequent evaporation ; or gradual recession of sea-water and deposition of salt as it receded. The generally received opinion is that it is the result of volcanic force. There are strong facts in favour of that theory. Gigantic mountains, composed of rock salt, stand solitary in districts where there are no traces of saline matter for hundreds of miles : thus one near Cordova is 500ft. high and three miles in circumference. Isolated masses are found in Lahore, Peru and other countries. On the south of the Dead Sea there is a mountain of rock salt extending five miles with a height from 200 to 400ft., but here the whole district is charged with salt. Lastly, there is the Indian salt range. These masses might have been elevated through the crust of the earth by some ancient volcanic force. Another fact which favours its seismological or volcanic origin is that rock salt is often found in close relation with gypsum, or sulphate of lime, known to be invariably the production of some subterranean action.

The objection to this theory is the total absence of organic remains in rock salt, while gypsum is very rich in remains of organic matter. But rock-salt is not always found in juxtaposition to gypsum. It is not confined to any particular group of strata. The salt mines of Galicia belong to the Tertiary, those of New York to the Silurian system, and in this country the Trias is the chief repository of salt. It is also present in the Lias. These facts indicate that it is not the result of regular geologic action, but probably due to volcanic agency. It has been suggested that an igneous origin of rock-salt and gypsum is not at all unlikely, and that the consolidation of both rocks was caused by intense heat, but there is the difficulty of the difference of the two rocks as to organic remains.

It was found by the Challenger that volcanic detritus is almost uniformly scattered over the floor of the ocean, and in such quantities that all the volcanoes, active and exhausted, would not suffice to eject material in such an enormous amount as to spread it over so vast a surface. There must be other submarine vents to account for such a distribution. As to the theory of marine explosion as an origin of rock-salt, it must not be forgotten that marine explosion and volcanic action are generally simultaneous.

The bottom of the ocean is in a continual state of change. There is a presumed subterranean communication between the North Sea and the Caspian, and other such communications between distant seas and inland lakes. What is more probable than that under-currents of water, dense with salt, pass into subterranean caverns, deposit their salt, and flow back to the ocean ; that this process, going on for centuries, forms beds of salt, which

are afterwards forced up nearer or through the crust of the earth by volcanic or earthquake action.

But the great difficulty in connecting rock-salt with a marine origin is the total absence of organic remains. How is this to be accounted for? Rock-salt and gypsum are frequently contiguous. The sulphuric acid of the latter and the hydrochloric acid of the former indicate a common origin, and both acids are also volcanic products. If both rocks were once in a state of fusion, one may have been favourable for the preservation of organic remains, and the other to the complete dissolving and metamorphosis of such material, giving it an entirely new character. If that were so, there is no longer a difficulty in attributing the formation of rock-salt to volcanic and earthquake action.

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## JULY.

James Reid, Esq. described, by means of beautifully-executed diagrams, curious changes gone through by the fungus called the Earth-Star, or *Geastrum*. It has first somewhat the appearance of the puff-ball, but as it matures, the upper and outer envelope divides at the top into about nine segments; it then has the appearance of a flat star-shaped fungus, resting on the ground, bearing within its centre a globular portion containing the spores of the fungus. Under certain atmospheric conditions, the rays curl under to such an extent that it stands up high above ground on their points like an octopus. These changes of form may be gone through several times, depending on the state of the atmosphere.

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## AUGUST.

Mr. Fullagar exhibited, under the microscope, some specimens of the beautiful *Volvox globator*, which may now be found in the ponds of the neighbourhood in vast quantities. In the whole circle of pond life, there is no more interesting object than *Volvox*, and it is a special favourite with microscopists. Though measuring only one-fiftieth of an inch in diameter, when a bottle of water containing them is held up against the light, their little bodies may be seen by the naked eye as minute movable green spots. Seen under a low power of the microscope, the *Volvox* is found to be a globe of transparent membrane of a delicate green colour, marked with fine lines in the form of network, with darker green spots at the points where the lines cross each other. Smaller but similar spheres may be seen rolling about within this parent

globe. Viewed under a higher power of the microscope, the green spots at the meeting of the lines are found to be clusters of delicate hair, and doubtless it is owing to their action that the *Volvox* constantly rolls through the water. For a long time the *Volvox* was considered a low form of animal life, and was classed under the Infusoria, but is now grouped with the Algæ. Though endowed with the peculiar motion alluded to, there is no reason why it should be called an animal on that account, since zoospores with movable cilia are not at all uncommon among undoubted plants. Finally, the old *Volvox* breaks up, the young ones escape from their temporary prison, and, floating away on their own account, grow to the size of their parent, and enclose little rolling balls within themselves as did their progenitors.

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## SEPTEMBER.

Mr. Sibert Saunders, of Whitstable, read a paper in continuation of his former interesting account of the Cirripedia. His special object on this occasion was to show the structure of the shell of the stalkless barnacle, and its mode of growth. This he did by means of descriptions, illustrative diagrams, and specimens prepared to show the component parts of the shell.

To a casual observer it is not easy to understand how so apparently fixed and solid a shell as that of the stalkless barnacle is enlarged with the growth of the animal. Mr. Saunders showed how beautifully intricate, how exquisitely perfect, are the means provided for this purpose. The shell which appears to consist of a single piece, of irregular external shape, is really a compound structure, consisting of 4, 6 or 8 compartments. These compartments are invariably arranged in a definite order; the one fitting into and interlocking with the others on either side of it by means of sutures, and by extensions of the sides, termed, according to their shape and position, radii or alæ. Nor is the shell itself in most genera solid throughout; on the contrary its external and internal laminæ are united by a beautiful system of connecting septa. The upper portion of the shell is strengthened by an internal hoop' called the *sheath*, formed by a thickening of a portion of the inside surface of those compartments which overlap the alæ so as to form a ridge into which the edges of the alæ are received.

The *basis* of the shell in some species is composed of membrane; in others it is calcareous, and sometimes consists of two laminæ separated by septa, in the same manner as the walls. The basis is cemented to whatever surface the animal first becomes attached. By additions to the basis round the circumference, and to the compartments on the edges of the radii and

alæ, the shell grows in diameter. It is increased in height by additions to the basal margins of the compartments. Darwin states that in the living state, the tubes formed by the septa of the walls and base, are occupied by threads of corium, and that crests of corium also run into each suture between the compartments. He also supposes that the tips of the complicated ridges, and points interlocking on the lines of sutures, are actually united by corium in a calcified, yet still growing condition.

Mr. J. Reid exhibited and explained a very large specimen of a fungus, of a foliated kind, removed from a beech tree. This fungus more frequently grows on the elm. It is edible, though its leathery substance is by no means attractive to the gourmand. A kind of tough leather-like cloth is made out of it, for clothing; its substance, dried and powdered, formed the amadou, so generally used to obtain fire, before lucifer matches came into use. It has several other uses.

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#### OCTOBER.

James Reid, Esq., with the aid of specially prepared diagrams, described the development and peculiarities of some of the fungi. This interesting lecture was further illustrated with the aid of microscopical slides by Mr. W. Reid. In continuation of the same subject, G. Rigden, Esq. exhibited a curious gelatinous fungus from New Zealand, sent to him by Mr. Gardener, late of Canterbury, from whence large quantities are now exported to China, with which the omnivorous inhabitants make soup. It is likely that this natural product may, in the future, afford a source for the production of gelatine on a large scale, as it differs from the mucilage obtained from the Carrageen moss (*chondrus crispus*) in containing nitrogen.

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#### NOVEMBER.

*The Maastricht Beds, by Mr. G. H. Nelson, M.A.*

Mr. G. H. Nelson, M.A., delivered a very able lecture, descriptive of the Maastricht beds, a remarkable portion of the upper cretaceous strata of Belgium. Mr. Nelson compared the English chalk formation with the Belgian, and described with the aid of carefully prepared diagrams, the relative positions of the various beds comprising each series. In this country the Thanet beds at the base of the Eocene formation immediately overlie the upper chalk, the uppermost portion of which is represented by the Margate chalk. On the continent between the beds corresponding to the Margate chalk, and the lowest Eocene beds, there are found considerable deposits known as the

Maastricht beds which are wholly absent in England, and which on account of their fossils partaking to some extent of an Eocene as well as a cretaceous character are peculiarly interesting. The lecturer pointed out the reasons which induce geologists to regard the Maastricht beds as belonging to the cretaceous system which is most developed in Belgium, in the province of Limburg. This portion of the chalk, which is missing in England, is divided into three groups—the Pisolitic, the Faxoe, and the Maastricht beds. The Faxoe series contains numerous cephalopods, and there can be no doubt about its belonging to the cretaceous age. The Pisolitic beds, represented in the limestones of the Paris basin, rest unconformably on the white chalk, and are entirely without cretaceous fossils, indicating that a considerable lapse of time must have occurred between the two depositions. The Maastricht beds consist of several different series, which repeat themselves continually; the main member, which is termed *crai tuffeau*, is a coarse, yellowish, sandy limestone. Thin beds containing *Bryozoa*, also frequently recur showing that the periods of similar conditions must have been frequent, probably periods of clearer water, alternating with periods of muddy water.

Mr. Nelson gave an interesting account of his visit to the remarkable galleries of the Maastricht quarries. They ramify for ten or twelve miles through the hills in every direction, and are from 15 to 20 feet high. They are believed to have been excavated by the Romans, the marks of their pickaxes remaining in the lower portions. The mediæval and modern quarrymen have discarded the pickaxe for the saw, the stone being soft until it is exposed to the external air. Mr. Nelson described the chief objects of interest in these far-reaching galleries. The air is nearly always at uniform temperature, and so dry that the bodies of unfortunate men who have strayed away and been lost in the distant recesses have dried up into mummy-like shapes. The Maastricht fossils are partly cretaceous and partly tertiary, the former preponderating. The three non-British divisions were probably in part synchronous, limestones being formed over the whole district, while the sea varied in temperature and clearness, and slightly in the life it contained. The most remarkable fossil remains are those of the *Mosasaurus* a huge marine creature like a paddled sea-serpent.

Mr. Nelson entered fully into geological details, and exhibited several characteristic fossils from the Maastricht beds.

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#### DECEMBER.

##### *Extinct Elephants of Kent, by Captain McDakin.*

The portion of a very fine tusk of a Mammoth which has recently come into the possession of the vicar of Herne-hill (the Rev. F.

Thorpe), has suggested the subject of this paper. Want of proper care when it was at first unearthed from the alluvium of the Medway, near Aylesford, has reduced the specimen to a collection of mere fragments. The circumference of the larger piece being twelve inches it is probable, by comparison with entire specimens, that the length (measured round the inside curve) was about seven feet. It is not the rarity of such a specimen that is most remarkable, but rather the vast number of extinct elephants that such remains represent. Mr. Boyd Dawkins, in the *Geological Magazine*, for 1867, page 101, gives the following species of mammalia as having been found in the Thames valley: 2 of Lion, 1 of Hyena, 2 of Boar, 2 of Ox, 3 of Deer, 1 of Horse, 1 of Beaver, 3 of Rhinoceros, 1 of Hippopotamus, and 3 of Elephant, viz.:—*E. antiquus*, *E. primigenius*, and *E. priscus*. It is, however, the *Elephas primigenius* or the mammoth, of which the remains are most numerous, and which was the representative in northern Europe towards the close of what is called geological time, of the elephants of the present day. It is remarkable that the word mammoth is not of classical origin but of Siberian, some having been found in the frozen gravels of Siberia in so perfect a condition that the inhabitants supposed them to be gigantic moles that had burrowed underground, and named them accordingly. We are apt to look upon fossil remains as very dry bones, but some of these have been found with the flesh on the bones covered with dark grey bristles from 1 to 18 inches in length and an underclothing of red wool curled in locks; in one of the specimens the eye was perfect; the flesh was in an eatable condition, for the dogs fed upon it, and a portion was made into soup of which (I remember Dean Alford saying, now about twenty years ago) some naturalists either partook or pretended to partake. This was an anticipation of the mode recently adopted for bringing over supplies of meat from Australia and South America preserved by ice, or rather at a low temperature, a few degrees above freezing being found most favourable. The famous skeleton in the Museum at St. Petersburg measures 16 feet in length and 9 feet 4 inches in height, so that it does not appear that these extinct elephants were bigger than those of the present day. Woodward states two thousand grinders were dredged up off the Norfolk coast in thirteen years; they are found in such quantities on the sea bottom off Dunkirk that the sailors call it the burying ground. Mr. Leith Adams states that he has recognized five hundred individuals in public and private museums in the country.

In our own immediate neighbourhood we are indebted to Mrs. Dean, of St. Mildred's, for collecting and preserving four molar teeth and a tusk, with other bones, found in the gravel pits on Mr. Dean's property in St. Mildred's. And also to Mr. Sheppard for preserving a tusk found in the drainage excavations



near the Broad Oak road. I am specially indebted to Mr. Bartlett of Maidstone, to Mr. Dowker, of Stourmouth, and Mr. James Reid, for furnishing me with a list of extinct elephant remains, a detail of which I have placed in an appendix to this paper. From these collections I have been able to record about seventy-five specimens in the Canterbury and Maidstone districts.

Mammoth remains in this county are principally found to the south of Yorkshire, but are occasionally met with as far north as the Highlands of Scotland, in Europe as far south as Spain and Italy; but they have not been found in Scandinavia. In Siberia they have been found in extraordinary quantities, and also in North America. From a microscopical examination of the stomach, the food of these creatures appears to have been leaves and branches of the birch and larch, trees now only growing in Siberia, 500 miles to the southward of the position where the tusks are most abundant, some of which measure more than nine feet in length and weigh over one hundred and sixty-eight pounds each.

The preservation of the elephantine remains is mainly due to the low temperature there. On digging below the surface to a depth of two or three feet even in the month of June, the earth is found to be frozen. The temperature in January sinks to 65 degrees below zero. In some places they seem to have been quietly floated down the rivers and to have become imbedded in the mud, and sand falling from the river cliffs. In other places they are found flung in heaps upon the higher grounds, as if they had fled there for refuge from a flood. Mr. Southall also states in his "Epoch of the Mammoth," that trees are met with in the same situations piled in disordered masses, with their trunks crushed and broken. Mr. Howarth, in a paper read before the British Association, 1878, on this subject, instanced the discovery of two hundred skulls of the Irish Elk on the Wicklow mountains, in a moss only a quarter of a mile long and about two hundred yards broad; the result, perhaps, of a sudden inundation. The destruction of the mammoth may have been brought about in Northern Asia by a flood that swept the carcasses into the frozen regions of the north, where they were preserved for an indefinite period by the cold. Tusks, grinders, and bones in the south-east of England are found under the gravels and in the silts that line the river valleys, and on the coasts, especially where old river valleys extend under the sea.

Such facts connected with these interesting fossils lead us to suppose that roaming herds of these strange looking giants must at one time have inhabited the Weald of Sussex and Kent, browsing on the branches of the birch and larch, clothed in their shaggy covering of long dark hair and reddish wool; and thus, defended from the cold and suited to the conditions of the climate, they formed an example of that admirable adaptation to

circumstances of which there are so many instances in nature, a power of conformity with which the Creator has endowed the various forms of life, acting through thousands of successive generations, and so modifying species in harmony with the changed conditions of climate and food.

The mammoth in this country seems to be both pre-and-post-glacial. It probably retired southward before the increasing cold and then returned after the climate became modified. The great number of tusks that strew the sea bottom, among many other facts, points to the high probability that Britain was then part of the continent; and that the Thames, Medway, and the Rhine were with other rivers, such as the Stour, but tributaries of a much larger one that flowed into the North Sea. Geologically, the strata on both sides of the channel are similar, and the naturalist finds a greater number of species of animals and plants on the continent than in England, and a greater number in the latter than in Ireland, two facts showing the British Isles, formed at one time part of Europe, and that the separation took place between Ireland and England before this country became separated from the continent. From our poetical ideas of the fathomless ocean, we are apt to over-rate the depth of the sea. Mr. James Croll, in "Climate and Time," states that if we reduce the size of the ocean to a pond one hundred yards wide, the average depth of the water would only be represented by an inch. The greatest depth between Dover and Calais is not 200 feet, so the top of the rood tower of Canterbury Cathedral, would stand 35 feet above the surface if placed in mid channel. Also it does not seem possible that so large a species originated in an island, although after it became separated by the sea, these animals may have existed for many centuries in the woods of our own district, which then most probably consisted of birch and larch; the climate in the Pleistocene period, being much colder than at present, and unsuitable for the growth of our glorious forest trees—the oak, the elm, and the beech. The fossil remains of East Kent, show us that remarkable changes of animal and vegetable forms were accompanied by equally remarkable changes of climate, for the latter could not have well taken place without affecting the former; the living forms either slowly adapting themselves to changed conditions, or dying out. On the stage of our own imagination, we can lift the curtain of the past and see in the London clay period, of the Lower Eocene, the palm trees, the crocodiles, and small pachydermata of a warm (perhaps tropical) climate, and the great and mysterious blank of the Miocene, which here, like a corrupt borough, is unrepresented;—a period, too, of a warm and genial climate, when the animal forms exceeded in size, and, still more remarkable, in the number of their species, the animals of the present day. Through the

Pliocene, the temperature seems to have become gradually lowered, until in the Pleistocene a permanent winter settled on the northern world, and the tropical forms either perished or changed; so that instead of the hairless elephant, rhinoceros, and hippopotamus of the warmer regions of the world, we find similar animals clothed in hair and wool. From what we know of elephants of the present day, the mammoth wandered about in herds, living in the tree jungles where they could most readily find their food, and frequenting drinking places on the rivers—to which, when sick or dying, like most wild creatures, they repaired. Their flesh would be devoured by the hyenas, the carrion birds, and their allies. The ice and winter floods would carry their bones down the valleys, where they would become buried in the alluvium. Their magnificent tusks of beautiful and solid ivory would resist decay longer than the rest; and a mere fragment of such a tusk thrown out of a gravel pit, such as that near St. Mildred's rectory, is oftentimes all that remains of such a lordly beast. A small fragment I one day placed to my tongue adhered most firmly, owing to the absorption of moisture, showing the organic matter had been entirely lost. As the teeth of animals contain fluorine, I acted on the fragments of a mammoth's tusk in such a manner that evolved hydrofluoric gas, wrote the word mammoth and engraved the likeness of the animal on a pane of glass. "To such base uses must we come!"

There are mammoth remains under the brick earth and gravels that line the sides of the valley of the Stour, and we may be thankful these giants no longer exist to be an additional burden in the shape of ground game to the farmers of Kent. The occasional flint flakes found in these river gravels make it possible for us to conclude that our British ancestors contended with these land-lords for the possession of the soil. But on dealing with such subjects, we must remember exact Science only admits of weight and measurement and facts, while speculative science launches on the sea of probabilities.

For the furtherance of one of the greatest subjects that can engage the attention of the Naturalists, it is especially desirable that a record should be kept of specimens, localities, and collectors, and this is naturally the province of a society like our own.

If I but succeed in directing the attention of local scientists to the subject, I shall promote through abler hands the cause of Natural Science.

# EAST KENT NATURAL HISTORY SOCIETY.

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## SCIENTIFIC MEETINGS, 1882-3.

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PLACE: THE SOCIETY'S ROOMS, 6, HIGH STREET, CANTERBURY.

TIME: 7 O'CLOCK P.M.

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| 1882.     |      | 1883.    |      |
|-----------|------|----------|------|
| June      | 7th. | January  | 3rd. |
| July      | 5th. | February | 7th. |
| August    | 2nd. | March    | 7th. |
| September | 6th. | April    | 4th. |
| October   | 4th. | May      | 2nd. |
| November  | 1st. | June     | 6th. |
| December  | 6th. |          |      |

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## ANNUAL MEETING,

Tuesday, January 30th, 1883, at 4 p.m.

*Presented*  
14 MAR 1887



THE HISTORY OF THE  
NORTH AMERICAN  
INDIANS  
BY  
J. H. COOPER  
IN THREE VOLUMES  
VOL. I  
NEW YORK  
G. P. PUTNAM'S SONS  
1857

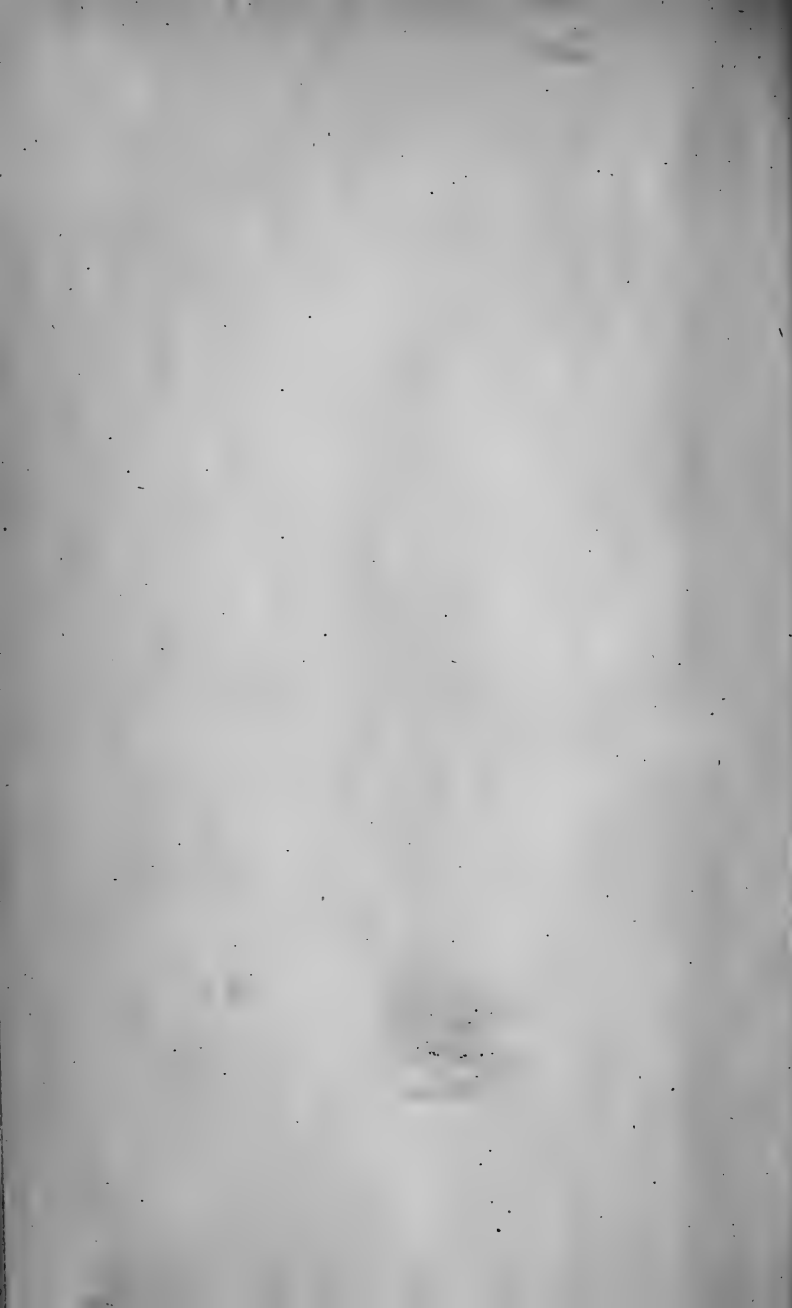


TWENTY-FIFTH REPORT  
(1882)  
OF THE  
EAST KENT  
NATURAL HISTORY SOCIETY,

ADOPTED AT THE  
ANNUAL MEETING,  
HELD AT CANTERBURY,  
ON JANUARY 30, 1883.



Canterbury :  
CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.





TWENTY-FIFTH REPORT

(1882)

OF THE

EAST KENT

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ON JANUARY 30, 1883.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

---

1883,



# EAST KENT NATURAL HISTORY SOCIETY.

---

## President :

CAPTAIN McDAKIN.

## Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.  
SIR WALTER JAMES, BART., BETTSHANGER.  
THE VERY REV. THE DEAN OF CANTERBURY.  
MATTHEW BELL, Esq., BOURNE PARK.  
COLONEL W. H. HORSLEY, R.E., CANTERBURY.  
G. DOWKER, Esq., F.G.S., STOURMOUTH.  
WILLIAM OXENDEN HAMMOND, Esq., ST. ALBAN'S.  
H. LEE, Esq., F.L.S., F.G.S.  
H. B. MACKESON, Esq.  
COLONEL COX, FORDWICH HOUSE.  
THE RIGHT REV. THE BISHOP OF DOVER.

## Treasurer and Librarian :

COLONEL HORSLEY, R.E.

## Honorary Secretary :

G. H. NELSON, Esq., M.A., F.R.G.S.

## Honorary Assistant Secretary :

MR. FULLAGAR, 12, ST. GEORGE'S TERRACE, CANTERBURY.

## Committee :

MR. FULLAGAR.  
H. A. GOGARTY, Esq., M.D.,  
W. H. HAMMOND, Esq.  
MR. SIDNEY HARVEY.

REV. R. N. GANDY.  
G. RIGDEN, Esq.  
SIBERT SAUNDERS, Esq.  
A. WETHERELT, Esq.

Please address all communications to G. H. Nelson, Esq., Middle Schools,  
Canterbury.

# EAST KENT NATURAL HISTORY SOCIETY.



The Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on Tuesday, January 30th, 1883, the President, Captain McDakin, in the chair, when the following Report was presented:—

## REPORT OF COMMITTEE FOR 1882.

Your Committee have the pleasure to report the increased success that has attended the monthly scientific meetings during the year, and beg to thank those members and friends to whom this success is mainly due. The following papers and addresses have been presented to the Society:—

February 1, Electrical Phenomena, illustrated by experiments, Mr. SIDNEY HARVEY, F.C.S.

March 1, The Connection between the Animal and Vegetable Kingdoms, Mr. G. DOWKER, F.G.S.

April 5, The Ship-Worm (*Teredo Navalis*), Mr. S. SAUNDERS; Natural History Notes, MISS CLARA KINGSFORD.

May 3, The Noble Metals, Mr. G. H. NELSON, M.A., F.R.G.S.

May 24, Molecular Physics and Radiant Matter, Mr. SIDNEY HARVEY, F.C.S.

June 7, The Effects of Mild Winter Weather on Animal and Vegetable Life, Miss CLARA KINGSFORD.

September 6, The Corn Weevil (*Calandra Granaria*), Miss CLARA KINGSFORD; Description of a Fungus taken from the wall of the Vestry of St. George's Church, Mr. JAMES REID, F.R.C.S.

October 4, The Cypris Clay of the Weald, THE PRESIDENT; Description of Geaster Fimbriatus, and other Fungi. Mr. JAMES REID, F.R.C.S.

November 1, Wind, as a Geological Agency, Mr. G. H. NELSON, M.A., F.R.G.S.

December 6, The Spectroscope, in connection with Rain Bands, Mr. W. HAMMOND.

January 3, 1883, The Gall Flies of Oak and Rose, Mr. G. S. SAUNDERS.

The following members have also added to the interest of the evening meetings by the exhibition of living infusoria and other microscopical objects—Colonel Horsley, Mr. T. B. Rosseter, Mr. James Fullagar, and Mr. T. Hayward.

Detailed reports of the proceedings and abstracts of the papers, which have appeared in the "Canterbury Press," have been transferred, for the information of Members, to the Society's Scrap Book.

## THE LIBRARY.

The sum at the disposal of the Librarian from the general funds of the Society during the past year, was £6 12s. 7d. Of this £1 1s. was spent in the purchase of a copy, in six parts, of the Ray Society's Nudibranchiate Molluscs, by Alden and Hancock, 1845 to 1854; of the remainder, for periodicals £4 7s., and for binding 10 vols. of the previous year's periodicals, £1 4s. 7d.

The low state of the Society's funds did not admit of any further expenditure for new books.

The undermentioned works have been received from the Ray Society in return for the annual subscription of one guinea, viz:—

A Monograph of the British Phytophagous Hymenoptera, by Peter Cameron, 1 vol., royal octavo, 1882.

A Monograph of British Spongiadae, by Bowerbank, 8vo., 1882.

The following gifts to the Library are acknowledged with the best thanks of the Society to the donors :—

1. "A Century of Inventions," presented by R. E. Thomson, Esq.
2. Proceedings of the Eastbourne Natural History Society.
3. "Manual of Injurious Insects," Miss Ormerod, presented by G. S. Saunders, Esq.
4. "The Story of our Museum, and what it taught us," Rev. H. Housman, M.A., F.G.S., presented by the Author.
5. Journal of the Royal Microscopical Society, 1882, presented by that Society.
6. Journal of the Postal Microscopical Society, Nos. I—IV, presented by Col. Horsley, R.E.
7. "Science for All," 4 vols., presented by Mr. H. Dean.
8. Annual Report of Smithsonian Institution, Washington, 1882.
9. List of Foreign Correspondents of Smithsonian Institution, corrected to January, 1882.
10. "Nature," for 1882, presented by G. Rigden, Esq., M.R.C.S.
11. "The Scientific Roll," Nos. 6 to 9, presented by A. Ramsay, Esq.
12. "Some Notes on Flint," J. Allen Brown, F.R.G.S.
13. "The Water-bearing strata of Ealing District," J. Allen Brown, F.R.G.S., presented by A. Ramsay, Esq.

NOTE.—Parts 4, 5, 6 of Manual of Infusoria, by Savile Kent, in completion of the work paid for in 1880, were received and added to the Library in 1882.

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## FINANCIAL REPORT.

During the past year there have been three deaths among the members, and six withdrawals, and two more have left Canterbury, making altogether a loss to the Society of eleven members. Besides which there are ten members whose names are borne on the

Society's list, but who have not paid subscriptions for two or more years, and who take no notice of the yearly reminders. If these latter be added to the above eleven, the total loss will amount to twenty-one members.

Against this loss may be set a gain of six new members, elected in 1882. The net loss, therefore, is fifteen, leaving seventy-three only on the books at the present time, and of these, sixty-eight have paid their subscriptions for 1882, and five have not done so, but will probably before long.

As regards funds, the subscriptions for 1882 from the above mentioned 68 members, have amounted to £29 11s. 6d. No arrears have been paid up, and none it is feared are likely to be paid, as those from whom they are due do not respond to the Treasurer's calls. Deducting, therefore, the deficit on the 26th January, 1882, viz., £1 17s. 5d. from the above amount, there remained £27 14s. 1d to meet the expenditure of the year, which, as shown by the Financial Statement herewith submitted, exceeded the receipts by £3 18s. 8d., thus making a balance of this amount against the Society on the 27th January, 1883. The grant to the Library amounted to £6 12s. 7d., the particulars of which have been already stated.

In the report of the previous year it was remarked that, "taking into consideration the falling off in annual income, owing to the loss of members by death, or otherwise, it is absolutely necessary to reduce the expenditure." This has been effected during the past year to the extent of £3 8s. 10d., principally in the item for printing the Annual Report, and yet there is a deficit of £3 18s. 8d. It is evident therefore, that further reductions in the expenditure must be made if it is to be kept within the income. Supposing all the 73 members to pay their subscriptions for 1883, the income would only amount to £32 10s. Cheaper accommodation is the great desideratum if it can possibly be obtained. At the same time every effort should be made to gain new members in the place of those whom the Society has lost of late years.

The Committee desire to take this opportunity of expressing their deep sense of the loss the Society has sustained in the death of its late Honorary Secretary, G. Gulliver, Esq., F.R.S., &c., and also their regret that the continued illness of the Honorary Assistant Secretary prevents him from taking that active part which has for so many years greatly aided the work of the Society.

In conclusion, your Committee feel that the cordial thanks of the Society are due to Messrs. Cross and Jackman for their kindness in permitting the Society to retain temporary occupation of the premises, at 6, High Street, until fresh arrangements are made; to the President, Captain McDakin; to the Hon. Secretary, G. H. Nelson, Esq., M.A., F.R.G.S.; to the Hon. Treasurer and Librarian, Colonel Horsley, R.E.; to the Auditor, G. Rigden, Esq., M.R.C.S.; and to Mr. E. B. Hayward for his assistance at the monthly meetings; also to those ladies and gentlemen who have contributed specimens to the scientific meetings.

On behalf of the Committee,

G. H. NELSON,

Hon. Sec.

On the motion of Mr. James Reid, seconded by Mr. Sidney Harvey, the Report was adopted.

The following Resolutions were then submitted to the meeting and carried unanimously:—

1. That the proceedings of the Annual Meeting be in future printed along with the Report of the Committee.

2. That all whose subscriptions are in arrears for the year 1881, and previous years, be struck off the list of members.



3. That the Abstract of Papers and Lectures, the Catalogue of the Library, and the Rules of the Society be omitted from the Report.

4. That the Transactions of the Society be printed from time to time, as the funds allow, from the records preserved in the Scrap Book.

5. That a rental of not more than £10 per annum be paid for the accommodation required by the Society for its Library and for its scientific meetings.

On the motion of Mr. G. Rigden, seconded by Col. Horsley, Capt. McDakin was unanimously re-elected President for 1883. The Vice-Presidents and the other Officers of the Society were then appointed.

# FINANCIAL STATEMENT, 1882.

## RECEIPTS.

|                                                                   | £  | s. | d. |
|-------------------------------------------------------------------|----|----|----|
| Subscriptions for 1882 received up to 27th January,<br>1883 ..... | 29 | 11 | 6  |

|                                           |          |    |   |
|-------------------------------------------|----------|----|---|
| Balance (deficit) 27th January, 1883..... | 3        | 18 | 8 |
|                                           | £33 10 2 |    |   |

Examined and found correct,  
**GEORGE RIGDEN.**

January, 1883.

## EXPENDITURE.

|                                                              | £        | s. | d. |
|--------------------------------------------------------------|----------|----|----|
| Balance (deficit) 27th January, 1882.....                    | 1        | 17 | 5  |
| Rent of Room for one year .....                              | 15       | 6  | 0  |
| Fire Insurance on Library, &c. ....                          | 0        | 6  | 9  |
| Subscription to the Ray Society.....                         | 1        | 1  | 0  |
| Contribution to Library .....                                | 6        | 12 | 7  |
| Hon. Assistant Secretary—petty cash.....                     | 1        | 8  | 5  |
| Cross and Jackman, for Printing the Report for<br>1881 ..... | 6        | 10 | 0  |
| Ditto, for Printing Post-Cards and Circulars.....            | 0        | 10 | 6  |
| Carriage, Post Office Orders, and Postage .....              | 0        | 3  | 6  |
|                                                              | £33 10 2 |    |    |

W. H. HORSLEY, COLONEL,  
Hon. Treasurer.

# M E M B E R S .

---

- |                                              |                                          |
|----------------------------------------------|------------------------------------------|
| Baynes Donald, Esq., M.D., M.A.,<br>F.R.G.S. | Lower Bridge Street, Canterbury.         |
| Bell, M., Esq.                               | Bourne Park, "                           |
| Bell, Miss                                   | St. Margaret's "                         |
| Blore, Rev. Dr.                              | King's School, "                         |
| Boddy, E. M., Esq., M.D.,                    | 109, Ashted Road, Bloomsbury, Birmingham |
| Bourne, Mr. H. C.                            | Mercery Lane, Canterbury                 |
| Cantis, Colonel                              | St. Stephen's Lodge, Canterbury          |
| Cole, Mrs.                                   | 4, Wincheap Street "                     |
| Coppin, Miss                                 | Rose Hotel, "                            |
| Cottew, C. Esq., R. N.                       | 5, Harrold Terrace, Dover                |
| Court, P., Esq.,                             | Dover                                    |
| Cowell, Mrs. E.                              | Hanover Place, Canterbury                |
| Cox, Colonel C. J.                           | Fordwich House, near Canterbury          |
| Cox, Mrs. C. J.                              | Ditto                                    |
| Cox, C. S. B., Esq.                          | Ditto                                    |
| Cross, F., Esq.                              | Watling Street, Canterbury               |
| Dean, Mrs. H. M.                             | 20, Wincheap Street "                    |
| Dover, Right Rev. Bishop of                  | Precincts, "                             |
| Dowker, G., Esq., F.G.S.                     | Stourmouth House, Wingham                |
| Dixon, Rev. T. F.                            | St. George's Rectory, Canterbury.        |
| Farren, General C. B.                        | Fordwich House                           |
| Forest, Mrs.                                 | Orchard Place, Canterbury                |
| Frend, G. R. Esq.                            | Parade, "                                |
| Fullagar, Mr. James                          | St. George's Terrace, Canterbury         |
| Furley, R., Esq.                             | Ashford                                  |
| Furley, George, Esq.                         | Barton Fields, Canterbury                |
| Gandy, Rev. Richard Norris                   | Dover House, Old Dover Road, Canterbury  |
| Gogarty, H. A., Esq., M.D.                   | Wingfield House, St George's Place "     |
| Groombridge, W., Esq.                        | 6, St. George's-fields, Canterbury       |
| Hammond, W. H., Esq.                         | Milton Chapel, Canterbury                |
| Hammond, W. O., Esq.                         | St. Alban's Court Wingham                |
| Harvey, Mr. Sidney, F. C. S.                 | High Street, Canterbury                  |
| Hatfield, Captain C. J.                      | Hartsdown, Margate                       |

|                                                                                                                                                                                                                                 |                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hilton, Captain T.<br>Holland, Rev. Canon<br>Horsley, Colonel, R. E.                                                                                                                                                            | Sole Street, Faversham<br>Precincts, Canterbury<br>St. Stephen's Lodge, Canterbury                                                                                               |
| Iron, Miss Henrietta                                                                                                                                                                                                            | 39, St. Margaret's Street ,,                                                                                                                                                     |
| Jackman, Mr. J.<br>James, Sir W. Bart.                                                                                                                                                                                          | Upper Bridge Street ,,<br>Betteshanger, Sandwich "                                                                                                                               |
| Kingsford, M., Esq.,<br>Kingsford, Miss<br>Kingsford, T. E., Esq.                                                                                                                                                               | Littlebourne<br>Barton House, Canterbury<br>Ditto                                                                                                                                |
| Lee, H., Esq., F.L.S., F.G.S.                                                                                                                                                                                                   | Ethelbert House, Margate                                                                                                                                                         |
| Mackeson, H. B., Esq.,<br>McDakin, Captain<br>McDakin Mrs.<br>Mount, Mr. W.                                                                                                                                                     | High Street, Hythe<br>Thyra House, Dane John, Canterbury<br>Ditto<br>Palace Street ,,                                                                                            |
| Nelson, G. H., Esq., M.A., F.R.G.S.                                                                                                                                                                                             | Middle Schools, Canterbury                                                                                                                                                       |
| Parker, Major, F.G.S.<br>Payne-Smith, Very Rev. Dean of<br>Canterbury<br>Payne-Smith, Miss<br>Payne-Smith, Miss M.<br>Peckham, T. G. Esq.<br>Pittock, Miss<br>Plumptre, C. J., Esq.<br>Poynter, A., Esq.<br>Powell, Mrs. Thomas | Westbere House ,,<br>Precincts<br>Ditto<br>Ditto<br>Hall Place, Canterbury<br>St. Sepulchre's, ,,<br>Fredville, Wingham<br>3, Marine Place, Dover<br>49, London Road, Canterbury |
| Reid, James, Esq., F.R.C.S.<br>Reid, A. S., Esq., B.A.<br>Rigden, G., Esq., M.R.C.S.<br>Rouch, Rev. F.<br>Rogers, Miss Alice                                                                                                    | Bridge Street, ,,<br>Ditto<br>Burgate Street, ,,<br>Precincts, ,,<br>28, St. George's Place, ,,                                                                                  |
| Sankey, Herbert, T., Esq.<br>Scholefield, Miss<br>Saunders, Sibert, Esq.<br>Slater, F., Esq.<br>Sondes, Right Hon. Earl                                                                                                         | Burgate Street, ,,<br>8, St. Margaret's Street ,,<br>Whitstable<br>Chislett<br>Lees Court, Faversham                                                                             |
| Taylor, Mrs. A. W. M.<br>Thomson, R. E., Esq.                                                                                                                                                                                   | North Street, Herne Bay<br>Kenfield House, Petham                                                                                                                                |
| Wacher, F., Esq.<br>Wetherelt, A., Esq.<br>Wray, Miss<br>Wright, J. W. Z., Esq.                                                                                                                                                 | King's Bridge, Canterbury<br>14, Cossington Road, ,,<br>13, St. George's Place, ,,<br>Barton Fields, ,,                                                                          |

## HONORARY & CORRESPONDING MEMBERS.

---

|                                                                                                                       |                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Bartlett, A. D., Esq.<br>Bates, H. W., Esq.<br>Bewsher, Charles, Esq.<br>Boycott, T., Esq., M.D.<br>Britton, J., Esq. | Zoological Gardens, London.<br>London.<br>St. Louis, Mauritius.<br>London.<br>Royal Herbarium, Kew. |
| Housman, Rev. H., M.A., F.G.S.                                                                                        | Northgate, Chichester.                                                                              |
| Kemp, Dr. William                                                                                                     | Wellington, New Zealand                                                                             |
| Linford, Mr. J. S.                                                                                                    | Charlton, Woolwich                                                                                  |
| Masters, Dr. Maxwell T., F.R.S.<br>May, Mr. Oliver, jun.<br>Mitchinson, Right Rev. Dr.                                | Ealing<br>Gas Works, Canterbury<br>Sibstone                                                         |
| Sandilands, —, Esq.<br>Saunders, G. S., Esq.                                                                          | Canning Downs, Queensland, Australia<br>St. Stephen's Lodge, Canterbury                             |
| Trimen, H., Esq.                                                                                                      | Botanical Department, British Museum                                                                |
| Whitaker, W., Esq.                                                                                                    | Geological Museum, Jermyn Street,<br>London                                                         |

# ASSOCIATES.

---

|                                                   |                                                                     |
|---------------------------------------------------|---------------------------------------------------------------------|
| Baker, Mr.                                        | Cattle Market, Sandwich                                             |
| Coppen, Mr. E.                                    | Sibertswood                                                         |
| Dean, Mr. H.<br>Down, Mr.                         | St. Peter's Street, Canterbury<br>St. Dunstan's Street, Caunterbury |
| Freeman, Mr. H. E.                                | 48, Woodstock Road, Finsbury Park,<br>London                        |
| Gordon, Mr. W. C.<br>Gutteridge, Mr.              | Museum, Dover<br>Faversham                                          |
| Hayward, Mr. T. B.                                | 6, Burgate Lane, Canterbury                                         |
| Mason, T. G., Esq.                                | Esplanade, Deal                                                     |
| Parren, Mr. W.<br>Prebble, Mr. J. G.<br>Pugh, Mr. | Canterbury<br>Ramsgate<br>Canterbury                                |
| Rosseter, Mr. T. B.                               | 3, Victoria Grove, Canterbury                                       |
| Young, Mr.                                        | Sittingbourne                                                       |

# EAST KENT NATURAL HISTORY SOCIETY.

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## SCIENTIFIC MEETINGS, 1883-4.

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PLACE: No. 6, HIGH STREET, CANTERBURY (until further notice).

TIME: 7 O'CLOCK P.M.

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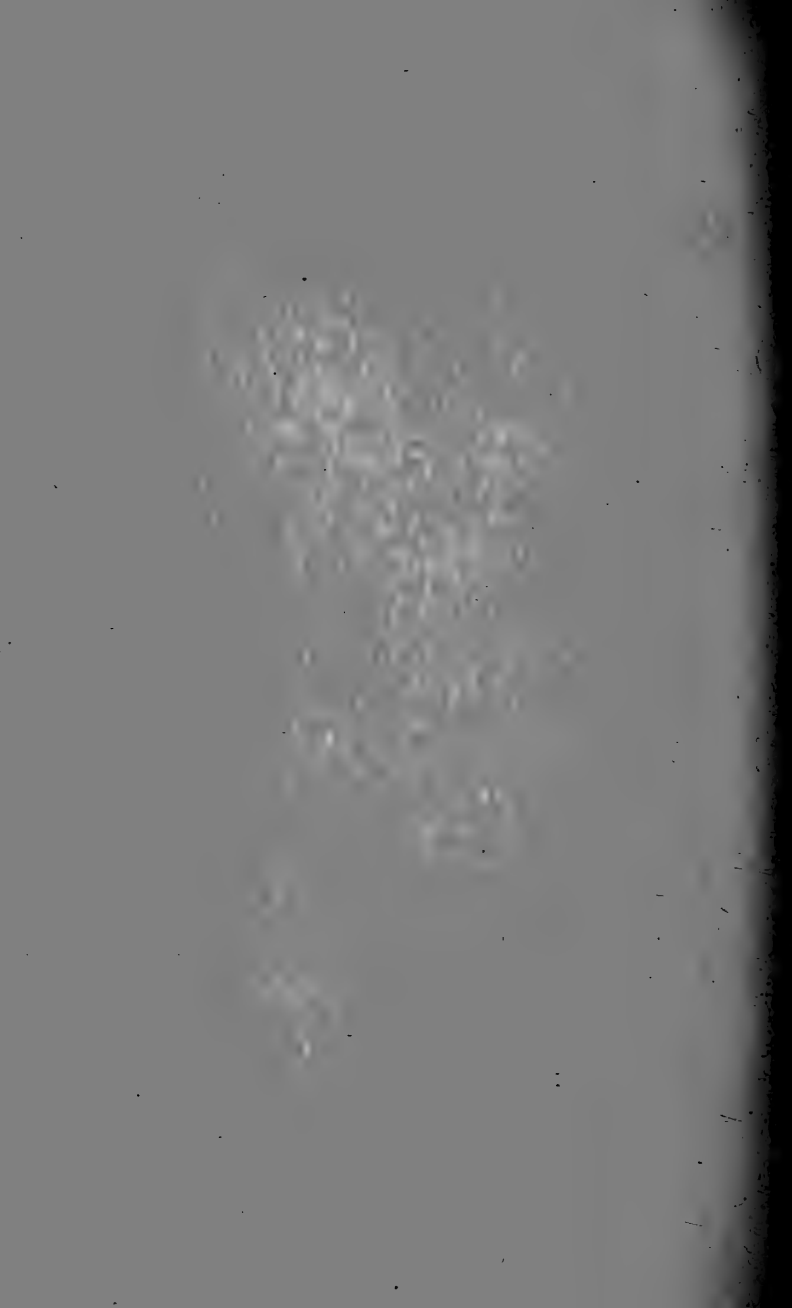
| 1883.     |      | 1883.    |      |
|-----------|------|----------|------|
| February  | 7th. | October  | 3rd. |
| March     | 7th. | November | 7th. |
| April     | 4th. | December | 5th. |
| May       | 2nd. |          |      |
| June      | 6th. | 1884.    |      |
| July      | 4th. | January  | 2nd. |
| August    | 1st. | February | 6th. |
| September | 5th. | March    | 5th. |

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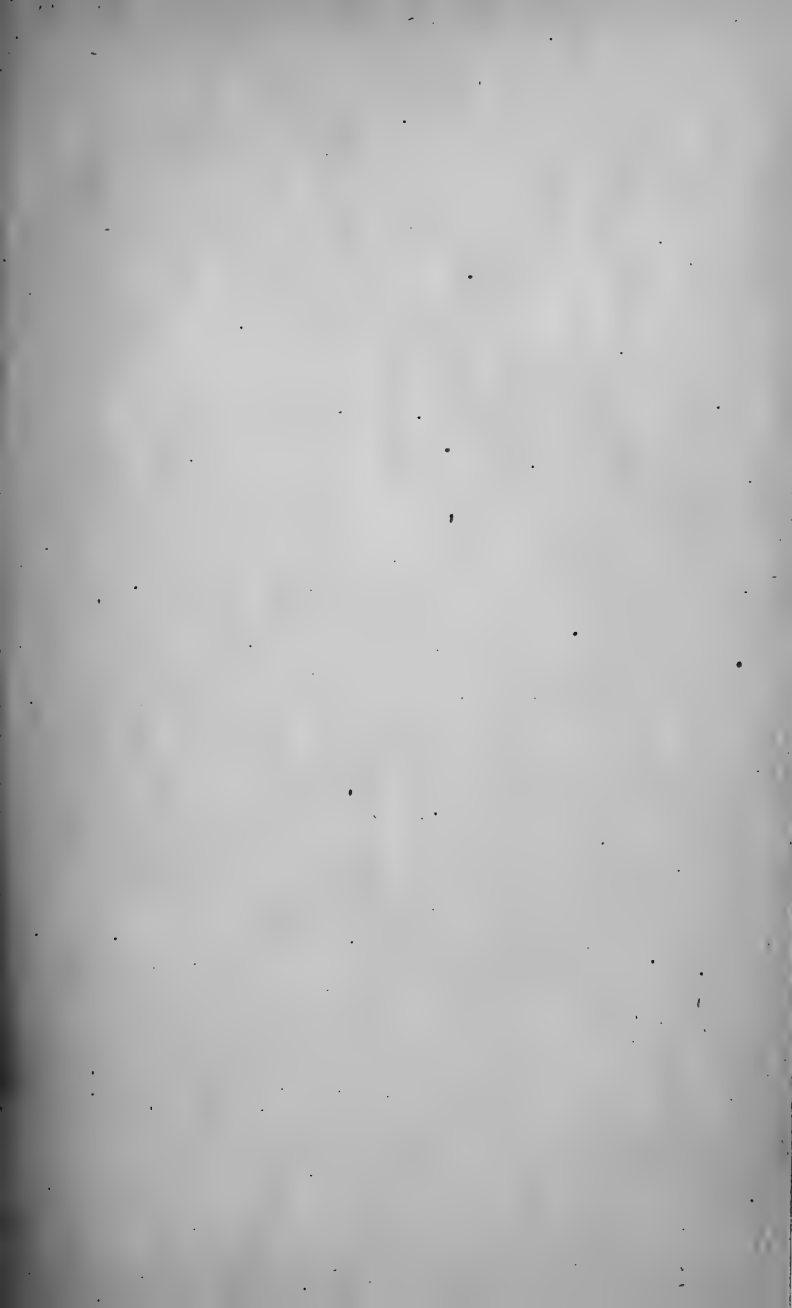
## ANNUAL MEETING,

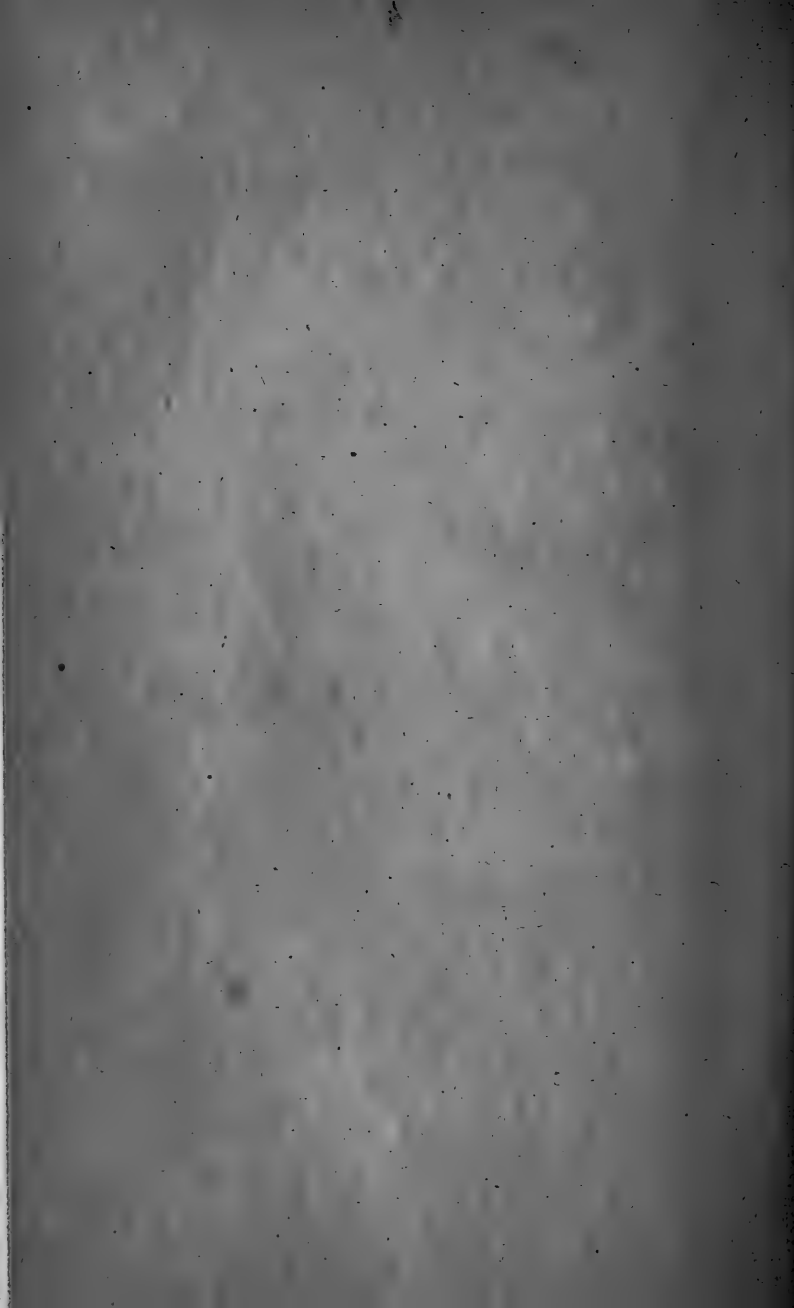
Tuesday, January 29th, 1884, at 4 p.m.











TWENTY-SIXTH REPORT

( 1 8 8 3 )

OF THE

EAST KENT

NATURAL HISTORY SOCIETY

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

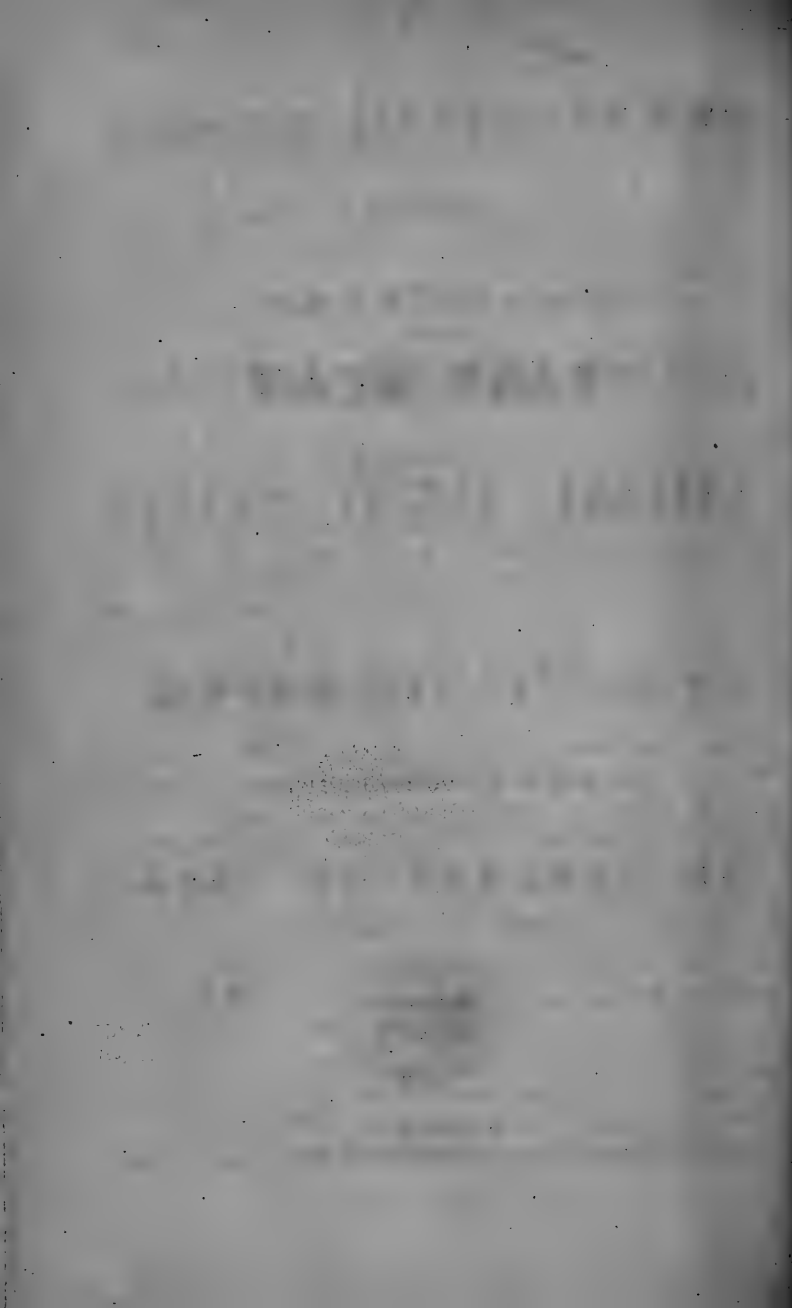
ON JANUARY 29th, 1884.

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Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1884.



TWENTY-SIXTH REPORT,

(1883)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

ON JANUARY 29, 1884.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET,

1884.

TWENTY-SIXTH REPORT.

1883

OF THE

EAST-KENT

NATURAL HISTORY SOCIETY.

PRINTED BY

ANNALS MEETING

FOR THE YEAR

ON JANUARY 29, 1884



Canterbury

JOHN JACKMAN, THE CANTERBURY PRESS, A HIGH STREET

1884

# EAST KENT NATURAL HISTORY SOCIETY.

---

## President :

CAPTAIN McDAKIN.

## Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.  
SIR WALTER JAMES, BART, BETTESHANGER.  
THE VERY REV. THE DEAN OF CANTERBURY.  
MATTHEW BELL, Esq., Bourne Park.  
COLONEL W. H. HORSLEY, R.E., CANTERBURY.  
G. DOWKER, Esq., F.G.S., STOURMOUTH.  
WILLIAM OXENDEN HAMMOND, Esq., St. ALBAN'S.  
H. LEE, Esq., F.L.S., F.G.S.  
H. B. MACKESON, Esq.  
COLONEL COX, FORDWICH HOUSE.  
THE RIGHT REV. THE BISHOP OF DOVER.

## Treasurer and Librarian :

COLONEL HORSLEY, R.E.

## Honorary Secretary :

G. H. NELSON, Esq., M.A., F.G.S., F.R.G.S.

## Honorary Assistant Secretary :

MR. FULLAGER, 12, St. GEORGE'S TERRACE, CANTERBURY.

## Committee :

|                            |                       |
|----------------------------|-----------------------|
| MR. FULLAGAR.              | REV. R. N. GANDY.     |
| H. A. GOGARTY, Esq., M.D., | G. RIGDEN, Esq.       |
| W. H. HAMMOND, Esq.        | SIBERT SAUNDERS, Esq. |
| MR. SIDNEY HARVEY.         | A. WETHERELT, Esq.    |
| ALDERMAN FREND.            | MAJOR PARKER, F.G.S.  |

Please address all communications to G. H. Nelson, Esq., Middle Schools,  
Canterbury.

E A S T   K E N T

N A T U R A L   H I S T O R Y   S O C I E T Y .



The Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on Tuesday, January 29th, 1884, the President, Captain McDakin, in the chair, when the following Report was presented :—

R E P O R T   O F   C O M M I T T E E   F O R   1 8 8 3 .

Your Committee have the pleasure to report that the number of members attending the monthly Scientific meetings during the past year has been steadily increasing, especially on those evenings when papers have been read. It is much to be desired that more members would make written or verbal communications to the Society, on any subject of Natural History or Science with which they may be familiar, and thus materially add to the interest of the evening meetings.

The following papers and addresses have been presented during the past year :—

February 7, The Cells of *Melicerta Ringens*, illustrated by Microscopical preparations, COL. HORSLEY, R.E. On *Testacella Haliotoidea*, Mr. G. S. SAUNDERS.

March 7, The Garnet Sand from Cape Comorin, COL. HORSLEY, R.E.

April 4, The Influence of a Submarine Barrier upon the Circulation of the Waters of Inland Seas, Mr. G. H. NELSON, M.A., F.G.S., F.R.G.S.



June 6, On some Orchidaceous Plants, Mr. G. DOWKER, F.G.S.

July 14, The Popular Names of British Plants, Mr. G. H. NELSON, M.A., F.G.S., F.R.G.S.

October 3, The Galls on the Leaves of the Elm, Mr. G. S. SAUNDERS.

November 7, On Fog, CAPT. MCDAKIN.

December 5, Vesuvius and its Environs, MAJOR PARKER, F.G.S.

The following members have also exhibited many Microscopical preparations or botanical specimens, or have in other ways contributed materials for examination and discussion:—Col. Horsley, R.E., Rev. R. N. Gandy, Mrs. Dean, Miss Kingsford, Miss Hurst, Messrs. R. E. Thomson, T. B. Rosseter, F.R.M.S., Sibert Saunders, Sidney Harvey, F.C.S., Pugh, and E. B. Hayward.

Detailed Reports of the Proceedings and Abstracts of the Papers, which have appeared in the "Canterbury Press," have been transferred, for the information of members, to the Society's Scrap Book.

On the 13th June, an Excursion took place under the guidance of Mr. G. Dowker to the Marsh district, between Wingham and Heart's Delight. The day was in every respect favourable. A large number of botanical specimens was collected. After tea at the Lion Inn, the party visited the Nicker Pits near Withernsean Hall. These curious pools are doubtless caused by the welling up of water, which has percolated through the adjacent hills of Tertiary Sands, and form the sources of a considerable stream.

It was not possible during 1883, in consequence of the state of the funds, to make any further purchases of New Books for the Library, the sum received from the Hon. Treasurer, viz. £6 12s. 7d., being sufficient only for the payment of the Quarterly and Monthly Periodicals taken in by the Society, and for binding those of the previous year. Of the above sum the Periodicals cost £4 13s. 6d., and the binding of 15 vols. £1 19s. 1d.

The 4th Vol. of Buckton's Monograph of the British Aphides was received from the Ray Society in 1883, in return for the annual Subscription of one guinea to that Society.

The following gifts to the Library are acknowledged with the best thanks of the Society to the donors:—

1. Journal of the Royal Microscopical Society for 1883, presented by that Society.
2. Journal of the Postal Microscopical Society, Nos. presented by Col. Horsley, R.E.
3. "Nature," for 1883, presented by G. Rigden, Esq.
4. Cardiff Natural History Society, (Report).  
Rochester Natural History Society, (Report).  
Croydon Microscopical and Natural History Club, (Proceedings and Transactions).  
Eastbourne Natural History Society, (Transactions).
5. Dr. Maxwell Master's  
Monograph on the "Passifloraceæ."  
Botanical Results of Experiments on the Mixed  
Herbage of Permanent Meadow.  
The Morphology of the Primulaceæ.  
The Morphology and Physiology of the Coniferæ.  
Sidelights on the Structure of Compositæ.  
Foliation and Ramification of *Buddleia auriculata*.  
The Bracts of Cruciferæ.  
A New Species of *Gossypium*.  
On Superposition in Flowers.  
Presented by the Author.
6. Topographical Botany by H. Watson, presented by Col. Horsley.

During the past year there has been a loss of only one subscription by a member leaving Canterbury, while there have been five subscriptions received from new members. Of these five, however, one has since left for India. Four old members have resigned, and one has died; so that there will be a loss of their subscriptions in 1884. Against this loss may be set a gain of three new members, lately elected, whose subscriptions will be due for 1884. The number of members on the books at the present time, inclusive of those lately elected, is seventy three, the same,

in fact, as in last year's report. Sixty nine members paid subscriptions in 1883, and seven are still in arrears.

As regards funds, the subscriptions from the above-mentioned members have amounted to £31 1s. 6d. To this must be added arrears for 1882, received from seven members, amounting to £4 1s. 0d., making a total of £35 2s. 6d. of ordinary receipts. For the purchase of furniture for the Society's room in Canterbury a sum of £6 10s. was subscribed by various members, and £6 1s. was paid for the same. The financial statement submitted herewith shows a balance on the right side of £5 16s. 10d., the total expenditure for the year, inclusive of a deficit at the beginning of £3 18s. 8d., being £35 15s. 8d., and the total receipts £41 12s. 6d.

Under the rules of the Society, all who are in any way interested in Natural History or in any other branch of Science are eligible for membership; and your Committee, believing that there are many persons in Canterbury and the vicinity, who are ignorant of the advantages which the Society enjoys in its extensive and valuable Library, its powerful Microscope, and conveniently situated and comfortable Reading Room, invite the co-operation of members in making the Society more generally known. A form of application is subjoined to this Report.

In conclusion, your Committee feel that the cordial thanks of the Society are due to those members, by whose timely aid the Society was enabled to establish itself in its present room. Great benefit has already been experienced in having the Library and the Collections near at hand during the evening meetings. Several gentlemen have promised papers for the ensuing session, and further efforts on the part of members in this direction also are much to be desired.

On behalf of the Committee,

S. GORDON McDAKIN, President.

W. H. HORSLEY, Col.,

Hon. Treasurer and Librarian.

G. H. NELSON, Hon. Secretary.

On the motion of the President, seconded by G. Rigden, Esq., the Report was adopted, and ordered to be printed and distributed to members.

The following Resolutions were then submitted to the Meeting and carried unanimously:—

1. That the Catalogue of the Library and the Rules of the Society be printed with the Report.

2. That the following Periodicals, viz.: "The Annals and Magazine of Natural History" and "The Zocologist" be discontinued.

3. That a quantity of duplicate numbers of Magazines be disposed of in any way that a Sub-Committee, composed of the President, the Librarian and Treasurer, and the Secretary, may think fit.

4. That the thanks of the Society be presented to the President and the other Officers of the Society; and to Mr. E. B. Hayward for his valuable assistance at the evening meetings.

5. That the President and the other Officers of the Society be requested to continue in office during the coming year.

6. That the names of Alderman G. R. Friend and Major Parker, F.G.S., be added to the list of members serving on Committee.

# FINANCIAL STATEMENT FOR 1883.

## RECEIPTS.

|                                                                               | £  | s. d. |
|-------------------------------------------------------------------------------|----|-------|
| Subscriptions for 1883 received up to 21st January,                           |    |       |
| 1884 .....                                                                    | 31 | 1 6   |
| Arrears for 1882 received up to the same date.....                            | 4  | 1 0   |
| Additional Subscriptions for purchase of furniture<br>for Society's Room..... | 6  | 10 0  |

£41 12 6

## EXPENDITURE.

|                                                               | £  | s. d. |
|---------------------------------------------------------------|----|-------|
| Balance (deficit) 27th January, 1883.....                     | 3  | 18 8  |
| Rent of Room for one year.....                                | 10 | 0 0   |
| Fire Insurance on Library, &c. ....                           | 0  | 6 9   |
| Subscription to Ray Society.....                              | 1  | 1 0   |
| Contribution to Library.....                                  | 6  | 12 7  |
| Hon. Assistant Secretary—petty cash.....                      | 1  | 0 0   |
| Cross and Jackman, for Printing Report.....                   | 4  | 5 0   |
| Ditto, for Circulars.....                                     | 0  | 4 6   |
| Ditto, for 10 Dozen Post-Cards and printing the<br>same ..... | 0  | 8 2   |
| Young Men's Christian Association for furniture....           | 6  | 1 0   |
| Bateman for Photographs for Report of 1880.....               | 0  | 12 0  |
| Card Trays and Carriage for same.....                         | 0  | 10 8  |
| Sundry Expenses by Hon. Secretary.....                        | 0  | 7 2   |
| Cleaning Room .....                                           | 0  | 6 0   |
| Post Office Order and Postage.....                            | 0  | 2 2   |
| Balance (credit) 21st January, 1884.....                      | 5  | 16 10 |

£41 12 6

Examined and found correct,

GEORGE RIGDEN.

W. H. HORSLEY, COLONEL,

Hon. Treasurer.

Actual Expenditure in 1883..... £35 15 8

# MEMBERS.

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|                                |                                          |
|--------------------------------|------------------------------------------|
| Bell, M., Esq.                 | Bourne Park, Canterbury                  |
| Bell, Miss                     | St. Margaret's            "              |
| Blore, Rev. Dr.                | King's School            "               |
| Boddy, E. M., Esq., M.D.       | 109, Ashted Road, Bloomsbury, Birmingham |
| Bohn, J., Esq.                 | 5, High Street, Canterbury               |
| Bourne, Mr. H. C.              | Mercery Lane,            "               |
| <br>                           |                                          |
| Cantis, Colonel                | St. Stephen's Lodge, Canterbury          |
| Cole, Mrs.                     | 4, Wincheap Street,       "              |
| Coppin, Miss                   | Rose Hotel,               "              |
| Court, P., Esq.                | Dover                                    |
| Cowell, Mrs. E.                | Hanover Place, Canterbury                |
| Cox, Colonel C. J.             | Fordwich House, near Canterbury          |
| Cox, Mrs. C. J.                | Ditto                                    |
| Cox, C. S. B., Esq.            | Ditto                                    |
| Cross, F., Esq.                | Watling Street,         "                |
| <br>                           |                                          |
| Dean, Mrs. H. M.               | 20, Wincheap Street,     "               |
| Dover, Right Rev. Bishop of    | Precincts,               "               |
| Dowker, G., Esq., F.G.S.       | Stourmouth House, Wingham                |
| Dixon, Rev. T. F.              | St. George's Rectory, Canterbury         |
| <br>                           |                                          |
| Eden, Rev. R.                  | Swalecliffe Rectory                      |
| <br>                           |                                          |
| Farren, General C. B.          | Fordwich House                           |
| Forest, Mrs.                   | Orchard Place, Canterbury                |
| Fremantle, Hon. and Rev. Canon | Precincts                "               |
| Frend, G. R., Esq.             | Parade,                 "                |
| Fullagar, Mr. James            | St. George's Terrace, Canterbury         |
| Furley, R., Esq.               | Ashford                                  |
| Furley, George, Esq.           | Barton Fields, Canterbury.               |
| <br>                           |                                          |
| Gandy, Rev. Richard Norris     | Dover House, Old Dover Road, Canterbury  |
| Gogarty, H. A., Esq., M.D.     | Wingfield House; St. George's Place.   " |
| Groombridge, W., Esq.          | 6, St. George's-fields, Canterbury       |
| <br>                           |                                          |
| Hammond, W. H., Esq.           | Milton Chapel, Canterbury                |
| Hammond, W. O., Esq.           | St. Alban's Court, Wingham.              |
| Harvey, Mr. Sidney, F.C.S.     | High Street, Canterbury                  |
| Hatfield, Captain C. J.        | Hartsdown, Margate                       |
| Holland, Rev. Canon            | Precincts, Canterbury                    |
| Howard, J., Esq.               | Ersham House, Canterbury                 |
| Horsley, Colonel, R.E.         | St. Stephen's Lodge    "                 |

|                                                                                                                                                                                                          |                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Iron, Miss Henrietta                                                                                                                                                                                     | 39, St. Margaret's Street, Canterbury                                                                                                                                                             |
| Jackman, Mr. J.<br>James, Sir W., Bart.                                                                                                                                                                  | Upper Bridge Street, Canterbury<br>Bettshanger, Sandwich                                                                                                                                          |
| Kingsford, M., Esq.<br>Kingsford, Miss<br>Kingsford, T., Esq.                                                                                                                                            | Littlebourne<br>Barton House, Canterbury<br>Ditto                                                                                                                                                 |
| Lee, H., Esq., F.L.S., F.G.S.<br>Laurie, Col.                                                                                                                                                            | Ethelbert House, Margate<br>Mystole, Chartham                                                                                                                                                     |
| Mackeson, H. B., Esq.<br>McDakin, Captain<br>McDakin, Mrs.<br>Mount, Mr. W.                                                                                                                              | High Street, Hythe<br>Thyra House, Danu John, Canterbury<br>Ditto<br>Palace Street                                                                                                                |
| Nelson, G. H., Esq., M.A., F.G.S.,<br>F.R.G.S.                                                                                                                                                           | Middle Schools, Canterbury                                                                                                                                                                        |
| Parker, Major, F.G.S.<br>Payne-Smith, Very Rev. Dean of<br>Canterbury<br>Payne-Smith, Miss<br>Payne-Smith, Miss M.<br>Pittock, Miss<br>Plumptre, C. J., Esq.<br>Poynter, A., Esq.<br>Powell, Mrs. Thomas | Westbere House,     ,,<br>Precincts             ,,<br>Ditto                 ,,<br>Ditto<br>St. Sepulchre's,     ,,<br>Fredville, Wingham<br>3, Marine Place, Dover<br>49, London Road, Canterbury |
| Reid, James, Esq., F.R.C.S.<br>Reid, A. S., Esq., M.A., F.G.S.<br>Rigden, G., Esq., M.R.C.S.<br>Rouch, Rev. F.<br>Rogers, Miss Alice                                                                     | Bridge Street,         ,,<br>Ditto                   ,,<br>Burgate Street,       ,,<br>Precincts,             ,,<br>28, St. George's Place   ,,                                                   |
| Sankey, Herbert T., Esq.<br>Scholefield, Miss<br>Sadler, Miss<br>Saunders, Sibert, Esq.<br>Slater, F., Esq.<br>Sondes, Right Hon. Earl                                                                   | Burgate Street<br>8, St. Margaret's Street   ,,<br>Oswald House, Watling Street, Canterbury<br>Whitstable<br>Chislet<br>Lees Court, Faversham                                                     |
| Thomson, R. E., Esq.                                                                                                                                                                                     | Kenfield House, Petham                                                                                                                                                                            |
| Wacher, F., Esq.<br>Wetherelt, A., Esq.<br>Wray, Miss<br>Wright, J. W. Z., Esq.                                                                                                                          | King's Bridge,         Canterbury<br>14, Cossington Road,     ,,<br>13, St. George's Place,   ,,<br>Barton Fields,            ,,                                                                  |

# HONORARY & CORRESPONDING MEMBERS.

---

|                                 |                                          |
|---------------------------------|------------------------------------------|
| Bartlett, A. D., Esq.           | Zoological Gardens, London               |
| Bates, H. W., Esq.              | London                                   |
| Bewsher, Charles, Esq.          | St. Louis, Mauritius                     |
| Boycott, T., Esq., M.D.         | London                                   |
| Britton, J., Esq.               | Royal Herbarium, Kew                     |
| Housman, Rev. H., M.A., F.G.S.  | Northgate, Chichester                    |
| Kemp, Dr. William               | Wellington, New Zealand                  |
| Linford, Mr. J. S.              | Charlton, Woolwich                       |
| Masters, Dr. Maxwell T., F.R.S. | Ealing                                   |
| May, Mr. Oliver, jun.           | Gas Works, Canterbury                    |
| Mitchinson, Right Rev. Dr.      | Sibstone                                 |
| Sandilands, —, Esq.             | Canning Downs, Queensland, Australia     |
| Saunders, G. S., Esq.           | Mount Zion, Tunbridge Wells              |
| Trimen, H., Esq.                | Botanical Department, British Museum     |
| Whitaker, W., Esq.              | Geological Museum, Jermyn Street, London |



# ASSOCIATES.

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|                                                   |                                                                    |
|---------------------------------------------------|--------------------------------------------------------------------|
| Coppen, Mr. E.                                    | Sibertswould                                                       |
| Dean, Mr. H.<br>Down, Mr.                         | St. Peter's Street, Canterbury<br>St. Dunstan's Street, Canterbury |
| Freeman, Mr. H. E.                                | 48, Woodstock Road, Finsbury Park,<br>London                       |
| Gordon, Mr. W. C.<br>Gutteridge, Mr.              | Museum, Dover<br>Faversham                                         |
| Hayward, Mr. E. B.                                | 6, Burgate Lane, Canterbury                                        |
| Mason, T. G., Esq.                                | Esplanade, Deal                                                    |
| Parren, Mr. W.<br>Prebble, Mr. J. G.<br>Pugh, Mr. | Canterbury<br>Ramsgate<br>Canterbury                               |
| Rosseter, Mr. T. B., F.R.M.S.                     | 3, Victoria Grove, Canterbury                                      |
| Young, Mr                                         | Sittingbourne                                                      |

# METEOROLOGICAL TABLES FOR 1883.

Compiled from observations taken by

**BRIAN RIGDEN, ESQ.,**

And by him presented to the Society at the request of the Committee,  
for insertion in this Report.

| THERMOMETER.  |                  |                              |                             |                   |                                   |                                  |                                |                                 |                                                     |
|---------------|------------------|------------------------------|-----------------------------|-------------------|-----------------------------------|----------------------------------|--------------------------------|---------------------------------|-----------------------------------------------------|
|               | Prevailing Wind. | Average highest in 24 hours. | Average lowest in 24 hours. | Average at 9 a.m. | Highest Reading during the Month. | Lowest Reading during the Month. | Number of days of 80° or over. | Number of days of 32° or under. | Greatest difference in Reading during any 24 hours. |
| January ..    | N.E., S.         | 44-12                        | 35-58                       | 38-87             | 53° on 1st.                       | 26° on 23rd.                     |                                | 11                              | 16° on 30th.                                        |
| February ..   | S.               | 46-75                        | 37-00                       | 41-32             | 53° on 22 & 25                    | 30° on 16th.                     |                                | 5                               | 19° on 22nd.                                        |
| March .....   | N.E., S.         | 42-03                        | 30-58                       | 35-70             | 53° on 31st.                      | 24° on 23rd.                     |                                | 23                              | 23° on 31st.                                        |
| April .....   | N.E.             | 57-33                        | 39-17                       | 49-50             | 68° on 5th.                       | 28° on 1st.                      |                                | 6                               | 26° on 1, 2, & 5                                    |
| May .....     | Various.         | 65-78                        | 44-55                       | 58-61             | 73° on 28th.                      | 33° on 4th.                      | 4                              |                                 | 33° on 21st.                                        |
| June .....    | N.E., S.         | 70-60                        | 50-57                       | 63-33             | 85° on 24 & 29                    | 43° on 16th.                     |                                |                                 | 33° on 30th.                                        |
| July .....    | S.E., S.W.       | 70-83                        | 51-80                       | 62-97             | 84° on 1st.                       | 45° on 15th.                     | 3                              |                                 | 29° on 1st.                                         |
| August .....  | S.W.             | 72-87                        | 53-09                       | 64-97             | 80° on 11 & 21                    | 45° on 19 & 23                   |                                |                                 | 35° on 11th.                                        |
| September ..  | S.W.             | 65-57                        | 49-73                       | 58-00             | 75° on 18th.                      | 42° on 5 & 29                    | 3                              |                                 | 27° on 16 & 18                                      |
| October ..... | S.W., S.E.       | 66-58                        | 43-06                       | 51-38             | 63° on 7th.                       | 35° on 22nd.                     |                                |                                 | 22° on 27th.                                        |
| November ..   | S.W., S.         | 48-57                        | 37-50                       | 42-27             | 55° on 5 & 9.                     | 30° on 15th.                     |                                | 4                               | 18° on 6 & 16                                       |
| December ..   | N.W., S.W.       | 42-48                        | 35-74                       | 38-48             | 53° on 14th.                      | 29° on 6th.                      | 10                             | 58                              | 16° on 14th.                                        |

Thunderstorms:—There were 7 during the year; 1 in May, 2 in June, 3 in July, 1 in November. —'Very High Winds' were noted on 8 days in the year; 3 in January (on successive days), 2 in February, 2 in September, 1 in October.—The first Ground Frost in the Autumn was on October 21st.—Over 1 inch of rain in the 24 hours fell on November 25th, when 1.03 inches fell.

### RAINFALL.

| Baro-<br>meter.<br>Average<br>reading<br>during<br>the<br>month. | Total<br>Rainfall<br>during<br>the<br>month<br>in<br>inches. | Rainy<br>days in the<br>month i. e.<br>more<br>than .50<br>in the<br>24 hours. | No. of<br>days on<br>which .50<br>or more<br>fell in the<br>24 hours. | Greatest number of<br>consecutive wet days during<br>the month. | Greatest number of<br>consecutive dry days during<br>the month. | Number<br>of days<br>on which<br>snow fell. |
|------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------|
|                                                                  |                                                              |                                                                                |                                                                       |                                                                 |                                                                 |                                             |
| 30.129                                                           | 1.79                                                         | 18                                                                             |                                                                       | 5 from 8th to 12th.                                             | 3 from 21st to 23rd.                                            | 1                                           |
| 30.320                                                           | 3.35                                                         | 16                                                                             | 2                                                                     | 6 from 7th to 12th.                                             | 7 from 21st to 27th.                                            | 1                                           |
| 30.155                                                           | 1.44                                                         | 14                                                                             |                                                                       | 5 from 6th to 10th.                                             | 6 from 20th to 25th.                                            | 10                                          |
| 30.198                                                           | 1.56                                                         | 11                                                                             |                                                                       | 8 from 18th to 25th.                                            | 18 from March 31st to 17th.                                     |                                             |
| 30.148                                                           | 2.43                                                         | 10                                                                             | 1                                                                     | 6 from 7th to 12th.                                             | 9 from 15th to 23rd.                                            |                                             |
| 30.129                                                           | 1.25                                                         | 13                                                                             |                                                                       | 5 from 14th to 18th.                                            | 13 from May 27th to 8th.                                        |                                             |
| 30.047                                                           | 2.67                                                         | 15                                                                             | 2                                                                     | 3 from 25th to 27th.                                            | 4 from 16th to 19th.                                            |                                             |
| 30.151                                                           | 0.36                                                         | 8                                                                              |                                                                       | 2 from 14th to 15th.                                            | 9 from 18th to 26th.                                            |                                             |
| 30.008                                                           | 3.46                                                         | 19                                                                             | 1                                                                     | 15 from 20th to October 4th.                                    | 7 from 13th to 19th.                                            |                                             |
| 30.156                                                           | 1.99                                                         | 14                                                                             |                                                                       | 4 from 14th to 17th.                                            | 4 from 24th to 27th.                                            |                                             |
| 30.052                                                           | 4.45                                                         | 19                                                                             | 2                                                                     | 11 from 17th to 27th.                                           | 6 from October 29th to 3rd.                                     | 2                                           |
| 30.342                                                           | 1.55                                                         | 16                                                                             |                                                                       | 6 from 2nd to 7th.                                              | 4 from 28th to 31st.                                            |                                             |
|                                                                  | 26.30                                                        | 173                                                                            | 8                                                                     |                                                                 |                                                                 | 14                                          |

NOTE.—The gauge is 5 inches in diameter, 9 feet 6 inches above ground,  
and 58 feet above sea level.

BRIAN RIGDEN.

# LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

---

## VERTEBRATA.

- Bell's British Quadrupeds, 1 vol., 8vo.  
Cassell's Book of Birds, 1 vol., 4to.  
Couch's Fishes, 4 vols., 8vo., 1862-66.  
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.  
Munro's Structure of Fishes, 1 vol., folio, 1785.  
Nitsch's Pterylography, 1 vol., 4to., 1867. Ray Society.  
Parker's Structure, &c., of the Shoulder Girdle and Sternum in the Vertebrata,  
1 vol., 4to., 1868. Ray Society.  
Swainson's Birds, 2 vols., 12mo.

## PAMPHLETS.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Moschus, Tragulus  
and Orycteropus.  
——— Memoirs on the Blood of Lemna Cornubica.  
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.  
——— On the Muscular Sheath of the Œsophagus, of the "Aye, Aye,"  
(*Chiromys Madagascariensis*.)  
——— On the Fibres of the Crystalline Lens of the *Petromyzonii*.  
——— On the Œsophagus of the Red Hornbill.  
——— On the Œsophagus of Sauropsida and other Vertebrata.  
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.  
——— On the Measurement of the Red Corpuscles of the Blood of Batrachians.  
——— Sketches of the Spermatozoa of *Petromyzon*.  
Hammond, W. H., On the Structure of the Red Blood Corpuscles, &c.

## INVERTEBRATA.

- Allman's G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with  
Burmeister's Trilobites.  
——— Gymnoblasic, or Tubularian Hydroids, part 1 and 2, folio, 1871-72.  
Ray Society.  
Baird's Entomostraca, 1 vol., 8vo., 1850. Ray Society.  
Baker's Natural History of the Polyp, 1 vol., 8vo., 1743.  
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.  
Bowerhanks, Dr., Monograph of British Spongiadæ, 3 vols., rl. 8vo., 1864-6-74.  
Ray Society.  
Brady's G. S., Monograph of the Copepoda of British Isles, vols. 1, 2, 3, 8vo.,  
1878-80. Ray Society.  
Buckton's G. B., Monograph of the British Aphides, vols. 1-4, 8vo., 1876-7-80-2.  
Ray Society.  
Cameron's Monograph of British Phytophagous Hymenoptera, vol. 1, 8vo., 1882.  
Ray Society.

- Carpenter's Foraminifera, Ray Society, 1 vol., folio, 1862.  
 Curtis on Farm Insects, crown 8vo., 1 vol., 1860.  
 Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.  
 Denny's Monographia Anoplurorum Britannia, 1 vol., 8vo., 1842.  
 Douglas and Scott's British Hemiptera, Heteroptera, 1 vol., 8vo., 1865, Ray Society.  
 Forbes', Professor E., British Naked Eyed Medusæ, 1 vol., 4to., 1848, Ray Society.  
 ——— British Star Fishes, 1 vol., 8vo., 1841.  
 Gosse's British Sea Anemones, &c., 1 vol., rl. 8vo., 1860.  
 Greene's The Insect Hunter's Companion, 12mo., 1863.  
 Hanley's Lamarck's Shells, 1 vol., 8vo.  
 Huxley's Oceanic Hydrozoa, 1859, 1 vol., crown folio, Ray Society.  
 Johnstone's British Zoophytes, 2 vols., 8vo., 1847.  
 Kent's Manual of the Infusoria, super royal 8vo., 1880.  
 Kirby's British Bees, 2 vols., 8vo., 1802.  
 Kirby and Spence's Introduction to Entomology, 4 vols., 8vo., 1828-29.  
 Lowne's B.T., M.R.C.S., Anatomy of Blow Fly, 1 vol., 8vo., 1870.  
 Lubbock's Sir John, Collembola and Thysanura, 1 vol., 8vo., 1873, Ray Society.  
 Martyn's, T., English Entomologist, 1 vol., 4to., 1792.  
 McIntosh's, W.C., M.D., British Annelids, part; 1873, crown folio, Ray Society.  
 ——— ditto, part; continued, 1874, Ray Society.  
 Morris's British Butterflies, 1 vol., crown 8vo., 1864.  
 Newman's Butterflies and Moths, 1 vol., crown 8vo., 1874.  
 Ormerod's Manual of Injurious Insects, 1 vol., 8vo., 1881.  
 Pritchard's History of Infusoria, 1 vol., rl. 8vo., 1861.  
 Reeve's British Land and Fresh Water Molluscs, 1 vol., 8vo., 1863.  
 Smith's Diatomaceæ, 2 vols., rl., 8vo., 1853.  
 Staveley's British Insects, 1871, demy 8vo.  
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The Librarian requests that Members taking Books or Periodicals from the Library will be careful to enter the same in the book kept on the table for the purpose, with the dates, "when borrowed" and "when returned."

# TITLE AND OBJECTS OF THE

## East Kent Natural History Society.

The objects of the EAST KENT NATURAL HISTORY SOCIETY shall be the Collection and Diffusion of Practical and Theoretical Knowledge respecting Natural History, in all its Branches, both in relation to the particular District and the General Science.

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### *RULES AND REGULATIONS.*

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#### MEMBERSHIP.

1.—The Society shall consist of Ordinary, Honorary, and Corresponding Members, and of Associates.

2.—Every candidate for admission into the Society as an Ordinary Member must be proposed in writing by two Members, and the election shall be by show of hands, or by Ballot, taken at any Meeting of the Committee, or at a General Meeting—one negative in five votes to exclude.

3.—The annual Subscription to be paid by Ordinary Members shall be Ten Shillings; the Subscription shall become due on the 1st of January in each year, and shall be paid in advance for the current year. Any Member neglecting to pay his subscription for three months after it is due, shall be applied to by the Treasurer or Secretary, and if the Subscription remain unpaid for three months after such application, he shall cease to be a member of the Society.

4.—The Committee shall have power to admit, without ballot, on the nomination of two Members, any Lady who shall be desirous of becoming an Ordinary Member, and her subscription shall be Five Shillings. This rule shall apply also to such sons, brothers, and nephews of Ordinary Members, as may be regularly resident in the same house with those Members.

5.—Any persons distinguished for their researches in Natural History, for their liberality to the Society, or for their connection with similar Societies, may, on the recommendation of the Committee, be elected Honorary or Corresponding Members of the Society, provided they do not reside within the district; such Honorary and Corresponding Members shall not be subject to any of the expenses of the Society, and shall have no vote in its affairs, nor be entitled to take books out of the Library, or to the Reports and Notices.

6.—In order to cultivate the study of Natural History, among individuals of the class of Mechanics, &c., residing in the district, the Committee shall have power to admit individuals of that class as Associates, provided they shall first communicate some information or observation on Natural History, exhibit such specimens or present them to the Local Museums, as shall, by their merits satisfy the Committee. Such Associates shall enjoy the privileges of Honorary Members.

#### MANAGEMENT AND BUSINESS MEETINGS.

7.—The affairs of the Society shall be conducted by a Committee of Management, which shall consist of a President, Vice-Presidents, a Treasurer, and an Honorary Secretary, with not less than six Members, who shall all be chosen at the Annual Meeting. Three Members of such Committee shall form a quorum. The Meetings shall be held at four o'clock p.m. on the first Saturday in every month, and at such other times as the Secretary may deem necessary. At any regular meeting including a sufficient number of Committee-Members, they may then and there declare themselves and act as a Committee in the ordinary business of the Society.

8.—An Annual Meeting shall be held at four o'clock p.m., on the last Tuesday in January, in each year, at Canterbury, for the purpose of electing the officers for the current year, receiving the Annual Statement of Accounts, and report of the Committee, and conducting the general affairs of the Society. In case of necessity, the Committee may alter the hour, posting due notice thereof in the Society's room.

9.—Special General Meetings may be summoned by the Committee, or by the Secretary, on the requisition (in writing) of any six members of the Society, the specific purpose of the Meeting being stated in the notice, which shall be sent to each Member not less than one week before the time of such meeting.

10.—All questions discussed at the Meetings shall be decided by a majority of votes ; and if upon any question the votes shall be equal, the Chairman of the Meeting shall have the second or casting vote.

11.—In the event of any vacancy occurring in the Officers or Committee between the Annual Meetings, the same shall be filled up by the Committee. The two Members who have been the longest thereon, and have attended the fewest meetings thereof, during the preceding year, shall go out by rotation at the Annual Meeting.

12.—In order to facilitate the objects of the Society, the Committee shall be empowered to appoint any Member a Local Secretary for the town or district he may reside in. Such Local Secretary shall be *ex-officio* a Member of the Committee.

#### SCIENTIFIC MEETINGS AND EXCURSIONS.

13.—The Meetings for Scientific Business shall be at Seven o'clock p.m. on the first Wednesday of every month, at Canterbury ; also extra Meetings at such place and time as the Committee shall have posted due notice of in the Society's apartment. Each Member to have the right of introducing a Visitor at these Meetings.

14.—There shall be ordinary excursions on the Afternoon of the day of each evening Scientific Meeting, and at other times, if the Committee so appoint, time and place to be duly notified in the Society's room by the Committee ; and Special Excursions at such times and places as may be approved by the Committee, who shall consider written suggestions of Members on the subject.

15.—Minutes of the proceedings of all Meetings shall be entered by the Secretary in a book kept for that purpose.

16.—The Secretary to give seven days' notice of Special Excursions to every Member, stating the time and place thereof.

#### LOCAL AND DISTRICT MEETINGS.

17.—To promote still further the objects and interests of the Society, Local Secretaries and Members are invited to organize Meetings or Excursions in their district, and to give notice of the same to the General and all the Local Secretaries, stating the time

Please fill up this Form and forward it to the Honorary Secretary.

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## East Kent Natural History Society.

### FORM OF APPLICATION FOR MEMBERSHIP,

*I, the undersigned am desirous of becoming a member of the East Kent Natural History Society, and have herewith remitted the sum of \_\_\_\_\_ shillings, as my annual subscription.*

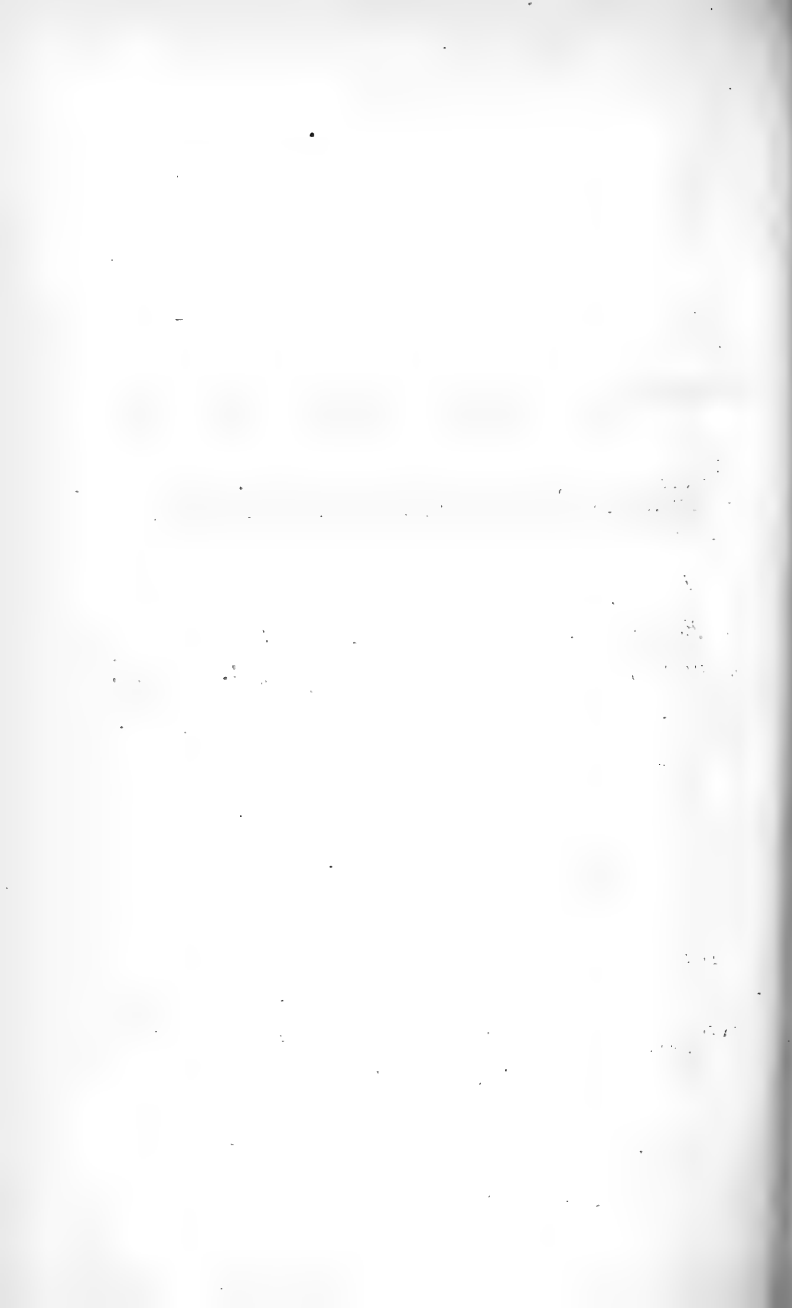
*(Signed)* \_\_\_\_\_

*(Address)* \_\_\_\_\_

*Date* \_\_\_\_\_

NOTE.—The Subscriptions are due in advance on January 1, in each year, and amount to

|           |      |
|-----------|------|
| GENTLEMEN | 10s. |
| LADIES    | 5s.  |



and place of Meeting, and what particular subjects are to be brought forward.

### COLLECTION OF SPECIMENS.

18.—The Society, as soon as it may possess sufficient means shall endeavour to make a collection of Objects of Natural History, both with a view of forming a Museum and distribution of Duplicate specimens according to the regulations to be adopted by the Committee.

### LIBRARY.

19.—Only Books and Periodicals connected with Natural History are to be purchased by the funds of the Society, and the number and particular books of this class to be purchased shall be determined by the Committee.

20.—All the Books and Periodicals shall be kept in some convenient place, so that Members shall be able to refer to them or take them out under such regulations as the Committee from time to time may think proper to make.

21.—Members are also invited to lend books for the use of the Library, reserving to themselves the full right of ownership; such Books to be under the care of the Committee, and not allowed to be taken out of the Library.

22.—In order to allow the Librarian to examine the Books they must all be returned to the Library and none taken therefrom during the first week in every June.

# EAST KENT NATURAL HISTORY SOCIETY.

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## SCIENTIFIC MEETINGS, 1884-5.

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PLACE: No. 6, HIGH-STREET, CANTERBURY.

TIME: 7.30 O'CLOCK P.M.

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| 1884.     |      | 1884.     |      |
|-----------|------|-----------|------|
| February  | 6th. | October   | 1st. |
| March     | 5th. | November  | 5th. |
| April     | 2nd. | December  | 3rd. |
| May       | 7th. |           |      |
| June      | 4th. | 1885.     |      |
| July      | 2nd. | January   | 7th. |
| August    | 6th. | February. | 4th. |
| September | 3rd. | March     | 5th. |

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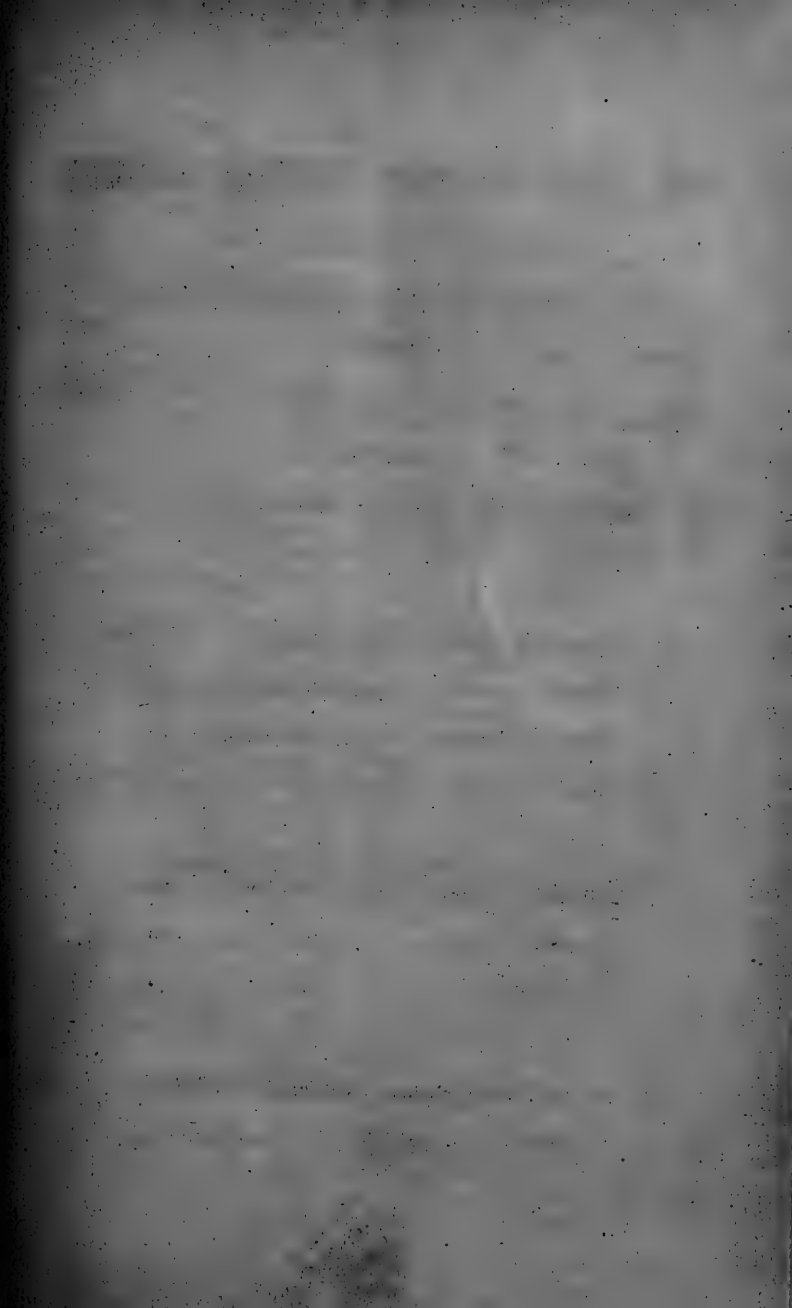
## ANNUAL MEETING,

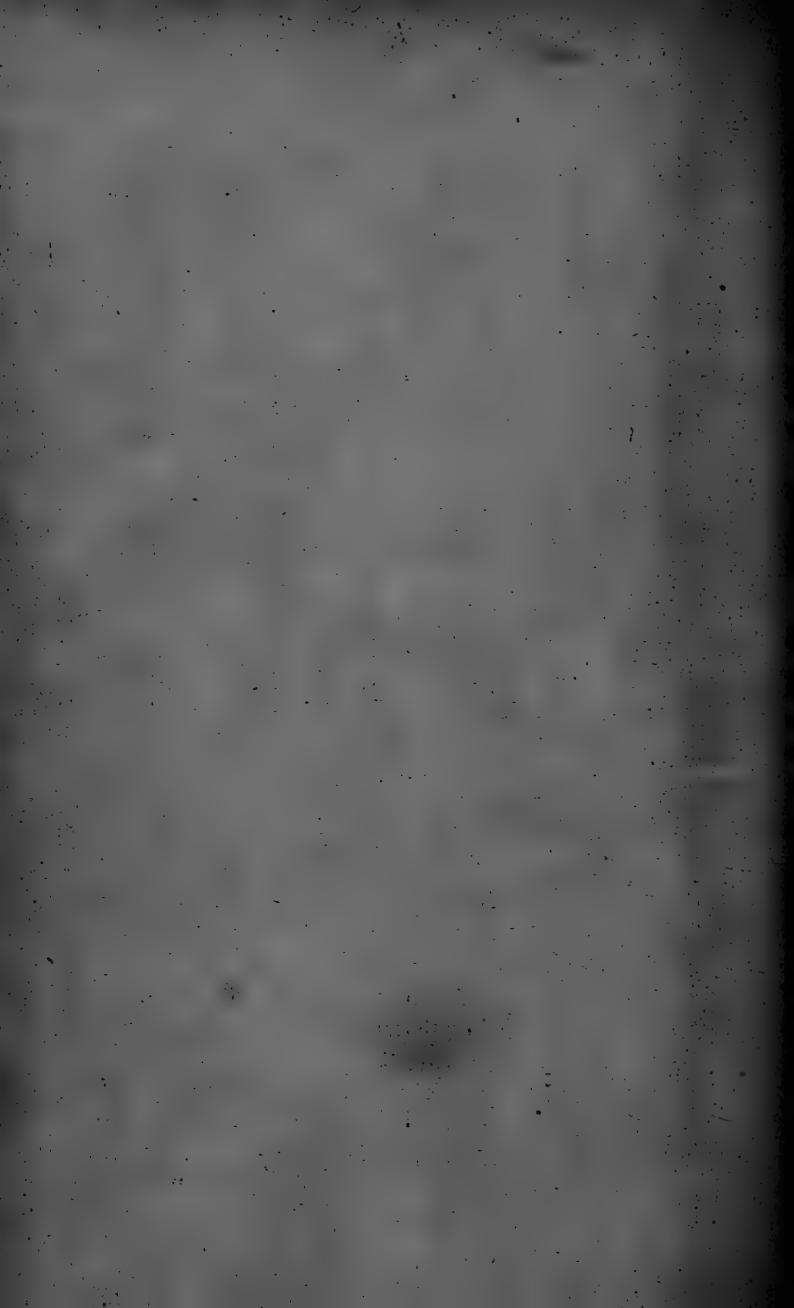
Tuesday, January 27th, 1885, at 4 p.m.

*Presented*  
14 MAR 1887









TWENTY-SEVENTH REPORT

(1884)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

ON JANUARY 27th, 1885.



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1885.



TWENTY-SEVENTH REPORT

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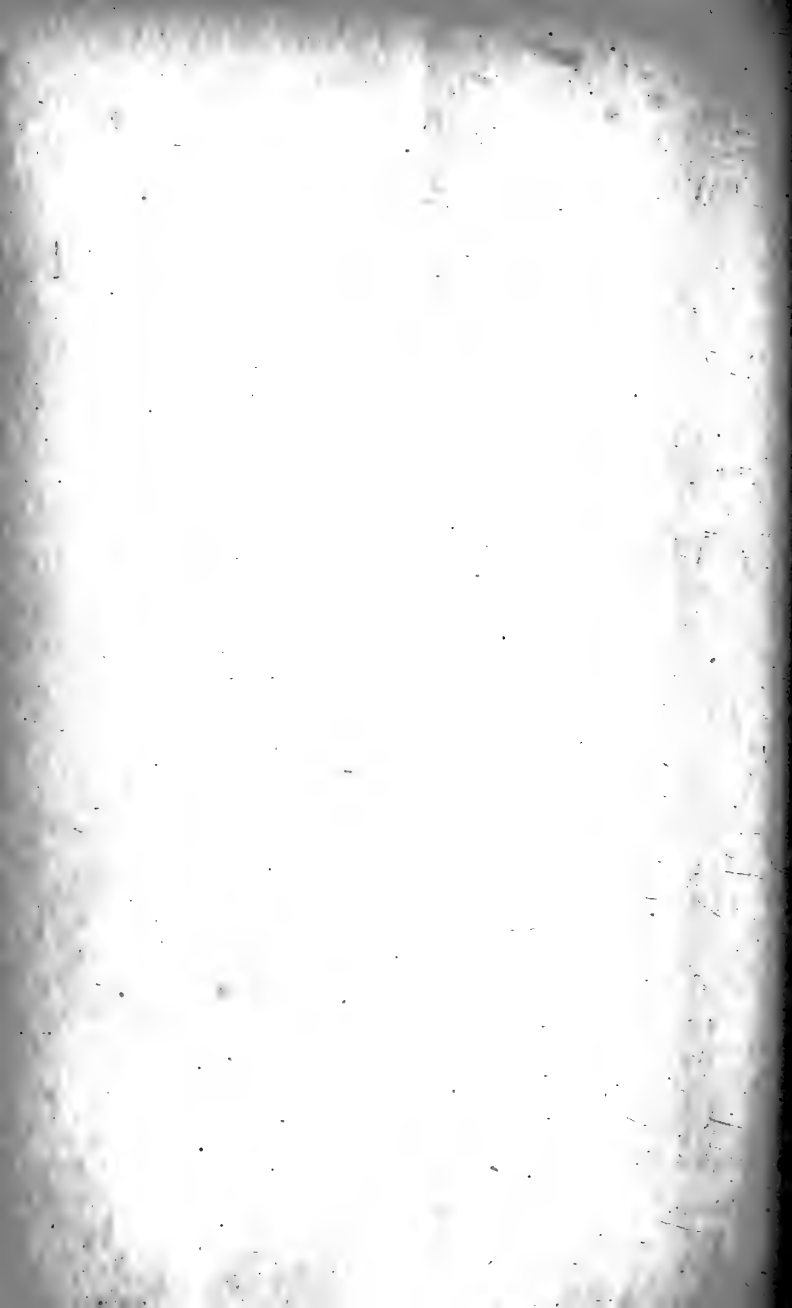
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- Sankey, Herbert T., Esq.  
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Ditto
- Ethelbert House, Margate  
Mystole, Chartham  
High Street, Hythe  
Middle Schools, Canterbury  
Thyra House, Dane John, Canterbury  
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25, Watling Street, Canterbury  
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- Betteshanger, Sandwich
- Toronto Villa, St. Martin's Hill, Canterbury
- Westbere House, Canterbury
- The Deanery                   ,,  
Ditto  
Ditto  
St. Sepulchre's,                   ,,  
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3, Marine Place, Dover  
49, London Road, Canterbury
- Bridge Street,  
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Burgate Street,  
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- Burgate Street                   ,,  
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Chislet  
Lees Court, Faversham
- St. Augustine's, Canterbury  
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# HONORARY & CORRESPONDING MEMBERS.

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Royal Herbarium, Kew

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Northgate, Chichester

Kemp, Dr. William

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Charlton, Woolwich

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# ASSOCIATES.

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Prebble, Mr. J. G.  
Pugh, Mr.

Ramsgate  
Canterbury

Young, Mr.

Sittingbourne

# EAST KENT NATURAL HISTORY SOCIETY.

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The Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on Tuesday, January 27th, 1885, the President, Captain McDakin, in the chair, when the following Report was presented.

## REPORT OF COMMITTEE FOR 1884.

Your Committee have the pleasure to report that many excellent Papers and Addresses have been given at the Scientific Meetings during the past year. As the number of members attending on those occasions has evidently been much increased by a timely intimation of the subject to be brought before them, and as this intimation has been easily made by the issue of Post Cards, it is recommended that this method of communication be continued. It is much to be desired that more members would make written or verbal communications to the Society on any subject of Natural History or Science with which they may be familiar, and thus materially add to the interest of the evening meetings.

The following papers, addresses, and notes have been presented during the past year:—

### PAPERS AND ADDRESSES.

- February 6. The Marine Aquarium, MR. SIBERT SAUNDERS.  
March 3, Glycerine Mounting, MR. JAMES REID; The History of a Leaf, MR. G. DOWKER, F.G.S.; Water Stoma of Saxifrage, MR. JAMES REID.  
April 2, History of a Snowflake, MR. A. S. REID, M.A., F.G.S.; Fertilization of Crocus by Bees, MR. JAMES REID; Stephanoceros Eichornii, MR. T.B. ROSSETER, F.R.M.S.  
May 7, Facts and Fancies in Botany, MR. G. H. NELSON, M.A., F.G.S., F.R.G.S.  
July 2, Ants and Emmets, MR. G. S. SAUNDERS; Alcyonella Fungosa, MR. G. DOWKER, F.G.S.  
December 3, The Expedition of the British Association to Canada, MR. A. S. REID, M.A., F.G.S.

### NOTES.

- May 7, Earthquake effects on the Artesian Wells of Canterbury, MR. SIDNEY HARVEY, F.C.S.  
June 4, Meteorological Notes, MR. KINGSFORD.

## OBJECTS EXHIBITED.

- March 5, *Aucuba Japonica*, COL. HORSLEY, R.E.; Male and Female Catkins of the Hazel, COL. HORSLEY, R.E.; *Pectinaria Belgica*, Mr. SIBERT SAUNDERS.
- May 7, Collection of Polished Pebbles, COL. COX; *Caprella Spinosa*, CAPT. MCDAKIN; Microscopical Mode of Showing Living Objects, MR. T. B. ROSSETER; Violet Leaves attacked by the Violet Smut, *Polycystis Violae*, MAJOR PARKER.
- July 2, Fasciation of Hop Plant, Mr. G. H. NELSON.
- October 1, *Asplachna Sieboldii*, and Air Sac of *Corethra*, MR. T. B. ROSSETER; Wasp's Nest, MR. JAMES REID.
- December 3, Malachites from Brazil; Cup Shaped Flint, COL. HORSLEY; Goosander, MR. G. DOWKER; *Æsophagus* of *Corethra*, MR. T. B. ROSSETER.

Detailed Reports of the Proceedings and Abstracts of the Papers, which have appeared in the "Canterbury Press," have been transferred, for the information of Members, to the Society's Scrap Book.

An Excursion was made to Wye Downs on the 21st of May. The geological features of the Weald, the gorge of the Stour at Wye, and the peculiar ferruginous beds capping the Downs, five hundred feet above the sea, came under the notice of the Members. These beds were the subject of some discussion as geologists are not agreed respecting their stratigraphical position. Several orchids and other botanical specimens were procured.

Another Excursion was made on July 10th, to Reculver. The geological features and ancient remains of the Roman Castrum were described by Mr. Dowker.

Your Committee have to record with deep regret the loss that the Society has sustained, firstly, by the death of its Hon. Assistant Secretary, Mr. James Fullagar, who for twenty-four years was most unwearied in his efforts to promote its welfare, and, secondly, by the removal of its Hon. Secretary, G. H. Nelson, Esq., M.A., F.R.G.S., F.G.S., who left Canterbury in August, on promotion to another appointment. Among the many valuable services which Mr. Nelson rendered to the Society there should be mentioned particularly that of arranging the collection of Fossils, Minerals, and Shells, for which work the Society is greatly indebted to him.

In order that as little inconvenience as possible might be

felt between Mr. Nelson's removal and the appointment of his successor, Col. Horsley most kindly undertook the Secretary's duties till the end of the year.

### LIBRARIAN'S REPORT.

It was not considered advisable, in consequence of the receipts of the year being very little above the ordinary expenditure of the year, to make any purchases of new books for the Library, the sum received from the Hon. Treasurer, viz., £6 2s., being sufficient only for the payment of the Periodicals taken in by the Society, and for binding those of the previous year. Of the above sum the periodicals cost £3 16s. 11d., and the binding of 15 vols. £2 5s. 1d.

The 1st Vol. of Michael's British Oribatidæ was received from the Ray Society in 1884, in return for the Annual Subscription of One Guinea to that Society.

The following gifts to the Library are acknowledged with the best thanks of the Society to the donors:—

1. Journal of the Royal Microscopical Society for 1884, presented by the Society.
2. Journal of the Postal Microscopical Society for 1884, presented by Col. Horsley, R.E.
3. Reports from—
  - a* Cardiff Natural History Society.
  - b* Rochester Natural History Society.
  - c* Croydon Microscopical and Natural History Club (Proceedings and Transactions).
  - d* Eastbourne Natural History Society (Transactions).
  - e* Transactions of the Essex Field Club.
4. Pamphlet by W. G. Smith, Esq., on the Palæolithic Floor of N. E. London.
5. Meteorological Notes by S. Kingsford, Esq., presented by Miss Kingsford.
6. Smithsonian Report for 1882, Presented by the same Society.
7. Geological Report of the United States of America, 1880 to 1881, Presented by the United States Government Geological Department.

8. Meteorological Register for Canterbury, 1884, by Brian Rigden, Esq.

### HON. TREASURER'S REPORT FOR 1884.

During the year under review, five members have left, and nine new members have joined the Society, a gain, therefore, of four, making seventy-seven in all. Of these, one is three years in arrears of his subscription, one two years, and three one year, viz., 1884—altogether £4 is the amount in arrears at present. Sixty-eight members paid subscriptions for 1884, and four paid up arrears amounting to £2.

The total sum received during the past year amounted to £31 16s., while the expenditure has been £26, leaving a balance of £5 16s., which, added to the previous balance, gives a nett balance in favour of the Society of £12 9s. 1d., as shown by the Financial Statement submitted herewith.

W. H. HORSLEY, COL.

Hon. Treasurer.

By the rules of the Society, all who are in any way interested in Natural History or in any other branch of Science are eligible for membership, under conditions specified in rule 2; and your Committee, believing that there are many persons in Canterbury and the vicinity, who are ignorant of the advantages which the Society enjoys in its extensive and valuable Library of scientific works, its powerful Microscope, and conveniently situated Reading-room, invite the co-operation of members in making the Society more generally known. A form of application is subjoined to this Report.

In conclusion, your Committee feel that the cordial thanks of the Society are due to those members who have contributed so largely to the success of the scientific meetings by reading papers and exhibiting objects; to the President, Captain McDakin; to the Hon. Secretary, G. H. Nelson, Esq., M.A., F.R.G.S., &c.; to the Hon. Treasurer and Librarian, Colonel Horsley, R.E.; to the Hon. Assistant Secretary, Mr. E. B. Hayward for his ready help at the monthly meetings; and to G. Rigden, Esq., for auditing the accounts.

# FINANCIAL STATEMENT FOR 1884.

| RECEIPTS.                                                                      | £   | s. | d. | EXPENDITURE.                                                | £   | s. | d. |
|--------------------------------------------------------------------------------|-----|----|----|-------------------------------------------------------------|-----|----|----|
| Balance (credit) 21st January, 1884.....                                       | 5   | 16 | 10 | Rent of Room for one year.....                              | 10  | 0  | 0  |
| Subscriptions for 1884 received up to 13th January, 1885 .....                 | 29  | 16 | 0  | Fire Insurance on Library, &c.....                          | 0   | 6  | 9  |
| Arrears of Subscriptions for 1882 and 1883, received up to the same date ..... | 2   | 0  | 0  | Subscription to Ray Society .....                           | 1   | 1  | 0  |
| Bonus on Fire Insurance.....                                                   | 0   | 6  | 9  | Contribution to Library .....                               | 6   | 2  | 0  |
| Balance with Hon. Treasurer .....                                              | 0   | 6  | 0  | Hon. Assistant Secretary—petty cash.....                    | 1   | 0  | 0  |
| Ditto with Hon. Assistant Secretary.....                                       | 0   | 3  | 6  | Cross and Jackman, for Printing Report.....                 | 4   | 10 | 0  |
|                                                                                |     |    |    | Ditto for Post Cards.....                                   | 0   | 14 | 6  |
|                                                                                |     |    |    | Hal Drury for Rubber Stamps, &c.....                        | 0   | 7  | 6  |
|                                                                                |     |    |    | Card Boxes for Cabinet.....                                 | 0   | 10 | 0  |
|                                                                                |     |    |    | Wrappers for posting Reports, and delivering the same.....  | 0   | 3  | 8  |
|                                                                                |     |    |    | Cleaning Room .....                                         | 0   | 2  | 6  |
|                                                                                |     |    |    | Hammond Hills for painting wire blinds and door board ..... | 0   | 18 | 0  |
|                                                                                |     |    |    | Carriage, Postage, and Post Office Order.....               | 0   | 4  | 1  |
|                                                                                |     |    |    | Balance (credit) 27th January, 1885.....                    | 12  | 9  | 1  |
|                                                                                | £38 | 9  | 1  |                                                             | £38 | 9  | 1  |

Examined and found correct,  
**GEORGE RIGDEN.**

W. H. HORSLEY, COLONEL,  
 Hon. Treasurer.

Actual Expenditure in 1884..... £26 0 0



On the motion of J. Reid, Esq., seconded by G. Rigden, Esq., the Report and Financial Statement were adopted, and ordered to be printed and distributed to members under the direction of the Committee.

The following Resolutions were then submitted to the Meeting and carried :—

1. That the Catalogue of the Library and Rules of the Society be printed with the Report.

2. That a publishing fund be established for the purpose of printing such papers and communications as may be selected by a Committee from the Transactions of the Society.

3. That a notice to this effect, with request for subscriptions, be sent to the members.

4. That the sum of Ten Pounds be placed at the disposal of the Hon. Librarian and Treasurer for the purpose of providing additional books for the Library, and for other necessary expenses.

5. That “The Annals and Magazine of Natural History” and “The Zoologist” be taken in, and the back numbers procured.

6. That the ordinary scientific meetings be held on the first *Tuesday* in each month, instead of Wednesday, so as not to clash with the Cathedral services.

7. That the thanks of the Society be presented to the President and the other Officers of the Society and especially to G. H. Nelson, Esq., for his painstaking and energetic services during the term of his office as Hon. Secretary.

8. That the Hon. and Rev. Canon Fremantle be President for the ensuing year.

9. That W. P. Mann, Esq., be Hon. Secretary.

10. That the Hon. Librarian and Treasurer, Col. Horsley, and the Hon. Assistant Secretary, Mr. E. B. Hayward, be requested to remain in office during the coming year.

11. That the name of H. M. Chapman, Esq., be placed on the list of the Committee, and that James Reid, Esq., be elected a Vice-President.

# LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

## VERTEBRATA.

- Bell's British Quadrupeds, 1 vol., 8vo.  
Cassell's Book of Birds, 1 vol., roy. 8vo.  
Couch's Fishes, 4 vols., 8vo., 1862-66.  
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.  
Gurney, J. H., List of Birds of Prey, 1884.  
Martin, W. C. J., History of Man and Monkeys, 1841.  
Munro's Structure of Fishes, 1 vol., folio, 1785.  
Nitsch's Pterylography, 1 vol., fol., 1867. Ray Society.  
Parker's Structure, &c., of the Shoulder Girdle and Sternum in the Vertebrata, 1 vol., fol., 1868. Ray Society.  
Swainson's Birds, 2 vols., 12mo.

## PAMPHLETS.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Moschus, Tragulus and Orycteropus.  
——— Memoirs on the Blood of Lemna Cornubica.  
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.  
——— On the Muscular Sheath of the Œsophagus, of the ("Aye, Aye," (Chiromys Madagascariensis).  
——— On the Fibres of the Crystalline Lens of the Petromyzonii.  
——— On the Œsophagus of the Red Hornbill.  
——— On the Œsophagus of Sauropsida and other Vertebrata.  
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.  
——— On the Measurement of the Red Corpuscles of the Blood of Batrachians.  
——— Sketches of the Spermatozoa of Petromyzon.  
Hammond, W. H., On the Structure of the Red Blood Corpuscles, &c.

## INVERTEBRATA.

- Alder, J., and A. Hancock, on Nudibranchiate Mollusca, part 1 to 6, Ray Soc., 1845-54  
Allman, G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with Burmeister's Trilobites.  
——— Gymnoblastic, or Tubularian Hydroids, part 1 and 2, folio, 1871-72. Ray Society.  
Baird's Entomostraca, 1 vol., 8vo., 1850. Ray Society.  
Baker's Natural History of the Polyp, 1 vol., 8vo., 1743.  
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.  
Bowerbanks, Dr., Monograph of British Spongiadæ, 4 vols., rl. 8vo., 1864-6-82. Ray Society.  
Brady, G. S., Monograph of the Copepoda of British Isles, vols. 1, 2, 3, 8vo., 1878-80. Ray Society.  
Buckton, G. B., Monograph of the British Aphides, vols. 1-4, 8vo., 1876-7-80-2, Ray Society.  
Cameron's Monograph of British Phytophagous Hymenoptera, vol. 1, 8vo., 1882. Ray Society.  
Carpenter's Foraminifera, Ray Society, 1 vol., folio, 1862.  
Curtis on Farm Insects, crown 8vo., 1 vol., 1860.  
Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.

- Denny's *Monographia Anoplurorum Britannia*, 1 vol., 8vo., 1842.  
 Douglas and Scott's *British Hemiptera, Heteroptera*, 1 vol., 8vo., 1865, Ray Society.  
 Forbes', Professor E., *British Naked Eyed Medusæ*, 1 vol., 4to., 1848, Ray Society.  
 ——— *British Star Fishes*, 1 vol., 8vo., 1841.  
 Gosse's *British Sea Anemones, &c.*, 1 vol., rl. 8vo., 1860.  
 Greene's *The Insect Hunter's Companion*, 12mo., 1863.  
 Hanley's *Lamarck's Shells*, 1 vol., 8vo.  
 Huxley's *Oceanic Hydrozoa*, 1859, 1 vol., folio, Ray Society.  
 Johnstone's *British Zoophytes*, 2 vols., 8vo., 1847.  
 Kent's *Manual of the Infusoria*, royal 8vo., 1880.  
 Kirby's *British Bees*, 2 vols., 8vo., 1802.  
 Kirby and Spence's *Introduction to Entomology*, 4 vol., 8vo., 1828-29.  
 Lowne. B.T., M.R.C.S., *Anatomy of Blow Fly*, 1 vol., 8vo., 1870.  
 Lubbock, Sir John, *Collembola and Thysanura*, 1 vol., 8vo., 1873, Ray Society.  
 Martyn, T., *English Entomologist*, 1 vol., 4to., 1792.  
 McIntosh, W. C., M.D., *British Annelids*, part 1, 1873, folio, Ray Society.  
 ——— ditto, part 2, 1874, Ray Society.  
 Michael's *British Oribatidæ*, vol. 1., 1884, Ray Society.  
 Morris's *British Butterflies*, 1 vol., 8vo., 1864.  
 Newman's *Butterflies and Moths*, 1 vol., 8vo., 1874.  
 Ormerod's *Manual of Injurious Insects*, 1 vol., 8vo., 1881.  
 Pritchard's *History of Infusoria*, 1 vol., rl. 8vo., 1861.  
 Reeve's *British Land and Fresh Water Molluscs*, 1 vol., 8vo., 1863.  
 Smith's *Diatomaceæ*, 2 vols., rl., 8vo., 1853.  
 Staveley's *British Insects*, 1871, 8vo.  
 Turton, Dr. W., *Land and Fresh Water Shells*, 1 vol., 8vo.  
 Westwood's *Butterflies of Great Britain*, vol., 4to., 1855.  
 ——— *Modern Classification of Insects*, 2 vols., 8vo., 1839-40.  
 Westwood and Humphrey's *British Butterflies, &c.*, 1 vol., 4to., 1841.  
 Williamson's *Recent Foraminifera*, 1 vol., 4to., 1858, Roy Society.  
 Wood's *Common Shells of the Sea Shore*, 1 vol., 12mo., 1865.

## PAMPHLETS.

- Bates's *Phasmidæ*.  
 British Moths, Nocturnæ:  
 ——— Geometræ:  
 Broeck, A., *Crustacea, Amphipoda, Borealia et Arctica*.  
 Fullagar, J. G., *On the development of Hydra*.  
 Gulliver, G., F.R.S., *Sketches to Scale of the Auditory Organs of Molluscs*.  
 Hammond, A., *Comparison of the Metamorphosis of the Crane-fly and the Blowfly*.  
 Lubbock, Sir J., *Chloen dimidiatum*, 1865.  
 Munn's, Major, *Bee Keeper's Magazine*, one part.  
 ——— *The Apiary*.  
 Oysters, *Cultivation of*, at Arcachon, 1876.  
 Sars, Michael, *Memoirs des Crinoïdes Vivants*.  
 Sars, M., *Forms of Animal Life from deep sea off Norway*, 1872.  
 Wallich, G. C., M.D., *on Amœba, Phizopods, Physalia, &c.*, 1862-9.

## BOTANY.

- Bentham's *Hand Book of the British Flora*, 2 vols., 8vo., 1865.  
 Berkeley's *Cryptogamic Botany*, 1 vol., rl. 8vo. 1857.  
 ——— *British Mosses*, 1 vol., rl. 8vo. 1863,  
 ——— *Fungology*, 1 vol., rl. 8vo., 1860.  
 Brewer, J. A., *Flora of Surrey*, 1 vol., 8vo., 1863.  
 Brown, R., *Miscellaneous Botanical Works*, 2 vols., 8vo., Ray Society, 1866, and  
 1 vol., *Atlas of Plates*, 1868.  
 Clarke's *Common Sea Weeds*, 1 vol., 12mo.  
 Cook, M.C., *Fungi, their nature and uses*, 1 vol., 8vo., 1875.  
 Cowell, M.H., *Floral Guide to East Kent*, 1 vol., 8vo., 1839.  
 Darwin, Charles, F.R.S., *Forms of Flowers*, 1 vol., 8vo., 1877.  
 ——— *Insectivorous Plants*, 1 vol., 8vo., 1875.  
 ——— *Movements of Plants*, 1 vol., 8vo., 1880.

- Dillwyn's British Confervæ, 1 vol., 4to., 1809.  
 Evelyn's Silva, 2 vols., 4to., 1786.  
 Gatty, Mrs., Atlas of British Sea Weeds, from Professor Harvey's Phycologia Britannica, 1 vol., 4to., 1863.  
 Harvey, Professor, Synopsis of British Sea Weeds, 1 vol., 12mo., 1857.  
 Henfrey's Elementary Botany, 2nd edition, by Dr. Masters, 1 vol., 8vo., 1870.  
 Hooker's Jungermannia, 1 vol., 4to., 1816.  
 Hooker's British Flora, 1835.  
 Jacob's Faversham Plants, 1 vol., 12mo., 1777.  
 Leighton's British Lichen Flora, 1 vol., 8vo., 1872.  
 Lindley's and Moore's Treasury of Botany, 2 vols., 8vo.  
 Loudon's Encyclopædia of Plants, with 2 supplements 2 vols., rl. 8vo., 1841-55.  
 Lubbock's Wild Flowers in relation to Insects, 1 vol., 8vo., 1875.  
 Masters, Vegetable Teratology, 8vo., Ray Society, 1869.  
 ——— Monograph on Passifloraceæ, 1 vol., folio.  
 ——— Results of Experiments on Mixed Herbage of Permanent Meadow, part 2, Botanical. Phil. Trans. part iv., 1882.  
 Meyen's Geography of Plants, Ray Society, 1 vol., 8vo., 1846.  
 Pulteney's Progress of Botany in England, 2 vols., 8vo., 1790.  
 Ralf's Desmidiæ, 1 vol., 4to., 1848.  
 Reports and Papers on Botany, Ray Society, 1 vol., 8vo., 1846.  
 Smith, G. E., East Kent Flora, 1 vol., 8vo., 1829.  
 ——— Sir J. E., English Flora, 4 vols., 8vo.  
 Watson's Topographical Botany, 1 vol., 8vo., 1883.  
 Wilson's Bryologia Britannica, 1 vol.

## PAMPHLETS.

- Blytt, A, Phanerogamer og Bregner, 1870.  
 Brown, R., F.R.S., Organs of Orchidaceæ, 1831.  
 Ditto, Pollen of Plants, 1828.  
 Gulliver, G., F.R.S., Crystals in the Testa of the Elm and the Character of the Epidermis of the Tway-Blade.  
 ——— Notes on Lemnaceæ and the Raphidian Character of Plants.  
 ——— Sphæraphides in Urticaceæ and Leonurus.  
 Hall and Woodhouse, Misses, Orchidaceæ found near Eastbourne.  
 Masters, (Dr. Maxwell), Side Lights on the structure of Composites.  
 ——— The Bracts of Crucifers.  
 ——— The Superposed Arrangement of the Parts of Flowers.  
 ——— Gossypium from East Tropical Africa.  
 ——— Morphology of the Leaves of Conifers  
 ——— Morphology of the Primulaceæ.  
 ——— Foliation and Ramification of Buddleia auriculata.  
 Miller, C. T., On a New Fungus.  
 Woodhouse, Miss, Adoxa Moschatellina.

## PERIODICALS.

- Journal, The, of Botany, vol. 8, 9, 1870-1, vol. 1, N.S. 1872, vol. 2, 1873.  
 Phytologist, The, vol. 3, 1859.

## GEOLOGY.

- Boddy's, Dr., History of Rock Salt, 1 vol., 1881.  
 Burmeister's Trilobites, 1 vol., 4to., 1846, bound with Allman's Freshwater Polyzoa, 1856, Ray Society.  
 Conybeare and Philips' Geology, 10th edition, 1 vol., 8vo., 1829.  
 Lectures, Introductory, School of Mines, 1851-53.  
 Lyell's Principles of Geology, 2 vols., rl. 8vo., 1867-68.  
 Ditto, Elements in Geology, 1 vol., rl. 8vo., 1865.  
 Nicol's Geology of Scotland, 1 vol., 8vo., 1844.  
 Owen, on the Skeleton of an extinct Sloth, Mylodon Robustus, 1 vol., 4to., 1842.  
 Philips, Professor, Manual of Geology, 1 vol., 8vo., 1855.  
 Portlock's Geological Report on Londonderry, &c., 1 vol., rl. 8vo., 1843.  
 Ramsay's Physical Geography of Great Britain, 1 vol., 8 vo., 1864.

Southall's, J.C., L.L.D., Epoch of the Mammoth, 1 vol., 8vo., 1878.  
Memoirs of the Geological Survey of Great Britain, 2 Nos.

## PAMPHLETS.

Brown's, J. A.), Some Notes on Flint.  
—————Water Bearing Strata of Ealing District.  
Carruthers, on Osmundites Dowkeri from the Eocene of Herne Bay.  
Dowker, G., On the Chalk of Thanet and East Kent.  
Marr, J. E., on Cambrian and Silurian Beds, 1878-80.  
Whitaker, W., List of Works on the Geology, Mineralogy, and Palæontology of the Hampshire Basin.

## PERIODICALS.

The Geological Magazine, vol. 1 to 10, 1864-73, vol. 1, N.S., 1874, to vol. 11, N.S., 1884.  
The Geologist from vol. 2, 3, 4, 1859-61, vol. 6, 7, 1863-4.  
Quarterly Journal of the Geological Society, vol. 20 to 39, 1864-83,

## MISCELLANEOUS.

Adams, C., Micrographia Illustrata, 4to, 1745.  
Archives do Museu Nacional do Rio Janeiro, vols. 4 and 5, 1881.  
Barclay, On Life and Organization, 1 vol., 8vo., 1822.  
Beale, Lionel S., F.R.S., How to work with the Microscope, 1 vol., rl. 8vo., 1880.  
Busk's Reports on Zoology, Ray Society, 1 vol., 8vo., 1843, 1844.  
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Pulteney's Life and Writings of Linnæus, 1 vol., 4to., 1805.  
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Swan's Comparative Anatomy of the Nervous System, 1 vol., 4to., 1864.  
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#### PERIODICALS FOR THE CURRENT YEAR.

Nature.  
 Geological Magazine.  
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 Quarterly Journal of Geological Society.  
 Journal of the Postal Microscopical Society.  
 Science Gossip.  
 Annals and Magazine of Natural History.  
 The Zoologist.

The Librarian requests that Members taking Books or Periodicals from the Library will be careful to enter the same in the book kept on the table for the purpose, with the dates, "when borrowed" and "when returned."

Mr. Sidney Harvey, Chemist, High-street, very obligingly keeps the key of the Library for the use of Members.

TITLE AND OBJECTS  
OF THE  
East Kent Natural History Society.

The objects of the EAST KENT NATURAL HISTORY SOCIETY shall be the Collection and Diffusion of Practical and Theoretical Knowledge respecting Natural History, in all its Branches, both in relation to the particular District and the General Science.

~~~~~  
RULES AND REGULATIONS.

MEMBERSHIP.

1.—The Society shall consist of Ordinary, Honorary, and Corresponding Members, and of Associates.

2.—Every candidate for admission into the Society as an Ordinary Member must be proposed in writing by two Members, and the election shall be by show of hands, or by Ballot, taken at any Meeting of the Committee, or at a General Meeting—one negative in five votes to exclude.

3.—The annual Subscription to be paid by Ordinary Members shall be Ten Shillings; the Subscription shall become due on the 1st of January in each year, and shall be paid in advance for the current year. Any Member neglecting to pay his subscription for three months after it is due, shall be applied to by the Treasurer or Secretary, and if the Subscription remain unpaid for three months after such application, he shall cease to be a member of the Society.

4.—The Committee shall have power to admit, without ballot, on the nomination of two Members, any Lady who shall be desirous of becoming an Ordinary Member, and her subscription shall be Five Shillings. This rule shall apply also to such

sons, brothers, and nephews of Ordinary Members, as may be regularly resident in the same house with those Members.

5.—Any persons distinguished for their researches in Natural History, for their liberality to the Society, or for their connection with similar Societies, may, on the recommendation of the Committee, be elected Honorary or Corresponding Members of the Society, provided they do not reside within the district; such Honorary and Corresponding Members shall not be subject to any of the expenses of the Society, and shall have no vote in its affairs, nor be entitled to take books out of the Library, or to the Reports and Notices.

6.—In order to cultivate the study of Natural History, among individuals of the class of Mechanics, &c., residing in the district, the Committee shall have power to admit individuals of that class as Associates, provided they shall first communicate some information or observation on Natural History, exhibit such specimens or present them to the Local Museums, as shall, by their merits satisfy the Committee. Such Associates shall enjoy the privileges of Honorary Members.

MANAGEMENT AND BUSINESS MEETINGS.

7.—The affairs of the Society shall be conducted by a Committee of Management, which shall consist of a President, Vice-Presidents, a Treasurer, and an Honorary Secretary, with not less than six Members, who shall all be chosen at the Annual Meeting. Three Members of such Committee shall form a quorum. The Meetings shall be held at four o'clock p.m. on the first Saturday in every month, and at such other times as the Secretary may deem necessary. At any regular meeting including a sufficient number of Committee-Members, they may then and there declare themselves and act as a Committee in the ordinary business of the Society.

8.—An Annual Meeting shall be held at four o'clock p.m., on the last Tuesday in January, in each year, at Canterbury, for the purpose of electing the officers for the current year, receiving the Annual Statement of Accounts, and report of the Committee, and conducting the general affairs of the Society. In case of necessity, the Committee may alter the hour, posting due notice thereof in the Society's room.

9.—Special General Meetings may be summoned by the

Committee, or by the Secretary, on the requisition (in writing) of any six members of the Society, the specific purpose of the Meeting being stated in the notice, which shall be sent to each Member not later than one week before the time of such meeting.

10.—All questions discussed at the Meetings shall be decided by a majority of votes; and if upon any question the votes shall be equal, the Chairman of the Meeting shall have the second or casting vote.

11.—In the event of any vacancy occurring in the Officers or Committee between the Annual Meetings, the same shall be filled up by the Committee. The two Members who have been the longest thereon, and have attended the fewest meetings thereof, during the preceding year, shall go out by rotation at the Annual Meeting.

12.—In order to facilitate the objects of the Society, the Committee shall be empowered to appoint any Member a Local Secretary for the town or district he may reside in. Such Local Secretary shall be *ex-officio* a Member of the Committee.

SCIENTIFIC MEETINGS AND EXCURSIONS.

13.—The Meetings for Scientific Business shall be at Seven o'clock p.m. on the first Tuesday of every month, at Canterbury; also extra Meetings at such place and time as the Committee shall have posted due notice of in the Society's apartment. Each Member to have the right of introducing a Visitor at these Meetings.

14.—There shall be ordinary excursions on the Afternoon of the day of each evening Scientific Meeting, and at other times, if the Committee so appoint, time and place to be duly notified in the Society's room by the Committee; and Special Excursions at such times and places as may be approved by the Committee, who shall consider written suggestions of Members on the subject.

15.—Minutes of the proceedings of all Meetings shall be entered by the Secretary in a book kept for that purpose.

16.—The Secretary to give seven days' notice of Special Excursions to every Member, stating the time and place thereof.

LOCAL AND DISTRICT MEETINGS.

17.—To promote still further the objects and interests of the Society, Local Secretaries and Members are invited to organize Meetings or Excursions in their district, and to give notice of the same to the General and all the Local Secretaries, stating the time and place of Meeting, and what particular subjects are to be brought forward.

COLLECTION OF SPECIMENS.

18.—The Society, as soon as it may possess sufficient means shall endeavour to make a collection of Objects of Natural History, both with a view of forming a Museum and distribution of Duplicate specimens according to the regulations to be adopted by the Committee.

LIBRARY.

19.—Only Books and Periodicals connected with Natural History are to be purchased by the funds of the Society, and the number and particular books of this class to be purchased shall be determined by the Committee.

20.—All the Books and Periodicals shall be kept in some convenient place, so that members shall be able to refer to them or take them out under such regulations as the Committee from time to time may think proper to make.

21.—Members are also invited to lend books for the use of the Library, reserving to themselves the full right of ownership ; such Books to be under the care of the Committee, and not allowed to be taken out of the Library.

22.—In order to allow the Librarian to examine the Books they must all be returned to the Library and none taken therefrom during the first week in every June.

EAST KENT NATURAL HISTORY SOCIETY.

SCIENTIFIC MEETINGS, 1885-6.

PLACE : No. 6, HIGH-STREET, CANTERBURY.

TIME : 7 O'CLOCK P.M.

| 1885. | | 1885. | |
|-----------|------|----------|-------|
| February | 3rd. | October | 6th. |
| March | 3rd. | November | 3rd. |
| April | 7th. | December | 1st. |
| May | 5th. | | 1886. |
| June | 2nd | January | 5th. |
| July | 7th. | February | 2nd. |
| August | 4th. | March | 2nd. |
| September | 1st. | April | 6th. |

ANNUAL MEETING,

Tuesday, January 26th, 1886, at 4 p.m.

Please fill up this Form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP,

I the undersigned being desirous of becoming a member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2, of the Society.

(Signed)

(Address)

Date

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs. Hammond and Co's. Bank, Canterbury, or to the Hon. Treasurer.







TWENTY-EIGHTH REPORT

(1885)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

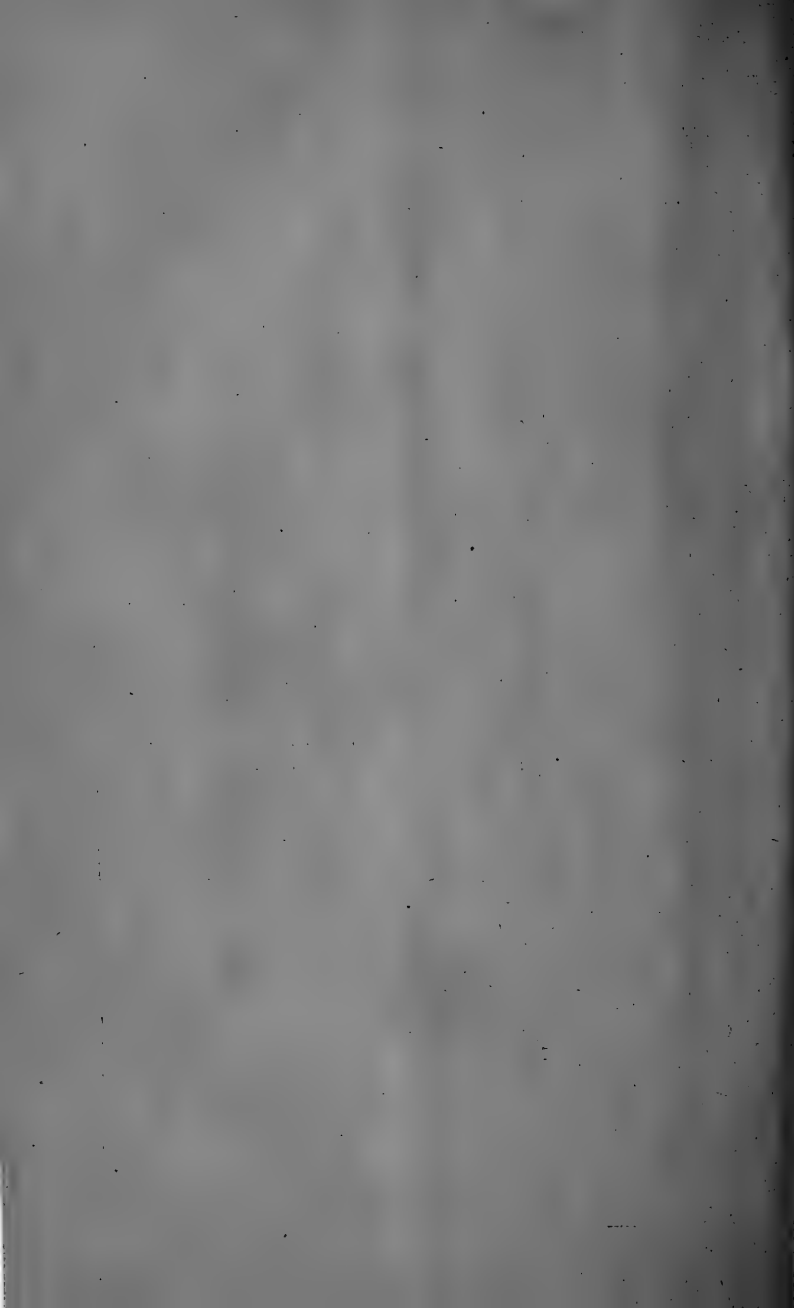
ON JANUARY 26th, 1886.



Canterbury :

CROSS & JACKMAN, " THE CANTERBURY PRESS," 6, HIGH STREET

1886.



TWENTY-EIGHTH REPORT

(1885)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

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HELD AT CANTERBURY,

ON JANUARY 26th, 1886.



Canterbury :

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1886.

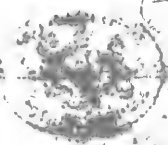
1881

1881

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS DEPARTMENT



1881

THE UNIVERSITY OF CHICAGO

EAST KENT NATURAL HISTORY SOCIETY.

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THE REV. R. N. GANDY, M.A.

Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.
THE RIGHT HON. THE LORD NORTHBOURNE, BETTESHANGER.
THE VERY REV. THE DEAN OF CANTERBURY.
MATTHEW BELL, Esq., Bourne Park.
COLONEL W. H. HORSLEY, R.E., CANTERBURY.
G. DOWKER, Esq., F.G.S., STOURMOUTH.
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COLONEL COX, FORDWICH HOUSE.
THE RIGHT REV. THE BISHOP OF DOVER.
CAPTAIN GORDON McDAKIN, CANTERBURY.
JAMES REID, Esq., F.R.C.S., CANTERBURY.
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Treasurer and Librarian :

COLONEL HORSLEY, R.E.

Honorary Secretary,

MR. W. P. MANN, B.A., MIDDLE SCHOOLS, CANTERBURY.

Assistant Secretary :

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee :

H. M. CHAPMAN, Esq.
W. H. HAMMOND, Esq.
Mr. SIDNEY HARVEY.
ALDERMAN FREND.

G. RIGDEN, Esq.
SIBERT SAUNDERS, Esq.
A. WETHERELT, Esq.
MAJOR PARKER, F.G.S.

Please address all communications to Mr. W. P. Mann, B.A., Middle Schools, Canterbury.

MEMBERS.

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 Blore, Rev. Dr.
 Boddy, E. M., Esq., M.D.
 Bohn, J. Esq.
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Cantis, Colonel
 Chapman, H. M., Esq.
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 Cole, Miss
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 Court, P., Esq.
 Cowell, Mrs. E.
 Cox, Colonel C. J.
 Cox, C. S. B., Esq.
 Cross, F., Esq.

Dover, Right Rev. Bishop of
 Dowker, G., Esq., F.G.S.
 Dixon, Rev. T. F.

Farren, General C.B.
 Fielding, John, Esq.
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 Furley, R., Esq.

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 Gogarty, H. A., Esq., M.D.
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 King's School, "
 109, Ashted Road, Bloomsbury, Birmingham
 5, High Street, Canterbury.
 Mercery Lane. "

St. Stephen's Lodge, Canterbury.
 The Priory, St. Martin's Hill, Canterbury.
 4, Wincheap Street, Canterbury.

Rose Hotel, " "
 Dover.
 Hanover Place, Canterbury.
 Fordwich House, near Canterbury.
 Ditto
 Watling Street, Canterbury.

Precincts, Canterbury.
 Stourmouth House, Wingham.
 St. George's Rectory, Canterbury.

Great Bealings, Woodbridge.
 St. Dunstan's, Canterbury.
 Orchard Place, Canterbury.
 Precincts "
 Parade "
 S. Dunstan's "
 Barton Fields, Canterbury.
 Ashford.

St. Andrew's Rectory, Canterbury.
 Nunnery Fields, Canterbury.
 St. George's Place, Canterbury.
 6, St. George's-fields, Canterbury.

Ethelbert Road, Canterbury.
 Chilham.
 St. Alban's Court, Wingham.
 High Street, Canterbury.
 Hartsdown, Margate.
 20, De Vere Gardens, Kensington, W.
 4, Chapel Place, Ramsgate.
 Precincts, Canterbury.
 Ersham House, Canterbury.
 St. Stephen's Lodge, "
 51, London Road, Canterbury.

HONORARY & CORRESPONDING MEMBERS.

| | |
|---------------------------------|---|
| Bartlett, A. D., Esq. | Zoological Gardens, London |
| Bates, H. W., Esq. | London |
| Bewsher, Charles, Esq. | St. Louis, Mauritius |
| Boycott, T., Esq., M.D. | London |
| Britton, J., Esq. | Royal Herbarium, Kew |
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| Masters, Dr. Maxwell T., F.R.S. | Ealing |
| May, Mr. Oliver, jun. | Gas Works, Canterbury |
| Mitchinson, Right Rev. Dr. | Sibstone |
| Sandilands, —, Esq. | Canning Downs, Queensland, Australia |
| Saunders, G. S., Esq. | Cumberland House, Mount Sion, Tunbridge Wells |
| Trimen, H., Esq. | Botanical Department, British Museum |
| Whitaker, W., Esq. | Geological Museum, Jermyn Street, London |

ASSOCIATES.

| | |
|--------------------|----------------------------------|
| Coppen, Mr. E. | Sibertswould |
| Dean, Mr. H. | St. Peter's Street, Canterbury |
| Down, Mr. | St. Dunstan's Street, Canterbury |
| Gordon, Mr. W. C. | Museum, Dover |
| Gutteridge, Mr. | Faversham |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury |
| Prebble, Mr. J. G. | Ramsgate |
| Pugh, Mr. | Canterbury |
| Young, Mr. | Sittingbourne |

EAST KENT NATURAL HISTORY SOCIETY.

The Annual Meeting was held at the Society's Rooms 6, High Street, Canterbury, on Tuesday, January 26th, 1886, Captain McDakin in the chair, when the following Report was presented.

REPORT OF COMMITTEE FOR 1885.

Your Committee are pleased to be able to say that the Society, as regards its work and numbers, has maintained its position during the past year. The attendance at the Monthly Meetings has generally been good, and much interest has been shown in the Subjects of the various papers. The Excursions during the Summer were well attended, and were all very successful.

The following papers, addresses, and notes have been presented during the year.

PAPERS.

- January 7, *Bos longifrons*, CAPT. MCDAKIN; Gall Mites, MR. G. S. SAUNDERS.
February 3, The Birds of East Kent, MR. G. DOWKER, F.G.S.
March 3, Exposition of some of the properties of Tannin, CAPT. MCDAKIN
April 8, Sea Stars, MR. SIBERT SAUNDERS.
May 5, The Birds of East Kent, MR. G. DOWKER.
July 7, The Honey Bee, COL. COX.
October 6, Influence of Light on Growth, MR. JAMES REID.
November 3, Our Social Wasps, MR. G. DOWKER.
December 1, The Larva of *Corethra plumicornis*, MR. T. B. RØSSETER, F.R.M.S.

NOTES.

- February 3, On the Trepang or Sea Cucumber, MR. JAMES REID.
 March 3, On Starfish devouring Oysters, MR. S. SAUNDERS.
 April 8, On a Battle between a Centipede and a Woodlouse, MR. JAMES REID.
 November 18, Eagles in East Kent, MR. G. DOWKER.

EXCURSIONS.

- June 12, To Wye Downs.
 June 24, To Hothfield Heath.
 August 18, To Kenfield Hall, to view MR. THOMSON'S Pinetum.
 December 17, Evening visit to a Conversazione at the Whitstable Institute, on the invitation of MR. SIBERT SAUNDERS.

OBJECTS EXHIBITED.

- February 3, Specimen of the Trepang, R. E. THOMSON, ESQ.; Bleached Skeletons of the Starfish, Brittle Star and Sand Star, Microscopical preparations showing the Calcareous Plates and Anchor-shaped Spiculae in the Skin of *Synapta digitata*; MR. SIBERT SAUNDERS.
 March 3, Branch of Eucalyptus, specimens of Male and Female Cones of *Araucaria Imbricata*, MR. JAMES REID; Different Species of Gall Nuts, MR. SIDNEY HARVEY.
 April 8, Specimens of Crinoidea, Ophiuroidea, and Asteroidea, with Microscopical preparations of details, MR. S. SAUNDERS.
 May 5, Black Gravel Conglomerate from Bigberry Wood, CAPT. MCDAKIN; Alimentary Canal and Pharynx of *Anopheles bifurcatus*, (Microscopical), MR. T. B. ROSSETER.
 June 2, Specimen of Edelweiss raised in England from seed, COL. COX; *Hydra fusca*, and *Melicerta ringens*, COL. HORSLEY; Clay Ironstone from The Weald of Sussex, CAPT. MCDAKIN; Cone of *Araucaria imbricata*, MR. JAMES REID; Jet from Battle Abbey, MRS. COLE.
 July 1, Botanical Specimens, MRS. DEAN and MRS. COLE.
 August 4, Foot of *Dytiscus*, Larva of *Dytiscus*, Leaf of *Drosera rotundifolia*, Sections of Lace Bark Tree, COL. HORSLEY; Flowers of *Liriodendron tulipifera*, THE SECRETARY; Orchid (*Habenaria alba*), MR. JAMES REID.
 September 1, Crystals of Nectar of Azalea and Hoya. Nest of *Vespa Norwegica*, *Plumatella repens*, and *Vorticella*, COL. HORSLEY; Larva of Tussock Moth, MISS WHITEMAN.
 October 6, *Lobelia urens*, and other Specimens, MR. JAMES REID.
 November 3, Sting and Poison Bag of a Wasp, COL. HORSLEY; Fruit of *Liriodendron tulipifera*, and Leaves of Horse Chestnut, showing Scars, MR. JAMES REID; Globular Wasps' Nest, CAPT. MCDAKIN.
 December 1, Mounted Specimens of Details of Larva of *Corethra plumicornis*, MR. T. B. ROSSETER; Crystals (Microscopical), MR. S. SAUNDERS.

The number of Members is 78. During the year 7 new Members have been added, 3 have resigned, and 3 have died.

Your Committee desire to express their deep sense of the loss which the Society has sustained by the death of Mrs. Cox, Mrs. Dean, and the Rev. F. Rouch. They all took a very great interest in the Society, and contributed much to its success.

It is to be regretted that during the past year the Society has been removed from the list of Corresponding Societies of the British Association. The reason for this appears to have been that as no Transactions had been published for 3 years, there was not sufficient evidence that the Members were systematically pursuing local Scientific investigation. Your Committee trust that the appeal they have made for reinstatement will be successful, and they earnestly hope that members will be induced not only to make careful observations and undertake original work, but to communicate their results for publication in the Society's Transactions.*

In accordance with a resolution passed at the last Annual Meeting, a selection of the Society's proceedings 1882-3-4 has been published at a cost of £6 12s. 0d., this being defrayed by subscriptions kindly given by a few Members in response to the appeal made. As the annual Subscriptions only just cover the ordinary expenses of the Society, and as the continuation of the publication of "Transactions" is most desirable, it may be necessary ere long to make another appeal for a publishing fund.

All persons interested in Scientific work are eligible for Membership under conditions specified in Rule 2, and your Committee would urge upon the members the desirability of

* The Subjects at present selected by the Association for local investigation are, (A) Luminous Meteors, Meteoric Dust in various localities; rainfall; underground temperature. (C) Erosion of Sea Coasts; height of underground waters; erratic blocks. (D) Migration of Birds at Lighthouses and Lightships; Periodical Natural Phenomena, (flowering of plants, &c.); injurious insects, (first appearance, &c.) (F) Working of Education Code in Elementary Schools; rudimentary Science in Schools. (G) Effective wind pressure on buildings. (H) Photographs of typical races and crosses; Ancient earthworks prehistoric remains; Anthropometric collections.

endeavouring to induce any of their friends who have a love of Nature to join the Society. It should be more widely known that Members have the advantage of a valuable Library of Scientific Works, and are also free to make use of the excellent Microscope in the Society's Room. A form of application is subjoined to this Report.

Your Committee feel that the thanks of the Society are due to those Members who have contributed papers and exhibited various objects during the year, and also to the President, the Hon. and Rev. Canon Fremantle; to the Hon. Treasurer and Librarian, Col. Horsley, R.E.; to the Hon. Secretary, Mr. W. P. Mann; to the Hon. Assistant Secretary, Mr. E. B. Hayward; and to Mr. G. Rigden for auditing the accounts.

LIBRARIAN'S REPORT FOR 1885.

The sum granted for expenditure on the Library for the year under review was £10. Rather more than this sum has been spent, not however in providing additional books, but rather in completing as far as practicable what was wanting of the Volumes and Numbers of the various Periodicals taken in by the Society. For instance, the back Numbers of the *Annals and Magazine of Natural History* and the *Zoologist*, both of which had been previously discontinued, the *Quarterly Microscopical Journal* Vol. 10 for 1862, the *Midland Naturalist* Vols. 5, 6, 7, 1882-4, and *Cardiff Reports* Vol. 6, 1874—Vol. 16, 1884, have all been paid for out of last year's grant. By means of gifts from Societies and individuals, very considerable additions have also been made during the year in completing the series of transactions and proceedings of Naturalists' Societies, thereby adding greatly to the value of the Library. They are not mentioned in detail in this Report as a MSS. Catalogue lies on the Library Table, giving a full description of them and of their places on the shelves, and there is also a Classified List for reference. The following Books have been added to the Library:—

Hugh Miller's "Cruise of the Betsy."
Huxley "On the Crayfish."

Rhind's History of the Vegetable Kingdom.

Robson's British Flora.

Loudon's Trees and Shrubs of Great Britain, 8 vols., all presented by James Reid, Esq.

Address to the Norwich Geological Society, 1883, and on the Area of the Chalk as a source of Water Supply, 1884, presented by the Author, W. Whitaker, B.A., F.G.S.

Hiern's Monograph on the Ebenaceæ, and "On Central African Plants," collected by Major Serpa Pinto, presented by H. M. Chapman, Esq.

Notes on the Fauna and Flora of W. Scotland, presented by R. Mason, Esq.

Geographical Distribution of Orchids; "Nature," 1885, presented by G. Rigden, Esq.

Smithsonian Report, 1883, presented by the Smithsonian Institute.

Cameron's British Phytophagous Hymenoptera, Vol. 2, received from the Ray Society in return for the Annual Subscription of One Guinea.

The total expenditure on the Library in the past year amounted to £10 14s. 0d.

Of the above sum the Periodicals taken in by the Society, together with those purchased to complete what was wanting in those of former years, cost £8 7s. 11d., including postage, etc., and the binding and repairing of 20 Vols., £2 6s. 1d.

HON. TREASURER'S REPORT FOR 1885.

During the year under review the Society has lost three old and valued members by death, and three have resigned. Against this loss may be set a gain of seven new members, thus giving an increase of one, and bringing the number up to seventy-eight in all. Of these, twelve have not paid their subscriptions for 1885, two are in arrears for 1883 and 1884, and two for 1884 in addition to 1885.

The total sum received during the past year was, from Subscriptions and Arrears, £30 11s. 6d., and from other sources, as shewn in the Balance Sheet, £1 3s. 2d., making £31 14s. 8d., while the expenditure has been £33 4s. 11d., or £1 10s. 3d., in excess of the receipts, thereby reducing the Balance to the credit of the Society to £10 18s. 10d.

W. H. Horsley, Col.,

Hon. Treasurer and Librarian.

FINANCIAL STATEMENT FOR 1885.

RECEIPTS.

| | £ | s. | d. |
|---|----|----|----|
| Balance (credit) on 27th January, 1885..... | 12 | 9 | 1 |
| By Subscriptions for 1885 received up to 20th January, 1886 | 29 | 6 | 6 |
| „ Arrears of Dito for 1884 received up to the same date | 1 | 5 | 0 |
| „ Bonus on Fire Insurance | 0 | 5 | 2 |
| „ Sale of Matting | 0 | 13 | 6 |
| „ Balance with Hon. Treasurer | 0 | 4 | 6 |

£44 3 9

DISBURSEMENTS.

| | £ | s. | d. |
|---|-----|----|----|
| To Rent of Room for one year..... | 10 | 0 | 0 |
| „ Fire Insurance on Library, &c..... | 0 | 6 | 9 |
| „ Subscription to Ray Society..... | 1 | 1 | 0 |
| „ Contribution to Library..... | 10 | 14 | 0 |
| „ Cross and Jackman for Printing Report for 1884 | 5 | 0 | 0 |
| „ Post Cards and Printing the same for Notices of Meetings, Excursions, &c..... | 3 | 11 | 7 |
| „ MSS. Book for Library Catalogue, Indexing and Lettering the same..... | 0 | 5 | 6 |
| „ Attendance, and Counterfoil Receipt Books.... | 0 | 4 | 0 |
| „ Addition to Book Case..... | 0 | 18 | 6 |
| „ Steps to Dito..... | 0 | 6 | 6 |
| „ Cleaning Room and Windows..... | 0 | 6 | 0 |
| „ Fire and removing specimens after Lecture by Mr. Dowker | 0 | 2 | 6 |
| „ Carriage, Postage, P. O. Orders and Telegram... | 0 | 5 | 0 |
| „ Hon. Assistant Secretary Petty Cash..... | 0 | 3 | 7 |
| „ Balance (credit) 26th January, 1886..... | £33 | 4 | 11 |
| | 10 | 18 | 10 |
| | 44 | 3 | 9 |

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

Examined and found correct,
GEORGE RIGDEN.
Canterbury, 26th January, 1886.

On the motion of James Reid, Esq., seconded by George Rigden, Esq., the Report and Financial Statement were adopted and ordered to be printed and distributed to Members under the direction of the Committee.

The following resolutions were then carried :—

That the thanks of the Society are due to James Reid, Esq., for his valuable labour in re-arranging and classifying the Library, and also for his presents of Books and Specimens.

That the thanks of the Society are due, and are tendered, to the Members who have read papers or notes, and to those who have exhibited objects at the Meetings ; also to the President, the Treasurer and Librarian, the Secretary and the Assistant Secretary.

That the Rev. R. N. Gandy, M.A., be the President for the ensuing year.

That the Treasurer and Librarian, the Secretary and Assistant Secretary, be requested to remain in office during the coming year.

That the thanks of the Society be given to Col. Horsley and G. Rigden, Esq., for presenting periodicals during the year, and to Brian Rigden, Esq., for the Weather Report for 1885.

That the sum of Twelve Pounds be placed at the disposal of the Treasurer and Librarian for additional Books and necessary expenses.

That the ordinary Scientific Meeting be held on the first Thursday of each month, and that Rule 13 be altered accordingly.

That the Quarterly Journal of the Geological Society, and the Midland Naturalist, be obtained as they are issued, and that last year's numbers of the Midland Naturalist be obtained.

That the Library classified Catalogue be printed with the Report.

That 200 Copies of the Rules be printed, in order to prevent the necessity of printing them annually with the Report.

That the following be added to the Library Rules :—

“The time during which a Book may be retained without renewal, shall not exceed three months, and the Librarian shall request a Member, who has had a Book beyond that period, to return it to the Library at once.”

LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

VERTEBRATA

- Bell's British Quadrupeds, 1 vol., 8vo.
Cassell's Book of Birds, 1 vol., roy. 8vo.
Couch's Fishes, 4 vols., 8vo., 1862-66.
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.
Gurney, J. H., List of Birds of Prey, 1884.
Martin, W. C. J., History of Man and Monkeys, 1841.
Munro's Structures of Fishes, 1 vol., folio, 1785.
Nitsch's Pterylography, 1 vol., fol., 1867. Ray Society.
Parker's Structure, &c., of the Shoulder Girdle and Sternum in the Vertebrata, 1 vol., fol., 1868. Ray Society.
Swainson's Birds, 2 vols., 12mo.

PAMPHLETS.

All bound in vol. 1., Pamphlets.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Moschus, Tragulus and Orycteropus.
——— Memoirs on the Blood of Lemna Cornubica,
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.
——— On the Muscular Sheath of the Œsophagus, of the ("Aye, Aye,"
(Chiromys Madagascariensis).
——— On the Fibres of the Crystalline Lens of the Petromyzonii.
——— On the Œsophagus of the Red Hornbill.
——— On the Œsophagus of Sauropsida and other Vertebrata.
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.
——— On the Measurement of the Red Corpuscles of the Blood of Batrachians.
——— Sketches of the Spermatozoa of Petromyzon.
Hammond, W. H., On the Structure of the Red Blood Corpuscles, &c.

INVERTEBRATA.

- Alder, J., and A. Hancock, on Nudibranchiate Mollusca, part 1 to 6, Ray Soc., 1845-54
Allman, G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with Burmeister's Trilobites.
——— Gymnoblasic, or Tubularian Hydroids, part 1 and 2, folio, 1871-72. Ray Society.
Baird's Entomostraca, 1 vol., 8vo., 1850. Ray Society.
Baker's Natural History of the Polyp, 1 vol., 8vo., 1743.
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.
Bowerbanks, Dr., Monograph of British Spongiadæ, 4 vols., 8vo., 1864-6-82. Ray Society.
Brady, G. S., Monograph of the Copepoda of British Isles, vols. 1, 2, 3, 8vo., 1878-89. Ray Society.
Buckton, G. B., Monograph of British Aphides, vols. 1-4, 8vo., 1876-7-80-2. Ray Society.
Cameron's Monograph of British Phytophagous Hymenoptera, vol. 1, 2, 8vo., 1882-4. Ray Society.
Carpeater's Foraminifera, Ray Society, 1 vol., folio, 1862.
Curtis on Farm Insects, 8vo., 1 vol., 1860.
Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.
Denny's Monographia Anoplurorum Britannicæ, 1 vol., 8vo., 1842.
Douglas and Scott's British Hemiptera, Heteroptera, 1 vol., 8vo., 1865, Ray Society.
Forbes', Professor E., British Naked Eyed Medusæ, 1 vol., 4to., 1848, Ray Society.
——— British Star Fishes, 1 vol., 8vo., 1841.
Gosse's British Sea Anemones, &c., 1 vol., 8vo., 1860

- Greene's Insect Hunter's Companion, 12mo., 1863.
 Hanley's Lamarck's Shells, 1 vol., 8vo.
 Huxley's Oceanic Hydrozoa, 1859, 1 vol., folio, Ray Society.
 Huxley's "Crayfish," 1880.
 Johnstone's British Zoophytes, 2 vols., 8vo., 1847.
 Kent's Manual of the Infusoria, royal 8vo., 1880.
 Kirby's British Bees, 2 vols., 8vo., 1802.
 Kirby and Spence's Introduction to Entomology, 4 vol., 8vo., 1828-29.
 Lowne, B.T., M.R.C.S., Anatomy of Blow Fly, 1 vol., 8vo., 1870.
 Lubbock, Sir John, Collembola and Thysanura, 1 vol., 8vo., 1873, Ray Society.
 Martyn, T., English Entomologist, 1 vol., 4to., 1792.
 McIntosh, W.C., M.D., British Annelids, part 1, 1873, folio, Ray Society.
 ——— ditto, part 2, 1874, Ray Society.
 Michael's British Oribatidæ, vol. 1., 1884, Ray Society.
 Morris's British Butterflies, 1 vol., 8vo., 1864.
 Newman's Butterflies and Moths, 1 vol., 8vo., 1874.
 Ormerod's Manual of Injurious Insects., 1 vol., 8vo., 1881.
 Pritchard's History of Infusoria, 1 vol., 8vo., 1861.
 Reeve's British Land and Fresh Water Molluscs, 1 vol., 8vo., 1863.
 Smith's Didtomacæ, 2 vols., 8vo., 1853.
 Staveley's British Insects, 1871, 8vo.
 Turton, Dr. W., Land and Fresh Water Shells, 1 vol., 8vo.
 Westwood's Butterflies of Great Britain, vol., 4to., 1855.
 ————Modern Classification of Insects, 2 vols., 8vo., 1839-40.
 Westwood and Humphrey's British Butterflies, &c. 1 vol., 4to., 1841.
 Williamson's Recent Foraminifera, 1 vol., 1858, Ray Society.
 Wood's Common Shells of the Sea Shore, 1 vol., 12mo., 1865.

PAMPHLETS.

- Bates's Phasmidæ. Bound with Newport's Memoirs.
 British Moths, Nocturnæ :
 ————Geometræ :
 Broeck, A., Crustacea, Amphipoda, Borealia et Arctica.
 Fullagar, J. G., On the development of Hydra.
 Gulliver, G., F.R.S., The Auditory Organs of Molluscs, vol. 1., Pamphlets.
 Hammond, A., Comparison of the Metamorphosis of the Crane-fly and the Blowfly.
 Lubbock, Sir J., *Chloen dimidiatum*, 1865, bound with Newport Memoirs.
 Munn's, Major, Bee Keeper's Magazine, one part.
 ————The Apiary.
 Oysters, Cultivation of, Arcachon, 1876.
 Sars, Michael, Memoirs des Crinoides Vivants.
 Sars, M., Forms of Animal Life from deep sea off Norway, 1872.
 Wallich, G. C., M.D., on Amœba, Physopods, Physalia, &c., 1862-9.

BOTANY.

- Bentham's Hand Book of the British Flora, 2 vols., 8vo., 1865.
 Berkeley's Cryptogamic Botany, 1 vol., 8vo : 1857.
 ————British Mosses, 1 vol., 8vo., 1863.
 ————Fungology, 1 vol., 8vo., 1860.
 Brewer, J.A., Flora, of Surrey, 1 vol., 8vo., 1863.
 Brown, R., Miscellaneous Botanical Works, 2 vols., 8vo., Ray Society, 1866, and
 1 vol., Atlas of Plates, 1868.
 Clarke's Common-Sea Weeds, 1 vol., 12mo.
 Cook, M.C., Fungi, their nature and uses, 1 vol., 8vo., 1875.
 Cowell, M.H., Floral Guide to East Kent, 1 vol., 8vo., 1839.
 Darwin, Charles, F.R.S., Forms of Flowers, 1 vol., 8vo., 1877.
 ————Insectivorous Plants, 1 vol., 8vo., 1875.
 ————Movements of Plants, 1 vol., 8vo., 1880.
 Dillwyn's British Confervæ, 1 vol., 4to., 1809.
 Evelyn's Silva, 2 vols., 4to., 1786.
 Fauna and Flora of West of Scotland, 1876.
 Gatty, Mrs., Atlas of British Sea Weeds, from Professor Harvey's Phycologia
 Britannica, 1 vol., 4to., 1863.
 Harvey, Professor, Synopsis of British Sea Weeds, 1 vol., 12mo., 1857.
 Hiern's Ebenaceæ, 1873.

- Henfrey's Elementary Botany, 2nd edition, by Dr. Masters, 1 vol., 8vo., 1870.
 Hooker's Jungermannia, 1 vol., 4to., 1816.
 Hooker's British Flora, 1835.
 Jacob's Faversham Plants, 1 vol., 12mo., 1777.
 Leighton's British Lichen Flora, 1 vol., 8vo., 1872.
 Lindley's and Moore's Treasury of Botany, 2 vols., 8vo.
 Loudon's Encyclopædia of Plants, with 2 supplements 2 vols., 8vo., 1841-55.
 Loudon's Trees and Shrubs of Great Britain, 8 vols., 1854.
 Lubbock's Wild Flowers in relation to Insects, 1 vol., 8vo., 1875,
 Masters, Vegetable Teratology, 8vo., Ray Society, 1869.
 ——— Monograph on Passifloraceæ, 1 vol., folio.
 ——— Results of Experiments on Mixed Herbage of Permanent Meadow, part 2,
 Botanical. Phil. Trans. part iv., 1882.
 ——— Geographical Distribution of Orchids, folio.
 Meyen's Geography of Plants, Ray Society, 1 vol., 8vo, 1846.
 Piute's (Serpa) Central African Plants.
 Pulteney's Progress of Botany in England, 2 vols., 8vo., 1790.
 Ralf's Desmidiæ, 1 vol., 4to., 1848.
 Reports and Papers on Botany, Ray Society, 1 vol., 8vo., 1846.
 Rhind's History of the Vegetable Kingdom.
 Robson, S., The British Flora, 1787.
 Smith, G.E., East Kent Flora, 1 vol., 8vo., 1829.
 ——— Sir J. E., English Flora, 4 vols, 8vo.
 Watson's Topographical Botany, 1 vol., 8vo., 1883.
 Wilson's Bryologia Britannica, 1 vol.

PAMPHLETS.

- Blytt, A., Phanerogamer og Bregner, 1870.
 Brown, R., F.R.S., Organs of Orchidaceæ, 1831. } Vol. 1 Pamphlets.
 Ditto, Pollen of Plants, 1828. }
 Gulliver, G., F.R.S., Crystals in the Testa of the Elm and the
 Character of the Epidermis of the Tway-Blade. } Vol. 1 Pamphlets.
 ——— Notes on Lemnaceæ and the Raphidian Character of Plants. }
 ——— Sphæraphides in Urticaceæ and Leonurus. }
 Hall and Woodhouse, Misses, Orchidaceæ found near Eastbourne.
 Masters, (Dr. Maxwell), Side Lights on the Structure of Composites.
 ——— The Bracts of Crucifers.
 ——— The Superposed Arrangement of the Parts of Flowers.
 ——— Gossypium from East Tropical Africa.
 ——— Morphology of the Leaves of Conifers.
 ——— Morphology of the Primulaceæ.
 ——— Foliation and Ramification of *Buddleia auriculata*.
 Miller, C.T., On a New Fungus.
 Woodhouse, Miss, *Adoxa Moschatellina*.

PERIODICALS.

- Journal, The, of Botany, vol. 8, 9, 1870-1, vol. 1, N.S. 1872, vol. 2, 1873.
 Phytologist, The, vol. 3, 1859.

GEOLOGY.

- Boddy's, Dr., History of Rock Salt, 1 vol., 1881.
 Burmeister's Trilobites, 1 vol., 4to., 1846, bound with Allman's Freshwater
 Polyzoa, 1856, Ray Society.
 Conybeare and Philips' Geology, 10th edition, 1 vol. 8vo., 1829.
 Lectures, Introductory, School of Mines, 1851-53.
 Lyell's Principles of Geology, 2 vols., 8vo., 1867-68.
 Ditto, Elements of Geology, 1 vol., 8vo., 1865.
 Millers, (Hugh), Cruise of "The Betsey," 1858.
 Nicol's Geology of Scotland, 1 vol., 8vo., 1844.
 Owen, on the Skeleton of an extinct Sloth, *Myiodon Robustus*, 1 vol., 4to., 1842.
 Philips, Professor, Manual of Geology, 1 vol., 8vo., 1855.
 Portlock's Geological Report on Londonderry, &c., 1 vol., 8vo., 1843.
 Ramsay's Physical Geography of Great Britain, 1 vol., 8vo., 1864.

Report, 2nd Annual, of the United States, Geol., Surv., 1880-1.
 Southall's J.C., L.L.D., Epoch of the Mammoth, 1 vol., 8vo., 1878.
 Memoirs of the Geological Survey of Great Britain, 2 Nos.

PAMPHLETS.

Brown's, J. A., Some Notes on Flint.
 ————Water Bearing Strata of Ealing District.
 Carruthers, on Osmundites Dowkeri from the Eocene of Herne Bay.
 Dowker, G., On the Chalk of Thanet and East Kent.
 Marr, J. E., on Cambrian and Silurian Beds, 1878-80.
 Whitaker, W., List of Works on the Geology, Mineralogy, and Palæontology of
 the Hampshire Basin.
 Whitaker, W., Address to Norwich Geological Society, 1883.
 ————The Area of the Chalk as a Source of Water Supply, 1884.

PERIODICALS.

The Geological Magazine; vol. 1 to 10, 1864-73, vol. 1, N.S., 1874, to vol. 12, 1885.
 The Geologist from vol. 1, 2, 3, 4, 1858-61, vol. 6, 7, 1863-4.
 Quarterly Journal of the Geological Society, vol. 20 to 40, 1864-84.

MISCELLANEOUS.

Adams, C., Micrographia Illustrata, 4to, 1745.
 Archives do Museu Nacional do Rio Janeiro, vols. 4 and 5, 1881.
 Barclay, On Life and Organization, 1 vol., 8vo., 1822.
 Beale, Lionel S., F.R.S., How to work with the Microscope, 1 vol., 8vo., 1880.
 Carpenter's Principles of Physiology, 1 vol., 8vo., 1851.
 Carpenter, W.B., The Microscope and its Revelations, 5th Edit., 1875.
 Dallas's Animal Kingdom, 1 vol., 8vo.
 Davis On Preparing and Mounting Microscopic Objects, 1 vol., 12mo.
 Figuier, Louis, World before the Deluge, 1 vol., 8vo., 1872.
 Gosse's Evenings at the Microscope, 1 vol., 8vo., 1859.
 ————Marine Zoology, 2 vols., 12mo., 1855-56.
 Hart, Rev. H. M., World of the Sea, 1 vol., 8vo., 1869.
 Houghton's Three Kingdoms of Nature, 1 vol., 8vo.
 Hewson, W., F.R.S., Works edited by G. Gulliver, F.R.S., 1 vol., 8vo., 1846.
 Houseman's Story of our Museum, and What it taught us, 1 vol., 8vo., 1881.
 Jones, Rymer, Outlines of Animal Kingdom, 1 vol., 8vo., 1861.
 Knapp's Journal of a Naturalist, 1 vol., 8vo., 1830.
 Kingsford, Thos., Reminiscences of Animals. Birds and Fishes, 1876.
 Leach's Zoological Miscellany, 1 vol., 8vo., 1814.
 Lubbock, Sir John, Bart., F.R.S., Scientific Lectures, 1 vol., 8vo., 1879.
 Micrographic Dictionary, 1 vol., with vol. of plates.
 Moseley, H. N., F.R.S., Notes by a Naturalist, on H.M.S., Challenger, 1 vol., 8vo.,
 1879.
 Newport, G., F.R.S., ten papers by, with papers by others, 1 vol., 4to.
 Owen's Comparative Anatomy, 3 vols., 8vo., 1866.
 Pulteney's Life and Writings of Linnæus, 1 vol., 4to., 1805.
 Quekett's Lectures on Histology, &c., 2 vols., 8vo., 1852-54.
 Reports on Zoology, Ray Society, 1 vol., 8vo., for 1843-1844,
 Science for All, 5 vols.
 Siebold on Parthenogenesis, 1 vol., 8vo., 1857.
 Swan's Comparative Anatomy of the Nervous System, 1 vol., 4to., 1864.
 Thomson Wyville, Depths of the Sea, 1 vol., 8vo., 1873.
 ————Second Voyage of the Challenger, 2 vols., 8vo., 1876.
 Ulyett's Rambles Round Folkestone, 1 vol., 8vo., 1880.
 Wallace, G., Malay Archipelago, 2 vols., 8vo., 1869.
 Wallace, G., Distribution of Animals, 2 vols., 8vo., 1876.
 Wells, Essays by, and a Memoir of his Life, 1 vol., 8vo., 1818.
 White, Gilbert, Natural History of Selborne, 1 vol., 8vo., 1875.

PAMPHLETS.

Guldberg et Waage, Etudes sur les Affinités Chimiques, 1867.
 Gulliver, G., F.R.S., Review of Works by Goodsir and others.

- Payue, G., Roman Remains at Bayford, Sittingbourne.
 Reade, Rev. J. B., F.R.S., The Diatom Prism, &c.
 Saxe, S. A., Le Glacier de Boinon.
 Smithsonian Institution, Foreign Correspondents of 1882.

BOUND PERIODICALS.

- Annals and Magazine of Natural History, vol. 3, 3rd S. to V. 20, 1859-67, (V. 8 and 9 missing), V. 1, 4th S. to V. 14, 5th S., 1868 to 1884.
 Journal of the Royal Microscopical Society, vol. 2, 3, 1879-1880, vol. 1, N.S., to vol. 5, 1881-5.
 Land and Water, 9 vols., 1866-79.
 Journal of Postal Microscopical Society, 1882-85.
 Monthly Microscopical Journal, vols. 1-18, 1869-77.
 Natural History Review, vol. 3, 1863, and vol. 4, 1864.
 Natural History Repertory, 1865.
 Nature, 1875 to 1884, vols. 11-29, 4to.
 Quarterly Journal of Microscopical Science, vols. 7-24, N.S., 1859-84, except vol. 2, N.S., 1862, and V. 10, 1870.
 Quarterly Journal of Science, vol. 1-7, 1864-70.
 Midland Naturalist, 1878-84.
 Scientific Roll, by A. Ramsay, F.G.S., Nos. 1-9, 1880-82, *unbound*.
 Science Gossip, vols. 7-21, 1871-85.
 Zoologist from 1843 (vol. for 1862 incomplete), vol. 1 to 23, 1865, vol. 1, 2nd S., to V 11, 1866-76, Vol. 1, 3rd S., to V. 8, 1877-84.

REPORTS AND TRANSACTIONS PRESENTED TO THE SOCIETY.

- Cardiff Naturalists' Society, Report and Transactions, No. 1-4, 6-16, 1875-1884.
 Croydon Microscopical Club, Reports and Transactions, 1871-84.
 Ealing Microscopical and Natural History Club, Report of 5, 7, 8, 1882-5.
 Eastbourne Natural History Society, No. 4 to 6, 8 to 13; 1871-4, 1875-81. Part 1, N.S. to 8, 1881-5.
 Essex Field Club, September, 1880-1884.
 Folkestone Natural History Society, 1870-84, Quart. Journ., 1869.
 Glasgow Natural History Society, Report and Transactions, Vol. 1 to 5, 1868-83, Part 1, 1884.
 Hertfordshire, 1881-2.
 Huddersfield Naturalists' Society, 1883-5.
 Lambeth Field Club, 1882-3.
 Linnean Society of Bordeaux, 1876.
 Manchester Scientific Students Society, 1873.
 Quekett Microscopical Club, June, 1874.
 Rochester Naturalist, Nos. 1, 2, 1883-5.
 Smithsonian Institution, Annual Report of, 4 vols., 1880-3.
 Reports, Geological, and Natural History, Survey of Minnesota 1, 7, 10, 11, 12, for 1872-8—81 to 83.
 South London Entomological Society, 1882-3.
 Report United States Geological Survey, 2nd Annual, 1880-1.
 Wellington College Natural Science, Nos. 4, 5, 6, 8, 10, 1873-9, 14-15, 1883-4.
 West Kent Natural History Society, 1871-2, 1878, 1880-2.
 Zoological Society's Report of Council, 1877.

PERIODICALS FOR THE CURRENT YEAR.

- Nature.
 Geological Magazine.
 Quarterly Journal of Microscopical Science.
 Quarterly Journal of Geological Society.
 Journal of the Postal Microscopical Society.
 Science Gossip
 Annals and Magazine of Natural History.
 The Zoologist.

The Librarian requests that Members taking Books or Periodicals from the Library will be careful to enter the same in the book kept on the table for the purpose, with the dates, "when borrowed" and "when returned."

Mr. Sidney Harvey, Chemist, High-street, very obligingly keeps the key of the Library for the use of Members.

EAST KENT NATURAL HISTORY SOCIETY.

SCIENTIFIC MEETINGS,

1886-7.

PLACE : No. 6, HIGH-STREET, CANTERBURY.

TIME : 7 O'CLOCK P.M.

On the First Thursday of each month, viz. :

| 1886. | | 1886. | |
|-----------|------|----------|-------|
| February | 4th. | October | 7th. |
| March | 4th. | November | 4th. |
| April | 1st. | December | 2nd. |
| May | 6th. | | 1887. |
| June | 3rd. | January | 6th. |
| July | 1st. | February | 3rd. |
| August | 5th. | March | 3rd. |
| September | 2nd. | April | 7th. |

ANNUAL MEETING,

Tuesday, January 25th, 1887, at 4 p.m.

Please fill up this Form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP,

I the undersigned being desirous of becoming a member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2, of the Society.

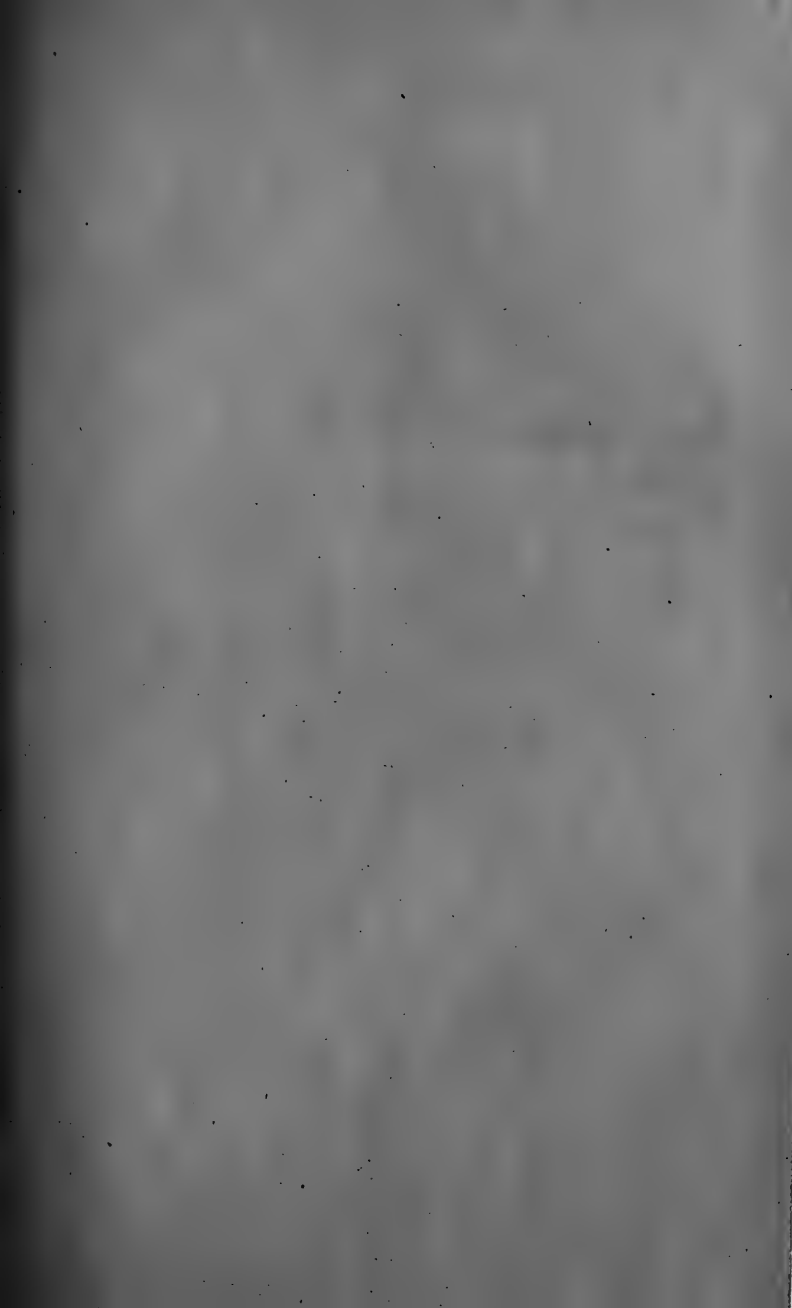
(Signed).....

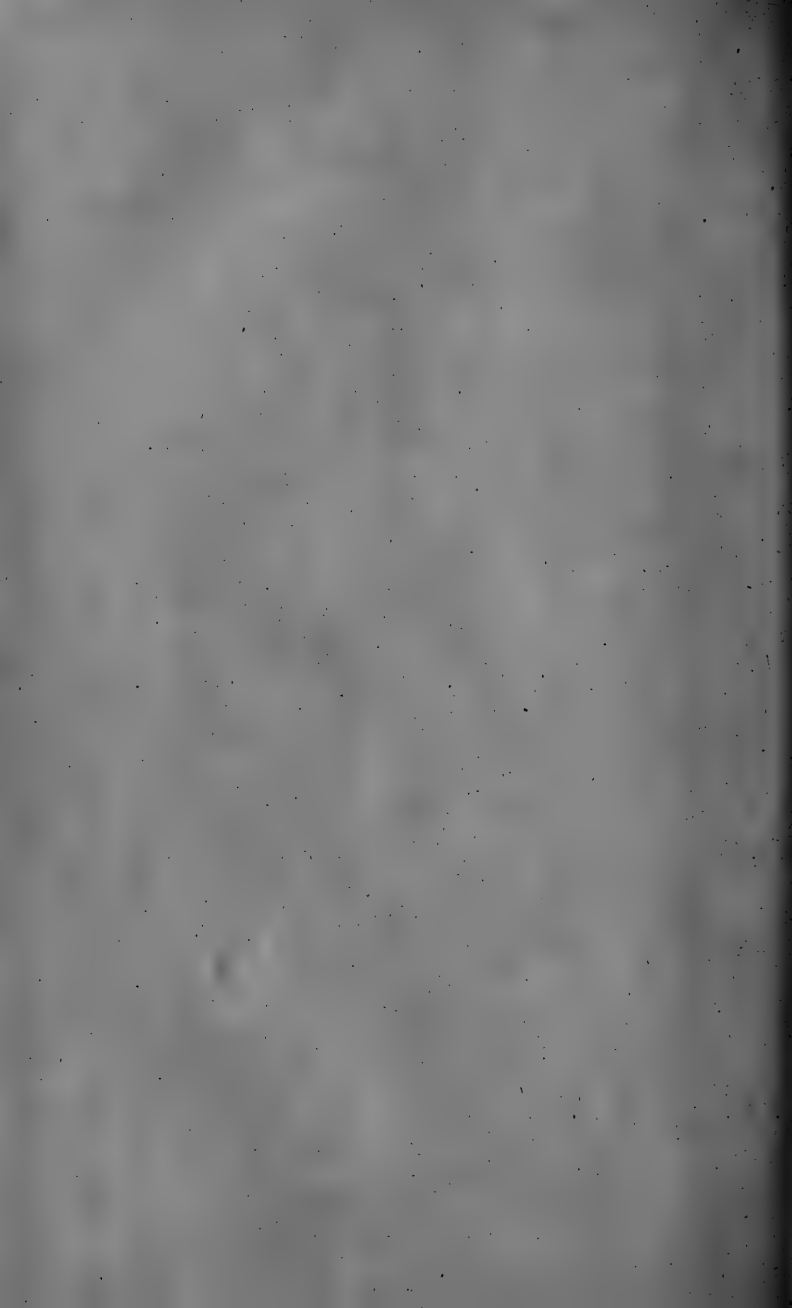
(Address).....

Date

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs. Hammond and Co's. Bank, Canterbury, or to the Hon. Treasurer.







TWENTY-NINTH REPORT

(1886)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

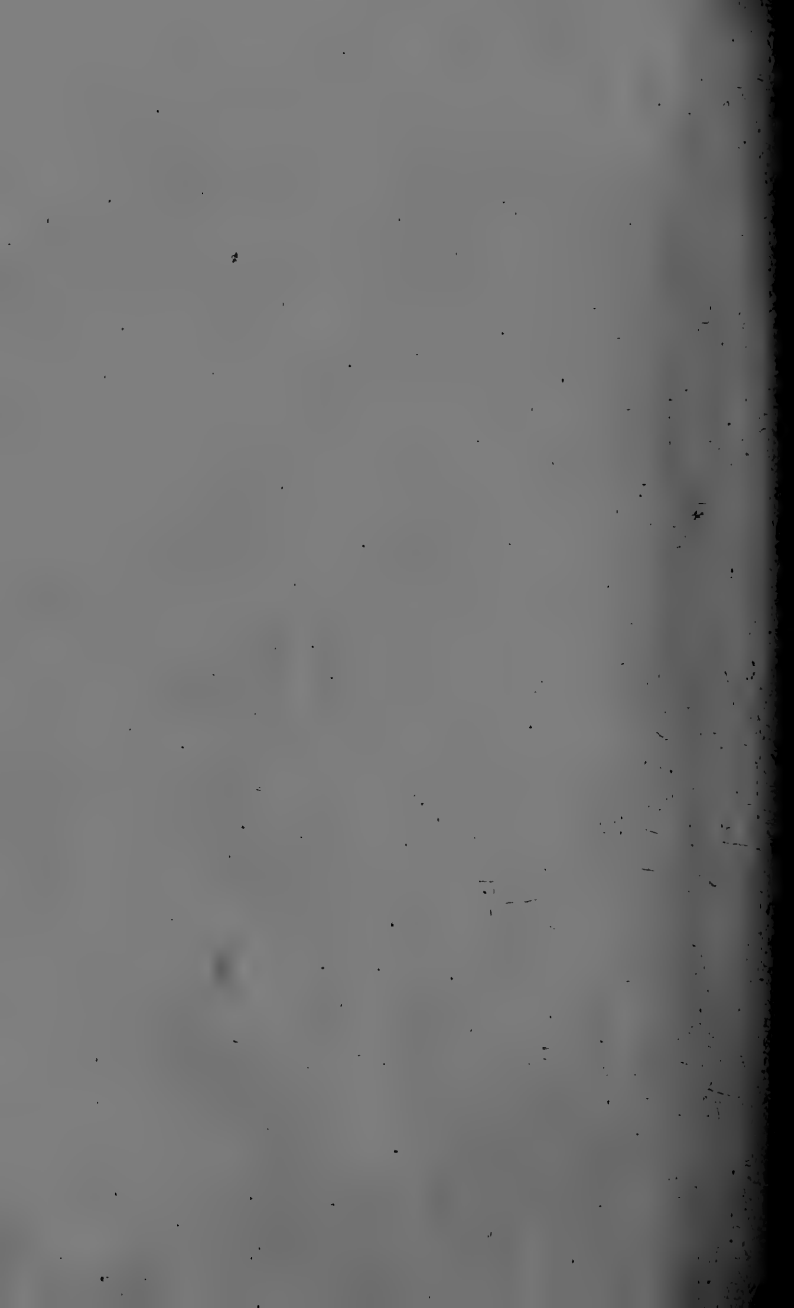
ON JANUARY 25th, 1887.



Canterbury:

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1887.



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1887.

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| Bartlett, A. D., Esq. | Zoological Gardens, London. |
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| Linford, Mr. J. S. | Charlton, Woolwich. |
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EAST KENT NATURAL HISTORY SOCIETY.

The Annual Meeting was held at the Society's Rooms 6, High Street, Canterbury, on Tuesday, January 25th, 1887, the Right Rev. the Bishop of Dover in the chair, when the following Report was presented.

REPORT OF COMMITTEE FOR 1886.

Your Committee in presenting the twenty-ninth report are able to say that the year has been a fairly satisfactory one as regards the work of the Society. The papers read, though not numerous, have been of considerable interest; but the attendance of members has not been as good as could be desired. The Excursions, four in number, were fairly well attended, and were not only enjoyable but successful from a scientific point of view.

The following papers have been presented during the year:—

- January 5, On the Intelligence of a Raven, MR. A. S. REID, M.A.
February 4, "Coccidae," or Scale Insects, MR. G. S. SAUNDERS.
March 4, "The Dental Apparatus of the Higher Mollusca," MR. SIBERT SAUNDERS; Filaria or Thread Worm in the Cypris, MR. T. B. ROSSETER, F.R.M.S.
May 6, On the Deep Wells and Natural Springs in East Kent, MR. G. DOWKER, F.G.S.
October 7, Wave Interference, MR. W. P. MANN, B.A.
November 4, Smut in Wheat, MR. JAMES REID, F.R.C.S.
December 2, Our Sponges, MR. J. T. HILLIER.

EXCURSIONS.

- June 11, To MR. W. HAMMOND'S Estate at Buckholt, to inspect the ancient burial mound, and then for a botanical ramble in Penny Pot Wood.
July 8, To East Wear Bay, along with some members of the Dover Field Club. This Excursion was Botanical and Geological.
July 28, To Ham and Hacklinge Marshes, near Sandwich. This Excursion was Botanical, MR. G. DOWKER being the conductor.
August 5, Coast Ramble from Broadstairs to Kingsgate, under the guidance of MR. HILLIER, of Ramsgate.

OBJECTS EXHIBITED.

- January 5, Galleries bored by the "Scolytus Destructor" in the soft inner bark of the Elm. Malformation of the incisor teeth of a rabbit, MR. JAMES REID; Leaden pipe gnawed by rats, MR. A. S. REID.
- February 4, Colour indications in solutions of Coccus Cacti and Manganic Acid and Manganates, CAPTAIN MCDAKIN.
- March 4, Cypris containing Filaria or Thread Worms, MR. T. B. ROSSETER; Many beautiful preparations to illustrate his papers on the same evening, MR. S. SAUNDERS.
- April 1, Entozoa; Cysticus pisciformis (head of); Distoma and Nematoda from intestine of Water Newt; Trichina Spiralis, Objects of Pond Life, MR. T. B. ROSSETER and MR. S. HARVEY; Diatomaceæ, 12 specimens, COLONEL HORSLEY; Various specimens of chalk and sand, Stellate hairs of the Deutzia (3 slides), Chara vulgaris, Asplenium bulbatum, Polystichum angulare, CAPTAIN MCDAKIN; Coal Sections, Rock Sections, MR. JOHN FIELDING; Wood Sections, MR. E. B. HAYWARD.
- May 6, Lower Eocene Fossils from the Barracks Butts, CAPTAIN MCDAKIN.
- September 2, Large puff ball; four apples showing abnormal development, MR. R. E. THOMSON.
- November 4, "Stylographs" of cat's purr and of the buzz of a blue bottle fly; Specimens of defective development of Slæe; Specimens of Smut in Wheat, various stages, MR. JAMES REID.
- December 2, Numerous specimens of Sponges and preparations, MR. J. T. HILLIER; Large box of Algae from the Mauritius, MR. C. BEWSHER.

The number of Members is 75. During the year 4 new Members have been added, 5 have resigned, and 2 have died.

Your Committee hope to be able to issue another series of Transactions during the current year, and as the balance in hand is satisfactory this may probably be done without any request for a special fund to cover the expense.

The appeal made for the reinstatement of the Society as one of the Corresponding Societies of the British Association was successful, but your Committee feel that unless members will undertake systematic observations and communicate them to the Society for publication in its Transactions the Society will soon have to lose the honour it has gained. A list of the Subjects for local investigation was given in the last report, and is repeated below*, and it is earnestly hoped that Members

* The Subjects at present selected by the Association for local investigation are. (A) Luminous Meteors, Meteoric Dust in various localities; rainfall: underground temperature. (C) Erosion of Sea Coasts; height of underground waters; erratic blocks. (D) Migration of Birds at Lighthouses and Lightships; Periodical Natural Phenomena,

will not fail to communicate any observations they make.

All persons interested in Scientific work are eligible for Membership under conditions specified in Rule 2, and your Committee would urge upon the members the desirability of endeavouring to induce any of their friends who have a love of Nature to join the Society. It should be more widely known that Members have the advantage of a valuable Library of Scientific Works, and are also free to make use of the excellent Microscope in the Society's Room. A form of application is subjoined to this Report.

Your Committee feel that the thanks of the Society are due to those Members who have contributed papers and exhibited various objects during the year, and also to the President, the Rev. R. N. Gandy; to the Hon. Treasurer and Librarian, Col. Horsley, R.E.; to the Hon. Secretary, Mr. W. P. Mann; to the Hon. Assistant Secretary, Mr. E. B. Hayward; and to Mr. G. Rigden for auditing the accounts.

LIBRARIAN'S REPORT FOR 1886.

The sum granted for expenditure on the Library for the year under review was £12. The whole of this sum was not spent, but only £10 18s. 8d., and this was expended almost entirely for Periodicals for 1885 and 1886, and for binding a large number of those of previous years. No less than thirty-six volumes have, in this way, been added to the Library in 1886, costing £3 9s. 8d. The only new work which has been added to the Library from the Society's funds is entitled "Larvæ of British Butterflies and Moths," by Buckton, Ray Society, 1885, in return for the annual subscription of one guinea. But though no new works (with the one exception just mentioned) have been purchased a large number have been presented to the Society during the past year, as the following list will show, viz. :—

| | |
|--|--------------------------|
| | Presented by |
| 1. Reports of the Smithsonian Institution, } United States of America, 1884 } | THE BOARD OF REGENTS. |
| 2. Ditto, ditto, for 1863-5-8-9-73 | JAMES REID, ESQ. |
| 3. Loudon's Arboretum Britannicum, 4 vols. } Text, 4 vols. Plates, 8 vols. 1854 } | DITTO. |

(flowering of plants, &c.); injurious insects, (first appearance, &c.)
(F) Working of Education Code in Elementary Schools; rudimentary Science in Schools. (G) Effective wind pressure on buildings.
(H) Photographs of typical races and crosses; Ancient earthworks prehistoric remains; Anthropometric collections.

- | | |
|--|-------------------------------------|
| | Presented by |
| 4. The Garner and Science Recorder's Journal, Nos. 1 to 4, 1885-6.. .. . | A. RAMSAY, F.G.S. The Editor. |
| 5. Ballard & Tomkinson, A decision connected with water supply from wells. Paper, 1885 | W. WHITAKER, Esq. The Author. |
| 6. Some Borings in Kent relating to the deep seated Geology of the London Basin. Paper, 1886 | DITTO. |
| 7. Reports, 3rd, 4th and 5th, of the Geological Survey, United States America, 1881-1885 | THE GOVERNMENT OF THE U. STATES. |
| 8. Report Annual of the Comptroller of the Currency, United States America, 1885 .. | DITTO. |
| 9. Geologist's Association Excursion to Canterbury, Reculvers, Pegwell Bay and Richboro', 1885. Pamphlet, 1886 | G. DOWKER, Esq. |
| 10. "What I believe," by Leon Tolstoi. Translated from the Russian by Constantine Popoff | THE PUBLISHER. |
| 11. Address to Geological Section of British Association, by Professor J. Phillips, 1864. Pamphlet. | JAMES REID, Esq. |
| 12. Observations of the Eclipse of the Sun at Oxford, by Professor J. Phillips, 1870. Paper | DITTO. |
| 13. Forbes' Volcanoes and Geysers of Iceland, 1860 | DITTO. |
| 14. Hunt, R., Descriptive Guide to the Museum of practical Geology. with notice of the Geological Survey, 2nd edition, 1859 .. | DITTO. |
| 15. List of British Marine Shells, by A. Somerville | UNKNOWN. |
| 16. Sketch of the Services of the late W. W. Seaton, in connection with the Smithsonian Institute | THE BOARD OF REGENTS. |
| 17. Transactions of the Norfolk and Norwich Naturalists' Society, 16 parts, forming vols. 1 to 3, 1869-84 | JAMES REID, Esq. |
| 18. The Geology of England and Wales, by H. B. Woodward, F.G.S., 1876 | DITTO. |

By an oversight the Quarterly Journal of the Geological Society for 1886 was omitted to be ordered for the Society. It has hitherto been procured by Mr. Dowker, but such was not the case last year. It will, however, be ordered without delay and added to the Library.

During the past year, by the persevering efforts and kind assistance of Mr. Reid, the loose and accumulated Papers, Memoirs, Monographs, &c., have been examined and arranged and inexpensively bound in eight volumes. Amongst these the valuable gifts from the University of Christiana have been preserved in four volumes. The numerous Reports of various Natural History Societies have been, as far as possible, arranged in volumes and bound. In all, under both these heads, about

19 volumes have been formed and bound. Likewise the various completed volumes of the serial works have been bound up and placed on the shelves, with Index letter and No. affixed.

The Hon. Librarian cannot conclude his Report for 1886 without stating how much he, individually, and the Society generally, owe to Mr. Reid for the unremitting labour he has bestowed in preparing the Catalogue which lies on the Library table, giving, as it does, a full description of the books, and of their places on the shelves, together with a classified list for reference. It is now easy for a Member to find the book he is in search of, that is if those who borrow books will only put them back on the shelf whence they took them.

W. H. HORSLEY, COLONEL,
Hon. Librarian.

HON. TREASURER'S REPORT FOR 1886.

During the past year the Society has lost two Members by death, viz., A. Poynter, Esq., of Dover, and T. Kingsford, Esq., of Barton House; and five Members have either resigned membership or left Canterbury. Against this loss there has been a gain of four new Members elected in 1886, thereby reducing the loss to three, and making the number of Members at present in connection with the Society 75. Of these, however, there are three who have not paid their subscriptions for several years, and who do not take any notice of reminders; their names therefore should be omitted from the list of Members, in accordance with Rule 3. This will reduce the number to 72. Of these, eight have not paid their subscriptions for 1886, and three of these are in arrears for 1885, making together £5 5s. still due.

The total sum received during the year under review was, from Subscriptions for 1886, £30 5s. 6d; and from Arrears, £2 5s. 0d.; making in all, £32 10s. 6d.; while the Expenditure has been £27 18s. 0d., or £4 12s. 6d. less than the receipts, thereby increasing the balance to the credit of the Society to £17 7s. 1d., of which £1 15s. 9d. is in the hands of the Hon. Treasurer.

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

FINANCIAL STATEMENT FOR 1886.

RECEIPTS.

| | £ | s. | d. |
|---|----|----|----|
| Balance (credit) on 26th January, 1886 | 10 | 18 | 10 |
| By Subscriptions for 1886 received up to 14th January, 1887 | 30 | 5 | 6 |
| „ Arrears of Ditto for 1884 and 1885 received up to the same date | 2 | 5 | 0 |
| „ Balance with Hon. Treasurer..... | 1 | 15 | 9 |

£45 5 1

Examined and found correct,
Canterbury, 25th January, 1887. GEORGE RIDDEN.

DISBURSEMENTS.

| | £ | s. | d. |
|---|-----|----|----|
| To Rent of Room for one year | 10 | 0 | 0 |
| „ Fire Insurance on Library, &c. | 0 | 6 | 9 |
| „ Subscription to Ray Society..... | 1 | 1 | 0 |
| „ Contribution to Library | 10 | 18 | 8 |
| „ Cross and Jackman for Printing Report for 1885..... | 4 | 0 | 0 |
| „ Ditto and Ditto for Printing 200 Rules of the Society | 1 | 1 | 0 |
| „ Hon. Assistant Secretary Petty Cash..... | 0 | 10 | 3 |
| „ P.O. Order and Postage | 0 | 0 | 4 |
| „ Balance (credit) on 25th January, 1887 | £27 | 18 | 0 |
| | 17 | 7 | 1 |

£45 5 1

W. E. HORSLEY, COLONEL,
Hon. Treasurer.

On the motion of George Rigden, Esq., seconded by Major Parker, the Report and Financial Statement were adopted and ordered to be printed and distributed to Members.

The following resolutions were then carried:—

That the thanks of the Society be given to James Reid, Esq., for the continuation and completion of his valuable labour in re-arranging and classifying the Library, and also for his presents of many important Books and Specimens.

That the thanks of the Society are tendered to the Members who have read papers or notes, and to those who have exhibited objects at the Meetings; also to the President, the Treasurer and Librarian, the Secretary and the Assistant Secretary.

That the Right Rev. the Bishop of Dover be the President for the ensuing year.

That the Treasurer and Librarian, the Secretary and the Assistant Secretary, be requested to remain in office during the coming year.

That the thanks of the Society be given to Col. Horsey and G. Rigden, Esq., for presenting periodicals during the year, and to Brian Rigden, Esq., for the Weather Report for 1886.

That the sum of Twelve Pounds be placed at the disposal of the Treasurer and Librarian for additional Books and necessary expenses.

That the ordinary Scientific Meetings be held on the Second Thursday of each month.

LIST OF BOOKS AND PERIODICALS

Belonging to the East Kent Natural History Society.

VERTEBRATA.

- Bell's British Quadrupeds, 1 vol., 8vo.
Cassell's Book of Bird's, 1 vol., roy. 8vo.
Couch's Fishes, 4 vols., 8vo., 1862-66.
Flower's, H. W., Recent Memoirs on the Cetacea, 1 vol., folio, 1866. Ray Society.
Gurney, J. H., List of Birds of Prey, 1884.
Martin, W. C. J., History of Man and Monkeys, 1841.
Munro's Structures of Fishes, 1 vol., folio, 1785.
Nitsch's Pterylography, 1 vol., fol., 1867. Ray Society.
Parker's Structure, &c., of the Shoulder Girdle and Sternum in the Vertebrata,
1 vol., fol., 1868. Ray Society.
Swainson's Birds, 2 vols., 12mo.

PAMPHLETS.

All bound in vol. 1., Pamphlets.

- Gulliver, G., F.R.S., on the Red Corpuscles of the Blood of Moschus, *Tragulus Orycteropus*.
——— Memoirs on the Blood of *Lemna Cornubica*.
——— On Blood Corpuscles of the Hippopotamus, Eared Teal and Walrus.
——— On the Muscular Sheath of the Œsophagus, of the "Aye, Aye,"
(*Chiromys Madagascariensis*).
——— On the Fibres of the Crystalline Lens of the *Petromyzonii*.
——— On the Œsophagus of the Red Hornbill.
——— On the Œsophagus of Sauropsida and other Vertebrata.
——— On the Size of the Red Corpuscles of the Blood of the Salamander, &c.
——— On the Measurement of the Red Corpuscles of the Blood of
Batrachians.
——— Sketches of the Spermatozoa of *Petromyzoa*.
Hammond, W. H., On the Structure of the Red Blood Corpuscles, &c.

INVERTEBRATA.

- Alder, J., and A. Hancock, on Nudibranchiate Mollusca, part 1 to 6, Ray Soc.,
1845-54.
Allman, G. S., M.D., Freshwater Polyzoa, 1 vol., 4to., 1856, bound with
Burmeister's Trilobites.
——— Gymnoblastic, or Tubularian Hydroids, part 1 and 2, folio, 1871-72.
Ray Society.
Baird's Entomostraca, 1 vol., 8vo., 1850. Ray Society.
Baker's Natural History of the Polyp, 1 vol., 8vo., 1743.
Bevan on the Honey Bee, edited by Major Munn, 1 vol., 8vo., 1870.
Bowerbanks, Dr., Monograph of British Spongiadæ, 4 vols., 8vo., 1864-6.82.
Ray Society.
Brady, G. S., Monograph of the Copepoda of British Isles, vols. 1, 2, 3, 8vo.,
1878-80. Ray Society.
Buckler, Wm., Larvæ of British Butterflies and Moths. vol. 1, Ray Society, 1886.
Buckton, G. B., Monograph of British Aphides, vols. 1-4, 8vo., 1876-7-80-2.
Ray Society.
Cameron's Monograph of British Phytophagous Hymenoptera, vol. 1. 2, 8vo.,
1882-4. Ray Society.
Carpenter's Foraminifera, Ray Society, 1 vol., folio, 1862.
Curtis on Farm Insects, 8vo., 1 vol., 1860.

- Darwin's Cirripedia, Ray Society, 2 vols., 8vo., 1851-54.
 Denny's Monographia Anoplurorum Britanniae, 1 vol., 8vo., 1842.
 Douglas and Scott's British Hemiptera, Heteroptera, 1 vol., 8vo., 1865, Ray Society.
 Forbes, Professor E., British Naked Eyed Medusae, 1 vol., 4to., 1848, Ray Society.
 ———— British Star Fishes, 1 vol., 8vo., 1841.
 Gesse's British Sea Anemones, &c., 1 vol., 8vo., 1860.
 Greene's Insect Hunter's Companion, 12mo., 1863.
 Hanley's Lamarck's Shells, 1 vol., 8vo.
 Huxley's Oceanic Hydrozoa, 1859, 1 vol., folio, Ray Society.
 Huxley's "Crayfish," 1880.
 Johnstone's British Zoophytes, 2 vols., 8vo., 1847.
 Kent's Manual of the Infusoria, royal 8vo., 1880.
 Kirby's British Bees, 2 vols., 8vo., 1802.
 Kirby and Spence's Introduction to Entomology, 4 vol., 8vo., 1828-29.
 Lowne, B.T., M.R.C.S., Anatomy of Blow Fly, 1 vol., 8vo., 1870.
 Lubbock, Sir John, Collembola and Thysanura, 1 vol., 8vo., 1873, Ray Society.
 Martyn, T., English Entomologist, 1 vol., 4to., 1792.
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 — Gossypium from East Tropical Africa.
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 — Foliation and Ramification of the Buddleia auriculata.
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 The Zoologist.

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East Kent Natural History Society.

SCIENTIFIC MEETINGS, 1887-8.

PLACE: No. 6, HIGH-STREET, CANTERBURY.

TIME: 7 O'CLOCK P.M.

On the Second Thursday of each month, viz.:

| 1887. | | 1887. | |
|-----------|-------|----------|-------|
| February | 10th. | October | 13th. |
| March | 10th. | November | 10th. |
| April | 14th. | December | 8th. |
| May | 12th. | 1888. | |
| June | 9th. | January | 12th. |
| July | 14th. | February | 9th. |
| August | 11th. | March | 8th. |
| September | 8th. | April | 12th. |

ANNUAL MEETING,

Tuesday, January 31st, 1888, at 4 p.m.

Please fill up this Form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP.

I the undersigned being desirous of becoming a member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2, of the Society.

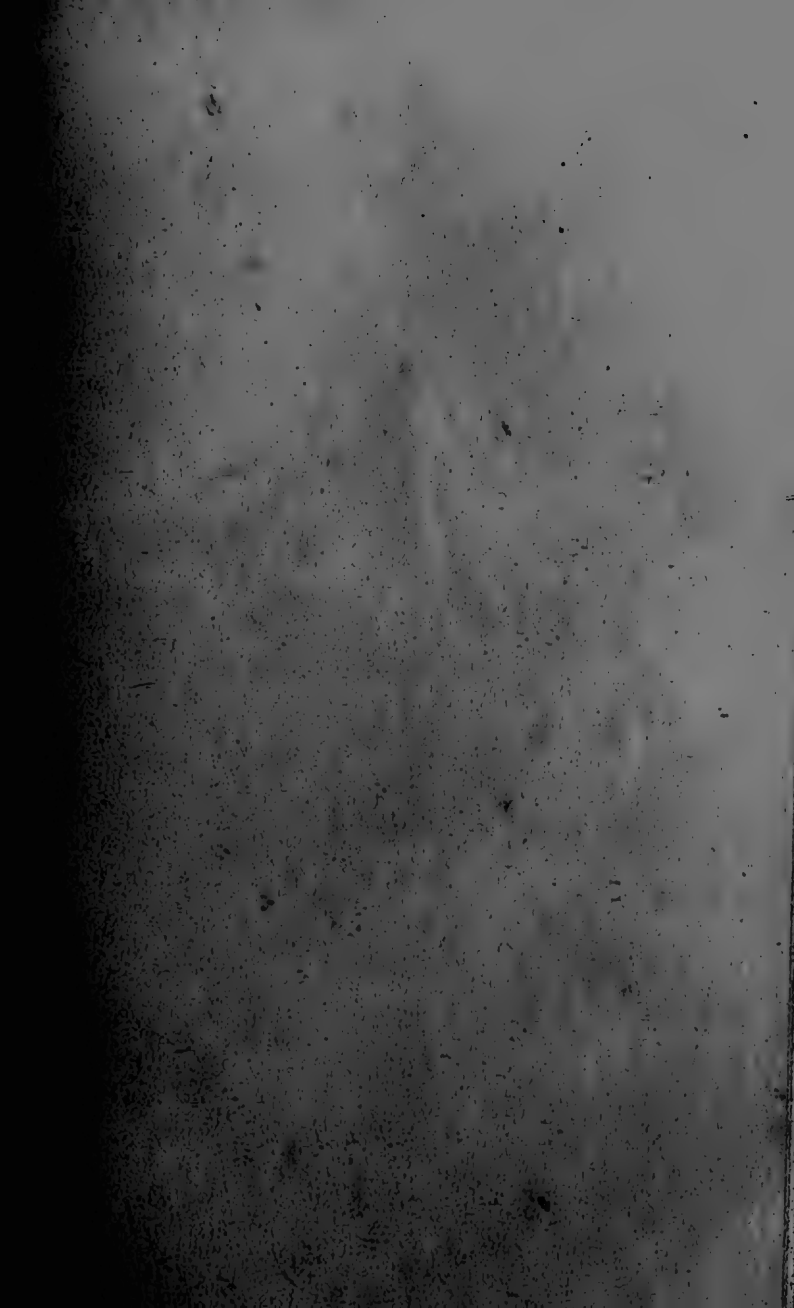
(Signed)

(Address)

Date

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs. Hammond and Co's. Bank, Canterbury, or to the Hon. Treasurer.







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(1887)

OF THE

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NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

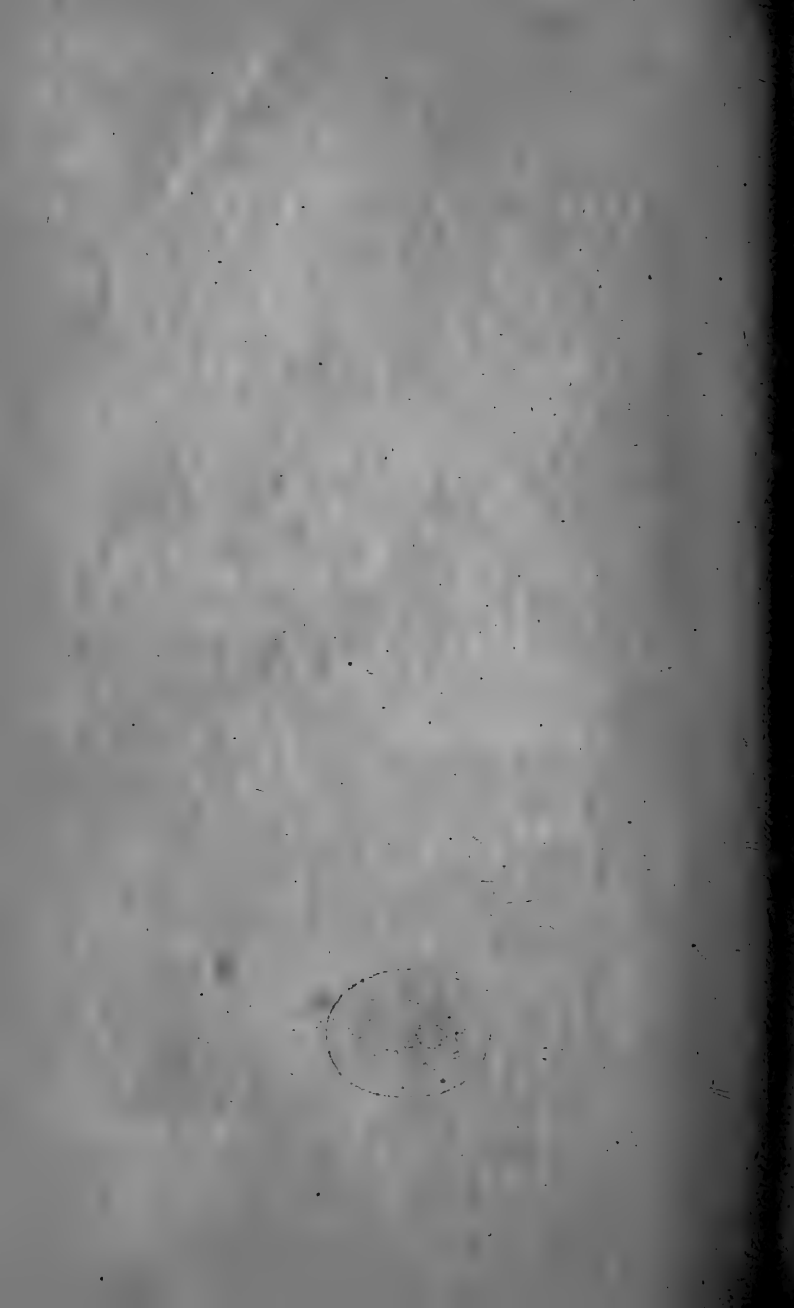
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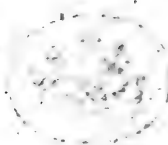
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EAST KENT NATURAL HISTORY SOCIETY.

The Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on Tuesday, January 31st, 1888, Mr. Sidney Harvey in the chair, when the following Report was presented.

REPORT OF COMMITTEE FOR 1887.

Though in presenting the Thirtieth Annual Report the Committee would have been pleased to be able to congratulate the Society on a large increase of members, on a much greater interest in the proceedings, on a larger number of papers, and on the communication of more original work, they still feel that the year has, on the whole, been a successful one, and that the position of the Society has been maintained.

The Papers read during the year were—

- February 10, On Trichodina as an Endoparasite, MR. T. B. ROSSETER, F.R.M.S. ; On the recent fall of rock in the Niagara Falls, communicated by MR. JAMES REID.
- March 10, On Insectivorous Plants, MR. G. DOWKER, F.G.S.
- April 14, Woodlice, Centipedes and Snake Millipedes, MR. G. S. SAUNDERS ; The Life History of a Wild Carrot, MR. JAMES REID.
- October 13, On Falcaria Riviri, MR. GEO. DOWKER.
- November 10, The Development of the Ear in Animals, MR. JAMES REID.
- December 8, On the probability of finding Coal in East Kent, MR. G. DOWKER, F.G.S.

EXHIBITS.

- February 10, Horn of white rhinoceros found at Ramsgate in a deposit of Romano-British date, Mr. HILLIER ; Diagrams showing changes in Niagra Falls during the last 200 years, MR. JAMES REID ; Foraminifera from Broadstairs, COL. HORSLEY.

- March 10, Fresh water shells from Hainan, COL. COX; Mole with orange-yellow breast, MR. SAVILLE; Beautifully mounted Sea Weeds, MR. W. E. GOULDEN; Foraminifera, COL. HORSLEY; Rock Sections, MR. J. FIELDING; Slides, showing special parts of Insectivorous Plants, MR. G. DOWKER.
- April 14, Slides in illustration of his paper, MR. G. S. SAUNDERS; Remarkable specimen of a wild carrot, MR. JAMES REID.
- October 13, Specimens of *Falcaria Riviri*, found near Preston, Kent, MR. G. DOWKER; Plant Crystals, COL. HORSLEY; Spectroscope, MR. HARVEY; Wimshurst Machine, Polariscopes, MR. MANN; Flints from the Westleton Beds, Suffolk, MR. J. REID; Japanese Hops and Triticum, R. E. THOMSON, ESQ.
- November 10, Diagrams to illustrate his paper, MR. J. REID.

EXCURSIONS.

- June 16, Boughton and Eastwell Park, Botanical and Geological.
- July 6, Sandhills near Sandwich, Botanical.
- August 25, To Whitstable for dredging.
- September 21, The Elham Valley Railway Cutting—Barham, Lyminge and Etching Hill.

The first excursion was on June 16 to Boughton Aluph, and Eastwell Park. A large number of members joined and went by waggonettes to Boughton. Thence they proceeded through Eastwell Park, and returned to Boughton for tea. Many fine and interesting Botanical specimens were gathered, and some of the Members formed a group for Geological exploration. On July 6 there was a Botanical Excursion to the Sandhills between Sandwich and Deal. The number joining was not large, but the excursion was successful, and several interesting specimens were gathered. In August a small party went to Whitstable for an afternoon's dredging under the guidance of Mr. Sibert Saunders.

The last excursion was a Geological one in the Elham Valley following the line of the new railway from Barham to Lyminge and Etching Hill. At the latter place Mr. Geo. Dowker gave an address on the most prominent features of the district as laid bare by the excavations, and then the members proceeded to Elham by way of Acryse and Elham Mill. At a spot between these places Mr. Dowker gave a brief address describing the sands that cap the high ground there.

These Excursions were rendered all the more successful and pleasant by being carefully planned and by the selection of leaders ; and the Committee would be pleased to receive suggestions from Members for the Excursions of next summer.

The Committee Meetings have been held very regularly and the affairs of the Society have been carefully attended to. An effort has been made, and with considerable success, to induce Members to give papers and communicate the results of their investigations, and the monthly meetings have never been lacking in interest.

An effort was made in the early part of the year to associate with the Committee of the University Extension Lectures in the hope that some Scientific Lectures might be organised ; but the effort was not successful as the feeling of the University Committee seemed to tend more towards Literary Subjects.

The Committee regret that the number of members attending the monthly meetings is often very small. It cannot but be discouraging to the Lecturer, after having spent a long time in investigation, and much trouble in putting his information into form, to find that such a small number of members come to the meeting to hear him. Not only has a card been issued giving the titles and particulars of the papers for the Session, but the Secretary always issues notices a few days before each meeting and therefore the poor attendance is not caused by any misapprehension of the times when papers are read.

In the last report it was mentioned that another Series of Transactions would probably be issued during the year. This 2nd series was published in May and a copy was forwarded to each member. The expenses of publication were defrayed out of the general funds of the Society. The publishing Committee are wishful to bring out another series as soon as possible, and they are anxious that these publications should be the means of gathering and preserving valuable information concerning the Natural History of East Kent. They would therefore be pleased if members would freely communicate any observations, if not in full papers at any rate in the form of notes

Mr. A. S. Reid, M.A., F.G.S. was the delegate of the Society at the Meeting of the British Association at Manchester, and he sent in a report of the proceedings of the Committee of the Corresponding Societies. In this report, which was read at the Committee Meeting on Oct. 1st, and also at the monthly Meeting on Oct. 15th, he points out the principal matters on which information from local investigators is most needed. Those pertaining to this district are the annual variation of the temperature of surface water in rivers, estuaries, and lakes; the habits, construction and features of the life history of plants; and a record of camps and prehistoric remains.

Your Committee would earnestly ask members to do all they can to collect information on these and other points, and then communicate freely with the Society. The papers published in the transactions are carefully noted by the Committee of the British Association, and a tabulated record made of them for reference. In this way the work of local investigators becomes known all over the country, and workers can see what has been done in other districts.

The advantages offered by your Society to all who are interested in scientific pursuits are so great, that your Committee cannot but think that there must be many young persons in the the district who would be glad to become members, and therefore the Committee would urge upon members the duty of making the Society as widely known as possible.

If members attending the monthly Meetings would ask friends to come with them they would very probably win many new members, and the gentlemen who read papers before the Society, seeing a better attendance, would be encouraged to appear more frequently.

The Library ought to be much valued by all the members for it now contains a large and well-chosen collection of books on all branches of Natural History. The Committee would respectfully draw the attention of members to Rule 21 by which "Members are invited to lend books for the use of the Library, reserving to themselves the full right of ownership. Such books to be under the care of the Committee, and not to be taken from the Library."

In order to give increased vigour to the Society, members are earnestly desired to come as frequently as possible to the monthly Meetings, to bring any specimens they consider of interest, to do all they can towards original investigation, to record and communicate their observations, and to endeavour to induce all who are interested in Natural History to join the Society.

LIBRARIAN'S REPORT FOR 1887.

The sum granted for expenditure on the Library for the year under review was £12. Of this sum £10 8s. 5d. was spent, the greater part for Periodicals. Three new books were added to the Library, viz: Behren's Text Book of General Botany, 2nd Edition; Ramsay's "Scientific Roll," and Vines' Physiology of Plants, 1886, at a cost of £1 3s. 9d., and 13 volumes were bound, and placed on the shelves, besides 2 maps of East Kent, mounted on canvas and rollers. Mr. G. Dowker's paper on the water supply from deep borings in Kent, a reprint from the Geological Magazine, cost altogether £2 1s. 6d. These items, with £5 3s. 9d. for Periodicals, and £1 18s. 9d. for binding, and a small item for postage &c., make up to the total sum as above stated.

The Ray Society, in return for the annual subscription of one guinea, have furnished the Society with Vol. 2 of the Larvæ of the British Butterflies and Moths, for 1886. The Volume for 1887, promised shortly, will be Vol. 2 of the Oribatidæ.

The Journal of Botany has been added to the List of Periodicals taken in by the Society.

In addition to the Serial Works purchased, as issued by the Society, there have been added during the year:—

- 42 Numbers of Nature.
- 32 Pamphlets, Reports and Transactions of Societies, &c., the Donors, other than Societies, being Col. Horsley, Major Parker, Messrs. G. Rigden, Jas. Reid, and W. Whitaker.
- 34 Volumes presented by British Association, Minnesota State, U.S., Miss Reid, Mr. Jas. Reid, Smithsonian Institute, U.S., and United States Government.

The following is the list of Works added to the Library in 1887, in addition to the Serials, works purchased, and the Transactions received from other Societies :—

- Behrens, Text Book of General Botany, 1885.
 Buckler, W., Larvæ of the British Butterflies and Moths, Vol. 2, Ray Society, 1886.
 Cooper, Dan., Flora Metropolitana; or Botanical Rambles within 30 miles of London, 1836.
 Edwards, F. E., Eocene Mollusca, Cephalopoda, Palæont. Society, 1849.
 Gray, J. E., Guide to the Systematic Distribution of Mollusca in the British Museum, 1857.
 Harbison, W. C., Bees and Beekeeping, 1860.
 Hoffmeister, W., On the Higher Cryptogamia, Ray Society, 1862.
 Jones, J. R., Fossil Aestheria, Palæont. Society, 1862.
 Pettit, W. J., Management of Bees, 2nd Edition.
 Phytologist, A Popular Botanical Miscellany, Vol. 1, 1844 to 1851. Vol. 1, N.S., 1855-6 to Vol. 6, 1862-3.
 Ramsay, Alex., A Bibliography, Guides and Index to Climate, 1884.
 Report of the 56th Meeting of the British Association for Advancement of Science, Birmingham, 1886.
 ——— of Smithsonian Institute, U.S.A., Part 1, 1885.
 ———, The 6th of U.S. Geological Survey, 1884-5.
 Richardson, H. D., The Hive and the Honey Bee.
 Sampil, J. Ant., Nuevo plan de Colmenas de las Abejas, Madrid, 1798.
 Smith, J. E., Compendium Floræ Britannicæ, 1828.
 Storr, Jno., The Flora of Cardiff, 1886.
 Taylor, H., The Bee Keeper's Manual, 1860.
 Thorley, J., On Bees, a German Edition, Gotha, 1766.
 Transactions of the Woolhope Naturalists' Field Club, Vol. 5. 1867-73.
 Vines, S. H., Lectures on the Physiology of Plants, 1886.
 Whitaker, W., B.A., F.G.S., &c., Further Notes on the Results of some deep borings in Kent, 1887.
 Winchell, N. H., The Geological and Natural History Survey of Minnesota, Reports for years 1884-5, 1885-6
 Year Book, The Official, of Scientific and Learned Societies, 1887.

Copies of Transactions are exchanged with the following Societies :—

- Cardiff Naturalists' Society.
 Croydon Microscopical and Natural History Club.
 Eastbourne Natural History Society.
 Folkestone Natural History Society.
 Huddersfield Naturalists' Society.
 Manchester Scientific Students' Society.

Rochester Naturalists' Club.
 Sidcup Literary and Scientific Society.
 Smithsonian Institute, Washington, U.S.A.
 Wellington College Natural History Society.
 West Kent Natural History Society.

Through the kindness of Mr. Reid in taking stock of the Library, on the 14th Dec., 1887, for the second time during the past year, the Librarian is able to report that none of the books are missing. Eleven Books were out on loan at the above mentioned date. The number borrowed during the year is about the same as last year, and gives good evidence that the value of the Library is well appreciated by the members. The regulation, which had been in force during the year, limiting the time a borrower shall hold a book without returning it to the Library, has operated well, preventing much inconvenience and preserving the property.

The Periodical Literature is much used for reference, and as this purpose is a particular value in such a Library, it would be very desirable, if possible, either by gifts or purchase, to complete the serial works in the Library. With this view a list of the imperfect sets is added, and it might be well to publish it in the next Report, intimating to Members that any contributions they can make towards completing the series will add to the strength of the Library and be gratefully received.

List of Volumes and Parts required to complete the series of Periodical Works in the Library:—

The Geologist, Vol. 5, 1862.

Reports of the Geological and Natural History Survey of Minnesota,
 2, 3, 4, 5, 6.

Ray Society—Alder & Hancock, Nudibranchiate Mollusca, Part 7, 1855.

„ Memorials of Ray, by E. Lancaster, 1846.

„ Correspondence of Ray, by E. Lancaster, 1848.

„ Elements of Physiophilosophy, by Oken, 1847.

„ Reports of Zoology and Botany, 1841-2, 1845.

„ Henfrey's Report on Botany, 1849.

„ Leighton Angiocarpous Lichens, 1851.

„ Henfrey's Botanical and Physiological Memoirs, 1853.

„ Agassiz's Catalogue of Works on Zoology and Geology,
 Vols. 4, 1848-54.

- Report of Smithsonian Institute, U.S., for 1864, 1866, 1867, 1870-1-2, 1874-5-6-7, 1878-9.
- Reports United States Geological Survey, any preceding year 1880.
- Reports and Proceedings West Kent Natural History Society, any preceding that for 1871, 1873 to 1877, 1879, 1882-3 and following.
- Reports, Wellington College Natural Science Society; any Reports preceding 1873, the 1st, 2nd, 3rd 7th, 11th 1880, 12th, 13th.
- Journal of the Royal Microscopical Society, Vol. 1, 1878.
- Quarterly Journal of Microscopical Science, Vol. 1, 1853, to Vol. 6, 1858, Vol. 10, 1870, Vol. 11, 1871.
- Annals and Magazine of Natural History, the 1st and 2nd Series; Vol. 1, 2, 3rd Series, 1857-8, Vol. 9 and 10, 3rd Series, 1862.
- Quarterly Journal of Science, Vol. 8, 1871, and any following.
- Review, Natural History, a Quarterly Journal, Vols. 1, 2, 1861-2, Vol. 5, and any following.
- Quarterly Journal of Geological Society of London, Vols. 1, 1843 to 19, 1863.
- Journal of Botany, Vol. 1, 1863, to Vol. 7, 1869.
- Zoologist, Vol. 20, 1862.
- Science Gossip, Vol. 1. 1865, to Vol. 5, 1869.
- Epping Forest or Essex Club, Part 3, 1880, Part 9, 1884, and following Parts.
- Hertfordshire Natural History and Field Club: Any Reports, &c., following 1882.
- Rochester "Naturalist" Club, No. 5, 1884, 6, 7, 9, 10, 11.
- Norfolk and Norwich Naturalists' Society: Any Nos. from 1881.
- Quekett Microscopical Club, Reports 1st to 8th, any following the 9th.
- Woolhope Club Transactions: Any Vols. or Parts following Vol. 5, 1873.
- "Nature," Vol. 1-8, 1869-74.
- Land and Water, Vol. 10, 1871, and any following.

W. H. HORSLEY, COL.,
Hon. Librarian.

HON. TREASURER'S REPORT FOR 1887.

During the year under review the Society has lost one Member by death, viz., G. R. Friend, Esq., of Canterbury, and eight Members have either resigned Membership or left Canterbury, and cannot therefore be any longer reckoned upon as paying Members. Of these eight, four have paid subscriptions for 1887.

Against this loss, there has been a gain of four new members, elected in 1887, thereby reducing the loss to four and making the number of members at present in connexion with the Society, 71. Of these, however, there are two who are in arrears for three years, and one who has not paid any subscription since 1882. The last mentioned, therefore, should be struck off the list of Members in accordance with Rule 3. This will reduce the number to 70. Of these, fourteen have not yet paid their subscriptions for 1887, and two are in arrears for 1885 and 1886, making together £8 still due to the Society.

The total sum received for 1887 was £27 5s., and for arrears of 1885 and 1886 £4, making altogether £31 5s., while the expenditure for the same period has amounted to £36, thereby reducing the balance to the credit of the Society to £12 12s. 1d., of which 13s. are in the hands of the Hon. Treasurer. This excess of expenditure above income is entirely owing to the cost of printing No. 2 series of the transactions of the Society, viz., £5 10s., as shown in the Financial Statement accompanying this Report. When No. 1 series was printed, a special fund was raised for the purpose, and it may be necessary to adopt a similar course in future.

W. H. HORSLEY, CoL.,
Hon. Treasurer.

Canterbury,
25th January, 1888.

FINANCIAL STATEMENT FOR 1887.

RECEIPTS.

| | £ | s. | d. |
|--|----|----|----|
| Balance (credit) on 25th January, 1887 | 17 | 7 | 1 |
| By Subscriptions for 1887 received up to 24th January, 1888 | 27 | 5 | 0 |
| „ Arrears of Ditto for 1885 and 1886 received up to same date..... | 4 | 0 | 0 |

£48 12 1

Examined and found correct,
GEORGE RIDDEN.
 Canterbury, 25th January, 1888.

DISBURSEMENTS.

| | £ | s. | d. |
|---|----|----|----|
| To Rent of Room for one year | 10 | 0 | 0 |
| „ Fire Insurance on Library, &c..... | 0 | 6 | 9 |
| „ Subscription to Ray Society..... | 1 | 1 | 0 |
| „ Contribution to Library | 10 | 8 | 5 |
| „ Cross and Jackman for Printing Report for 1886 | 4 | 0 | 0 |
| „ Gibbs and Sons for Printing Transactions, No. 2 Series..... | 5 | 10 | 0 |
| „ Gibbs and Sons for Printing Reminders, &c..... | 0 | 10 | 6 |
| „ Hon. Secretary for Cards and Stamps, &c..... | 2 | 17 | 6 |
| „ Hon. Assistant Ditto for Petty Cash..... | 0 | 10 | 0 |
| „ Hon. Assistant Ditto for Cleaning Room..... | 0 | 7 | 0 |
| „ G. Parren for fixing Pulleys for Diagrams..... | 0 | 5 | 6 |
| „ Postage and P. O. Orders..... | 0 | 3 | 4 |

£36 0 0

12 12 1

£48 12 1

W. H. HORSLEY, Colonel,
 Hon. Treasurer.

On the motion of Mr James Reid, seconded by Mr. George Dowker the Reports and Financial Statements were adopted and ordered to be printed and distributed to Members.

The following resolutions were then carried :—

That the thanks of the Society are tendered to those gentlemen who have read papers or notes or who have exhibited objects ; to those Members and friends who have presented books or periodicals, especially to Mr. James Reid, Col. Horsley, Major Parker, Mr. George Rigden, and Mr. Wm. Whitaker, and also to Mr. Brian Rigden for the weather report for 1887.

That the thanks of the Society are offered to Mr. James Reid for further important work in the Library, and to Mr. E. B. Hayward, the Assistant Secretary, for his valuable assistance.

That the sum of Twelve Pounds be placed at the disposal of the Treasurer and Librarian for additional Books and necessary expenses.

That Mr. Sidney Harvey, F.C.S., be the President for the coming year.

That the Treasurer and Librarian, the Secretary and Assistant Secretary be requested to continue in office during the coming year.

That Mr. H. M. Chapman, Mr. F. W. Cross, Captain Godfery, Rev. Canon Holland, Major Parker, Mr. G. Rigden, Mr. S. Saunders, and Mr. A. Wetherelt form the Committee.

Recd

9 MAY. 95



East Kent Natural History Society.

SCIENTIFIC MEETINGS,

1888-9.

PLACE: No. 6, HIGH STREET, CANTERBURY.

TIME: 7.30 O'CLOCK P.M.

On the Second Thursday of each month, viz.:

1888.

February 9th.

March 8th.

April 12th.

During May, June and July there
will be Excursions and due notice
of them will be given.

August 9th.

September 13th.

1888.

October 11th.

November 8th.

December 13th.

1889.

January 10th.

February 14th.

March 14th.

April 11th.

ANNUAL MEETING,

Tuesday, January 29th, 1889, at 4 p.m.

Please fill up this form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP.

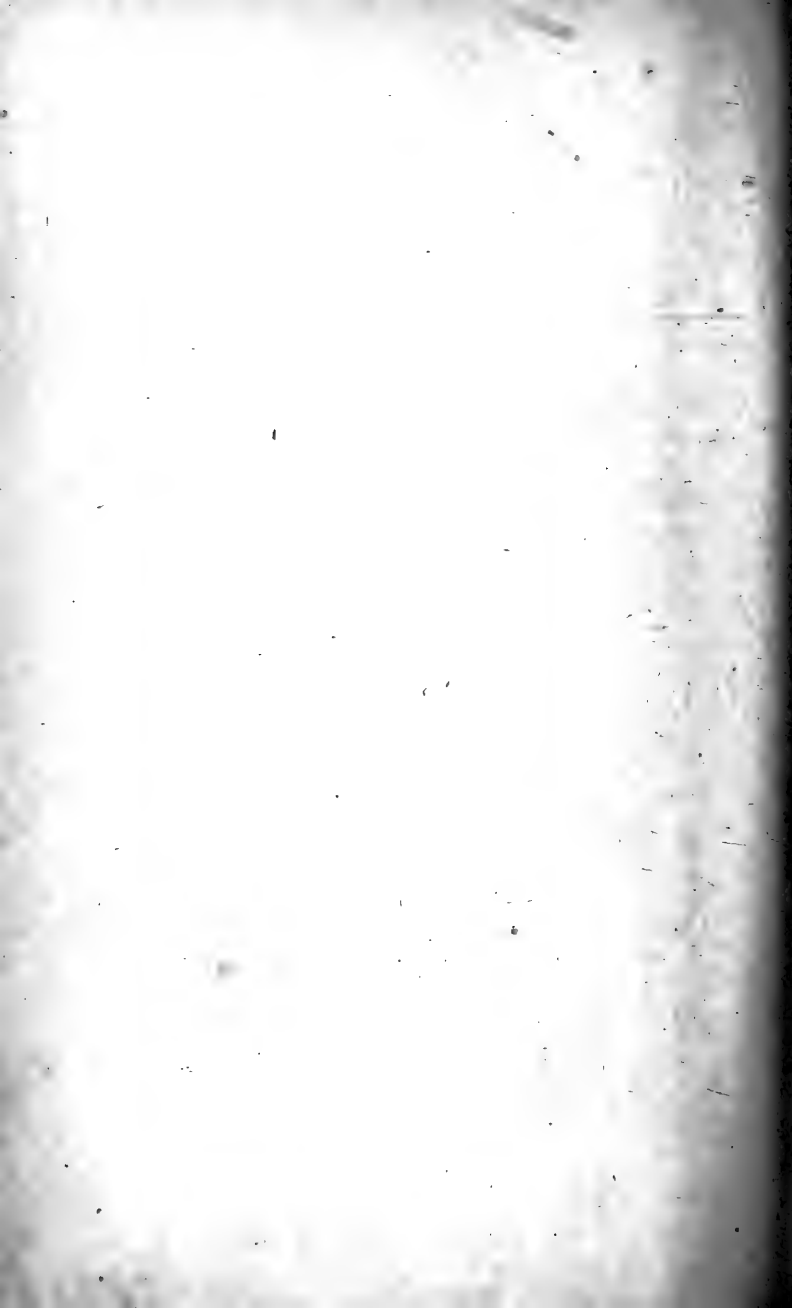
I, the undersigned, being desirous of becoming a member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2 of the Society.

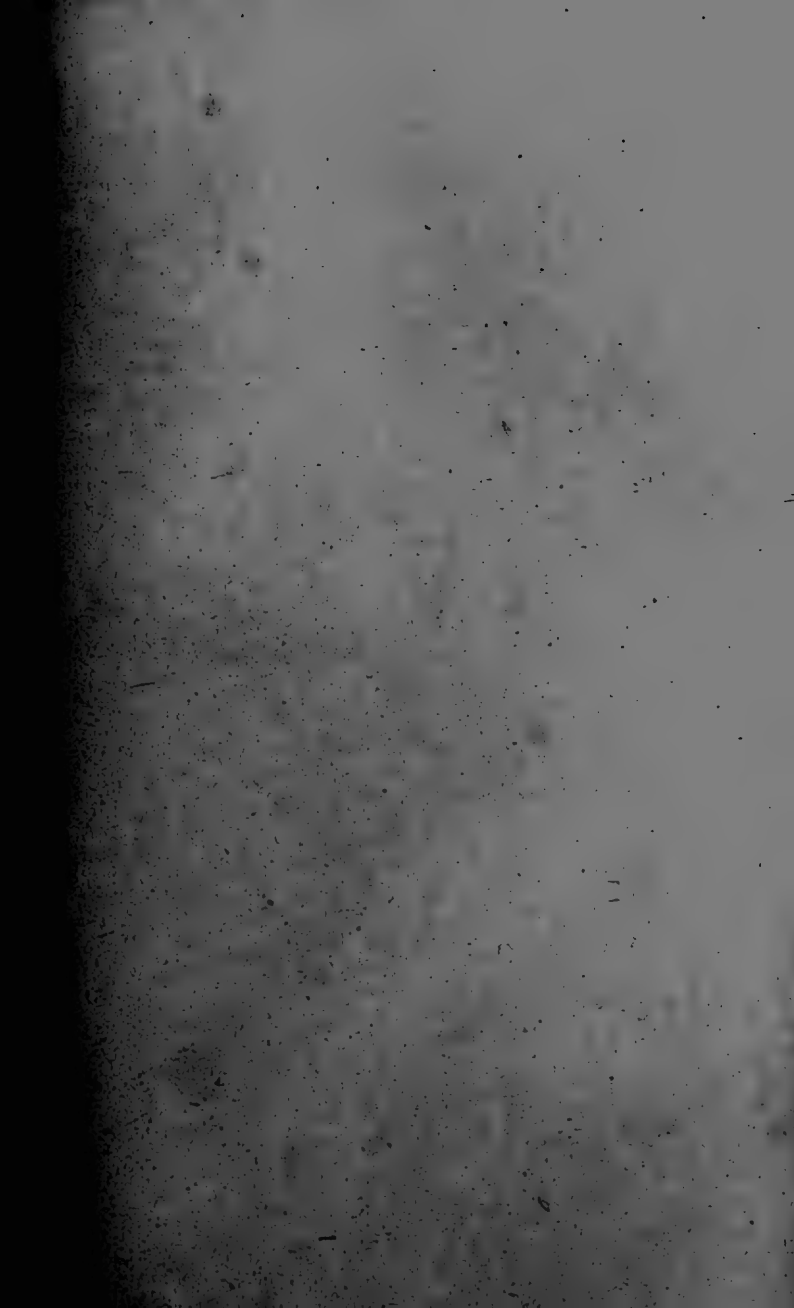
(Signed)

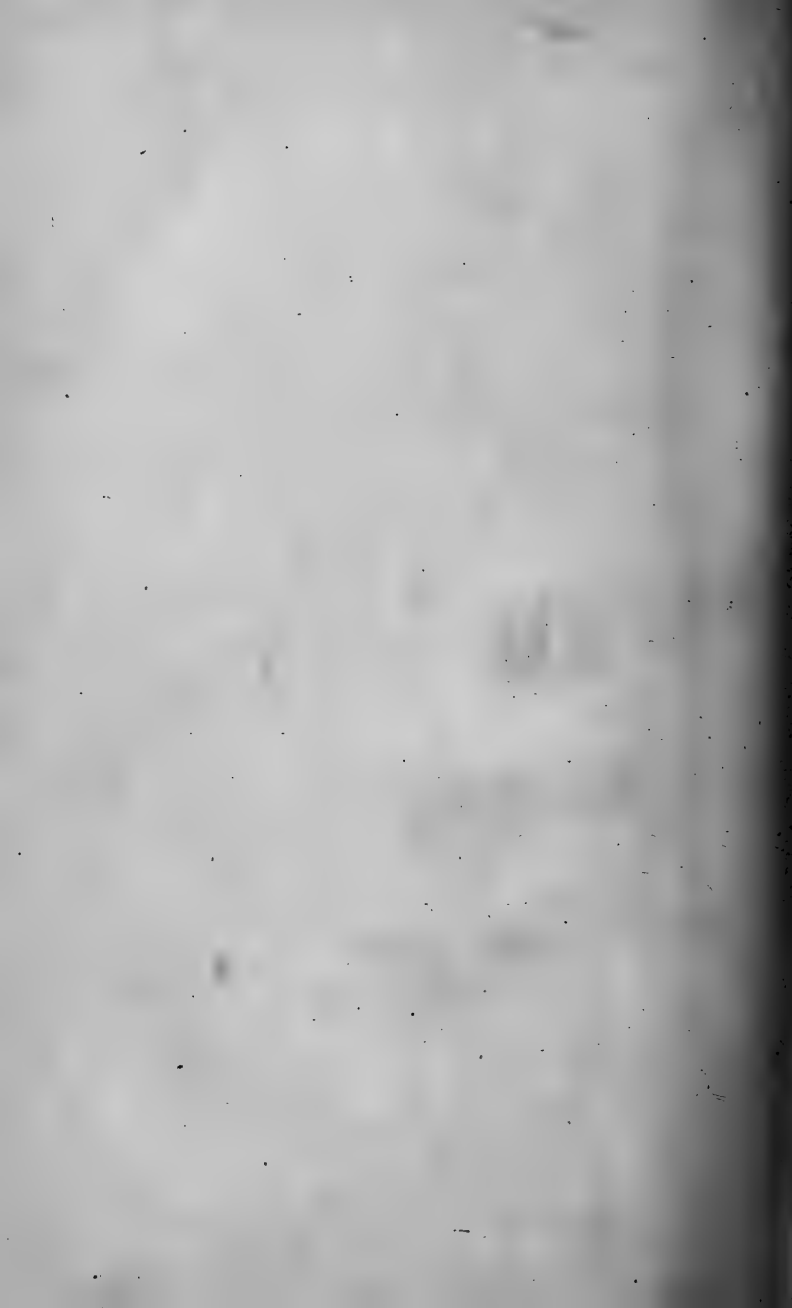
(Address)

Date

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs Hammond and Co's. Bank, Canterbury, or to the Hon. Treasurer.







THIRTY-FIRST REPORT

(1888)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

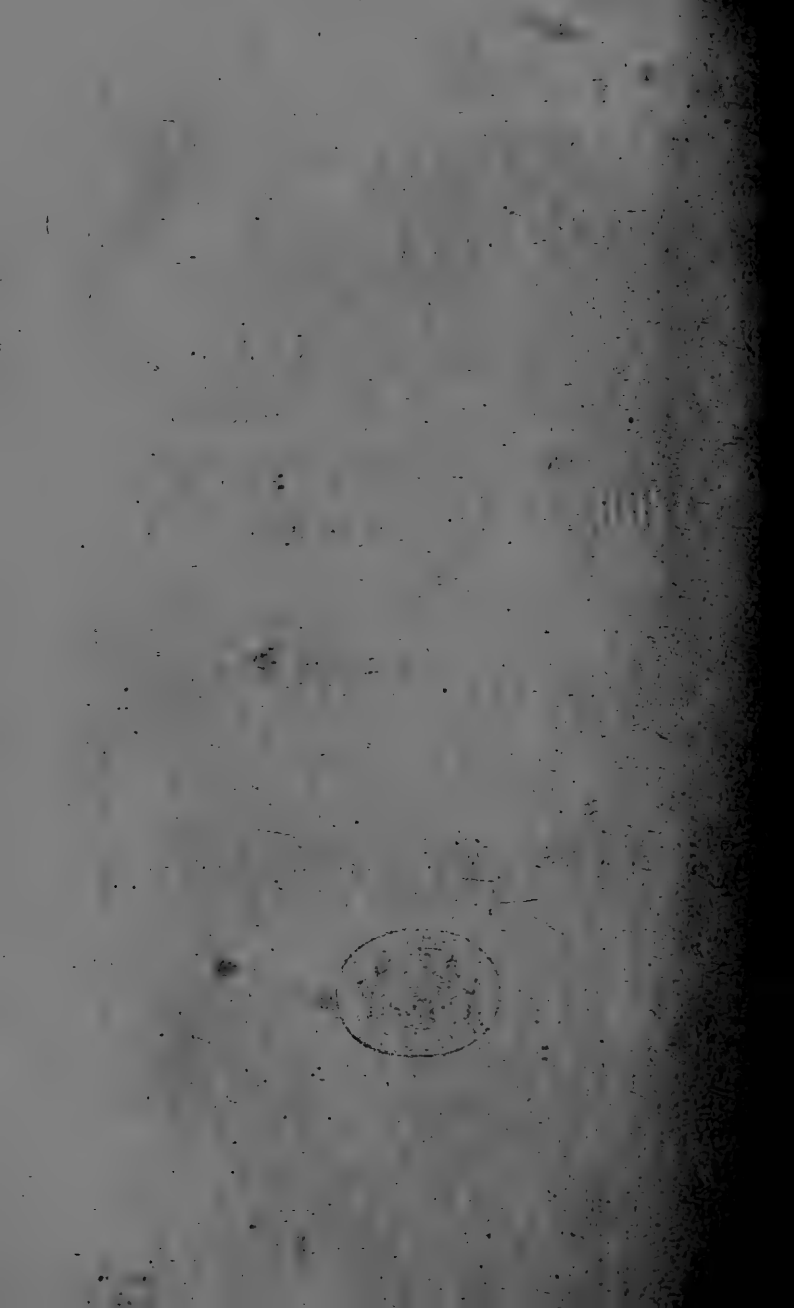
ON JANUARY 29th, 1889.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS" OFFICE.

1889.



THIRTY-FIRST REPORT

(1888)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

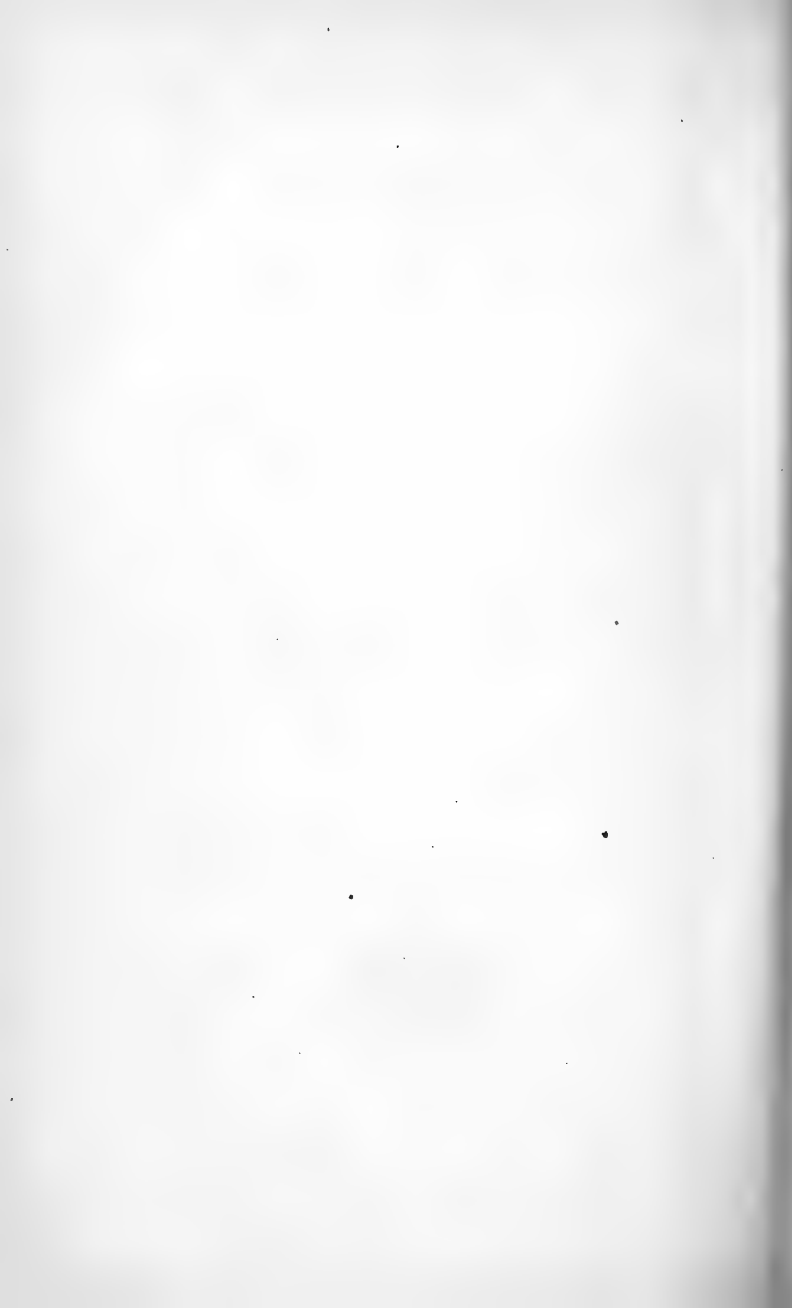
ON JANUARY 29th, 1889.



Canterbury :

CROSS & JACKMAN, "THE CANTERBURY PRESS," 6, HIGH STREET.

1889.



EAST KENT NATURAL HISTORY SOCIETY.

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MR. WILLIAM OXENDEN HAMMOND, ST. ALBAN'S.
MR. H. B. MACKESON.
CAPTAIN GORDON McDAKIN, DOVER.
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MR. FRANK BAKER, C.E.

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MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

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MR. F. W. CROSS.
MAJOR GODFERY.
REV. CANON HOLLAND, M.A.

MAJOR PARKER, F.G.S.
MR. G. RIGDEN
MR. SIBERT SAUNDERS.
MR. W. P. MANN, B.A.

MEMBERS.

| | |
|------------------------------------|--|
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| Cole, Miss | Ditto. |
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| Dover, Right Rev. Bishop of | Precincts, Canterbury. |
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| Gandy, Rev. Richard Norris | St. Andrew's Rectory, Canterbury. |
| Gardner, Mrs. | Precincts, " |
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| Goulden, Mr. W. E. | Station Road, " |
| Groombridge, Mr. W. | 6, St. George's Fields, " |
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| Howard, Mr. J. | Ersham House, " |
| Iron, Miss Helen | 39, St. Margaret's Street, Canterbury. |
| Iron, Miss Henrietta | Ditto. |

- Jackman, Mr. A.
Jackman, Mr. J.
- Kingsford, Mr. M.
Kingsford, Miss
- Laurie, Colonel, M.P.
- Mackeson, Mr. H. B.
Mann, Mr. W. P., B.A.
McDakin, Captain
McMaster, Mr. J.
- Northbourne, Right Hon. Lord
- Parker, Major, F.G.S.
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of Canterbury
Payne-Smith, Miss
Payne-Smith, Miss M.
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Powell, Mrs. Thomas
Preston, Mrs. T.
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Reid, Mr. A. S., M.A., F.G.S.
Rigden, Mr. G., M.R.C.S.
Rosseter, Mr. T. B., F.R.M.S.
- Saunders, Mr. Sibert
Slater, Mr. F.
Sondes, Right Hon. Earl
- Thomson, Mr. R. E.
- Wacher, Mr. F.
Webber, Mr. J. D.
Webb, Mr. Sydney
Wetherelt, Mr. A.
Whiteman, Miss M.
- 6, Lower Bridge Street, Canterbury.
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- Upper Hardres.
- Hill Side House, Hythe.
Langton Schools, Canterbury.
15, Esplanade, Dover.
The Holt, Hartledown.
- Betteshanger, Sandwich.
- Westbere House, Canterbury.
- The Deanery.
Ditto.
Ditto.
Kent College, Canterbury.
Wingham
49, London Road, Canterbury.
18, St. George's Place, ,,
- Bridge Street, Canterbury.
Trinity College, Glenalmond, Perth.
Burgate Street, Canterbury.
3, Victoria Grove, ,,
- Whitstable.
Chislet.
Lees Court, Faversham.
- Kenfield Hall, Petham.
- Monastery House, Canterbury.
Tower House, Harbledown.
Maidstone House, Dover.
14, Cossington Road, Canterbury.
Tyler Hill, ,,

CORRESPONDING MEMBERS.

Bartlett, Mr. A. D.
Bates, Mr. H. W.
Britton, Mr. J.

Zoological Gardens, London.
London.
Royal Herbarium, Kew.

Masters, Dr. Maxwell T., F.R.S.
Mitchinson, Right Rev. Dr.

Ealing.
Sibstone.

Saunders, Mr. G. S.

Care of Colonel Horsley, St. Stephen's
Lodge, Canterbury.

Trimen, Mr. H.

Botanical Department, British Museum.

Whitaker, Mr. W.

Geological Museum, Jermyn St., London.

HONORARY MEMBERS.

Bewsher, Mr. Charles

St. Louis, Mauritius.

Kemp, Dr. William

Wellington, New Zealand.

Linford, Mr. J. S.

Hull.

ASSOCIATES.

Dean, Mr. H.

St. Peter's Street, Canterbury.

Hayward, Mr. E. B.

6, Burgate Lane, Canterbury.

Pugh, Mr.

Canterbury.

EAST KENT NATURAL HISTORY SOCIETY.

The Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on Tuesday, January 29th, 1889, Mr. Sidney Harvey in the chair, when the following report was presented.

REPORT OF COMMITTEE FOR 1888.

The Committee have the pleasure of presenting the Thirty-first Annual Report to the Members of the East Kent Natural History Society.

The Papers, Addresses, &c., read during the year were—

| | | | |
|-------|----|--|-------------------------------|
| Jan. | 10 | Time as a Geological Factor, | Mr. A. S. REID, M.A., F.G.S. |
| Feb. | 9 | Manganese in East Kent, | CAPTAIN McDAKIN. |
| March | 8 | The Lower Greensand, | CAPTAIN McDAKIN. |
| April | 12 | Meteorology, | Mr. G. S. SAUNDERS, F.L.S. |
| Oct. | 11 | Report of the Proceedings of the Committee of the Cor- responding Societies of the British Association, | Mr. A. S. REID, M.A. |
| | | Address on Chemical and Vital Force, | THE PRESIDENT. |
| | | Notes on the Life History of the Giant Hogweed, | MR. JAS. REID, F.R.C.S. |
| Nov. | 8 | The Physiography and Ge- ology of Canada, | Mr. F. BAKER, C.E. |
| Dec. | 20 | Shells and Shell Collecting, | Mr. S. B. COX, B.A., M.R.C.S. |

At each meeting objects of interest contributed by members were on view. The chief of these were specimens to illustrate the different papers—botanical specimens sent by Mr. Thomson, of Kenfield Hall, and generally explained by Mr. James Reid; botanical and other specimens sent by Miss

Kingsford; and many botanical and ornithological exhibits contributed by Mr. Jas. Reid and Mr. Dowker.

The year's work of the Society may, on the whole, be regarded as satisfactory. The supply of papers has been well kept up, and they have been of considerable interest. The attendance at the evening meetings has shown a decided improvement, and it is hoped that members will endeavour to be present as frequently as possible.

The Excursions of the Season have been very successful. The first was on May 17, to Folkestone, Sandgate, and Hythe, Mr. Geo. Dowker being the director for the Geological Observations, and Mr. H. B. Mackeson for the Archæology of Hythe. The second Excursion, on June 14, was a Botanical one to Challock Lees and Eastwell under the guidance of Mr. H. Dean. On August 16 a Botanical Excursion was organised to Wingham, Preston, and Stodmarsh, Mr. Geo. Dowker again undertaking the duties of director. The last Excursion of the season was to Dover on September 13; Capt. McDakin was the organiser, and the company separated into two groups, one for Botanical exploration, the other for Zoophyte hunting.

All the Excursions were well attended, and on every occasion the weather was fine. Lists of specimens found have been made, and are kept in the Society's room for inspection, and a general account of each Excursion is preserved in the Report Book.

Mr. A. S. Reid, M.A., F.G.S., again kindly undertook to act as the delegate of the Society at the meeting of the British Association at Bath. He submitted a very interesting and suggestive report of the proceedings of the Committee of the Corresponding Societies. He again draws attention to the great importance of members of Natural History Societies undertaking systematic local investigations, and he mentions the recording of the variation in river temperature, the photographing of geological sections, the study of the life history of plants, and the preservation of ancient monuments as applying particularly to this district.

Your Committee have made arrangements for the observation of the temperature of the Stour, and they have taken some steps to organise a plan for the photographing of geological sections. They feel that the thanks of the Society are due to Mr. A. S. Reid for his services as delegate, and for his excellent and suggestive report, and they would be pleased if members would help to carry out his recommendations.

It was mentioned in the last report that another series of

the Society's Transactions would appear during the year, but a delay has occurred on account of the author of the most important paper requiring more time to verify some observation, in order to render his work as perfect as possible. It is confidently hoped that a double number will appear in 1889.

Your Committee have for some time had under consideration a scheme by which other Natural History Societies could be affiliated to the East Kent Society for united investigations, and especially for the publication of transactions. Such a plan has at length been decided upon, and it is believed that the adoption of it by other Societies would tend to encourage united action for original investigation, and result in the publication of valuable transactions.

Your Committee would again urge members to use their best exertions to forward the interests and development of the Society. They could do this by undertaking observations and communicating notes of them, and also by attending the meetings as frequently as possible. The advantages that the Society offers to lovers of Natural History by means of the papers and discussions—by means of the valuable well-kept and well-arranged Library, and by means of the excellent Microscope and collection of Specimens, ought to be brought as widely as possible before the notice of the young men of the city, so that they might be induced to join the Society.

Several changes have occurred in the List of Members through removal or death, and your Committee feel that they cannot let the occasion pass without calling attention to the great loss the Society has sustained in the death of Mr. J. T. Hillier, of Ramsgate, and Mr. H. Lee, of London.

Mr. J. T. Hillier was one of those who took the first steps to form the Society; he was a quiet, courteous, unobtrusive man, well and accurately stored with much knowledge in Archæology, History, and Biology, and was in touch with many eminent men on the subjects he pursued. He contributed much to the better knowledge of the History, Botany, and Zoology of his own locality, the Isle of Thanet, and was an excellent Microscopist. He was generally beloved in his profession and by the community of his town and neighbourhood, and was always active in promoting every good object.

Mr. Lee, whilst he resided at Margate, was very active in the interests of the Society, and much promoted its welfare. He was a man of great ability, genial and active; of Natural History he had an extensive practical knowledge, which he easily and pleasantly conveyed to all about him. After leav-

ing Margate he was an active member of the Croydon Society, but he still maintained his association with the East Kent Society.

HON. LIBRARIAN'S REPORT FOR 1888.

The sum granted for expenditure on the Library for the year under review was £12; of this sum £7 14s. 5d. only was spent, and the greater part of that, viz., £5 14s. 3d., was for Periodicals; one new work was purchased, viz., "Stainton's Manual of British Butterflies, 2 vols, 1869, at a cost of 10s.; and twelve volumes of Periodicals of the previous year were bound and placed on the shelves, the cost of binding being £1 9s. 8d.

The Ray Society, in return for the annual subscription of one guinea, have furnished the Society with Vol. 2 British Oribatidæ by Alb. D. Michael. The serial works purchased by the Society consist of—

1. The Midland Naturalist.
2. The Journal of Botany.
3. The Annals and Magazine of Natural History.
4. The Zoologist.
5. Science Gossip.
6. The Geologist.
7. The Quarterly Journal of Microscopical Science.

To these may be added the Journal of the Royal Microscopical Society, presented by that Society.

The Library has been further strengthened by gifts from various kind donors, amounting in all to twenty-five Volumes and Pamphlets, viz. :—

- Geologist, The, Vol. 5, 1862, presented by G. Dowker, Esq.
 Oestland, O. W., Synopsis of Aphididæ of Minnesota, 1887. Bulletin
 4 of Natural History of Minnesota
 Wadsworth, M. E., Preliminary Description of the Peridotytes,
 Gabbeos Diaboses, and Andosytes of Minnesota, 1887. Bulletin
 2 of Natural History Survey of Minnesota
 Arthur, J. C., and others, Report on Botanical Work in Minnesota,
 1886. Bulletin 3 of Geol. and Nat. Hist. Survey of Minnesota.
 Report, Geological and Natural History Survey of Minnesota for
 the year 1886.
 Smithsonian Report, Part 2, 1887. Presented.
 Abercromby, Hon. Ralph, on Photographs of Lightning Flashes, presented
 by Mr. B. Rigden.
 Nature, Vols. 34, 35, 36, bound; Vols. 37, 38 in Nos., presented by Mr.
 G. Rigden.

- Quarterly Journal of Geological Society, Vol. 43, 1887, and No. 3, 1888, presented by Major Parker.
- Quarterly Journal of Geolog. Society, Vols. 16, 18, 19, 1860-2-3, in Nos., and Nos. 59, 60, Vol. 15; Nos. 66, 67, 68, Vol. 17, 1858-9.
- Murray, And., Economic Entomology, Aptera, S. Kens. Mus., Handbook.
- Quarterly Journal of Science, in Nos. Vol. 8, 1871 to Vol. 15, O.S., 1878.
- Tegetmeir on Pallas Sand-grouse, 1888, presented by Mr. J. Reid.
- Journal of the Postal Microscopical Society, Vol. 1887, bound, Vol. 1888, presented by Col. Horsley.
- Fielden, H. W., Col., The Dawn of Life, an Address to Norfolk and Norwich Natural History Society (Vol. 4), presented by Capt. Gordon McDakin.

Nine Natural History Societies have either presented or given by exchange their Reports and Transactions; these are as follows, viz. :—

- Croydon Microscopical and Natural History Society, Vol. 1878 to 1884, bound.
- Eastbourne Natural History Society, Part 11, Vol. 1, 1885-6; Transaction Report, Part 1, Vol. 2, 1886-7; Part 1, Vol. 2, N. S., 1886-7
- Cardiff Naturalists' Society, Transactions, Vol. 19, Part 1, 1887; Vol. 20, Part 1, 1888.
- West Kent Natural History Society, Report and Papers, 1887-8.
- London College of Science Society, Report No. 2, 1886-7; No. 3, 1887-8.
- Manchester Microscopical Society, Transactions and Report, 1887.
- Rochester Naturalist, Nos. 6, 7, 9, 10, 11, to complete set, No. 19, Jan., 1888, No. 21 1888.
- Sidcup Literary and Scientific Society. Annual Report, No. 4, 1887.
- Wellington College Natural History Society, Transactions and Report, 1887.

The Librarian is again indebted to Mr. Jas. Reid for his kindness in taking stock of the Library, and reporting on it as he has done. From his report it will be seen that the loans from the Library during the year 1888 were fifty-five, and there are still with the borrowers eight books; none of these are over the period allowed by the Rules, viz., three months.

In conclusion, the Librarian would call attention to the following list of imperfect serial works in the Library, which it is desirable, if possible, to complete, either by gifts or purchase. Any contributions from members towards this desirable object will be thankfully received and acknowledged.

List of Volumes and Parts required to complete the series of Periodical works in the Library :—

- Reports of the Geological and Natural History Survey of Minnesota, 2, 3, 4, 5, 6.
- Ray Society—Alder & Hancock, Nudibranchiate Mollusca, Part 7, 1885.
- „ Memorials of Ray, by E. Lancaster, 1846.

- Ray Society—Correspondence of Ray, by E. Lancaster, 1848.
 „ Elements of Physiophilosophy, by Oken, 1847.
 „ Reports of Zoology and Botany, 1841-2, 1845.
 „ Henfrey's Report on Botany, 1849.
 „ Leighton Angiocarpous Lichens, 1851.
 „ Henfrey's Botanical and Physiological Memoirs, 1853.
 „ Agassiz's Catalogue of Works on Zoology and Geology, Vols. 4, 1848-54.
- Report of Smithsonian Institute, U.S., for 1864, 1866, 1867, 1870-1-2, 1874-5-6-7, 1878-9.
- Reports United States Geological Survey, any preceding year 1880.
- Reports and Proceedings West Kent Natural History Society, any preceding that for 1871, 1873 to 1877, 1879, 1882-3 and following.
- Reports, Wellington College Natural Science Society: any reports preceding 1873, the 1st, 2nd, 3rd, 7th, 11th, 1880, 12th, 13th.
- Journal of the Royal Microscopical Society, Vol. 1, 1878.
- Quarterly Journal of Microscopical Science, Vol. 1, 1853, to Vol. 6, 1858, Vol. 10, 1870, Vol. 11, 1871.
- Annals and Magazine of Natural History, the 1st and 2nd Series; Vol. 1, 2, 3rd Series, 1857-8, Vol. 9 and 10, 3rd Series, 1862.
- Quarterly Journal of Science, any of the N. S. commencing 1879.
- Review, Natural History, a Quarterly Journal, Vols. 1, 2, 1861-2, Vol. 5, and any following.
- Quarterly Journal of Geological Society of London, Vols. 1, 1843 to 19, 1863.
- Journal of Botany, Vol. 1, 1863, to Vol. 7, 1869.
- Zoologist, Vol. 20, 1862.
- Science Gossip, Vol. 1, 1865, to Vol. 5, 1869.
- Epping, Forest or Essex Club, Part 3, 1880, Part 9, 1884, and following Parts.
- Hertfordshire Natural History and Field Club: Any Reports, &c., following 1882.
- Norfolk and Norwich Naturalists' Society: Any Nos. from 1881.
- Quekett Microscopical Club, Reports 1st to 8th, any following the 9th.
- Woolhope Club Transactions: Any Vols. or Parts following Vol. 5, 1873.
- “Nature,” Vol. 1—8, 1869-74.
- Land and Water, Vol. 10, 1871, and any following.

W. H. HORSLEY, Col.,
 Hon. Librarian.

Canterbury,
 29th January, 1889.

HON. TREASURER'S REPORT FOR 1888.

During 1888 the Society has lost eight members—two by death, one has left Canterbury, and five have resigned membership; of these eight, two have paid subscription for 1888. Against this loss there has been a gain of six new members up to the present date, thereby reducing the loss to two, and making the number of members at present in connection with the Society sixty-eight; of these, nine have not yet paid their subscriptions for 1888, one is in arrears for the three years previous also, and three for 1887, making together £7 still due to the Society.

The subscriptions for 1888 received up to 19th Jan., 1889, amounted to £26 3s., and for arrears of 1885, '86, and '87, to £4 15s., making together £30 18s. The expenditure on the other hand for the same period has amounted to £27 16s. only, thereby increasing the balance to the credit of the Society to £15 14s. 1d. This reduction in expenditure is accounted for partly by the fact of the contribution to the Library having amounted to £7 14s. 5d. only, instead of £12, as voted by the Committee; and partly from there having been no outlay for printing the Transactions of the Society in the year just closed. The cost of printing No. 2 series was £5 10s., and a similar sum will have to be provided in the current year should it be determined to print No. 3 series.

W. H. HORSLEY, COL.,
Hon. Treasurer.

Canterbury,
29th January, 1889.



FINANCIAL STATEMENT FOR 1888.

RECEIPTS.

| | £ | s. | d. |
|--|----|----|----|
| Balance (credit) 25th January, 1888..... | 12 | 12 | 1 |
| By Subscriptions for 1888 received up to 19th January, 1889 | 26 | 3 | 0 |
| „ Arrears of Ditto for 1885, 1886, 1887 | 4 | 15 | 0 |

£43 10 1

DISBURSEMENTS.

| | £ | s. | d. |
|---|----|----|----|
| To Rent of Room for one year | 10 | 0 | 0 |
| „ Fire Insurance on Library | 0 | 11 | 3 |
| „ Subscription to Ray Society | 1 | 1 | 0 |
| „ Cross and Jackman for printing Report for 1887 | 4 | 0 | 0 |
| „ H. Paine for additions to book case | 1 | 1 | 6 |
| „ Gibbs and Sons for printing post cards | 1 | 0 | 0 |
| „ Ditto for ditto | 0 | 4 | 6 |
| „ Hon. Secretary for cards, postage, and sundries | 1 | 11 | 4 |
| „ Hon. Assistant Secretary for Petty Cash | 0 | 10 | 0 |
| „ Postage and P.O. Orders | 0 | 2 | 0 |
| „ Contribution to Library | 7 | 14 | 5 |

£27 16 0

15 14 1

£43 10 1

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

Examined and found correct,
Canterbury, 24th January, 1889. GEORGE RIGDEN.

On the motion of Mr. G. Rigden, seconded by Major Parker, it was resolved that the Reports and Financial Statement be adopted, printed, and distributed to members.

It was moved by Mr. Jas. Reid, seconded by Mr. H. M. Chapman, and resolved "That the amount, five pounds, not expended during 1888 for printing Transactions, be a lien on the balance carried over to 1889, that it may be added to a like sum charged on the funds for 1889, with the purpose of publishing a double number of Transactions during 1889.

On the motion of the President, seconded by Capt. McDakin, it was resolved "That the thanks of the Society be tendered to those gentlemen who have read papers or notes, to those who have sent exhibits, and to those who have contributed books or periodicals to the Library, especially to Mr. James Reid, Col. Horsley, Major Parker, Mr. Dowker, and Mr. G. Rigden; and to Mr. Brian Rigden for his Weather Report.

The President proposed, Col. Horsley seconded, and it was resolved that the thanks of the Society are due to Mr. James Reid for his laborious, patient, and accurate work in the Library during 1888.

Proposed by Mr. Jas. Reid, seconded by Mr. F. Cross, and resolved that in Rule 7 in the last clause, after the words "act as a Committee," strike out remainder of the sentence and add: *in any business of the Society that may then be deemed urgent, but any decision or resolution made thereon shall be submitted for confirmation at the next meeting of the Committee for ordinary business; and that at the end of Rule 8 these words shall be added at the end:—"Any change in the Laws of the Society shall be made only at the Annual Meeting, or a Special Meeting called for the purpose, and 14 days' notice of the proposed change must be given beforehand to the Secretary, and be stated in the Summons to the Meeting sent to each Member."*

Mr. Jas. Reid proposed, Captain McDakin seconded, and it was resolved, "That in order to promote the combination and co-operation of other Societies in the County of Kent, or Divisions of them, that are organised for the purpose of carrying out the same objects as this Society, such Societies or divisions of them may be affiliated with this Society by a vote taken at the Annual, or a Special General Meeting summoned according to the Laws made for the purpose, provided the following terms are agreed to beforehand by the Societies or divisions of them desiring to be affiliated."

a That the combining Society will undertake local scientific investigations, and communicate the same for the purpose of publication in an adopted medium hereafter agreed upon.

b That a consultation and publishing Council shall be appointed, consisting of a proportionate number of delegates from the combining Societies. It shall be the purpose of the Council to consider and determine the particular investigations to be made by the Societies with a view to united reports thereon; to select and decide on the reports and papers contributed by the members that shall be printed, and to make arrangements for and supervise the publications of the combined Societies.

c The number of delegates from each Society shall be one for every 20 of its members, provided the number of delegates shall not exceed 3 from any one Society.

d The Council shall make an Annual Report of its proceedings to a meeting of the combined Societies, which shall take place at some town in the district of the Societies, previously agreed upon, some time in the spring or early summer, when a conjoint Excursion shall form part of the proceedings.

e A capitation fee of One Shilling per member shall be contributed by each combined Society, provided the sum from each Society be not less than £1. These fees shall be added to the fund for publishing, which may otherwise be made for such purpose by the Societies.

f Each Society shall manage its own affairs and publish its own Report on business and finance; but its members shall be considered honorary members of the other combining Societies, and have the privileges of attending the scientific meetings and joining the excursions on giving proof of their membership. Each member of the affiliated Societies shall be entitled to a copy of the publication, issued by the Council.

It was resolved that Rules 12 and 17 be cancelled, and that the above-mentioned scheme take the place of Rule 12—the Rules now following 17 to be in sequence to Rule 16.

Mr. Reid proposed, Col. Horsley seconded, and it was unanimously resolved that Mr. Sidney Harvey be offered the cordial thanks of the Society for his valuable services as President, and that he be requested to be the President for 1889.

Mr. Reid moved, Major Godfery seconded, and it was

resolved that the thanks of the Society are tendered to Mr. W. P. Mann for his services as Secretary since January, 1885, and that his resignation is received with much regret.

Col. Horsley proposed and Capt. McDakin seconded, and it was resolved that Mr. F. Baker be the Secretary.

The President moved and Mr. Reid seconded, and it was resolved that Col. Horsley be requested to retain the offices of Treasurer and Librarian, and that a cordial vote of thanks be offered him for his past services.

Resolved that Mr. W. P. Mann be on the Committee in place of Mr. Wetherelt, resigned.



TITLE AND OBJECTS

OF THE

East Kent Natural History Society.

The objects of the EAST KENT NATURAL HISTORY SOCIETY shall be the Collection and Diffusion of Practical and Theoretical Knowledge respecting Natural History, in all its Branches, both in relation to the particular District and the General Science.

RULES AND REGULATIONS.

MEMBERSHIP.

- 1.—The Society shall consist of Ordinary, Honorary, and Corresponding Members, and of Associates.
- 2.—Every Candidate for admission into the Society as an Ordinary Member must be proposed in writing by two Members and the election shall be by show of hands, or by Ballot, taken at any Meeting of the Committee, or at a General Meeting—one negative in five votes to exclude.
- 3.—The Annual Subscription to be paid by Ordinary Members shall be Ten Shillings; the Subscription shall become due on the 1st of January in each year, and shall be paid in advance for the current year. Any Member neglecting to pay his subscription for three months after it is due, shall be applied to by the Treasurer or Secretary, and if the Subscription remain unpaid for three months after such application, he shall cease to be a Member of the Society.
- 4.—The Committee shall have power to admit, without ballot, on the nomination of two Members, any Lady who shall be desirous of becoming an Ordinary Member, and her subscription shall be Five Shillings. This rule shall apply also to such

sons, brothers, and nephews of Ordinary Members as may be regularly resident in the same house with those Members.

5.—Any person distinguished for their researches in Natural History, for their liberality to the Society, or for their connection with similar Societies, may, on the recommendation of the Committee, be elected Honorary or Corresponding Members of the Society, provided they do not reside within the district; such Honorary and Corresponding Members shall not be subject to any of the expenses of the Society, and shall have no vote in its affairs, nor be entitled to take books out of the Library, or to the Reports and Notices.

6.—In order to cultivate the study of Natural History among individuals of the class of Mechanics, &c., residing in the district, the Committee shall have power to admit individuals of that class as Associates, provided they shall first communicate some information or observation on Natural History, exhibit such specimens or present them to the Local Museums as shall, by their merits, satisfy the Committee. Such Associates shall enjoy the privileges of Honorary Members.

MANAGEMENT AND BUSINESS MEETINGS.

7.—The affairs of the Society shall be conducted by a Committee of Management, which shall consist of a President, Vice-Presidents, a Treasurer, and an Honorary Secretary, with not less than six Members, who shall all be chosen at the Annual Meeting. Three Members of such Committee shall form a quorum. The Meetings shall be held at four o'clock p.m. on some day during the first week in every month, and at such other times as the Secretary may deem necessary. At any regular Meeting including a sufficient number of Committee Members, they may then and there declare themselves and act as a Committee in any business of the Society that may be deemed urgent, but any decision or resolution made thereon shall be submitted for confirmation at the next Meeting of the Committee for ordinary business.

8.—An Annual Meeting shall be held at four o'clock p.m. on the last Tuesday in January, in each year, at Canterbury, for the purpose of electing the Officers for the current year, receiving the Annual Statement of Accounts and Report of the Committee, and conducting the general affairs of the Society. In

case of necessity, the Committee may alter the hour, posting due notice thereof in the Society's room. Any change in the Laws of the Society shall be made only at the Annual Meeting, or at a Special Meeting called for the purpose, and 14 days' notice of the proposed change must be given to the Secretary, and be stated in the Summons to the Meeting sent to each Member.

9.—Special General Meetings may be summoned by the Committee, or by the Secretary, on the requisition (in writing) of any six Members of the Society, the specific purpose of the Meeting being stated in the notice, which shall be sent to each Member not later than one week before the time of such Meeting.

10.—All questions discussed at the Meetings shall be decided by a majority of votes; and if upon any question the votes shall be equal, the Chairman of the Meeting shall have the second or casting vote.

11.—In the event of any vacancy occurring in the Officers or Committee between the Annual Meetings, the same shall be filled up by the Committee. The two Members who have been the longest thereon and have attended the fewest Meetings thereof during the preceding year, shall go out by rotation at the Annual Meeting.

12.—That in order to promote the combination and co-operation of other Societies in the County of Kent, or Divisions of them, that are organised for the purpose of carrying out the same objects as this Society, such Societies or divisions of them may be affiliated with this Society by a vote taken at the Annual, or a Special General Meeting summoned according to the Laws made for the purpose, provided the following terms are agreed to beforehand by the Societies or divisions of them desiring to be affiliated.

a That the combining Society will undertake local scientific investigations, and communicate the same for the purpose of publication in an adopted medium hereafter agreed upon.

b That a consultation and publishing Council shall be appointed, consisting of a proportionate number of delegates from the combining Societies. It shall be the purpose of the Council to consider and determine the particular investigations to be made by the Societies with a view to united reports thereon; to select and decide on the reports and papers con-

tributed by the members that shall be printed, and to make arrangements for and supervise the publications of the combined Societies.

c The number of delegates from each Society shall be one for every 20 of its members, provided the number of delegates shall not exceed 3 from any one Society.

d The Council shall make an Annual Report of its proceedings to a meeting of the combined Societies, which shall take place at some town in the district of the Societies, previously agreed upon, some time in the spring or early summer, when a conjoint Excursion shall form part of the proceedings.

e A capitation fee of One Shilling per member shall be contributed by each combined Society, provided the sum from each Society be not less than £1. These fees shall be added to the fund for publishing, which may otherwise be made for such purpose by the Societies.

f Each Society shall manage its own affairs and publish its own Report on business and finance; but its members shall be considered honorary members of the other combining Societies, and have the privileges of attending the scientific meetings and joining the excursions on giving proof of their membership. Each member of the affiliated Societies shall be entitled to a copy of the publication, issued by the Council.

SCIENTIFIC MEETINGS AND EXCURSIONS.

13.—The Meetings for Scientific Business shall be held monthly at Canterbury; and extra Meetings at such place and time as the Committee shall have posted due notice of in the Society's apartment. Each Member shall have the right of introducing a Visitor at these Meetings.

14.—There shall be ordinary excursions on the Afternoon of the day of each evening Scientific Meeting, and at other times if the Committee so appoint; time and place to be duly notified in the Society's room by the Committee; and Special Excursions at such times and places as may be approved by the Committee, who shall consider written suggestions of Members on the subject.

15.—Minutes of the proceedings of all Meetings shall be entered by the Secretary in a book kept for that purpose.

16.—The Secretary shall give seven days' notice of Special Excursions to every Member, stating the time and place thereof.

COLLECTION OF SPECIMENS.

17.—The Society, as soon as it may possess sufficient means, shall endeavour to make a Collection of Objects of Natural History, both with a view of forming a Museum and distribution of duplicate specimens according to the regulations to be adopted by the Committee.

LIBRARY.

18.—Only Books and Periodicals connected with Natural History shall be purchased by the funds of the Society, and the number and particular Books of this class to be purchased shall be determined by the Committee

19.—All the Books and Periodicals shall be kept in some convenient place, so that Members shall be able to refer to them, or take them out under such regulations as the Committee from time to time may think proper to make.

20.—Members are also invited to lend Books for the use of the Library, reserving to themselves the full right of ownership; such Books to be under the care of the Committee, and not allowed to be taken out of the Library.

21.—In order to allow the Librarian to examine the Books they must all be returned to the Library, and none taken therefrom during the first week in every June.

22.—The time during which a Book may be retained without renewal shall not exceed three months, and the Librarian shall request a Member who has had a Book beyond this period to return it to the Library at once.



East Kent Natural History Society.

SCIENTIFIC MEETINGS, SESSION, 1889-90.

PLACE: No. 6, HIGH STREET, CANTERBURY.

TIME: 7.30 O'CLOCK, P.M.

Generally on the Second Monday* of each month, viz.:

1889.

February 21st.

March 11th.

April 8th.

1889.

October 14th.

November 11th.

December 9th.

During May, June and July there
will be Excursions and due notice

of them will be given.

August 12th.

September 9th.

1890.

January 13th.

February 10th.

March 10th.

April 14th.

* At the General Meeting held March 2, 1889, it was determined that the ordinary Scientific Meetings be held on the Second Monday of the Month.

ANNUAL MEETING.

Tuesday, January 28th, 1890, at 4 p.m.

Please fill up this form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP.

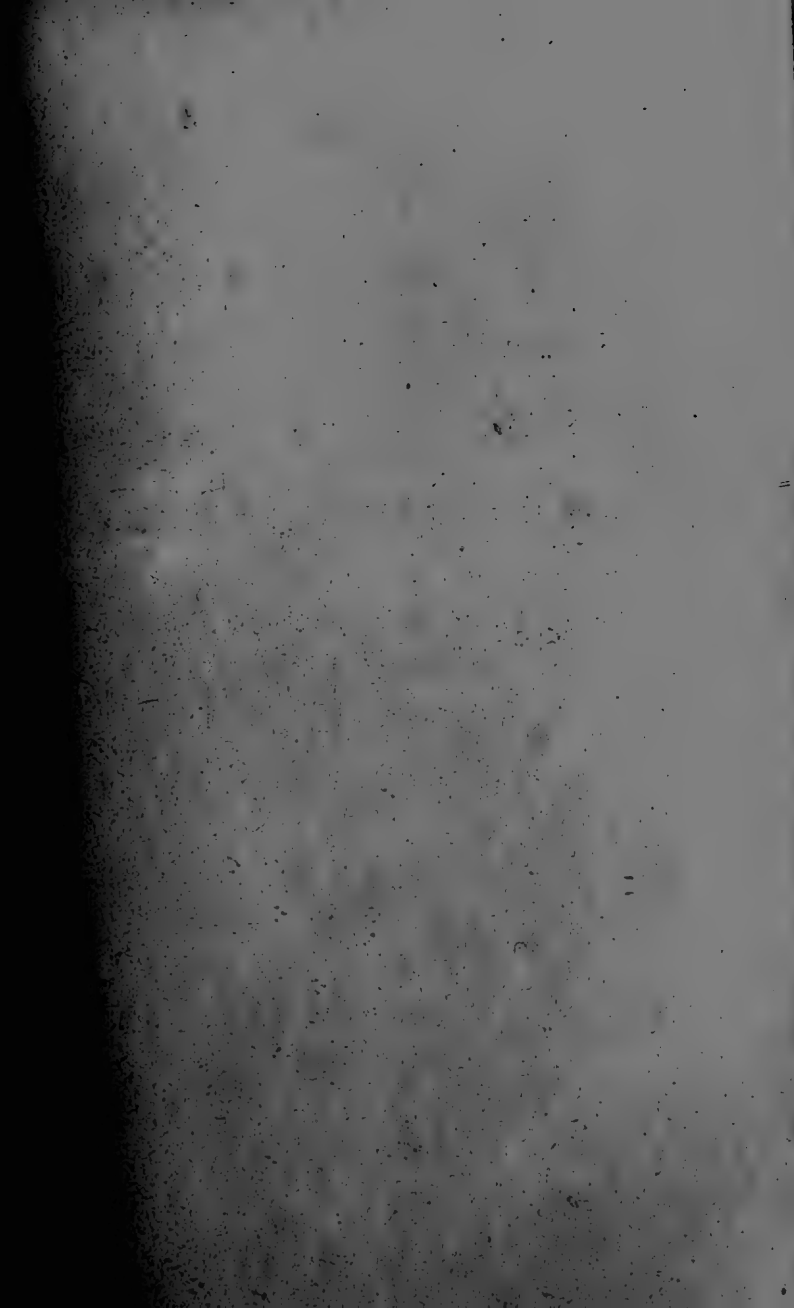
I, the undersigned, being desirous of becoming a member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2 of the Society.

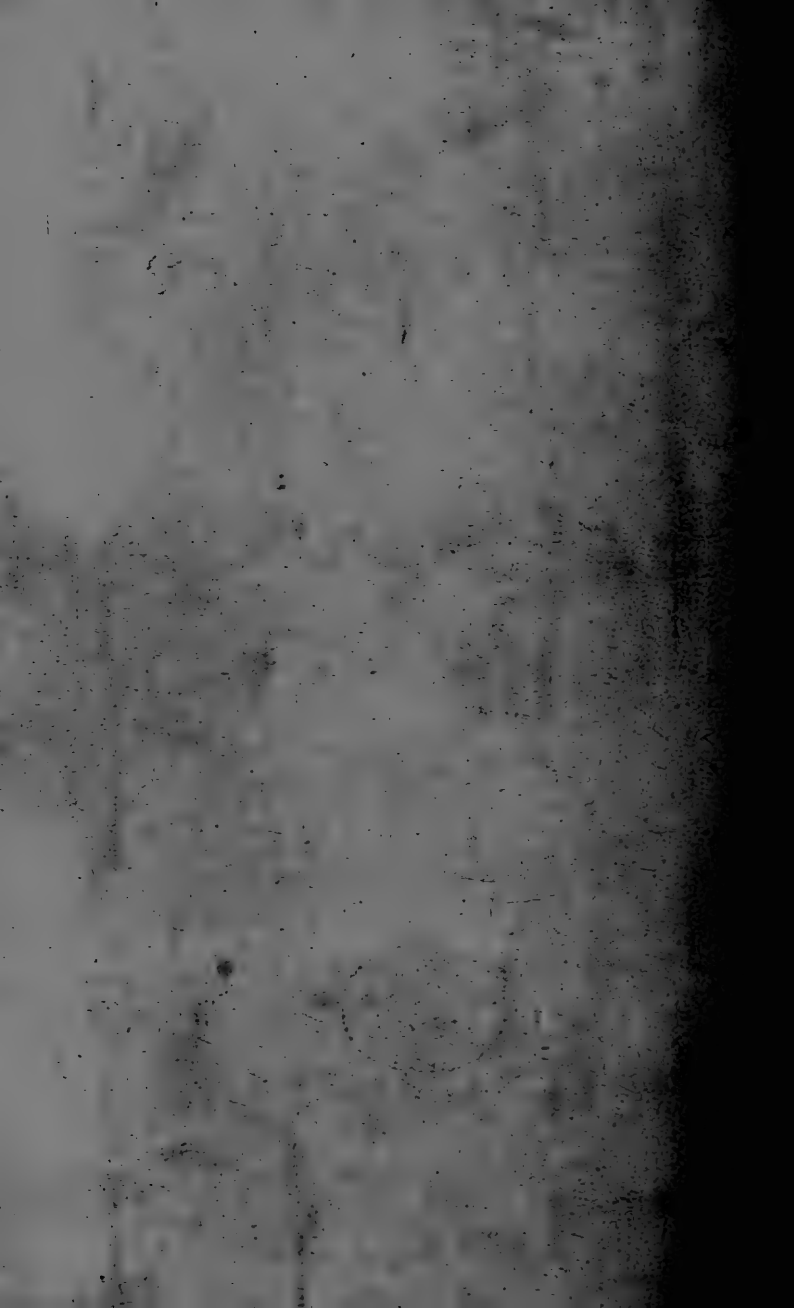
(Signed).....

(Address).....

Date.....

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs. Hammond & Co's. Bank, Canterbury, or to the Hon. Treasurer.





THIRTY-SECOND REPORT

(1889)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

ON FEBRUARY 4th, 1890.



Canterbury :

CROSS & JACKMAN "THE CANTERBURY PRESS," 6, HIGH STREET.

1890.

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THE NATIONAL ANTHROPOLOGICAL ARCHIVES

1900-1909

1910-1919

1920-1929

1930-1939

1940-1949

1950-1959

EAST KENT NATURAL HISTORY SOCIETY.

President :

MR. SIDNEY HARVEY, F.I.C., F.C.S.

Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.
THE RIGHT HON. THE LORD NORTHBOURNE, BETESHANGER.
THE VERY REV. THE DEAN OF CANTERBURY.
MR. MATTHEW BELL, BOURNE PARK.
COLONEL W. H. HORSLEY, R.E., CANTERBURY.
MR. G. DOWKER, F.G.S., STOURMOUTH.
MR. WILLIAM OXENDEN HAMMOND, ST. ALBAN'S.
MR. H. B. MACKESON, HYTHE.
CAPTAIN GORDON McDAKIN, DOVER.
MR. JAMES REID, F.R.C.S, CANTERBURY.
THE HON. AND REV. CANON FREMANTLE, M.A.
THE REV. R. N. GANDY, M.A., CANTERBURY.
THE RIGHT REV. THE BISHOP OF DOVER.

Treasurer and Librarian :

COLONEL HORSLEY, R.E.

Honorary Secretary :

MR. W. E. DRAKE.

Assistant Secretary :

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee :

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REV. CANON HOLLAND, M.A.

REV. T. FIELD, M.A.

MR. G. RIGDEN, M.R.C.S.

MR. SIBERT SAUNDERS.

MR. W. P. MANN, B.A.

MEMBERS.

- | | |
|------------------------------------|--|
| Ashton, Mr. E. | 33, St. Thomas's Terrace, Canterbury. |
| Baker, Mr. Frank, C.E. | Dane John, Canterbury. |
| Bell, Mr. Matthew | Bourne Park, Canterbury. |
| Blore, Rev. Dr. | St. Stephen's House, Canterbury. |
| Cantis, Colonel | St. Stephen's Lodge, Canterbury. |
| Chapman, Mr. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| Chapman, Mrs. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| Cole, Miss | 53, London Road, Canterbury. |
| Court, Colonel, J.P. | 140, Snargate Street, Dover. |
| Cowell, Mrs. E. | 3, Hanover Place, Canterbury. |
| Cox, Mr. C. S. B., B.A. | Torquay. |
| Cross, Mr. F. W. | Watling Street, Canterbury. |
| Davies, Mrs. | 14, St. Dunstan's Terrace, Canterbury. |
| Dover, Right Rev. Bishop of | Precincts, Canterbury. |
| Dowker, Mr. G., F.G.S. | Stourmouth House, Wingham. |
| Drake, Mr. W. E., | Victoria Road, Canterbury. |
| Farren, General, C.B. | Great Bealings, Woodbridge. |
| Field, Rev. T., M.A. | King's School, Canterbury. |
| Flint, Mr. Benjamin H. | Ramsgate. |
| Forest, Mrs. | Orchard Place, Canterbury. |
| Fremantle, Hon. & Rev. Canon, M.A. | Precincts, Canterbury. |
| Furley, Mr. George | Barton Fields, Canterbury. |
| Gandy, Rev. Richard Norris, M.A. | St. Andrew's Rectory, Canterbury. |
| Gardner, Mrs. | Precincts, Canterbury. |
| Gogarty, Mr. H. A., M.D. | St. George's Place, Canterbury. |
| Goulden, Mr. E. B. | "Kentish Gazette" Office, Canterbury. |
| Groombridge, Mr. W. | 6, St. George's Fields, Canterbury. |
| Hammond, Mr. W. O. | St. Alban's Court, Wingham. |
| Harvey, Mr. Sidney, F.I.C., F.C.S. | 8, High Street, Canterbury. |
| Heaton, Mr. J. Henniker, M.P. | 36, Eaton Square, London, W. |
| Hobson, Colonel | Wilstead, Ethelbert Road, Canterbury. |
| Holland, Rev. Canon, M.A., | Precincts, Canterbury. |
| Horsley, Colonel, R.E. | St. Stephen's Lodge, Canterbury. |
| Iron, Miss Helen | 39, St. Margaret's Steeet, Canterbury. |
| Iron, Miss Henrietta | 39, St. Margaret's Street, Canterbury. |

- Jackman, Mr. J. Upper Bridge Street, Canterbury.
- Kingsford, Mr. M. Littlebourne.
Kingsford, Miss 14, St. Dunstan's Terrace, Canterbury.
- Laurie, Colonel, M.P. Upper Hardres.
- Mackeson, Mr. H. B. Hillside House, Hythe.
Mann, Mr. W. P., B.A. Simon Langton Schools, Canterbury.
McDakin, Captain 15, Esplanade, Dover.
McMaster, Mr. J. The Holt, Harbledown.
- Northbourne, Right Hon. Lord Betteshanger, Sandwich.
- Payne-Smith, Very Rev. R., Dean of Canterbury The Deanery, Canterbury.
Payne-Smith, Miss The Deanery, Canterbury.
Payne-Smith, Miss M. The Deanery, Canterbury.
Posnett, Mr. L. W., M.A., B.Sc. Kent College, Canterbury.
Plumptre, Mr. C. J. Fredville, Dover.
- Reid, Mr. James, F.R.C.S. Bridge Street, Canterbury.
Reid, Mr. A. S., M.A., F.G.S. Trinity College, Glenalmond, Perth.
Rigden, Mr. G., M.R.C.S. Burgate, Canterbury.
Rigden, Mrs. G. Burgate, Canterbury.
Rigden, Miss Burgate, Canterbury.
- Sangster, Mr. Francis 27, Old Dover Road, Canterbury.
Saunders, Mr. Sibert Whitstable.
Slater, Mr. F. 5, Guilford Lawn, Dover.
Sondes, Right Hon. Earl Lees Court, Faversham.
- Thomson, Mr. R. E. Kenfield Hall, Petham.
- Wacher, Mr. F., M.R.C.S. Monastery House, Canterbury.
Webb, Mr. Sidney Maidstone House, Dover.
Wetherelt, Mr. A. Havelock Street, Canterbury.
Whiteman, Miss M. Tyler Hill, Canterbury.

CORRESPONDING MEMBERS.

| | |
|---------------------------------|--|
| Bartlett, Mr. A. D. | Zoological Gardens, London. |
| Bates, Mr. H. W. | London. |
| Britton, Mr. J. | Royal Herbarium, Kew. |
| Masters, Dr. Maxwell T., F.R.S. | Ealing. |
| Mitchinson, Right Rev. Dr. | Sibstone. |
| Saunders, Mr. G. S., F.L.S. | Care of Colonel Horsley, St. Stephen's Lodge, Canterbury. |
| Trimen, Mr. H. | Botanical Department, British Museum. |
| Whitaker, Mr. W. | Geological Museum, Jermyn St., London. |

HONORARY MEMBERS.

| | |
|----------------------|--------------------------|
| Bewsher, Mr. Charles | St. Louis, Mauritius. |
| Kemp, Dr. William | Wellington, New Zealand. |
| Linford, Mr. J. S. | Hull. |

ASSOCIATES.

| | |
|--------------------|---------------------------------|
| Dean, Mr. H. | St. Peter's Street, Canterbury. |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury. |
| Pugh, Mr. | Canterbury. |

EAST KENT NATURAL HISTORY SOCIETY.

The Adjourned Annual Meeting was held at the Society's Rooms, 6, High Street, Canterbury, on February 4th, 1890, the President, Mr. Sidney Harvey, in the chair, when the following report was presented :—

REPORT OF THE COMMITTEE FOR 1889.

The Committee, in presenting the Thirty-second Annual Report to the Members of the East Kent Natural History Society, desire to congratulate them, as the oldest Society of the kind in Kent, on the continued energy and the fair amount of success that has been enjoyed during the past year.

The papers, &c., read during the year were .—

| | | | |
|-------|----|---|----------------------------|
| Jan. | 10 | On Butterflies of the Malay Peninsula | MAJOR GODFERY. |
| Feb. | 21 | Tertiary Beds between the Chalk and the London Clay | MR. G. DOWKER, F.G.S. |
| March | 25 | Insects and their Allies | MR. G. S. SAUNDERS, F.L.S. |
| April | 8 | Scottish Archæology and Historic Notes..... | MAJOR PARKER, F.G.S. |
| May | 13 | Internal Heat of the Earth.. | CAPT. MCDAKIN. |
| Oct. | 14 | Life History of a Grain of Wheat | MR. G. DOWKER, F.G.S. |
| Nov. | 11 | Coal and Coal Plants..... | MR. F. BAKER, C.E. |
| Dec. | 9 | Some Remarks on Volcanoes | CAPT. MCDAKIN. |

At each of the meetings many exhibits of objects of interest, with short papers or descriptions, were presented by the members. Amongst these may be named :—Sections of faggot-wood, by Mr. J. Reid ; Col. Ross' method of separating the metals of alloys, described and exhibited by Capt. McDakin ; a fine specimen of Cone of the *Pinus Macrocarpus* which takes two years to mature, of Bud-galls produced by *Phytopus zibis* ; skeleton-form of *Lycoperdon giganteum*, by Mr. Thomson, Kenfield Hall ; eggs and larvæ of *Dryobius robaris* (aphidæ), by Mr. W. H. Hammond ; a photograph with

description of the dissection of a recently hatched Duckling, in which a perfectly developed leg had, by adhesions formed between the yolk-bag and the foot, been drawn up to an acute angle, and the foot, in the natural withdrawal of the yolk-bag into the belly, been carried with it and retained there, by Prof. E. W. Reid, M.B.; Distorted Bloom of Foxglove, abnormal growth of Sweet William, Mrs. Newham and Major Parker; Photographs of Sections in Cuttings of Elham Valley Railway; specimen, with life history for 3 months in an aquarium of *Syngnathus acus*, a Pipe Fish, by Mr. G. Dowker; a list of 50 species of flowers seen in bloom near Dover, 11th November, 1889, and specimens of *Periza cocc*: and succ.; by Capt. McDakin.

This last mentioned part of the proceedings of the monthly meetings of the Session is much appreciated, especially by the younger members and students in Natural History, and in order to give a better opportunity for its advantages, it was arranged to precede the reading of the paper instead of following it as heretofore. The reading of the chief communication of the evening is fixed for 8.15 p.m., the meeting closing at 9.15 p.m., the preliminary proceedings commencing at 7.30 p.m. It would much assist the usefulness of these meetings if members, who are unable to attend, would send objects for exhibition and brief descriptions or short papers with them.

There has been, on the whole, a fair attendance at the evening meetings, but it has been too uncertain at times, and the small number present at a few of the meetings must have rather caused discouragement to those who had taken the trouble to prepare a communication.

The excursions of the spring and summer have been more numerous than they were last year, having indeed been more than double the number. The intercommunication between this Society and the Dover Society afforded many additional opportunities for excursions, and much pleasant intercourse has been enjoyed by the members. It would occupy too much space to describe all the excursions, but one special meeting may be named for which the Society was much indebted to their Secretary for the energy and skill with which he arranged it. That was the visit in June to examine the cuttings of the newly made Elham Valley Railway just before it was opened for public traffic. Good photographic views were taken of well selected spots, and they have been preserved as expositions of the geology of the surfaces displayed. However, the expenses of printing in connection with the notices of these excursions

have so strained the limited finances of the Society that it will become necessary to diminish them, and perhaps to bring them into some alternating relation with those of the Dover Society, with which this Society is now affiliated. The permanent results and records of these excursions beyond the photographs mentioned, and one full list of the plants met with, have been unsatisfactory.

Mr. A. S. Reid, M.A., F.G.S., again represented the Society at the meeting of the British Association, held at Newcastle-on-Tyne, and sent an interesting and suggestive report of the proceedings at the meeting of the Committee of the Corresponding Natural History Societies. The report was read at the October meeting at the opening of the Session, and your Committee have since organized sub-Committees for systematic local investigation on the subjects he pointed out as probably most suitable, namely:—Variation of temperatures in rivers, &c.; photography of geological sections; coast erosion; observation of native flora, including life history, disappearance or establishment of species; invertebrate fauna and flora of fresh water ponds, lakes, rivers, &c. Any facts and well ascertained observations on these subjects will be very acceptable to the sub-Committees, if members and their friends will kindly send them to the Hon. Secretary of the Society, who will forward them to the special sub-Committee. The Dover Society under the adopted plan of affiliation will conjointly and concurrently carry out the same investigations.

Under the plan of affiliation notified in the last report of your Committee, a Council was formed and met for the first time in September last, after the Summer Session was completed. The Council consists of six members; the representatives of the East Kent Natural History Society are:—Col. Horsley, R.E.; Mr. W. P. Mann, B.A.; Mr. J. Reid, F.R.C.S., Eng. The representatives of the Dover Natural History Field Club are:—Mr. Sidney Webb, Capt. McDakin, Mr. Edward Horsnail.

Capt. McDakin was appointed Chairman, and Mr. J. Reid Hon. Secretary, *pro tem*. There will be a yearly meeting of the Council at the end of March for general business, and an Annual Meeting of the Conjoint Societies in the early summer, when an excursion will form part of the proceedings. The publication of the affiliated Societies will be called the *South Eastern Naturalist*, and will be published in June if the transactions give sufficient material. Under this arrangement the double number of the transactions of the Society published

last July will be the last of the series, and the future publications of the Society will appear in the *South Eastern Naturalist*.

Your Committee, in estimating the numerical strength of the Society, have to record one great loss that has been sustained in the death of Col. Cox, who was one of the founders of the Society, who was several times its President, and who always took an active and lively interest in its work and proceedings. A vote of condolence with the family of the deceased was conveyed to them, and the President and some members of the Committee attended the funeral.

It is very necessary that members should feel that the Society requires to be recruited in numbers and strength, particularly by young active students and observers in Natural History, who would find many advantages in it, especially in its good microscope and its well stored Library, which is particularly rich in periodical literature.

HON. LIBRARIAN'S REPORT FOR 1889.

The sum granted for expenditure on the Library for the year under review was £12; of this sum £11 2s. 9d. was expended, and the greater part of that was for Periodicals, viz., £6 10s. 11d. Two new works were purchased, viz., Report of Royal Society on the Eruption of Krakatoa, 1888, and Descent of Man, by C. Darwin, 1888, at a total cost of £1 10s. 9d. Seven Volumes of Serials of 1888, and others of previous years, numbering altogether 24 Volumes, were bound and placed on the shelves, the cost of binding being £3 0s. 4d.

The Ray Society in return for the annual subscription of one guinea, have furnished the Society with "Larvæ of British Butterflies and Moths" by Mr. Buckton, 1889.

The serial works purchased by the Society remain the same as last year, viz.—

1. The Midland Naturalist.
2. The Journal of Botany.
3. The Annals and Magazine of Natural History.
4. The Zoologist.
5. Science Gossip.
6. The Geologist.
7. The Quarterly Journal of Microscopical Science.

to which may be added the Journal of the Royal Microscopical Society, presented by that Society.

The Library has been further strengthened by gifts from

various kind donors amounting in all to 60 works, including 44 Volumes and 16 Pamphlets, or parts of works. They are—

- 2 Vols. of *Nature*, May 1889, October 1889, in Nos., by Mr. G. Rigden.
 The Vols. of the *Journal of Microscopy* for 1889, in Nos., by Col. Horsley.
 The *Entomologist*, Vols. 19, 20, 21, 1886 to 1888, in Nos., by Miss Kingsford.
Some Wells and their teachings, pamphlet, by the author, Wm. Whitaker.
Twenty-five years Rainfall in Wirral; N.W. Cheshire, by R. Bushell, by the Hon. Secretary, Mr. F. Baker.
 The *Quarterly Journal of the Geological Society*, No. 176, Nov. 1888, by Major Parker.
Anales del Museo Nacional de Costa Rica Tom 1, 1887. 1888; Report on Public Education in Costa Rica, by the Commissioner, P. P. Zeledon, 1888, both these presented by the State.
 The *Flora of Maidstone*, by H. T. Lamb, 1880, by the Author.
British Rainfall, by G. J. Symons, 13 Vols., 1869 to 1881, by J. Reid.
Symon's Monthly Meteorological Magazine, 16 Vols., 1886 to 1881., by J. Reid.
 Report of the British Association, Bath, 1888, by the Society.
Journal of the Royal Microscopical Society, 5 parts, for 1888, by the Society.
 Report of the Smithsonian Institute, U.S., Part 1, 1886, by the Board of Regents.
 16th Annual Report for Year 1887 of the Geological Survey of Minnesota, U.S., by N. H. Winchell, 1888, presented by the State.
 Wooster D., *Alpine Plants* 1st Series, 1872, by J. Reid.
Memorials of Ray, by E. Lancaster, Ray Society, 1846; *Correspondence of Ray*, by E. Lancaster, Ray Society, 1848, by Col. Horsley.

In addition to the above, nine Natural History Societies have either presented or given by exchange their Reports and Transactions; these are as follows, viz. :—

- Manchester Microscopical Society, Transactions and Report for 1888.
 Wellington College Natural History Society, 19th Annual Report, 1888.
 The Rochester Naturalist, Nos. 24, 25, 26, 1889.
 The Folkestone Natural History Society, Proceedings 5th Series, Nov. 1887, June 1888.
 West Kent Natural History Society, 1888-9, Transactions and Report.
 Cardiff Natural History Society, Part 2, Vol. 20, 1888.
 Croydon Microscopical and Natural History Society, 1888—1889; Proceedings and Transactions.
 Ealing Microscopical and Natural History Society, 12th Annual Report, 1888.
 Science Society of the London College, No. 4, 1888 9, Annual Report and Journal, making 12 Parts of Reports and Transactions of Societies.

The Librarian is once more indebted to Mr. Jas. Reid for his kindness and valuable help in taking stock of the Library, and reporting on it, as he has done twice during the past year. From his Report, dated 10th Jan., 1890, it appears that the loans of works from the Library during the year 1889 numbered seventy-four, and there were still with the borrowers eleven works, all of which are within the period allowed by the Rules, viz., three months.

The following books were found missing from the shelves, and not entered in the loan book, viz. :—

- Huxley's *Physiography*, 1880.
 Pulteney's *Sketches of the progress of Botany*, 2 Vols., 1790.

Should any Member be in possession of either of these works, it is requested that he will return the same to the Library, entering the date of such return in the Loan Book.

In conclusion the Librarian would call attention to the following list of imperfect serial works in the Library, which it is desirable, if possible, to complete, either by gifts or purchase. Any contributions from Members towards this desirable object will be thankfully received and acknowledged.

List of Volumes and Parts required to complete the series of Periodical works in the Library:—

- Reports of the Geological and Natural History Survey of Minnesota, 2, 3, 4, 5, 6.
- Ray Society—Alder & Hancock, Nudibranchiate Mollusca, Part 7, 1885.
- „ Elements of Physiophilosophy, by Oken, 1847.
- „ Reports of Zoology and Botany, 1841-2, 1845.
- „ Henfrey's Report on Botany, 1849.
- „ Leighton Angiocarpous Lichens, 1851.
- „ Henfrey's Botanical and Physiological Memoirs, 1853.
- „ Agassiz's Catalogue of Works on Zoology and Geology, Vols. 4, 1848-54.
- Report of Smithsonian Institute, U.S., for 1864, 1866, 1867, 1870-1-2, 1874-5-6-7, 1878-9.
- Reports United States Geological Survey, any preceding year 1880.
- Reports and Proceedings West Kent Natural History Society, any preceding that for 1871, 1873 to 1877, 1879, 1882-3 and following.
- Reports, Wellington College Natural Science Society; any reports preceding 1873, the 1st, 2nd, 3rd, 7th, 11th, 1880, 12th, 13th.
- Journal of the Royal Microscopical Society, Vol. 1, 1873.
- Quarterly Journal of Microscopical Science, Vol. 1, 1853, to Vol. 6, 1858, Vol. 10, 1870, Vol. 11, 1871.
- Annals and Magazine of Natural History, the 1st and 2nd Series; Vol. 1, 2, 3rd Series, 1857-8, Vol. 9 and 10, 3rd Series, 1862.
- Quarterly Journal of Science, any of the N. S. commencing 1879.
- Review, Natural History, a Quarterly Journal, Vols. 1, 2, 1861-2, Vol. 5, and any following.
- Quarterly Journal of Geological Society of London, Vols. 1, 1843 to 19, 1863.
- Journal of Botany, Vol. 1, 1863, to Vol. 7, 1869.
- Zoologist, Vol. 20, 1862.
- Science Gossip, Vol. 1, 1865, to Vol. 5, 1869.
- Epping Forest or Essex Club, Part 3, 1880, Part 9, 1884, and following Parts.
- Hertfordshire Natural History and Field Club: Any Reports, &c., following 1882.
- Norfolk and Norwich Naturalists' Society: Any Nos. from 1881.
- Quekett Microscopical Club, Reports 1st to 8th, any following the 9th.
- Woolhope Club Transactions: Any Vols. or Parts following Vol. 5, 1873.
- “Nature,” Vol. 1—8, 1869-74.
- Land and Water, Vol. 10, 1871, and any following.

W. H. HORSLEY, Col.,
Hon. Librarian.

Canterbury,
24th January, 1890.

HON. TREASURER'S REPORT FOR 1889.

During the year under review the Society has lost eight members, one (Col. Cox) by death, three have left Canterbury, and four have resigned membership. Of these eight, two paid subscription for 1889. Against this loss there has been a gain of four new members, thereby reducing the loss to four, and making the number of members at present in connexion with the Society, sixty-four. Of these nine* members have not yet paid their subscription for 1889 ; two are in arrears for 1888 as well, and one from 1885 to 1889 inclusive, making altogether £7 still due to the Society.

The subscriptions for 1889 received up to the 20th January, 1890, amount to £24 2s. No arrears have been paid in. The cost of 2 copies of the Society's Transactions for the past year, viz., two shillings, has been added to the Receipts side of the Financial Statement, making altogether £24 4s., or including Balance (credit) on the 24th January, 1889, £39 18s. 1d.

The expenditure, on the other hand, for the same period, has amounted to £46 8s. 9d., or £6 10s. 8d. in excess of the receipts. This excess is accounted for in the first place by the large sum, viz. £12 12s., paid for printing two years' transactions of the Society, and, secondly, by that for Post Cards, and printing notices of meetings and excursions, which latter charge has exceeded that paid for similar work in the previous year by £2 17s. 3d. The expenditure on the Library also was £3 8s. 4d. in excess of that of 1888, though slightly within the grant sanctioned for the Library.

Considering that with our present number of members we cannot reckon upon more than £25 annual receipts, it is evident that the most rigid economy must be observed in the future.

A separate fund must be provided to meet the expense of printing the Transactions of the Society, as is indeed contemplated in concert with the Dover Field Club.

W. H. HORSLEY, Col.,
Hon. Treasurer.

24th January, 1890.

* Of these, four have since paid their arrears, leaving £3 only still due.

FINANCIAL STATEMENT FOR 1889.

RECEIPTS.

| | £ | s. | d. |
|--|---------|----|----|
| Balance (credit) 24th January, 1889..... | 15 | 14 | 1 |
| By subscriptions for 1889 received up to 20th January, 1890 | 24 | 2 | 0 |
| „ Sale of 2 copies of Transactions, 1889 | 0 | 2 | 0 |
| Balance due to Treasurer | 6 | 10 | 8 |
| | £46 8 9 | | |

Examined and found correct,
GEORGE RIGDEN.

DISBURSEMENTS.

| | £ | s. | d. |
|---|---------|----|----|
| To Rent of Room for one year | 10 | 0 | 0 |
| „ Fire Insurance on Library, &c. | 0 | 11 | 3 |
| „ Subscription to Ray Society | 1 | 1 | 0 |
| „ Cross and Jackman for printing Report for 1888 | 4 | 10 | 0 |
| „ Ditto for Post cards and Printing the same for Meetings and Excursions | 4 | 1 | 9 |
| „ Gibbs and Sons for printing Transactions (2 years) | 12 | 12 | 0 |
| „ H. J. Goulden for envelopes | 0 | 1 | 8 |
| „ Hon. Secretary for Post Cards, Postage, &c., &c. | 2 | 6 | 1 |
| „ Hon. Assistant Secretary for Petty Cash | 0 | 0 | 9 |
| „ Postage | 0 | 1 | 6 |
| „ Contribution to Library | 11 | 2 | 9 |
| | £46 8 9 | | |

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

The minutes of the last Annual Meeting were read and confirmed.

On the motion of Mr. James Reid, seconded by Mr. Rigden, it was resolved that the Reports and Financial Statement be adopted, printed, and issued to members.

It was also resolved that the thanks of the Society are due to the gentlemen who have read papers, and to all who had contributed notes and exhibits during the year.

Thanks were cordially voted to Mr. James Reid for his continued valuable services during the year in supervising the arrangements of the Library, and in keeping careful records of the proceedings of the Scientific Meetings.

The Minutes of the General Meeting, held on March 3rd, 1889, were confirmed, except as regards the day of meeting of the Committee.

Mr. G. Rigden moved, and Colonel Horsley seconded, and it was unanimously passed, that Mr. Harvey be asked to continue his valuable services as President during the year, and on his consent being obtained, he was elected President.

It was resolved that a vote of thanks be communicated to Mr. Baker for his services as Secretary during the past year.

Mr. Mann moved, Mr. Rigden seconded, and it was carried, that Mr. W. E. Drake be elected Secretary.

Mr. James Reid moved, Mr. H. M. Chapman seconded, and it was resolved, that Colonel Horsley be requested to continue to hold the offices of Treasurer and Librarian.

On the motion of the President, seconded by Mr. Mann, thanks were unanimously voted to Mr. E. B. Hayward for his services as Assistant Secretary.

Mr. James Reid moved, Colonel Horsley seconded, and it was resolved that the Committee be re-elected, and that in place of Major Godfery, who has left Canterbury, the Rev. Thomas Field, M.A., be placed on the Committee.

On the motion of Mr. Reid, seconded by Mr. Rigden, the thanks of the Society were voted to the President and Officers for their services during the year.



Please fill up this form and forward it to the Honorary Secretary.

East Kent Natural History Society.

FORM OF APPLICATION FOR MEMBERSHIP.

I, the undersigned, being desirous of becoming a Member of the East Kent Natural History Society, request that my name may be brought before the Committee at their next meeting in accordance with rule 2 of the Society.

(Signed).....

(Address).....

Date.....

NOTE.—The Subscriptions are due in advance on January 1, in each year, and may be paid either to Messrs. Hammond & Co's. Bank, Canterbury, or to the Hon. Treasurer.

East Kent Natural History Society.

SCIENTIFIC MEETINGS, SESSION, 1890-91.

PLACE: No. 6, HIGH STREET, CANTERBURY.

TIME: 7.30 O'CLOCK, P.M.

Generally on the Second Monday* of each month, viz.:

1890.

January 13th.

February 10th.

March 10th.

April 14th.

1890.

October 13th.

November 10th.

December 8th.

During May, June and July there
will be Excursions and due notice
of them will be given.

August 11th.

September 8th.

1891.

January 12th.

February 9th.

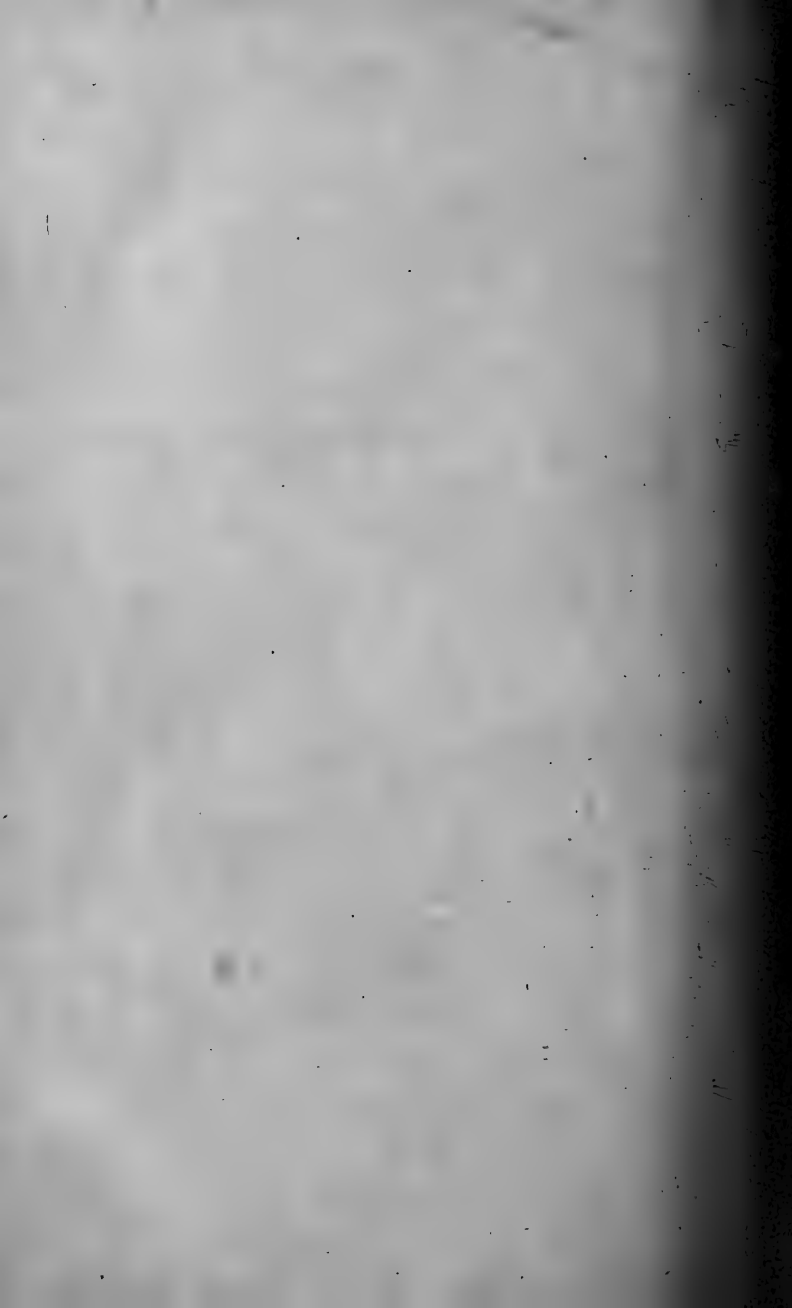
March 9th.

April 13th.

*At the General Meeting held March 2, 1889, it was determined that the ordinary Scientific Meetings be held on the Second Monday of the Month.

ANNUAL MEETING,

Tuesday, January 27th, 1891, at 4 p.m.



9 MAY. 95

THIRTY-THIRD REPORT

(1890)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING,

HELD AT CANTERBURY,

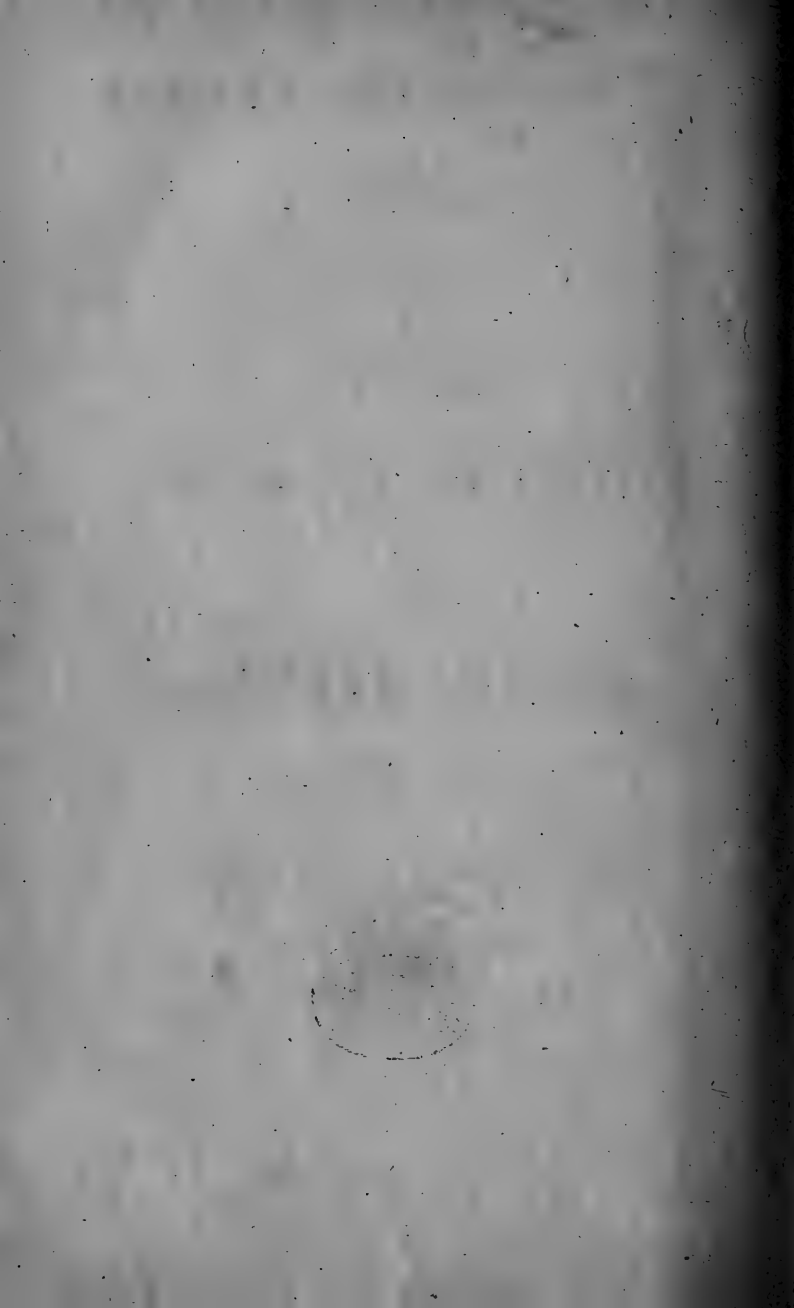
ON JANUARY 27th, 1891.



Canterbury:

"KENTISH GAZETTE AND CANTERBURY TIMES," OFFICE.

1891.



THIRTY-THIRD REPORT

(1890)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

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ANNUAL MEETING,

HELD AT CANTERBURY,

ON JANUARY 27th, 1891.



Canterbury:

“KENTISH GAZETTE AND CANTERBURY TIMES,” OFFICE.

1891.

THE HISTORY OF THE

1780

THE HISTORY OF THE

THE HISTORY OF THE

THE HISTORY OF THE

EAST KENT NATURAL HISTORY SOCIETY.

President:

MR. SIDNEY HARVEY, F.I.C., F.C.S.

Vice-Presidents:

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.
THE RIGHT HON. THE LORD NORTHBOURNE, BETTESHANGER.
THE VERY REV. THE DEAN OF CANTERBURY.
MR. MATTHEW BELL, BOURNE PARK.
COLONEL W. H. HORSLEY, R.E., CANTERBURY.
MR. G. DOWKER, F.G.S., STOURMOUTH.
MR. WILLIAM OXENDEN HAMMOND, ST. ALBAN'S.
MR. H. B. MACKESON, HYTHE.
CAPTAIN GORDON McDAKIN, DOVER.
MR. JAMES REID, F.R.C.S., CANTERBURY.
THE HON. AND REV. CANON FREMANTLE, M.A.
THE REV. R. N. GANDY, M.A., CANTERBURY.

Treasurer and Librarian:

COLONEL HORSLEY, R.E.

Honorary Secretary:

MR. W. P. MANN, B.A., SIMON LANGTON SCHOOLS, CANTERBURY.

(To whom all communications should be addressed.)

Assistant Secretary:

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee:

| | |
|------------------------|--------------------------|
| MR. J. A. BLOFELD, | REV. T. FIELD, |
| REV. J. SANGER DAVIES, | REV. CANON HOLLAND, |
| MR. H. M. CHAPMAN, | GENERAL R. MONEY, |
| MR. F. W. CROSS, | MR. G. RIGDEN, M.R.C.S., |
| | MR. SIBERT SAUNDERS. |

MEMBERS.



- | | |
|------------------------------------|--|
| Ashton, Mr. E. | 33, St. Thomas's Terrace, Canterbury. |
| Baker, Mr. F., C.E., | Vernon House, Canterbury. |
| Bell, Mr. Matthew | Bourne Park, Canterbury. |
| Blofeld, Mr. J. A. | Mill Bank, London Road, Canterbury. |
| Blore, Rev. Dr. | St. Stephen's House, Canterbury. |
| Cantis, Colonel | St. Stephen's Lodge, Canterbury. |
| Chapman, Mr. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| Chapman, Mrs. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| Cole, Miss | 53, London Road, Canterbury. |
| Court, Colonel, J.P. | 140, Snargate Street, Dover. |
| Cowell, Miss E. | 3, Hanover Place, Canterbury. |
| Cox, Mr. C. S. B., B.A. | Torquay. |
| Cross, Mr. F. W. | Watling Street, Canterbury. |
| Davies, Rev. J. Sanger | St. Mary Bredin's Vicarage, Canterbury. |
| Davies, Mrs. J. Sanger | St. Mary Bredin's Vicarage, Canterbury. |
| Davies, Mrs. | 14, St. Dunstan's Terrace, Canterbury. |
| Dowker, Mr. G., F.G.S. | Stourmouth House, Wingham. |
| Drake, Mr. W. E. | Victoria Road, Canterbury. |
| Farren, General, C.B. | Great Bealings, Woodbridge. |
| Field, Rev. T., M.A. | King's School, Canterbury. |
| Forest, Mrs. | 22, Hanover Place, Canterbury. |
| Fremantle, Hon. & Rev. Canon, M.A. | Precincts, Canterbury. |
| Furley, Mr. George | Barton Fields, Canterbury. |
| Gandy, Rev. Richard Norris, M.A. | St. Andrew's Rectory, Canterbury. |
| Gardner, Mrs. | Precincts, Canterbury. |
| Gogarty, Mr. H. A., M.D. | St. George's Place, Canterbury. |
| Goulden, Mr. E. B. | Ethelbert Road, Canterbury. |
| Groombridge, Mr. W. | 6, St. George's Fields, Canterbury. |
| Hammond, Mr. W. O. | St. Alban's Court, Wingham. |
| Harvey, Mr. Sidney, F.I.C., F.C.S. | 8, High Street, Canterbury. |
| Heaton, Mr. J. Henniker, M.P. | 36, Eaton Square, London, W. |
| Holland, Rev. Canon, M.A. | Precincts, Canterbury. |
| Horsley, Colonel, R.E. | St. Stephen's Lodge, Canterbury. |
| Hunt, Miss | The Pines, Canterbury. |
| Iron, Miss Helen | 39, St. Margaret's Street, Canterbury. |
| Iron, Miss Henrietta | 39, St. Margaret's Street, Canterbury. |

- Jackman, Mr. J. Upper Bridge Street, Canterbury.
- Kingsford, Mr. M. Littlebourne.
Kingsford, Miss 14, St. Dunstan's Terrace, Canterbury.
- Laurie, Colonel, M.P. Hardres Court, Upper Hardres.
- McDakin, Captain 15, Esplanade, Dover.
Mackeson, Mr. H. B. Hillside House, Hythe.
McMaster, Mr. J. The Holt, Harbledown.
Mann, Mr. W. P., B.A. Simon Langton Schools, Canterbury.
Molony, Rev. C. A. Winton House, Canterbury.
Money, General R. Hopebourne, Harbledown.
- Northbourne, Right Hon. Lord Betteshanger, Eastry, Dover.
- Payne-Smith, Very Rev. R., Dean of Canterbury The Deanery, Canterbury.
Payne-Smith, Miss The Deanery, Canterbury.
Payne-Smith, Miss M. The Deanery, Canterbury.
Posnett, Mr. L. W., M.A., B.Sc. Kent College, Canterbury.
Plumptre, Mr. C. J. Fredville, Dover.
- Reid, Mr. James, F.R.C.S. Bridge Street, Canterbury.
Reid, Mr. A. S., M.A., F.G.S. Trinity, College, Glenalmond, Perth.
Rigden, Mr. G., M.R.C.S. Burgate, Canterbury.
Rigden, Mrs. G. Burgate, Canterbury.
Rigden, Miss Burgate, Canterbury.
- Sangster, Mr. Francis 27, Old Dover Road, Canterbury.
Saunders, Mr. Sibert Whitstable.
Slater, Mr. F. 5, Guildford Lawn, Dover.
Sondes, Right Hon. Earl Lees Court, Faversham.
- Thomson, Mr. R. E. Kenfield Hall, Petham.
- Wacher, Mr. F., M.R.C.S. Monastery House, Canterbury.
Webb, Mr. Sidney Maidstone House, Dover.
Wetherelt, Mr. A. Havelock Street, Canterbury.
Whiteman, Miss M. Tyler Hill, Canterbury.

CORRESPONDING MEMBERS.

| | |
|---------------------------------|--|
| Bartlett, Mr. A. D. | Zoological Gardens, London. |
| Bates, Mr. H. W. | London. |
| Britton, Mr. J. | Royal Herbarium, Kew. |
| Marshall, Rev. E. S. | Witley, Godalming, Surrey. |
| Masters, Dr. Maxwell T., F.R.S. | Ealing. |
| Mitchinson, Right Rev. Dr. | Sibstone Rectory, Atherstone. |
| Saunders, Mr. G. S., F.L.S. | Care of Colonel Horsley, St. Stephen's Lodge, Canterbury. |
| Trimer, Mr. H. | Botanical Department, British Museum. |
| Whitaker, Mr. W. | Geological Museum, Jermyn St., London. |

HONORARY MEMBERS.

| | |
|--------------------|--------------------------|
| Kemp, Dr. William | Wellington, New Zealand. |
| Linford, Mr. J. S. | Hull. |

ASSOCIATES.

| | |
|--------------------|---------------------------------------|
| Dean, Mr. H. | St. Peter's Street, Canterbury. |
| Fiddian, Mr. W. H. | "Kentish Express" Office, Canterbury. |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury. |
| Pugh, Mr. | Vernon Place, Canterbury. |

EAST KENT NATURAL HISTORY SOCIETY.

The Annual meeting was held at the Society's Rooms, 39, St. George's Street, Canterbury, on January 27th, 1891, the President, Mr. Sidney Harvey, in the chair, 8 members being present. The following report was presented :—

REPORT OF THE COMMITTEE FOR 1890.

Being the 33rd since the formation of the Society.

The present numerical strength of the Society is 64 members, 9 corresponding members, two honorary members, and 4 associates. Three members have died during the year; the Right Revd. Bishop Parry, one of the Vice-Presidents, who in former years took an active interest in the Society ; Major Parker, F.G.S, an active supporter of the Society and a frequent contributor to its proceedings, and Mr. Charles Bewsher of St. Louis, Mauritius, an honorary member who from time to time forwarded many objects of interest from his collection to the Society. The Society has also lost

three members who have retired or left Canterbury ; but has elected 10 new members, making an addition of 5 new subscribers.

The papers read during the year were :—

| | | | |
|-------|----|--|------------------------------------|
| JAN. | 13 | Concretions and Concretionary Action | MR. A. S. REID, F.G.S. |
| FEB. | 10 | Polarised Light, with Lantern demonstrations | MR. W. P. MANN, B.A. |
| MARCH | 10 | The Habits and Senses of Certain Insects..... | MR. GEO. SAUNDERS, F.L.S. |
| APRIL | 14 | The Structure and Growth of Shell in the Mollusca... | MR. SIBERT SAUNDERS. |
| OCT. | 13 | On Glaciers, with Lantern Illustrations | REV. T. FIELD, M.A. |
| NOV. | 10 | On Local Bats and their Habits | MR. G. DOWKER, F.G.S. |
| DEC. | 8 | On the Action of Ferments | MR. SIDNEY HARVEY, F.I.C. & F.C.S. |

At the preliminary meetings preceding the reading of the special communications many microscopical exhibits and objects of interest have been shown, and short papers and descriptions of much practical value been given, by which the interest of this part of the proceedings of the Society has been well maintained. This arrangement, which was alluded to in the last report, has worked well, and adds to the popularity at the same time that it encourages the practical purposes for which it was intended. It also affords an opportunity for the working sub-Committees of investigation, now established by the Society, to convey special information to the members, and receive in return any aid that the particular observations of individual members on the same subjects may afford. As an illustration of this, at the March meeting Colonel Horsley read an abstract of the observations made by the sub-Committee on the Temperature of the River Stour compared with that of the atmosphere, of which gave much interesting information that was well appreciated ; and drew from the members some special statements. Two meetings in April and September were held conjointly with the Dover Society for the purpose of microscopical demonstration. At the latter meeting a pleasant excursion formed part of the proceedings. Six excursions were arranged for the Summer Session, which were carried out satisfactorily and were fairly attended. The

objects observed were chiefly botanical, and some good lists of plants met with have been recorded. The general attendance of members at the Scientific meetings has improved.

Mr. Arthur S. Reid, F.G.S., continues to represent the Society at the Conference of Corresponding Natural History Societies of the British Association; he attended the meetings at Leeds last September and communicated a very suggestive report on the work for this Society, which was read at the first meeting of the Winter Session. It will be interesting and encouraging to members to know that in the report of the Committee of the corresponding Societies of the British Association there are mentioned, in the index of the more important papers published by the local Societies, thirteen that were published in the last double number of the Transactions of this Society for 1889.

Under the new plan of publishing in combination with the Dover Society, by direction of the Representative Council, the first number of the "South Eastern Naturalist" has appeared, edited by two members of the Council. It was found that the sum yielded by the Capitation-grant of the United Societies, which at the time was all that was provided for the Council, was not adequate to meet the expense. The Committee, therefore, considering that it was never intended that the publishing power should be limited by the bare amount of the Capitation grant; that other contributions were needed from the combined Societies to maintain a sufficient fund for the purpose; and that the recent annual balances of the general income did not permit of a further demand upon the Society, issued a circular in accordance with the suggestion made in last year's report by the Treasurer, requesting the members to establish a separate fund for publishing. It is hoped that a generous response will be made, in order that this important object may be well developed.

The annual meeting of the combined Societies was held 21st May, 1890, at the Rural Village of Denton, the rendezvous of a combined excursion of the two Societies. It will be necessary in the future that a more suitable and convenient arrangement be made beforehand, by each Society advising the Council in anticipation of the meeting. It will be necessary at the Annual Meeting of this

Society to elect another Representative of the Society in the place of Mr. J. Reid, who has resigned his seat on the Council.

At the Committee Meeting in October, notice of the termination of the tenancy of the room at No. 6, High Street, on January 1st, 1891, was received. After much inquiry and investigation, the present room at No. 39, St. George's Street, above the *Kentish Gazette* Office, was selected, under an agreement of occupation for three years, at a rent of £14 per annum. *Members can obtain the key of the Library by entering their names in a book kept for the purpose at the Kentish Gazette office, during office hours.*

A proposal has been made to admit as Members young persons under age, who, being interested in or desiring to follow the study of Natural History, are not able to pay the full admission fee. The Committee having considered the matter, recommend it to the consideration of the Annual Meeting, together with a proposal, under certain conditions, to admit as Honorary Members, persons connected with Natural History Clubs of Schools and Institutions.

The Library has been increased by 60 presentations, including parts of 3 serial works, various volumes, pamphlets, Transactions of Societies, in exchange for our own; 1 volume by subscription; and seven volumes of serial works, by purchase. The serial works are continuations of the previous sets. The binding of these last has been reduced by binding six of them in cloth. There have been 40 loans of books during the year, and the volumes reported as missing last year have been recovered. A list of the books added will be appended.

The cash statement will show the financial position of the Society. A balance of £1 14s. 6d. is due to the Treasurer on the general account, whilst a balance of £3 10s. 0d. on the publishing is carried over to meet the expenses of increased publication of the "S. E. Naturalist."

BOOKS ADDED TO THE LIBRARY DURING 1890.

- Darwin, C., *A Naturalist's Voyage round the World*, 1889.
Annals and Magazine of Natural History, Vols. 8, 9, 10, 11.
 United States Department of Agriculture, *North American Fauna*, Nos. 1, 2, 1889, *North American Pocket Mice*

- United States Department of Agriculture, Economic Ornithology and Mammalogy, Bulletin 1, 1889, English Sparrow in North America.
 Taylor, W., F.W.S., The Probability of finding Coal in S.E. England, 1886.
 Whittaker, W., Coal in S.E. England, April, 1890.
 Report of the British Association, Newcastle-on-Tyne, 1889.
 United States Geological Survey, 7th Annual Report, 1888.
 " " " " 8th " " " " Parts 1 and 2, 1889.
 Haydon, W. T., Catalogue of flowering Plants, Dover and neighbourhood, 1890.
 United States Smithsonian Institute Annual Report, 1886, Part 2.
 " " " " " " " " 1887, Parts 1 and 2.
 Cameron British Phytophagous Hymenoptera, Vol 3, Ray Society, 1889.
 Humbolt's Cosmos, by Sabine and others, 4 Vols., 1845 to 1858.
 McAlpine, D., Zoological Atlases, Invertebrata, 1881, Vertebrata, 1881,
 Science Gossip, Vols. 2, 3, 4, 5, 1866 to 1869.
 The Entomologist, 1889.

The deficiencies in the series of periodical works requiring to be made good may be seen in previous reports; also the serial works purchased by the Society, and the Transactions of other Societies received in exchange.

The following Sub-committees have been formed to make and obtain special investigations and observations in accordance with the suggestions of the British Association. All the members of the Society are invited to assist the work of the Sub-committees.

The President is Ex-officio a Member of every Sub-Committee.

VARIATION OF TEMPERATURE IN RIVERS.

G. Dowker, F.G.S.
 Col. W. H. Horsley, R.E.

PHOTOGRAPHY OF GEOLOGICAL SECTIONS AND OBJECTS.

G. Dowker, F.G.S.
 Capt. J. Gordon McDakin.
 A. S. Reid, M.A., F.G.S.

COAST EROSION.

G. Dowker, F.G.S.
 Capt. J. Gordon McDakin.

THE FLORA OF THE DISTRICT.

G. Dowker, F.G.S.
 J. Reid, F.R.C.S.

INVERTEBRATE FAUNA AND CRYPTOGAMIC FLORA OF FRESH WATER.

W. P. Mann, B.A.
 Sibert Saunders.

FINANCIAL STATEMENT OF 1890.

RECEIPTS.

| | £ | s. | d. |
|--|----|----|----|
| By subscriptions for 1890 received up to January 7th, 1891 | 26 | 1 | 6 |
| " arrears to same date from 1885 to 1889 | 10 | 0 | 0 |
| " grant from publishing fund for 1890 | 0 | 3 | 6 |
| " extra copy of No. 1 S.E. Naturalist | 0 | 1 | 0 |
| Balance due to Treasurer | 1 | 14 | 6½ |

£38 0 6½

Examined and found correct,
GEORGE RIGDEN.

DISBURSEMENTS.

| | | | |
|--|---|----|----|
| To Rent of Room for the year | 2 | 10 | 0 |
| " Fire Insurance on Library, &c. | 0 | 11 | 3 |
| " Subscription to Ray Society | 1 | 1 | 0 |
| " Cross and Jackman for printing Report of 1889 | 2 | 10 | 0 |
| " Ditto for printing sundry Post cards, Note Heads, &c. | 2 | 14 | 6 |
| " Capitation Grant to Council | 3 | 3 | 0 |
| " Extra to Ditto for printing 1st No. of S.E. Naturalist | 0 | 3 | 6 |
| " Ditto for Post cards and Circulars | 0 | 15 | 0 |
| " J. Craik for Lantern Lecture | 1 | 1 | 0 |
| " C. W. Allen for Photographs of Elham Railway Cutting | 2 | 0 | 0 |
| " Acting and Assistant Secretary for Petty Cash | 0 | 14 | 0½ |
| " Postage and fees for P.O. orders | 0 | 2 | 9 |
| " Contribution to Library | 6 | 13 | 10 |
| " Balance to Treasurer as per last account ... | 6 | 10 | 8 |

£38 0 6½

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

EAST KENT NATURAL HISTORY SOCIETY.

PUBLISHING FUND FOR 1890.

| RECEIPTS. | | | PAYMENTS, | | | | |
|---------------------------|-------|----|-----------|----------------------------|-------|----|----|
| | £ | s. | d. | | £ | s. | d. |
| Mrs. Davies | 0 | 5 | 0 | To Mr. James Reid for Pay- | | | |
| Miss Kingsford... .. | 0 | 5 | 0 | ment of extra amount in | | | |
| Mr. J. A. Blofield..... | 0 | 5 | 0 | account with Council for | | | |
| Mr. Sibert Saunders | 0 | 5 | 0 | printing 1st No. of S. E. | | | |
| Mr. Ernest Ashton | 0 | 5 | 0 | Naturalist..... | 0 | 3 | 6 |
| Mr. James Reid..... | 0 | 10 | 0 | | | | |
| Captain McDakin..... | 0 | 10 | 0 | | | | |
| Mr. Rigden | 0 | 5 | 0 | | | | |
| Colonel Cantis | 0 | 10 | 0 | Balance in hand | 3 | 6 | 6 |
| Colonel Horsley | 0 | 10 | 0 | | | | |
| | <hr/> | | | | | | |
| | 3 | 10 | 0 | | | | |
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Examined and found correct,
GEORGE RIGDEN.

W. H. HORSLEY, Col.,
Hon. Treasurer.

20th January, 1891.

The minutes of the last Annual Meeting were read and confirmed.

On the motion of Mr. H. Mapleton Chapman, seconded by Mr. Dowker, it was resolved that the Report and Financial Statements be adopted, printed, and issued to the members.

It was also resolved that the thanks of the Society are due to the gentlemen who have read papers, and to all who had contributed notes and exhibits during the year.

Mr. G. Rigden moved, and Mr. W. P. Mann seconded, and it was unanimously passed, that Mr. Harvey be asked to continue

his valuable services as President during the year; and on his consent being obtained, he was elected President.

The President moved, Mr. Dowker seconded, and it was resolved, that Colonel Horsley be requested to continue to hold the offices of Treasurer and Librarian.

On the motion of Mr. Reid, seconded by Mr. Mapleton Chapman, Mr. W. P. MANN was elected Secretary.

On the motion of the President, seconded by Mr. Rigden, thanks were unanimously voted to Mr. E. B. Hayward for his obliging services as Assistant Secretary.

The following Members were then elected to form the Committee:—Mr. J. A. Blofeld, Rev. J. Sanger Davies, Mr. H. Mapleton Chapman, Mr. F. W. Cross, Rev. T. Field, Rev. Canon Holland, General R. Money, Mr. G. Rigden, Mr. Sibert Saunders.

The President proposed, Mr. Rigden seconded, and it was carried, that Mr. Dowker be the Representative of the Society on the Council of the United Societies, to fill the vacancy caused by the retirement of Mr. Reid.

It was proposed by Mr. Rigden, seconded by Mr. Dowker, and carried, that Rule 4 be added to as follows:—

“That the Committee shall be further empowered to admit young persons, from the age of 15 to 21 years, upon the recommendation given in writing by two members, on the payment of five shillings per annum, as Ordinary Members, and also, under a similar nomination, Members of Natural History Clubs connected with Schools and Institutions of the city and neighbourhood on the additional guarantee of the recognised Authority being a member of the Society, or contributing a sum not less than 10s., may be admitted as Honorary Members to attend the Proceedings of the Society.

It was recommended by the meeting that the Committee should make inquiry about the Gilchrist Trust, and ascertain how far its objects could be promoted by the Society in Canterbury.



East Kent Natural History Society.

SCIENTIFIC MEETINGS, SESSION, 1891-92.

PLACE: No. 39, ST. GEORGE'S STREET, CANTERBURY.

TIME: 7 O'CLOCK, P.M.

On the Second Monday of each month, viz.:

1891.

January 12th.
February 9th.
March 9th.
April 13th.

1891.

October 12th.
November 10th.
December 8th.

During May to September there will be Excursions, and due notice of them will be given.

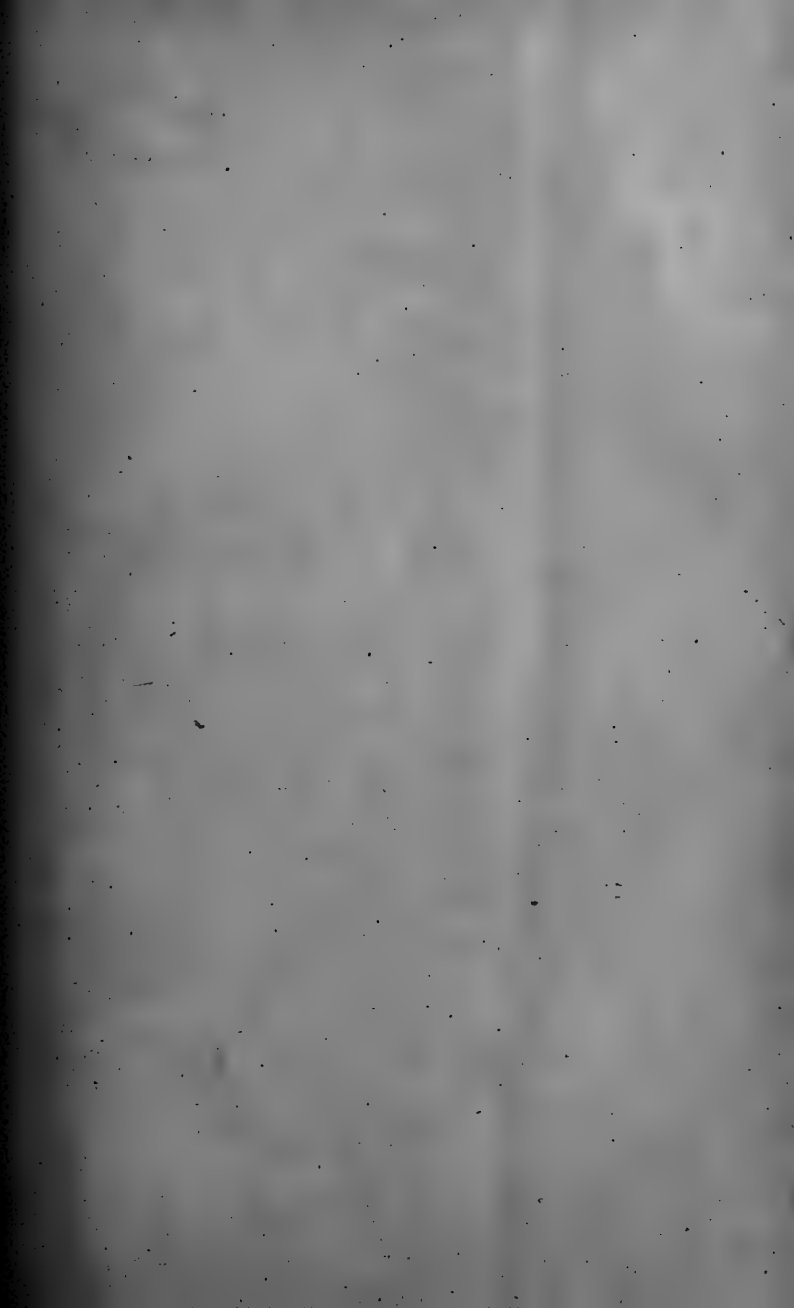
1892.

January 11th.
February 8th.
March 14th.
April 11th.

ANNUAL MEETING,

Tuesday, January 26th, 1892, at 4 p.m.





THIRTY-FOURTH REPORT

(1891)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING.

HELD AT CANTERBURY,

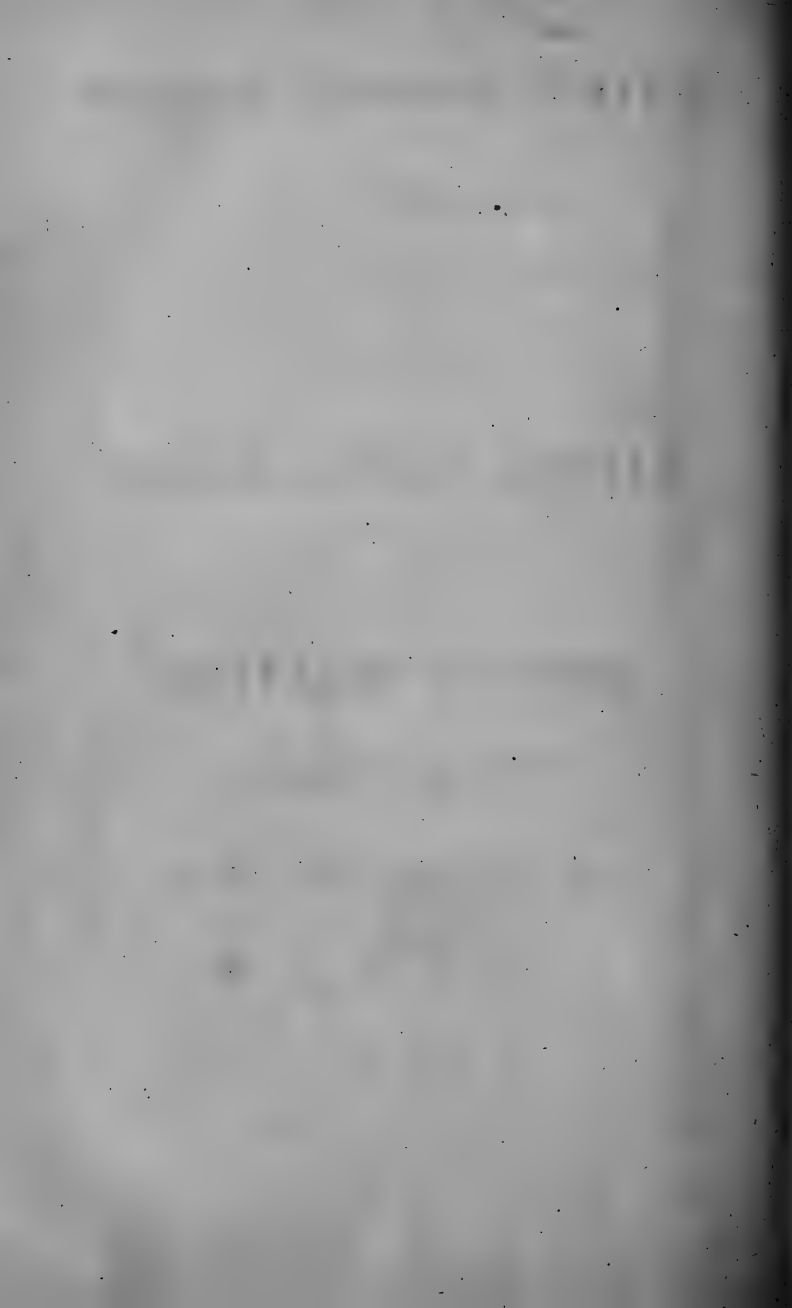
ON JANUARY 26th, 1892.



Canterbury ;

“KENTISH GAZETTE AND CANTERBURY PRESS,” OFFICE,

1892.



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Canterbury ;

"KENTISH GAZETTE AND CANTERBURY PRESS," OFFICE,

1892.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

ANNUAL REPORT

1953-1954

BY THE FACULTY

1954

EAST KENT NATURAL HISTORY SOCIETY.

President:

MR. SIDNEY HARVEY, F.I.C., F.C.S.

Vice-Presidents:

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.
THE RIGHT HON. THE LORD NORTHBOURNE, BETTESHANGER.
THE VERY REV. THE DEAN OF CANTERBURY.
MR. MATTHEW BELL, BOURNE PARK.
COLONEL W. H. HORSLEY, R.E.; CANTERBURY.
MR. G. DOWKER, F.G.S., STOURMOUTH.
MR. WILLIAM OXENDEN HAMMOND, ST. ALBANS.
MR. H. B. MACKESON, HYPHE.
CAPTAIN GORDON McDAKIN, DOVER.
MR. JAMES REID, F.R.C.S., CANTERBURY.
THE HON. AND REV. CANON FREMANTLE, M.A.
THE REV. R. N. GANDY, M.A., CANTERBURY.

Treasurer and Librarian:

COLONEL HORSLEY, R.E.

Honorary Secretary:

MR. W. P. MANN, B.A., SIMON LANGTON SCHOOLS, CANTERBURY.
(To whom all communications should be addressed.)

Assistant Secretary:

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee:

| | |
|------------------------|-------------------|
| MR. F. BAKER, | MR. J. EVENS, |
| MR. J. BLOFELD, | REV. T. FIELD, |
| REV. J. SANGER DAVIES, | GENERAL R. MONEY, |
| MR. H. M. CHAPMAN, | MR. G. RIGDEN, |
| MR. SIBERT SAUNDERS. | |

MEMBERS.

| | |
|--------------------------------------|--|
| Ashton, Mr. E. | 38, St. Thomas's Terrace, Canterbury. |
| Baker, Mr. F., C.E. | Vernon House, Canterbury. |
| ✓ Bell, Mr. Matthew. | Bourne Park, Canterbury. |
| ✓ Blofeld, Mr. J. A. | Mill Bank, London Road, Canterbury. |
| ✓ Blore, Rev. Dr. | St. Stephen's House, Canterbury. |
| Cantis, Colonel | St. Stephen's Lodge, Canterbury. |
| ✓ Chapman, Mr. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| ✓ Chapman, Mrs. H. M. | The Priory, St. Martin's Hill, Canterbury. |
| ✓ Cole, Miss | 53, London Road, Canterbury. |
| ✓ Court, Colonel, J.P. | 140, Snargate Street, Dover. |
| ✓ Cox, Mr. C. S. B., B.A. | San Remo, Chelston, Torquay. |
| ✓ Cross, Mr. F. W. | Watling Street, Canterbury. |
| ✓ Cross, Mrs. T. | 3, Hanover Place, Canterbury. |
| ✓ Davies, Rev. J. Sanger, M.A. | St. Mary Bredin's Vicarage, Canterbury. |
| ✓ Davies, Mrs. J. Sanger | St. Mary Bredin's Vicarage, Canterbury. |
| ✓ Davies, Mrs. | 14, St. Dunstan's Terrace, Canterbury. |
| ✓ Dowker, Mr. G., F.G.S. | Stourmouth House, Wingham. |
| ✓ Drake, Mr. W. E. | Victoria Road, Canterbury. |
| Evens, Mr. John | St. Stephen's, Canterbury. |
| ✓ Farren, General | Great Bealings, Woodbridge. |
| ✓ Field, Rev. T., M.A. | King's School, Canterbury. |
| ✓ Forest, Mrs. | 22, Hanover Place, Canterbury. |
| ✓ Fremantle, Hon. & Rev. Canon, M.A. | Precincts, Canterbury. |
| ✓ Furley, Mr. George | Barton Fields, Canterbury. |
| ✓ Fielding, Mr. H. | St. Dunstan's, Canterbury. |
| ✓ Gandy, Rev. Richard Norris, M.A. | St. Andrew's Rectory, Canterbury. |
| ✓ Gardner, Mrs. | Precincts, Canterbury. |
| ✓ Gogarty, Mr. H. A., M.D. | St. George's Place, Canterbury. |
| ✓ Goulden, Mr. E. B. | Ethelbert Road, Canterbury. |
| ✓ Hammond, Mr. W. O. | St. Alban's Court, Wingham. |
| ✓ Harvey, Mr. Sidney, F.I.C., F.C.S. | 8, High Street, Canterbury. |
| ✓ Heaton, Mr. J. Henniker, M.P. | 38, Eaton Square, London, W. |
| ✓ Holland, Rev. Canon, M.A. | Precincts, Canterbury. |
| ✓ Horsley, Colonel, R.E. | St. Stephen's Lodge, Canterbury. |
| ✓ Iron, Miss Helen | 39, St. Margaret's Street, Canterbury. |
| ✓ Iron, Miss Henrietta | 39, St. Margaret's Street, Canterbury. |
| Johnson, Mr. J. G. | Barton Mills, Canterbury. |

- ✓ Jackman, Mr. J. Upper Bridge Street, Canterbury.
- ✓ Kingsford, Mr. M. Littlebourne.
✓ Kingsford, Miss 14, St. Dunstan's Terrace, Canterbury.
- ✓ Laurie, Colonel, M.P. Hardres Court, Upper Hardres.
- McDakin, Captain 15, Esplanade, Dover.
Mackeson, Mr. H. B. Hillside House, Hythe.
✓ McMaster, Mr. J. The Holt, Harbledown.
Mann, Mr. W. P., B.A. Simon Langton Schools, Canterbury.
✓ Molony, Rev. C. A. Winton House, Canterbury.
Money, General R. Hopebourne, Harbledown.
- ✓ Northbourne, Right Hon. Lord Betteshanger, Eastry, Dover.
- ✓ Oxbrow, Mr. A. W. Burgate, Canterbury.
- Payne-Smith, Very Rev. R., Dean
of Canterbury. The Deanery, Canterbury.
Payne-Smith, Miss The Deanery, Canterbury.
Payne-Smith, Miss M. The Deanery, Canterbury.
✓ Posnett, Mr. L. W., M.A., B.Sc. Kent College, Canterbury.
✓ Plumptre, Mr. C. J. Fredville, Dover.
- Read, Mr. James, F.R.C.S. Bridge Street, Canterbury.
✓ Reid, Mr. A. S., M.A., F.G.S. Trinity College, Glenalmond, Perth.
Rigden, Mr. G., M.R.C.S. Burgate, Canterbury.
Rigden, Mrs. G. Burgate, Canterbury.
Rigden, Miss Burgate, Canterbury.
- ✓ Sangster, Mr. Francis 27, Old Dover Road, Canterbury.
Saunders, Mr. Sibert Whitstable.
✓ Slater, Mr. F. 5, Guildford Lawn, Dover.
Sondes, Right Hon. Earl Lees Court, Faversham.
✓ Skerrin, Mr. W. R. 3, Codrington Villas, Ramsgate.
Stead, Captain Rose Lawn, London Road, Canterbury.
- Tindall, Mr. Arthur, M.A. Clergy Orphan School, Canterbury.
Tripp, Mr. G. D., B.A. King's School, Canterbury.
- Wacher, Mr. F., M.R.C.S. Monastery House, Canterbury.
✓ Webb, Mr. Sidney Maidstone House, Dover.
Wetherelt, Mr. A. 61, Havelock Street, Canterbury.
Whiteman, Miss M. Tyler Hill, Canterbury.

CORRESPONDING MEMBERS.

| | |
|---------------------------------|--|
| Bartlett, Mr. A. D. | Zoological Gardens, London. |
| Bates, Mr. H. W. | London. |
| Britton, Mr. J. | Royal Herbarium, Kew. |
| Marshall, Rev. E. S. | Witley, Godalming, Surrey. |
| Masters, Dr. Maxwell T., F.R.S. | Ealing. |
| Mitchinson, Right Rev. Dr. | Sibstone Rectory, Atherstone. |
| Saunders, Mr. G. S. | Care of Colonel Horsley, St. Stephen's Lodge, Canterbury. |
| Trimen, Mr. H. | Botanical Department, British Museum. |
| Whitaker, Mr. W., F.R.S. | Geological Museum, Jermyn St., London. |

HONORARY MEMBERS.

| | |
|--------------------|--------------------------|
| Kemp, Dr. William | Wellington, New Zealand. |
| Linford, Mr. J. S. | Hull. |

ASSOCIATES.

| | |
|--------------------|---------------------------------------|
| Dean, Mr. H. | St. Peter's Street, Canterbury. |
| Fiddian, Mr. W. H. | "Kentish Express" Office, Canterbury. |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury. |
| Pugh, Mr. | Vernon Place, Canterbury. |

EAST KENT NATURAL HISTORY SOCIETY.

The Annual Meeting was held at the Society's Rooms, 39, St. George's Street, Canterbury, on January 26th, 1892, the President, Mr. Sidney Harvey, in the chair, 10 members being present. The following Report was presented :—

REPORT OF THE COMMITTEE FOR 1891.

Being the 34th since the formation of the Society.

The Society consists of 67 members, 9 corresponding members, 2 honorary members, and 4 Associates.

The papers read during the year were :—

| | | | |
|-------|----|--|------------------------------|
| JAN. | 12 | " On Sandpipes," | MR. A. S. REID, M.A., F.G.S. |
| FEB. | 9 | " Water,"... .. | MR. G. S. SAUNDERS. |
| MARCH | 9 | " Light," | MR. W. P. MANN. |
| OCT. | 12 | " Molecules and their Manners."... .. | MR. S. HARVEY. |
| NOV. | 9 | " A Gravel Pit " | MR. G. DOWKER. |
| DEC. | 14 | " The Elm." | MR. S. WEBB. |

There has been a marked increase in the number of members and friends present on the Scientific evenings, and the interest in the proceedings before the paper of the evening is read, has been well maintained. The number of exhibits has been better than in previous years, and the Society is indebted to many members and friends, who live at a distance, for many valuable and interesting contributions.

Excursions : Four excursions were arranged for the summer, but the one planned for Eastwell Park could not be carried out. There was an excursion to the cliffs and shore at Dover on June 3rd, in conjunction with the Dover Field Club. In July, a very enjoyable excursion was made by train to Westenhanger, and thence on foot across country to Lyminge. The last excursion was to Herne Bay and Reculver in August. The number of members present at these excursions was very satisfactory.

Mr. A. S. Reid, M.A., has again represented the Society at the

Conference of the Corresponding Societies of the British Association. The meeting this year was at Cardiff, and he has forwarded another suggestive report of the proceedings. This report has been read at one of the Scientific Meetings of the Society. It is to be regretted that Mr. Reid has still occasion to point out how much valuable work is yet undone for want of more combined and systematic observations, not only among the various Natural History Societies, but also among members of the same Society.

The Annual Meeting of the combined Societies was held at Dover on June 3rd, after the excursion mentioned above. At this meeting the report of the Council was read, and Mr. George Dowker was appointed Secretary in place of Mr. James Reid, who had expressed a desire to withdraw from official duties. Mr. Reid was one of the promoters of the scheme of combination, and upon him has fallen almost the whole of the work which the adoption of the scheme entailed. The combined Societies are deeply indebted to him for the skill and labour which he has so generously bestowed upon the formulating and carrying out of the scheme.

The new room, 39, St. George's Street, which was selected for the Society, and which has been occupied since January 1st, 1891, has proved to be commodious and convenient. The Library is arranged to good advantage, and members can, as before, have access to it on applying for the key at the *Kentish Gazette* office. and signing their names in the book provided.

The question of admitting Junior Members to the Society was considered at the Annual Meeting, Jan. 27, 1891, and in order to gain members from among the young persons at the various schools and educational institutions in the city and neighbourhood, an addition to Rule 4 was adopted, empowering the Committee to admit persons between the ages of 15 and 21, on certain favourable conditions. It is hoped that this privilege may be made widely known and that many young members may be brought to the Society.

Publications.—Since the last Report was issued, Part 2 of the "South Eastern Naturalist" has been published. Members who have contributed papers, communications, or notes of original observations to the Society during the past year, and who desire that such matter

may appear in the "South Eastern Naturalist," should bear in mind that their manuscript should be sent to the Hon. Secretary before the last week in February, when the Publishing Committee of the Society meet to make selections for publication. Any member desiring reprints of his paper should give notice to the Publishing Committee, stating the number (not to exceed 10) that will be required.

A generous response was made to the applications for contributions to a Publishing Fund, and the publishing power of the Council of the Combined Societies has been much increased. It is hoped that members will be willing to continue to help in this way, for other demands may be made upon the fund, such, for instance, as for part of the cost of a much needed new catalogue for the Library.

A few members of the Society subscribed the amount necessary for the purchase of an excellent "Herbarium," relating mainly to East Kent. Along with it there is a carefully arranged Catalogue of the Specimens, and the "Herbarium" not only forms a valuable addition to the possessions of the Society but at the same time promotes one of the objects of the Society's special investigations.

The recommendations of the last Annual Meeting with regard to the Gilchrist Lectures were carried out. Through the exertions of the Society the interest of the various public bodies was aroused, and an influential meeting was held in the Guildhall, under the presidency of the Mayor. A guarantee fund was provided without difficulty and an appeal was sent to the Gilchrist Trustees. A similar appeal was sent from Dover, but the reply was to the effect that it was impossible, on account of the great number of applications, to include Canterbury and Dover in the list of towns at which lectures could be given for the season of 1891-2.

The Sub-Committees on Special Investigations.—The one on "Variation of Temperature in Rivers, etc.," has continued its work, which has been favourably acknowledged by the Secretary of the Committee, on the subject, of the British Association.

Geological Photography.—The past work of this Committee is recorded in the album lying on the Library table. In it will be found the photographs accompanied by the required descriptions.

The Flora of the District.—The acquisition of the "Herbarium" of

the District has been the chief event. The re-arrangement and extension of it are steadily proceeding.

LIBRARIAN'S REPORT FOR 1891.

The sum spent in connection with the Library during the year under review amounted to £9 4s. 11d. Of this sum £6 15s. 5d. was for periodicals, and £2 9s. 1d. for binding a number of volumes of the same, received in previous years, and a small sum for postage.

The Ray Society, in return for the annual subscription of one guinea, furnished the Society with Vol. IV. of the "Larvæ of the British Butterflies and Moths."

The volume for the present year will be the 1st part of the Monograph on the Cretaceous Star fishes.

In addition to the 8 serial works purchased, and laid on the table, from month to month, the following have been presented by members and other friends, viz.—Books 15; periodicals 5; pamphlets 9; and by exchange with other Societies—periodicals, 15; on loan, for reference of members, by Mr. G. Dowker, "Ormerod's Classified Index of Transactions of the London Geological Society."

Mr. Dowker has also kindly promised to place in the Library, on loan, the deficient volumes of the series of these Transactions for reference only. The Societies with which exchange of publication is now made number twelve. The publications of our Society are also sent to certain Institutions which have expressed a desire to have them.

Through the kindness of Mr. Reid in taking stock of the Library on the 31st December, 1891, for the second time during the year, the Librarian is able to report that the books generally are in good order. The loans from the Library have been 38 during the year. Five of these loans were detained over time, one such still continuing so. Twice omission has occurred to note the return of the book borrowed. These are matters which require attention on the part of members if the Library is to be kept from loss.

There are a number of periodicals, transactions of Societies and pamphlets at present loose on the shelves, and soiled with dust. These should be bound up in volumes as soon as the funds will permit.

The last Catalogue of the Library was printed with the Report of

the Society in 1887. Since then the accumulation of books has been considerable, and it is expedient that a new Catalogue should be published. The expense of this might be met to some extent by a grant made from the publishing fund of the Society, and by a small charge to Members for copies of the new Catalogue.

The Periodical Literature is much used for reference, and is of particular value in such a Library. It is, therefore, desirable, if possible, either by gifts or purchase, to complete the serial works in the Library.

W. H. HORSLEY, COL.,

Hon. Librarian.

TREASURER'S REPORT FOR 1891.

The accompanying financial statement exhibits a considerable increase in disbursements over those of former years, but this is easily accounted for. 1st. The rent of room is £4 in excess. 2nd. The expenses connected with the moving of books and furniture, with certain additions thereto came in the aggregate to £5 3s. 11d. 3rd. The contribution to the library was £2 11s. 1d., in excess of the previous year, owing to the supply of missing periodicals, and to a greater number of books being bound. These several sums alone amount to £11 15s.

The subscriptions received from members was, as nearly as possible, the same as in the previous year, viz., £26 1s., while the arrears collected amounted to £1 10s. There are still arrears due. It will be observed that the Fire Insurance Premium, viz., 11s. 3d., has been returned, and is entered on both sides of the account. The same is the case with the sum raised for the purchase of the "Herbarium," viz., £3 3s.

There have been five new members elected during the year, making the number of members 67, with one junior member. The total expenditure for the past year is shown to have been £45 9s. 1½d., inclusive of £1 14s. 6½d., balance due to Treasurer as per last

account ; while the receipts have only amounted to £32 7s. 3d., leaving a balance of £13 1s. 10½d. due to the treasurer.

W. H. HORSLEY, COL.,
Hon. Treasurer.

Canterbury,
22, January, 1892.

The following Sub-committees have been formed to make and obtain special investigations and observations in accordance with the suggestions of the British Association. All the members of the Society are invited to assist the work of the Sub-committee.

The President is Ex-officio a Member of every Sub-Committee.

VARIAION OF TEMPERATURE IN RIVERS.

Mr. G. Dowker, F.G.S.
Col. W. H. Horsley, R.E.

PHOTOGRAPHY OF GEOLOGICAL SECTIONS AND OBJECTS.

Mr. G. Dowker, F.G.S.
Capt. J. Gordon McDakin.
Mr. A. S. Reid, M.A., F.G.S.

COAST EROSION.

Mr. G. Dowker, F.G.S.
Capt. J. Gordon McDakin,

THE FLORA OF THE DISTRICT.

Mr. G. Dowker, F.G.S.
Mr. J. Reid, F.R.C.S.

INVERTEBRATE FAUNA AND CRYPTOGAMIC FLORA OF FRESH WATER.

Mr. W. P. Mann, B.A.
Mr. Sibert Saunders.

FINANCIAL STATEMENT OF 1891.

RECEIPTS.

| | £ | s. | d. |
|--|----|----|-----|
| By subscriptions for 1891 received up to January 14th, 1892..... | 26 | 1 | 0 |
| " arrears for 1890 to the same date..... | 1 | 10 | 0 |
| " donation from Jas. Reid, Esq. | 1 | 0 | 0 |
| " amount received for Herbarium | 3 | 3 | 0 |
| " ditto for Fire Insurance returned | 0 | 11 | 3 |
| " 2 copies of No. 2 S.E. Naturalist | 0 | 2 | 0 |
| Balance due to Treasurer..... | 13 | 1 | 10½ |

£45 9 1½

Examined and found correct,
GEORGE RIGDEN.

DISBURSEMENTS.

| | £ | s. | d. |
|---|----|----|----|
| Balance due to Treasurer, as per last account | 1 | 14 | 6½ |
| To rent of room for the year | 14 | 0 | 0 |
| " stamp and agreement with Mr. Goulden .. | 0 | 1 | 6 |
| " fire insurance on Library | 0 | 11 | 3 |
| " subscription to Ray Society | 1 | 1 | 0 |
| " E. B. Goulden, for printing report, 1890 ... | 3 | 9 | 0 |
| " Ditto for Post Cards, Carriage, &c. (Mr. Drake) | 1 | 9 | 11 |
| " Capitation grant to S.E. Council | 3 | 6 | 0 |
| " J. Godden & Son for removing books, etc. | 1 | 12 | 6 |
| " W. Tice's Bill..... | 0 | 4 | 9 |
| " H. Paine's ditto | 1 | 5 | 5 |
| " P. Bowle's ditto | 2 | 1 | 8 |
| " Hon. Secretary for Cards, Postage, etc. ... | 1 | 11 | 0 |
| " Hon. Assistant ditto for Petty Cash..... | 0 | 10 | 7 |
| " Contribution to Library .. . | 9 | 4 | 11 |
| " Herbarium purchased | 3 | 3 | 0 |
| " Postage and fees for P.O. orders | 0 | 2 | 6 |

£45 9 1½

W. H. HORSLEY, COLONEL,
Hon. Treasurer.

EAST KENT NATURAL HISTORY SOCIETY.

PUBLISHING FUND FOR 1891.

| RECEIPTS. | | | | PAYMENTS. | | | |
|----------------------------|----------|-----------|----------|-----------------------------|----------|-----------|----------|
| | £ | s. | d. | | £ | s. | d. |
| Mrs. Davies | 0 | 5 | 0 | To Mr. G. Dowker on account | | | |
| Miss Kingsford | 0 | 5 | 0 | of the East Kent Natural | | | |
| Mr. James Reid | 0 | 10 | 0 | list, No. 2, published in | | | |
| Mr. Mann | 0 | 10 | 0 | 1891 | 8 | 6 | 6 |
| Colonel Horsley | 0 | 10 | 0 | | | | |
| Colonel Cantis | 0 | 10 | 0 | | | | |
| Mr. Sibert Saunders | 0 | 5 | 0 | | | | |
| Mr. Rigden | 0 | 5 | 0 | | | | |
| Mr. Blofeld | 0 | 5 | 0 | | | | |
| Mr. Ernest Ashton | 0 | 5 | 0 | | | | |
| Mr. J. Evens | 0 | 3 | 0 | | | | |
| Balance in hand on the | | | | Balance in hand on the 20th | | | |
| 20th January, 1891 ... | 3 | 6 | 6 | January, 1892.... | 8 | 18 | 0 |
| | <u>6</u> | <u>19</u> | <u>6</u> | | <u>6</u> | <u>19</u> | <u>6</u> |

Examined and found correct,
GEORGE RIGDEN.

W. H. HORSLEY, Col.,
Hon. Treasurer.
20th January, 1892.

The minutes of the last Annual Meeting were read and confirmed.

On the motion of Mr. James Reid, seconded by Mr. Rigden, it was resolved that the Report and Financial Statements be adopted, printed, and issued to the members.

It was also resolved that the thanks of the Society are due to the gentlemen who have read papers, and to all who have contributed notes and exhibits during the year.

Mr. Mann moved, Colonel Horsley seconded, and it was resolved that the thanks of the Society are due to Mr. Reid for his valuable ser-

vices during the year in examining and arranging the Library, in examining and re-arranging the Herbarium, and in promoting the interests of the Society in many ways.

On the motion of Colonel Horsley, seconded by Mr. Mann, it was resolved that the thanks of the Society be given to Mr. Hayward for his services.

Colonel Horsley moved, Mr. James Reid seconded, and it was resolved that Mr. Sidney Harvey should be asked to consent to retain the Presidentship for 1892.

On the motion of the President, seconded by Mr. F. Baker, Colonel Horsley was re-appointed Librarian and Treasurer, Mr. Mann Secretary, and Mr. Hayward Assistant Secretary.

The Committee was re-appointed with the substitution of Mr. Evens and Mr. Baker for two members who had expressed a wish to retire.

It was resolved that the Committee be instructed to consider the following matters :—

1. The question of publishing a new Catalogue to the Library.
2. The advisability of holding a *Conversazione* to provide funds for making up the deficit in the accounts.
3. The renewal of the application for the Gilchrist Lectures.



East Kent Natural History Society,

SCIENTIFIC MEETINGS

SESSION, 1892-3.

PLACE: NO. 39, ST. GEORGE'S STREET, CANTERBURY.

TIME: 7 O'CLOCK, P.M., FOR EXHIBITS.

7.30 " " FOR PAPER.

On the Second Monday of each month, viz.:

1892.

January 11th.

January 25th.

February 8th.

March 14th.

April 11th.

From May to September there
will be Excursions, and due notice
of them will be given.

1892.

October 10th.

November 14th.

December 12th.

1893.

January 16th.

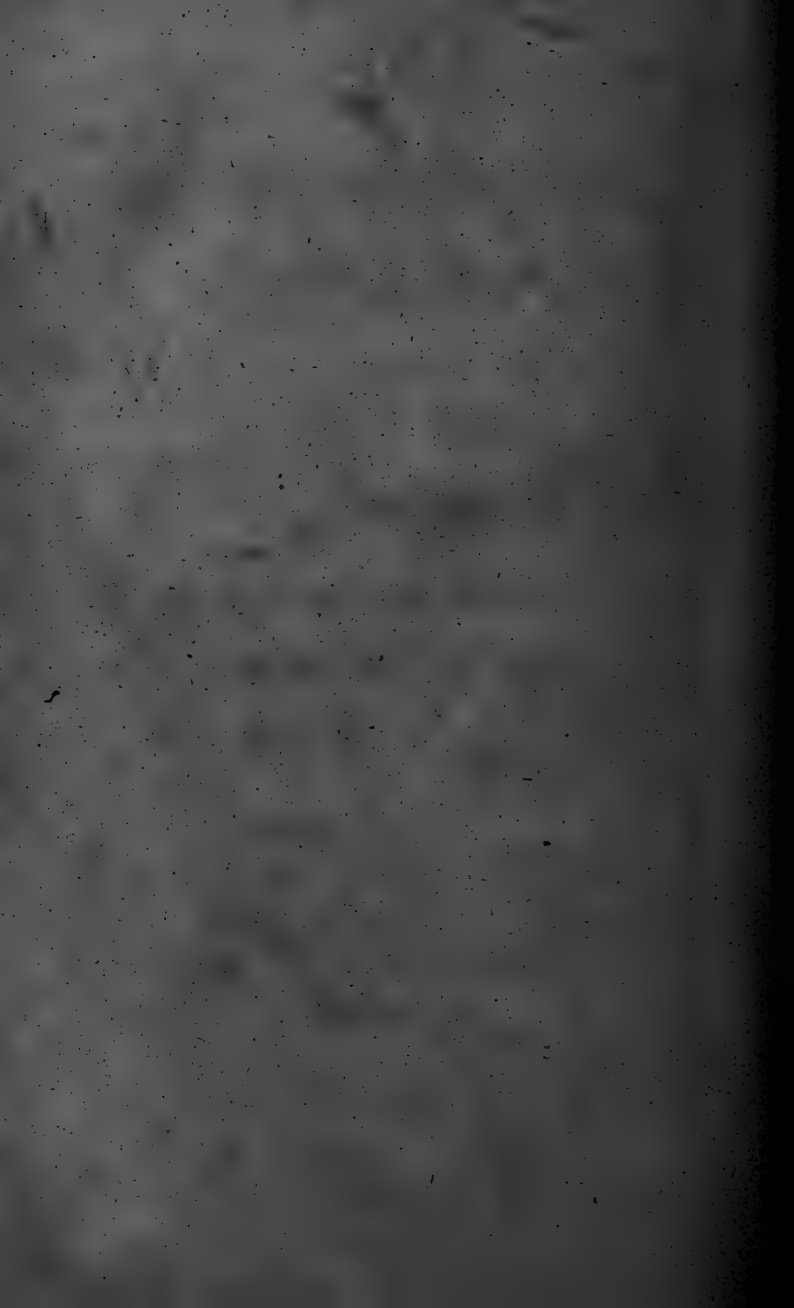
February 13th.

March 13th.

April 10th.

ANNUAL MEETING,

Tuesday, January 31st, 1893, at 4 p.m.



THIRTY-FIFTH REPORT

(1892)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING

HELD AT

The Society's Rooms, 39, St. George's Street, Canterbury,

On JANUARY 31st, 1893.

Canterbury :



' KENTISH GAZETTE AND CANTERBURY PRESS " OFFICE.

1893.

THIRTY-FIFTH REPORT

(1892)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING

HELD AT

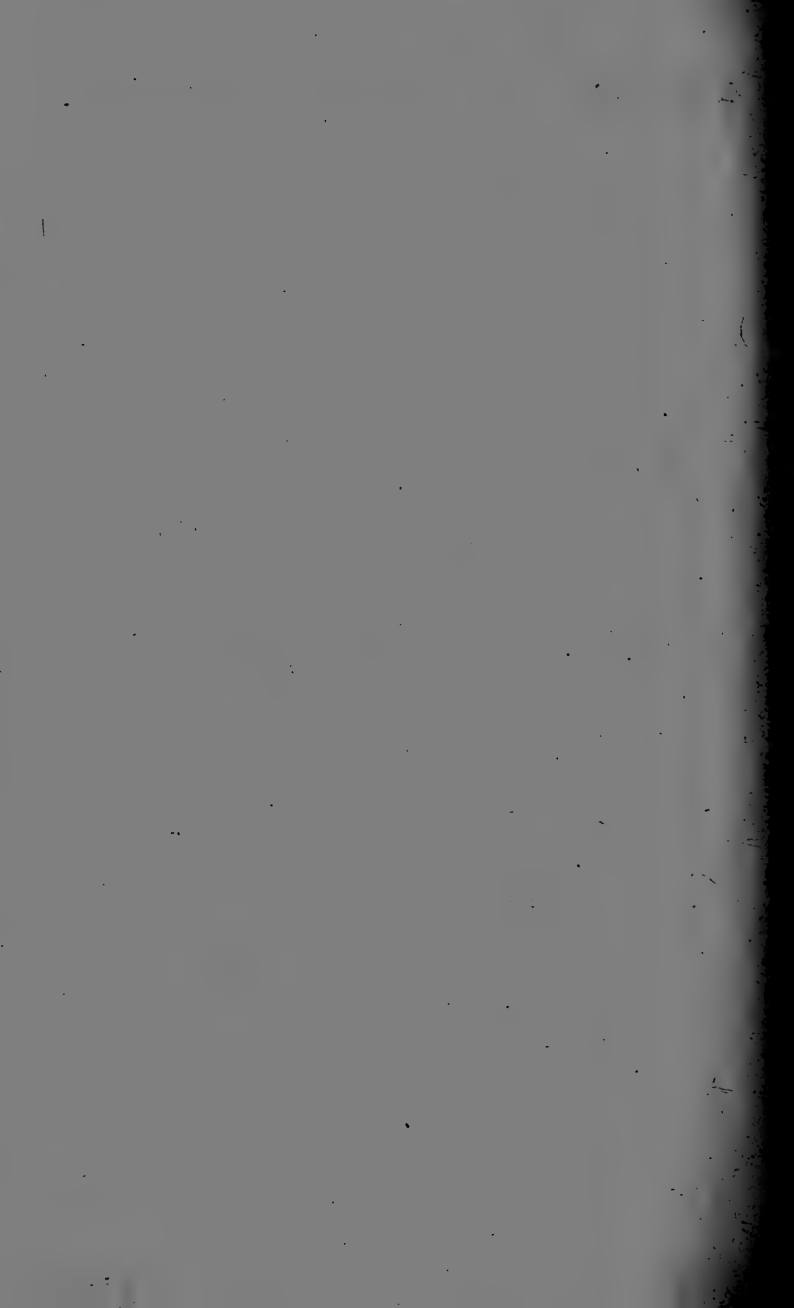
The Society's Rooms, 39, St. George's Street, Canterbury,

On JANUARY 31st, 1893.

Canterbury :

"KENTISH GAZETTE AND CANTERBURY PRESS" OFFICE.

1893.



EAST KENT NATURAL HISTORY SOCIETY,

Founded 1857.

~~~~~

## President :

Mr. SIDNEY HARVEY, F.I.C., F.C.S.

## Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.  
THE VERY REV. THE DEAN OF CANTERBURY.  
MR. MATTHEW BELL, BOURNE PARK.  
MR. G. DOWKER, F.G.S., RAMSGATE.  
MR. WILLIAM OXENDEN HAMMOND, ST. ALBANS.  
MR. H. B. MACKESON, HYPHE.  
CAPTAIN GORDON McDAKIN, DOVER.  
MR. JAMES REID, F.R.C.S., CANTERBURY.  
THE HON. AND REV. CANON FREMANTLE, M.A.  
THE REV. R. N. GANDY, M.A., CANTERBURY.

## Treasurer :

Mr. J. A. BLOFELD.

## Librarian :

Mr. JAMES REID, F.R.C.S.

## Honorary Secretary :

Mr. F. BAKER, C.E., VERNON HOUSE, CANTERBURY.  
*(To whom all communications should be addressed.)*

## Assistant Secretary :

Mr. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

## Committee :

Mr. J. A. BLOFELD,  
Mr. H. M. CHAPMAN,  
Rev. J. SANGER DAVIES,  
Mr. J. EVENS,

Rev. T. FIELD,  
Mr. W. P. MANN,  
General R. MONEY,  
Mr. G. RIGDEN,

Mr. SIBERT SAUNDERS.

# MEMBERS.

---

- |                                    |                                            |
|------------------------------------|--------------------------------------------|
| Abbott, Miss                       | 10, Hanover Place, Canterbury.             |
| Amos, Mr. F.                       | 1, Parade, Canterbury.                     |
| Baker, Mr. F., C.E.                | Vernon House, Canterbury,                  |
| Bell, Mr. Matthew                  | Bourne Park, Canterbury.                   |
| Biggleston, Mr. H.                 | Old Dover Road, Canterbury.                |
| Blofeld, Mr. J. A.                 | Mill Bank, London Road, Canterbury.        |
| Blore, Rev. Dr.                    | St. Stephen's House, Canterbury.           |
| Briggs, Mr. H. M.                  | 17, St. George's Place, Canterbury.        |
| Cantis, Colonel                    | St. Stephen's Lodge, Canterbury.           |
| Chapman, Mr. H. M.                 | The Priory, St. Martin's Hill, Canterbury. |
| Chapman, Mrs. H. M.                | The Priory, St. Martin's Hill, Canterbury. |
| Cole, Miss                         | 53, London Road, Canterbury.               |
| Court, Colonel, J.P.               | 140, Snargate Street, Dover.               |
| Cozens, Mr. W.                     | 33, Dover Street, Canterbury.              |
| Coutts, Mrs.                       | Stone House, Canterbury.                   |
| Davies, Rev. J. Sanger, M.A.       | St. Mary Bredin's Vicarage, Canterbury.    |
| Davies, Mrs. J. Sanger             | St. Mary Bredin's Vicarage, Canterbury.    |
| Davies, Mrs.                       | 14, St. Dunstan's Terrace, Canterbury.     |
| Dowker, Mr. G., F.G.S.             | Laburnam Villa, Station Road, Ramsgate.    |
| Evens, Mr. John                    | St. Stephen's, Canterbury.                 |
| Farren, General                    | Great Bealings, Woodbridge.                |
| Field, Rev. T., M.A.               | King's School, Canterbury.                 |
| Forest, Mrs.                       | 22, Hanover Place, Canterbury.             |
| Fremantle, Hon. & Rev. Canon, M.A. | Precincts, Canterbury.                     |
| Furley, Mr. George                 | Barton Fields, Canterbury.                 |
| Fielding, Mr. H.                   | St. Dunstan's, Canterbury.                 |
| Gandy, Rev. Richard Norris, M.A.   | St. Andrew's Rectory, Canterbury.          |
| Gardner, Mrs.                      | Precincts, Canterbury.                     |
| Gogarty, Mr. H. A., M.D.           | St. George's Place, Canterbury.            |
| Goulden, Mr. E. B.                 | Ethelbert Road, Canterbury.                |
| Greenwood, Miss D.                 | 48, St. George's Street, Canterbury.       |
| Hamm, Miss                         | Whitefriars, Canterbury.                   |
| Hammond, Mr. W. O.                 | St. Alban's Court, Wingham.                |
| Harvey, Mr. Sidney, F.I.C., F.C.S. | 8, High Street, Canterbury.                |
| Heaton, Mr. J. Henniker, M.P.      | 38, Eaton Square, London, W.               |
| Holland, Rev. Canon, M.A.          | Precincts, Canterbury.                     |
| Iron, Miss Helen                   | 39, St. Margaret's Street, Canterbury.     |

- Iron, Miss Henrietta 39, St. Margaret's Street, Canterbury.
- Jennings, Mr. W. J. Westbere.  
Johnson, Mr. J. G. Barton Mills, Canterbury.
- Kearney, Mrs. Ancher Villas, London Road, Canterbury.  
Kingsford, Mr. M. Littlebourne.  
Kingsford, Miss 14, St. Dunstan's Terrace, Canterbury.
- Laurie, Colonel, C.B. Hardres Court, Upper Hardres.
- McDakin, Captain 15, Esplanade, Dover.  
Mackeson, Mr. H. B. Hillside House, Hythe.  
McMaster, Mr. J. The Holt, Harbledown.  
Mann, Mr. W. P., B.A. Simon Langton Schools, Canterbury.  
Molony, Rev. C. A. Winton House, Canterbury.  
Money, General R. Hopebourne, Harbledown.
- Oxbrow, Mr. A. W. Burgate, Canterbury.
- Patterson, Rev. John Bridge Street, Canterbury.  
Payne-Smith, Very Rev. R., Dean of Canterbury. The Deanery, Canterbury.  
Payne-Smith, Miss The Deanery, Canterbury.  
Payne-Smith, Miss M. The Deanery, Canterbury.  
Posnett, Mr. L. W., M.A., B.Sc. Kent College, Canterbury.  
Plumtre, Mr. C. J. Fredville, Dover.
- Reid, Mr. James, F.R.C.S. Bridge Street, Canterbury.  
Reid, Mr. A. S., M.A., F.G.S. Trinity College, Glesalmond, Perth.  
Rigden, Mr. G., M.R.C.S. Burgate, Canterbury.  
Rigden, Mrs. G. Burgate, Canterbury.  
Rigden, Miss urgate, Canterbury.
- Sangster, Mr. Francis 27, Old Dover Road, Canterbury.  
Saunders, Mr. Sibert Whitstable.  
Slater, Mr. F. 5, Guildford Lawn, Dover.  
Sondes, Right Hon. Earl Lees Court, Faversham.  
Skerrin, Mr. W. R. 3, Codrington Villas, Ramsgate.  
Stead, Captain Rose Lawn, London Road, Canterbury.
- Tripp, Mr. G. D., B.A. King's School, Canterbury.
- Wacher, Mr. F., M.R.C.S. Monastery House, Canterbury.  
Webb, Mr. Sidney Maidstone House, Dover.  
Webber, Mr. J. D. 50, London Road, Canterbury.  
Wetherelt, Mr. A. 61, Havelock Street, Canterbury.  
Whiteman, Miss Tyler Hill, Canterbury.

# CORRESPONDING MEMBERS.

---

|                                 |                                                           |
|---------------------------------|-----------------------------------------------------------|
| Bartlett, Mr. A. D.             | Zoological Gardens, London.                               |
| Bates, Mr. H. W.                | London.                                                   |
| Britton, Mr. J.                 | Royal Herbarium, Kew.                                     |
| Marshall, Rev. E. S.            | Witley, Godalming, Surrey.                                |
| Masters, Dr. Maxwell T., F.R.S. | Ealing.                                                   |
| Mitchinson, Right Rev. Dr.      | Sibstone Rectory, Atherstone.                             |
| Saunders, Mr. G. S.             | Care of Mrs. Horsley, St. Stephen's Lodge,<br>Canterbury. |
| Trimen, Mr. H.                  | Botanical Department, British Museum.                     |
| Whitaker, Mr. W., F.R.S.        | Geological Museum, St. Jermyn St., London.                |

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# HONORARY MEMBERS.

---

|                               |                          |
|-------------------------------|--------------------------|
| Kemp, Dr. William             | Wellington, New Zealand. |
| Linford, Mr. J. S.            | Hull.                    |
| Rossiter, Mr. T. B., F.R.M.S. | Canterbury.              |

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# ASSOCIATES.

---

|                    |                                       |
|--------------------|---------------------------------------|
| Dean, Mr. H.       | St. Peter's Street, Canterbury.       |
| Fiddian, Mr. W. H. | "Kentish Express" Office, Canterbury. |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury           |
| Pugh, Mr.          | Vernon Place, Canterbury.             |

# EAST KENT NATURAL HISTORY SOCIETY.

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Report for 1892, being the 35th Report of the Society.

The Society comprises 75 Ordinary Members; 9 Corresponding Members; 3 Honorary Members; 4 Associates.

The papers read during the year were:—

|       |    |                                                           |                             |
|-------|----|-----------------------------------------------------------|-----------------------------|
| JAN.  | 11 | "Cretaceous Forms of Life" ...                            | CAPTAIN MCDAKIN.            |
| JAN.  | 25 | "Cephalopoda" ... ..                                      | MR. SIBERT SAUNDERS.        |
| FEB.  | 8  | "Analogy of Evolution in Biology<br>and Sociology" ... .. | REV. T. FIELD, M.A.         |
| MARCH | 14 | "Air" ... ..                                              | MR. G. S. SAUNDERS.         |
| APRIL | 11 | "Geological Photography" ...                              | MR. A. S. REID, M.A.,       |
| OCT.  | 17 | "Modern Alchemy" ... ..                                   | MR. S. HARVEY.              |
| NOV.  | 14 | "Holidays on Snow and Rock" ...                           | REV. J. SANGER DAVIES, M.A. |
| DEC.  | 12 | "Animal Messmates" ... ..                                 | MR. E. HORSNAILL.           |

The attendance on the scientific evenings has been generally larger than in the preceding year, and a very great amount of interest has been taken in the examination of the exhibits before the paper of the evening has been read. Microscopical, Geological, Botanical, and Photographical Exhibits of great beauty and scientific value have been brought to these meetings, and Members who have not been able to come have often kindly sent objects they had prepared or collected.

*Excursions:* Four excursions were arranged for the summer, viz.: The landslip near Folkestone and Cæsar's Camp, May 19th; to Shepherdswell and Barham on June 16th; to the Warren near Folkestone on July 21st; and at Whitstable and Graveney Marshes on September 1st. All these were carried out and all except the last were well attended. All proved to be very enjoyable and generally interesting.

*Representation of the Society at the conference of delegates of corresponding Societies of the British Association.*—Mr. A. S. Reid, M.A., again represented the Society and again contributed a very able report which was read at the opening of the Session on October 17th, 1892. He strongly urges the importance of securing photographs of Geological sections and phenomena to be found in Kent, a county as important geologically as the county of Yorkshire

which has already recorded nearly all her important geological objects in the National Collection, whilst Kent has contributed only seventeen. He also earnestly advises the Society in conjunction with the Dover Society to avoid the great danger that besets local Natural History Societies in the development of *Individualism* which tends to hinder their usefulness and ultimately leads to their extinction. He hopes that the Societies will carry out researches on subjects of special character by combined action through Sub-Committees and thus produce records of National importance.

The Annual Meeting of the Council of the Combined Societies was held at the rooms of the East Kent Natural History Society, Canterbury, on June 29th, 1892. The Council in their Report urged the Members of the Societies to consider the importance of following out the particular lines of research and observation laid down by the British Association through the Delegate of the Societies, and hoped that in the future additional workers would be found to carry out the special investigations of Sub-Committees. These are (1) the life history and disappearance of native plants, (2) the invertebrate fauna and cryptogamic flora of the district, (3) the photographing of important geological sections.

The work of revising, rearranging and combining the specimens included in the Dean and Reid Collections, was undertaken by Mr. James Reid and has been continued throughout the year. The work is being done so thoroughly that progress must necessarily be comparatively slow, but when it is completed the Society will be in possession of a very valuable Herbarium.

Eighty Six Orders have already been arranged and placed in fourteen cases in two divisions:—

- (1) Specimens obtained in Kent, chiefly in East Kent.
- (2) Specimens obtained from other parts of Britain.

Four Orders remain to be arranged, viz.:—Gramineæ, Equisetaceæ, Lycopodiaceæ, Filices.

*Conversazione*: For some years past the Society has made no special effort to bring itself to the notice of the public, but at the beginning of this year several Members of the Committee undertook to promote a *Conversazione* with the object of increasing the interest of the public in the Society's work.—The *Conversazione* was held in May, in the Music



Hall, and was in every respect successful. Through the liberality of Members and others the expenses were fully covered by Subscriptions so that the funds of the Society have not had to suffer. The increase in the Membership has not been as large as was anticipated, though eight or nine new Members have been added as a direct result of the *Conversazione*.

*Gilchrist Lectures*: In the last Report it was mentioned that the application for a course of Gilchrist Lectures had not been successful. A second application was made in 1892, and Canterbury was selected as one of the towns to receive a Course of Six Lectures in the Autumn. These Lectures have been given and have been exceedingly well received. They have without doubt aroused an interest in Scientific Subjects, and it will be a misfortune if this interest cannot be stimulated by the establishment of some more permanent course of instruction. The movement for the Gilchrist Lectures emanated from the East Kent Natural History Society, and it is to be congratulated upon the success of the scheme.

*Publishing*: No publication of Transactions has been made during 1892, but the materials for Part III. of the *South Eastern Naturalist* are now being arranged and it will be issued early in the Spring.

The Editors of the *South Eastern Naturalist* desire to appeal to Members to send them notes of observations on Natural History Matters. These Notes are always found to be one of the most interesting and valuable parts of the publication. It was agreed at the Annual Meeting of the Combined Societies held in June, that Members and others who require copies of the *South Eastern Naturalist* should apply for them to the Secretary of this Society.

*Sub-Committees*: 'Variation of Temperature in Rivers, &c.'—This investigation by the British Association is now closed. The Notes sent up from Canterbury have been of considerable value.

*Geological Photography*: Captain McDakin has kindly contributed a number of Photographs of Special Local interest to the Album of Geological Photographs.

#### HON. LIBRARIAN'S REPORT FOR 1892.

The sum expended in connection with the Library during the past year amounted to £9 4s. 7d. Of this sum £7 11s. 10d. was for periodicals and £1 12s. 3d. for binding fifteen volumes of the same, and a

small sum for postage. Owing to the kindness of Mr. Reid in taking stock of the Library twice during the year under review, and, moreover, drawing up an elaborate Report of its state and condition, which Report will doubtless be submitted to the Annual Meeting of the Society, there is nothing further for the Hon. Librarian to state, except to express his very sincere thanks to Mr. Reid for so kindly taking the matter in hand during his late illness, and doing it so thoroughly.

There is one matter which was noticed in the Report of last year, which will, no doubt, be considered and finally determined one way or the other at the Annual Meeting. I refer to a New Catalogue of the books in the Library, which is much wanted, the accumulation of books since the last Catalogue was published in 1887 being considerable.

W. H. HORSLEY, COL.,  
Hon. Librarian.

Canterbury,  
27th January, 1893.

#### HON. TREASURER'S REPORT FOR 1892.

The accompanying financial statement shows, I regret to say, a still further deficit of £2 1s. 7d. over and above that of the previous year. The purchase of an additional book-case at a cost of £2 10s., is more than sufficient to account for this. But so long as the normal expenditure exceeds the receipts from Members, the deficit must necessarily continue, if it does not increase.

The receipts from subscriptions, arrears, and donations amounted to £36 13s. 6d., while the expenditure, deducting balance due to Treasurer, was £39. There are still arrears of subscriptions for 1891-92 due, amounting in the aggregate to £7 5s. It is to be hoped the greater part of, if not the whole of this sum will be paid in during the current year. The several parties have had reminders sent them.

It is satisfactory to report an increase in the number of members during the past year.

Ten new members have been elected, but against this must be set six resignations—thereby making the number of members at this present 75, for whom a capitation grant of one-shilling per head has been paid

to the Hon. Secretary of the S.E. Council to form a publishing fund in connection with the S.E. Naturalist, the 3rd number of which publication it is expected will be published in the current year.

It will be observed that a portion of the Fire Insurance Premium has been returned and brought to account.

Besides the above there is nothing particular to report.

W. H. HORSLEY, COL.,  
Hon. Treasurer.

Canterbury,

27th January, 1893.

The following Sub-committees have been formed to make and obtain special investigations and observations in accordance with the suggestions of the British Association. All the members of the Society are invited to assist the work of the Sub-committees.

*The President is Ex-officio a Member of every Sub-committee.*

VARIATION OF TEMPERATURE IN RIVERS.

Mr. G. Dowker, F.G.S.  
Col. W. H. Horsley, R.E.

PHOTOGRAPHY OF GEOLOGICAL SECTIONS AND OBJECTS.

Mr. G. Dowker, F.G.S.  
Capt. J. Gordon McDakin.  
Mr. A. S. Reid, M.A., F.G.S.

COAST EROSION.

Mr. G. Dowker, F.G.S.  
Capt. J. Gordon McDakin.

THE FLORA OF THE DISTRICT.

Mr. G. Dowker, F.G.S.  
Mr. J. Reid, F.R.C.S.

INVERTEBRATE FAUNA AND CRYPTOGAMIC FLORA OF FRESH WATER.

Mr. W. P. Mann, B.A.  
Mr. Sibert Saunders.

# FINANCIAL STATEMENT OF 1892.

## RECEIPTS.

|                                                                   | £         | s. | d. |
|-------------------------------------------------------------------|-----------|----|----|
| By subscriptions for 1892 received up to January 24th, 1893 ..... | 25        | 16 | 0  |
| „ arrears for 1891 to the same date .....                         | 4         | 10 | 6  |
| „ donations towards deficit .....                                 | 6         | 7  | 0  |
| „ portion of Fire Insurance premium returned .....                | 0         | 3  | 11 |
| „ 1 copy of No. 2 S.E. Naturalist .....                           | 0         | 1  | 0  |
| Balance due to Treasurer .....                                    | 14        | 3  | 5½ |
|                                                                   | £51 1 10½ |    |    |

Canterbury,  
27th January, 1892.

Examined and found correct,  
GEORGE RIGDEN.

## DISBURSEMENTS.

|                                                    | £         | s. | d.  |
|----------------------------------------------------|-----------|----|-----|
| Balance due to Treasurer, as per last account      | 13        | 1  | 10½ |
| To rent of room for the year .....                 | 14        | 0  | 0   |
| „ fire insurance on Library .....                  | 0         | 11 | 3   |
| „ subscription to Ray Society .....                | 1         | 1  | 0   |
| „ E. B. Goulden, & Co. for printing report of 1891 | 2         | 12 | 6   |
| „ Ditto for cards and circulars .....              | 1         | 5  | 0   |
| „ Hon. Secretary for postage, etc. ....            | 2         | 6  | 6   |
| „ Hon. Assistant Secretary for Petty Cash ...      | 0         | 11 | 8   |
| „ Capitation grant to S.E. Council .....           | 3         | 15 | 0   |
| „ Mr. G. Dowker for book case .....                | 2         | 10 | 0   |
| „ Contribution to Library .....                    | 9         | 4  | 7   |
| „ Postage and fees for P.O. orders .....           | 0         | 2  | 6   |
|                                                    | £51 1 10½ |    |     |

W. H. HORSLEY, COLONEL,  
Hon. Treasurer.

# EAST KENT NATURAL HISTORY SOCIETY.

## PUBLISHING FUND FOR 1892.

### RECEIPTS.

|                             | £ | s. | d. |                             | £ | s. | d. |
|-----------------------------|---|----|----|-----------------------------|---|----|----|
| Mrs. Davies ... ..          | 0 | 5  | 0  |                             |   |    |    |
| Miss Kingsford ... ..       | 0 | 5  | 0  |                             |   |    |    |
| Mr. James Reid ... ..       | 0 | 10 | 0  |                             |   |    |    |
| Mr. Mann ... ..             | 0 | 10 | 0  |                             |   |    |    |
| Colonel Horsley ... ..      | 0 | 10 | 0  |                             |   |    |    |
| Colonel Cantis ... ..       | 0 | 10 | 0  |                             |   |    |    |
| Mr. Sibert Saunders ... ..  | 0 | 5  | 0  |                             |   |    |    |
| Mr. Rigden ... ..           | 0 | 5  | 0  |                             |   |    |    |
| Mr. E. Ashton ... ..        | 0 | 5  | 0  |                             |   |    |    |
| Balance in hand on the 20th |   |    |    | Balance in hand on the 24th |   |    |    |
| January, 1892 ... ..        | 3 | 13 | 0  | January, 1893 ... ..        | 6 | 18 | 0  |
|                             | 6 | 18 | 0  |                             | 6 | 18 | 0  |

Examined and found correct,  
GEORGE RIGDEN.

W. H. HORSLEY, COL.,  
Hon. Treasurer.

The Minutes of the Annual Meeting, held January 26th, 1892, were confirmed.

On the motion of Mr. G. Rigden, seconded by the Rev. J. Sanger Davies, it was resolved that the Reports and Financial Statements be adopted, printed and issued to the Members.

It was proposed by the Rev. J. Sanger Davies, seconded by Mr. F. Baker, and resolved—'That in accordance with the recommendation of the Committee, a new Catalogue of the Library be prepared, and that a special appeal be made to Members for subscriptions towards the expense

It was moved by Mr. James Reid, seconded by Mr. F. Baker and carried—"That the Committee be requested to consider whether more active measures can be taken in relation to the Sub-Committees of observation and investigation, so that annual reports of their work may be

included in the proceedings of the Society for the year, and also that selections from such reports may be published in the South Eastern Naturalist.

It was resolved that the thanks of the Society be given to those who read papers or contributed notes and exhibits during the year.

The thanks of the Society were given to Mr. James Reid for his continued services in the Library, and for his valuable work in examining, re-arranging, and completing the Herbarium.

The thanks of the Society were also voted to the Secretary and to the Assistant Secretary.

It was proposed by Mr. James Reid, seconded by the Rev. J. Sanger Davies, and carried, that Mr. S. Harvey be requested to continue to hold the Presidentship for 1893.

On the motion of Captain Stead, seconded by Mr. James Reid, Mr. F. Baker was elected Secretary, and the Librarian, Treasurer and Assistant Secretary were re-appointed

The Committee was re-appointed with the substitution of Mr. W. P. Mann for Mr. F. Baker who had been elected Secretary.

*Pres.*  
9 MAY. 95



# East Kent Natural History Society.

## SCIENTIFIC MEETINGS, SESSION, 1893-4.

PLACE: NO. 39, ST. GEORGE'S STREET, CANTERBURY.

TIME: 7 O'CLOCK P.M. FOR EXHIBITS.

7.30 " " FOR PAPER.

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On the Second Monday of each month, viz.:

1893.

January 16th.

February 13th.

March 13th.

April 10th.

From May to September there  
will be Excursions, and due notice  
of them will be given.

1893.

October 9th.

November 13th.

December 11th.

1894.

January 15th.

February 12th.

March 12th.

April 9th.

---

## ANNUAL MEETING,

Tuesday, January 30th, 1894, at 4 p.m.









THIRTY-SIXTH REPORT

(1893)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING

HELD AT

*The Society's Rooms, Watling Chambers,  
19, Watling Street, Canterbury,*

ON JANUARY 30th, 1894.



PRINTED AT THE "KENT HERALD" OFFICE, 9, HIGH STREET.



# THIRTY-SIXTH REPORT

( 1 8 9 3 )

OF THE

**EAST KENT**

**NATURAL HISTORY SOCIETY,**

ADOPTED AT THE

**ANNUAL MEETING**

HELD AT

*The Society's Rooms, Watling Chambers,  
19, Watling Street, Canterbury,*

**ON JANUARY 30th, 1894.**



Canterbury :

PRINTED AT THE "KENT HERALD" OFFICE, 9, HIGH STREET.

THE HISTORY OF THE  
CITY OF BOSTON

FROM THE FIRST SETTLEMENT  
TO THE PRESENT TIME

BY  
NATHANIEL BENTLEY

IN TWO VOLUMES.

VOLUME I.

BOSTON: PUBLISHED BY  
J. B. ALLEN, 1856.

# EAST KENT NATURAL HISTORY SOCIETY

Founded 1857.

President :

MR. SIDNEY HARVEY, F.I.C., F.C.S.

Vice-Presidents :

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.  
THE VERY REV. THE DEAN OF CANTERBURY.  
MR. MATTHEW BELL, BOURNE PARK.  
MR. G. DOWKER, F.G.S., RAMSGATE.  
MR. WILLIAM OXENDEN HAMMOND, ST. ALBAN'S.  
CAPTAIN J. GORDON McDAKIN, DOVER.  
MR. JAMES REID, F.R.C.S., CANTERBURY.  
THE HON. AND REV. CANON FREMANTLE, M.A., CANTERBURY.  
THE REV. R. N. GANDY, M.A., CANTERBURY.

Treasurer :

MR. J. A. BLOFELD.

Librarian :

MR. JAMES REID, F.R.C.S.

Honorary Secretary :

MR. F. BAKER, C.E., VERNON HOUSE, CANTERBURY.

*(To whom all communications should be addressed.)*

Assistant Secretary :

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee :

MR. H. M. CHAPMAN.  
REV. J. SANGER DAVIES.  
MR. J. EVENS.  
REV. T. FIELD.

MR. W. P. MANN.  
GENERAL R. MONEY.  
MR. G. RIGDEN.  
MR. F. SANGSTER.

MR. SIBERT SAUNDERS.

## MEMBERS.

---

|                                         |                                             |
|-----------------------------------------|---------------------------------------------|
| Abbott, Miss                            | 10, Hanover Place, Canterbury.              |
| Amos, Mr. F.                            | 1, Parade, Canterbury.                      |
| Baker, Mr. F., C.E.,                    | Vernon House, Canterbury.                   |
| Bell, Mr. Matthew                       | Bourne Park, Canterbury.                    |
| Biggleson, Mr. H.                       | Old Dover Road, Canterbury.                 |
| Blofeld, Mr. J. A.                      | Mill Bank, London Road, Canterbury.         |
| Blore, Rev. Dr.                         | St. Stephen's House, Canterbury.            |
| Briggs, Mr. H. M.                       | 17, St. George's Place, Canterbury.         |
| Cantis, Colonel                         | St. Stephen's Lodge, Canterbury.            |
| Chapman, Mr. H. M.                      | The Priory, St. Martin's Hill, Canterbury.  |
| Chapman, Mrs. H. M.                     | The Priory, St. Martin's Hill, Canterbury.  |
| Cole, Miss                              | 53, London Road, Canterbury.                |
| Cozens, Mr. W.                          | 33, Dover Street, Canterbury.               |
| Coutts, Mrs.                            | Stone House, Canterbury.                    |
| Davies, Rev. J. Sanger,<br>M.A.         | St. Mary Bredin's Vicarage, Canterbury.     |
| Davies, Mrs. J. Sanger                  | St. Mary Bredin's Vicarage, Canterbury.     |
| Davies, Mrs.                            | 14, St. Dunstan's Terrace, Canterbury.      |
| Dowker, Mr. G., F.G.S.                  | 2, Laburnam Villas, Station Road, Ramsgate. |
| Evens, Mr. John                         | St. Stephen's, Canterbury.                  |
| Farren, General                         | Great Bealings, Woodbridge.                 |
| Field, Rev. T., M.A.                    | King's School, Canterbury.                  |
| Forest, Mrs.                            | 22, Hanover Place, Canterbury.              |
| Fremantle, Hon. and Rev.<br>Canon, M.A. | Precincts, Canterbury.                      |
| Furley, Mr. George                      | Barton Fields, Canterbury.                  |
| Flint, Mr. Benjamin H.                  | Leigh House, Canterbury.                    |
| Gandy, Rev. Richard<br>Norris, M.A.     | St. Andrew's Rectory, Canterbury.           |
| Gardner, Mrs.                           | Precincts, Canterbury.                      |
| Goulden, Mr. E. B.                      | Ethelbert Road, Canterbury.                 |
| Greenwood, Miss D.                      | 48, St. George's Street, Canterbury.        |
| Hamm, Miss                              | Whitefriars, Canterbury.                    |
| Hammond, Mr. W. O.                      | St. Alban's Court, Wingham.                 |
| Hammond, Mr. W. H.                      | Milton Chapel, Thanington.                  |
| Harvey, Mr. Sidney,<br>F.I.C., F.C.S.   | 19, Watling Street, Canterbury.             |
| Heaton, Mr. J. Henniker,<br>M.P.        | 38, Eaton Square, London, W.                |
| Hitchens, Rev. F. H.,<br>M.A.           | St. Stephen's Vicarage, Canterbury.         |
| Holland, Rev. Canon, M.A.               | Precincts, Canterbury.                      |



|                            |                                         |
|----------------------------|-----------------------------------------|
| Iron, Miss Henrietta       | 39, St. Margaret's Street, Canterbury.  |
| Jennings, Mr. W. J.        | Westbere.                               |
| Johnson, Mr. J. G.         | Barton Mills, Canterbury.               |
| Kearney, Mrs.              | Aucher Villas, London Road, Canterbury. |
| Kingsford, Mr. M.          | Littlebourne.                           |
| Kingsford, Miss            | 14, St. Dunstan's Terrace, Canterbury.  |
| Laurie, Colonel, C.B.      | Hardres Court, Upper Hardres.           |
| McDakin, Captain J. G.     | 15, Esplanade, Dover.                   |
| McMaster, Mr. J.           | The Holt, Harbledown.                   |
| Mann, Mr. W. P., B.A.      | Simon Langton Schools, Canterbury.      |
| Molony, Rev. C. A.         | Winton House, Canterbury.               |
| Money, General R.          | Hopebourne, Harbledown.                 |
| Oxbrow, Mr. A. W.          | Burgate, Canterbury.                    |
| Patterson, Rev. John       | Bridge Street, Canterbury.              |
| Payne-Smith, Very Rev. R.  |                                         |
| Dean of Canterbury,        | The Deanery, Canterbury.                |
| Payne-Smith, Miss          | The Deanery, Canterbury.                |
| Payne-Smith, Miss M.       | The Deanery, Canterbury.                |
| Plumtre, Mr. C. J.         | Fredville, Dover.                       |
| Reid, Mr. James, F.R.C.S., | Bridge Street, Canterbury.              |
| Reid, Mr. A. S., M.A.,     |                                         |
| F.G.S.                     | Trinity College, Glenalmond, Perth.     |
| Rigden, Mr. G., M.R.C.S.   | Burgate, Canterbury.                    |
| Rigden, Mrs. G.,           | Burgate, Canterbury.                    |
| Rigden, Miss               | Burgate, Canterbury.                    |
| Sangster, Mr. Francis      | 27, Old Dover Road, Canterbury.         |
| Saunders, Mr. Sibert       | Whitstable.                             |
| Slater, Mr. F.             | 5, Guildford Lawn, Dover.               |
| Sondes, Right Hon. Earl,   | Lees Court, Faversham.                  |
| Skerrin, Mr. W. R.         | 3, Codrington Villas, Ramsgate.         |
| Stead, Captain             | Rose Lawn, London Road, Canterbury.     |
| Story, Mr. Geo. A.,        |                                         |
| L.D.S., R.C.S.             | Vale House, Canterbury.                 |
| Tripp, Mr. G. D., B.A.     | King's School, Canterbury.              |
| Throwley, Lord             | Lees Court, Faversham.                  |
| Wacher, Mr. F., M.R.C.S.   | Monastery House, Canterbury.            |
| Webb, Mr. Sidney           | Maidstone House, Dover.                 |
| Wetherelt, Mr. A.          | 61, Havelock Street, Canterbury.        |

## CORRESPONDING MEMBERS.

---

|                                  |                                                           |
|----------------------------------|-----------------------------------------------------------|
| Bartlett, Mr. A. D.              | Zoological Gardens, London.                               |
| Bates, Mr. H. W.                 | London.                                                   |
| Britton, Mr. J.                  | Royal Herbarium, Kew.                                     |
| Marshall, Rev. E. S.             | Witley, Godalming, Surrey.                                |
| Masters, Dr. Maxwell T., F.R.S., | Ealing.                                                   |
| Mitchinson, Right Rev. Dr.,      | Sibstone Rectory, Atherstone.                             |
| Saunders, Mr. G. S.              | Care of Mrs. Horsley, St. Stephen's<br>Lodge, Canterbury. |
| Trimen, Mr. H.                   | Botanical Department, British<br>Museum.                  |
| Whitaker, Mr. W., F.R.S.,        | 33, East Park Terrace, Southamp-<br>ton.                  |

---

## HONORARY MEMBERS.

---

|                                |                         |
|--------------------------------|-------------------------|
| Kemp, Dr. William              | Wellington, New Zealand |
| Linford, Mr. J. S.             | Hull                    |
| Rossiter, Mr. T. B., F.R.M.S., | Canterbury              |

---

## ASSOCIATES.

---

|                    |                                      |
|--------------------|--------------------------------------|
| Dean, Mr. H.       | St. Peter's Street, Canterbury       |
| Fiddian, Mr. W. H. | "Kentish Express" Office, Canterbury |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury          |
| Pugh, Mr.          | Vernon Place, Canterbury             |

# EAST KENT NATURAL HISTORY SOCIETY.



## THIRTY-SIXTH ANNUAL REPORT.

REPORT FOR 1893, BEING THE 36TH REPORT OF THE SOCIETY.

The Society comprises 71 Ordinary Members, 9 Corresponding Members, 3 Honorary Members, and 4 Associates.

The Annual Meeting of the Society was held at the Society's New Rooms, Watling Chambers, 19, Watling Street, Canterbury, on Tuesday, January 30th, 1894, at 4 p.m., the President in the chair.

### REPORT OF THE COMMITTEE FOR 1893.

Your Committee in presenting the Thirty-sixth Report are pleased to be able to say that the Society, during the past year, as regards its work and numbers, may be said to have maintained its position; and that the members of this Society fully recognizing the valued labours of the late Colonel Horsley, in connection with the Society, as Past President, Treasurer, and Librarian, and also the ceaseless interest displayed by him in every department of its work, extending over a period of thirty years, desire to record their warmest appreciation and indebtedness for the same.

The following papers have been presented during the year:

- |       |     |                                                                                                                    |                         |
|-------|-----|--------------------------------------------------------------------------------------------------------------------|-------------------------|
| JAN.  | 9.  | "Evidence of a raised beach at Dover"                                                                              | CAPT. J. GORDON McDAKIN |
| FEB.  | 13. | "Animal Intelligence" .. .. .                                                                                      | Mr. G. D. TRIPP, B.A.   |
| MARCH | 13. | "Malthus and the connection of his<br>Theory with Darwinism" .. .. .                                               | Mr. H. ULLYETT, B.Sc.   |
| APRIL | 10. | "Earth" .. .. .                                                                                                    | Mr. G. SAUNDERS.        |
| OCT.  | 9.  | "President's Address, and Annual Report<br>of Delegate to Conference British<br>Association Meeting at Nottingham. |                         |
| NOV.  | 13. | "Mimicry and Protective Colouring" ..                                                                              | Mr. E. HORSNAILL.       |
| DEC.  | 11. | "Recent Geological discoveries in<br>Canada" .. .. .                                                               | Mr. F. BAKER, C.E.      |

This last paper was given by the Hon. Sec. at short notice, and illustrated by a series of beautiful photographic views by the oxyhydrogen light.

The scientific meetings throughout the year have generally been well attended, and great interest taken in the papers and exhibits.

*Excursions*: May 24th, Lenham and Charing, Geological and Botanical; June 14, Ramsgate to Pegwell Bay. Geological; September 13, Chilham Castle, Archæological and Botanical. These excursions were arranged and carried out successfully; it is however, to be regretted that the excursion to the Isle of Sheppey of July 12th, had to be abandoned in consequence of the few members replying, and the impossibility of making the necessary arrangements. The Chilham excursion was the best attended, and the thanks of the Society were accorded to the Hon. Sec. for giving a short history of the Castle and the trouble he had taken in arranging it; and also a hearty vote of thanks to Col. Hardy, for allowing the Society the opportunity of inspecting the Castle and Gardens.

*British Association*: Representation of the Society at the Conference of delegates of corresponding Societies, of the British Association. The thanks of the Society are due to Mr. A. S. Reid, M.A., who again attended the Conference as our delegate, and a report was contributed and read at the opening meeting on October 9th.

It is hoped that these reports will be printed in the "South Eastern Naturalist."

#### HON. LIBRARIAN'S REPORT FOR 1893.

Owing to the Financial deficiency of the Society, the volumes of Periodicals for the year 1892 have not been bound, and the purchase of the Journal of the Society of Microscopical Science has been suspended. The supply of three Periodicals received by the Society have ceased: the International Magazine of Microscopical Science presented by the late Col. Horsley; Science Gossip which stopped in August, 1893 and The Midland Naturalist in December the volume for the year, 1893 being concluded. Only one member of the Society responded to the offer of receiving any of the Periodicals on Loan after they had lain on the Library Table for 14 days.

The only Books received by purchase, besides the six Periodical Volumes, have been two volumes of the Ray Society, for 1891-2, the delivery of which were much in arrear, so much so, that the Committee

determined that it was not expedient to pay the Annual Subscriptions so much in advance of the delivery of the Volumes, and have given notice that the Subscription will be discontinued if the Books, are not delivered up to date of the year of Subscription.

The contributions by Members and others have been considerable. The Donations from the United States are particularly interesting and valuable. The following is a list of the gifts :—

|                                                               |     |
|---------------------------------------------------------------|-----|
| Pamphlets ... ..                                              | 3   |
| Volumes of Periodicals ... ..                                 | 4   |
| Reports and Proceedings, in exchange with other Societies ... | 13  |
| Books and Reports received ... ..                             | 74  |
|                                                               | —   |
| Total ... ..                                                  | 94  |
| With Periodicals and Books purchased... ..                    | 8   |
|                                                               | —   |
| Making Total ... ..                                           | 102 |
|                                                               | —   |

The Loan List of the Library shows that 49 Books have been borrowed, 19 Periodicals in the ordinary way and 17 on the 4 days loan, making a total of 85. Nine of these continued on Loan at the end of the year.

It is very desirable that a printed Catalogue of the Books should be in the hands of the Members. A Grant was made from the Publishing Fund of the Society for this purpose, but the pre-occupation of the Librarian in relation to the Herbarium of the Society has prevented the commencement of the work, and at the same time the present financial state of the Society makes it doubtful if the expense can be borne at present.

The attention of members is directed to the monthly issue of the Periodicals, any of which may be had on application to the Hon. Librarian. Members having any copies of the Annual Reports of past years they do not require, the Librarian will be glad to receive them.

JAMES REID,

*Hon. Librarian.*

December, 1893.

## HON. TREASURER'S REPORT FOR 1893.

From the following Financial Statement it will be seen that the result of the transactions of the Society for the year 1893, is not altogether satisfactory.

The amount received as Subscriptions, &c., proper to the year is £36 12s., and the expenditure amounts to £37 14s. 1d., shewing that the latter exceeds the former by £1 2s. 1d.

The number of Subscribers whose names appear in the front of the Report is 71, five having resigned this year and one being dead. The names of Col. Horsley and Mr. B. H. Flint were accidentally omitted from the list of subscribers in the report of 1891.

Of the 71 Subscribers the subscriptions of seven are in arrear, a portion of the amount thus due to the Society will probably be paid, but I do not think more than two or three pounds can be relied on.

Soon after being appointed your Honorary Treasurer, I received from the Executors of the late Colonel Horsley, a number of documents and books, consisting of Memoranda, Receipts, Bills, &c. ; also Cash, 7s. and £3 12s. 6d., the latter said to belong to the Publishing Fund. The Balance due by the Society to this Fund was shewn at end of the year 1892 as £6 18s., the difference of £3 5s. 6d., would appear to have been due to this Fund. This sum being due from the late Treasurer reduces the debt to his Estate from £14 3s. 5½d. to £10 17s. 11½d.

A letter of explanation of the above was addressed by our President to Mr. Geo. S. Saunders, from whose letter in reply, I beg to give the following extract :—

“ I, as one of the Trustees, shall have great pleasure in  
“ doing what I can in this matter to help your Society.”

It is, therefore, not known at present what demand will be made on the Society in respect of the sum mentioned.

The Publishing Fund Subscriptions are brought into the General Fund of the Society, £1 15s., having been received towards it in 1893. The Fund in question now amounts to £8 13s., so that this sum is placed as a liability against the assets.

The amounts received towards the expenses of the *Conversazione* in May, 1892, was not sufficient to meet the expenses incurred. According to the Hon. Sec's. Account £9 5s. 6d. was received, out of which he paid £8 13s. 11d., leaving a balance in hand of 11s. 7d., which he has handed to me. There are, however, two bills to pay amounting to £3 4s., so that there is a claim of £2 12s. 5d. to be met by the Society.

The rent of the room recently vacated in High Street was £14 per annum. The rent of the two rooms now occupied in Walting Street is £10 a saving of expenditure will be therefore effected as regards the current year.

Presuming that in 1894 the amount received for subscriptions will be as great as that received in 1893 (and I see no reason why this should not be the case), it is highly probable that the Finances of the Society will be in a much more satisfactory state at the end of that year than they are at present.

J. A. BLOFELD,  
*Honorary Treasurer,*

January, 1894.

## REPORT ON SUB-COMMITTEES.

### I.—COAST EROSION,

BY CAPTAIN MCDAKIN.

*Coast Erosion of the Dover Cliffs from Folkestone to St. Margarets:*  
This Report was concluded and sent into the Committee of the British Association early in 1893.

The coast line has been compared with the Ordnance six-inch map for 1876. Although there has been several heavy falls amounting to some thousands of tons no great subsidence or change of outline has taken place. Amongst the heaviest falls were those of January 1877, near the Abbot's Cliff, interrupting the S.E. Railway traffic for two months, by which two lives were lost; the fall of the Cornhill Cliff (about 2 miles east of Dover), on the 23rd February, 1891, and the slip of the undercliff near the Warren Inn, on the 4th November, 1892.

*Shingle* has accumulated to a depth of about 15 feet to the west of the Admiralty Pier at Dover during the last 20 years.

*Coast marks*, consisting of half-inch holes, three inches deep, were bored in the chalk on the line of marine erosion.



That with the circle round it is the test hole, the others are only guide marks.

The erosion of the chalk is surprisingly slow, only about half an inch in a year, some of the marks of 1890 were intact in 1893. Large blocks are, however, torn out from time to time, and especially where the land springs undermine the cliffs, or where the shingle is intercepted by piers on groynes to the westward.

*Raised Beach.*—Captain McDakin read a Paper on the evidence of a Raised Beach occurring at an elevation of 140 feet above the sea near the second milestone from Dover on the London Road. At this place the cutting of the Deal and Dover railway exposes a section of subangular flint mixed with subspherical chalk pebbles. This deposit is being worked in a gravel pit near the same spot. The elevation of 140 feet corresponds with the raised beaches on the South Downs near Arundel and Chichester. As similar gravels are now being formed both to the east and west of Dover, the author concludes that these pebbles are evidence of the same action and that the chalk rubble was rounded by the waves of a quiet inlet of the sea in recent geological times. These chalk pebbles are found in spots round the coast, occasionally reached by the waves at spring-tides, but where the action on the chalk is repeated at every tide the chalk is entirely worn away and only the harder materials are left, as shingle, which on the coast of Kent is almost entirely flint.



## II.—PHOTOGRAPHS COMMITTEE.

By CAPTAIN McDAKIN, 15, Esplanade, Dover.

Numbers registered with the British Association.

|       |     |                                       |
|-------|-----|---------------------------------------|
| Kent. | 707 | Newington, Folkestone, Landslip.      |
|       | 708 | Newington, Folkestone, Cwm in Chalk.  |
|       | 709 | Cornhill Cliffs, Chalk.               |
|       | 710 | Cornhill Cliffs, Chalk.               |
|       | 795 | St. Margaret's Bay, from South.       |
|       | 796 | St. Margaret's Bay, from North.       |
|       | 797 | Railway Cutting, Dover, Raised Beach. |
|       | 798 | Railway Cutting, Dover, Raised Beach. |
|       | 799 | Sandgate Groyne, Landslip.            |
|       | 800 | Sandgate Groyne, Landslip.            |

## III.—ON THE FLORA OF THE DISTRICT.

Papers have been received on the variations in appearance and disappearance of Plants during 30 years ; and on Life-History.



# East Kent Natural History Society.

## PUBLISHING FUND FOR 1893.

| RECEIPTS. |                              | £     | s. | d. | £                           | s.    | d. |
|-----------|------------------------------|-------|----|----|-----------------------------|-------|----|
| Dr.       | To Balance in hand from year |       |    |    |                             |       |    |
|           | 1892.....                    | 6     | 18 | 0  |                             |       |    |
|           | „ Received for year 1893—    |       |    |    |                             |       |    |
|           | „ Miss Kingsford .....       | 0     | 5  | 0  |                             |       |    |
|           | „ Mrs. Davis .....           | 0     | 5  | 0  |                             |       |    |
|           | „ Jas. Reid .....            | 0     | 10 | 0  |                             |       |    |
|           | „ S. Saunders .....          | 0     | 5  | 0  |                             |       |    |
|           | „ W. P. Mann.....            | 0     | 10 | 0  |                             |       |    |
|           |                              | <hr/> |    |    |                             |       |    |
|           |                              | £8    | 13 | 0  |                             |       |    |
|           |                              | <hr/> |    |    |                             |       |    |
|           |                              |       |    |    | By Balance due from General |       |    |
|           |                              |       |    |    | Fund carried to year 1894   | 8     | 13 |
|           |                              |       |    |    |                             | 0     |    |
|           |                              |       |    |    |                             | <hr/> |    |
|           |                              |       |    |    |                             | £8    | 13 |
|           |                              |       |    |    |                             | 0     |    |
|           |                              |       |    |    |                             | <hr/> |    |

Examined and found correct,  
GEORGE RIGDEN.

J. A. BLOFELD,  
Hon. Treasurer.

### ANNUAL MEETING,

Held at the Society's Rooms, Watling Chambers, Watling Street, on Tuesday, January 30th, 1894.

Present:—The President (in the chair), M. J. Reid, Mr. G. Rigden, Captain Stead, Mr. Sangster, Mr. Evens, Mr. Story, Mr. Biggs, Mr. Oxbrow, Mr. Fiddian, the Hon. Treasurer and Hon. Secretary.

The minutes of the annual meeting held on January 31st, were read and confirmed.

Proposed by Mr. J. Reid, seconded by Captain Stead, and carried unanimously, that Mr. Harvey be requested to accept the office of President for the ensuing year.

Proposed and seconded, and carried unanimously, that the Hon. Treasurer and Hon. Secretary be re-elected.

Resolved that the Hon. Secretary draw up a circular setting forth the advantages of the Society and that 500 copies be printed and that 4 copies be sent to each member.

Proposed, seconded, and carried unanimously, that a conversazione be held in May next and that it take the form of a Loan Collection and Exhibition, to be advertised and a charge be made for admission.



*Presd.*  
9

# East Kent Natural History Society.

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## SCIENTIFIC MEETINGS,

SESSION, 1894-5.

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PLACE :

WATLING CHAMBERS, No. 19, WATLING STREET, CANTERBURY.

TIME : 7 O'CLOCK P.M. FOR EXHIBITS.

8 „ „ FOR PAPER.

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On the Second Monday of each month, viz. :

1894.

January 15th.

February 12th.

March 12th.

April 9th.

1894.

October 8th.

November 12th.

December 10th.

1895.

From May to September there will be Excursions, and due notice of them will be given.

January 14th.

February 11th.

March 11th.

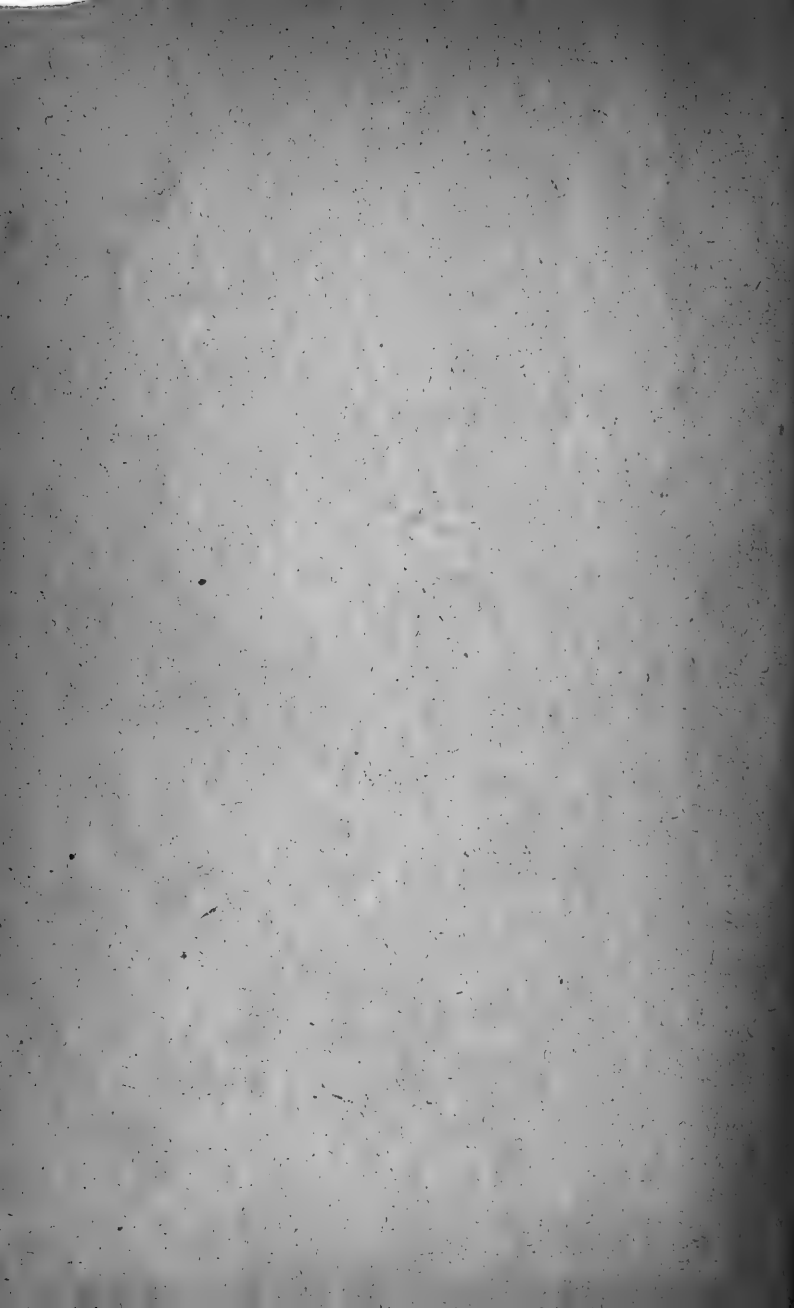
April 8th.

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## ANNUAL MEETING.

Tuesday, January 29th, 1895, at 4 p.m.





THIRTY-SEVENTH REPORT

(1894)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

ADOPTED AT THE

ANNUAL MEETING

HELD AT

*The Society's Rooms, Watling Chambers,  
19, Watling Street, Canterbury,*

On January 29th, 1895.



PRINTED AT THE "KENT HERALD" OFFICE, 9, HIGH STREET.





THIRTY-SEVENTH REPORT

Σ.

(1894)

OF THE

EAST KENT

NATURAL HISTORY SOCIETY,

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*The Society's Rooms, Watling Chambers,  
19, Watling Street, Canterbury.*

On January 29th, 1895.



Canterbury:

PRINTED AT THE "KENT HERALD" OFFICE, 9, HIGH STREET.

# EAST KENT NATURAL HISTORY SOCIETY

FOUNDED 1857.

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THE OFFICERS ELECTED FOR 1895.

President :

MR. SIDNEY HARVEY, F.I.C., F.C.S.

Vice-Presidents :

THE VERY REV. THE DEAN OF CANTERBURY.

MR. MATTHEW BELL, BOURNE PARK.

MR. G. DOWKER, F.G.S., RAMSGATE.

MR. WILLIAM OXENDEN HAMMOND, ST. ALBAN'S.

CAPTAIN J. GORDON McDAKIN, DOVER.

MR. JAMES REID, F.R.C.S., CANTERBURY.

THE HON. AND REV. CANON FREMANTLE, M.A., CANTERBURY.

THE REV. R. N. GANDY, M.A., CANTERBURY.

THE RIGHT HON. EARL SONDES, LEES COURT, FAVERSHAM.

Treasurer :

MR. J. A. BLOFELD.

Librarian :

MR. JAMES REID, F.R.C.S.

Honorary Secretary :

~~MR. E. BAKER, C.E., VERNON HOUSE, CANTERBURY.~~

(To whom all communications should be addressed).

*Mr. S. Story, M. Inst. C. & S. Peter's House Canterbury*

Assistant Secretary :

MR. E. B. HAYWARD, 6, BURGATE LANE, CANTERBURY.

Committee :

MR. H. M. CHAPMAN

MR. W. P. MANN

MR. J. EVENS

MR. G. RIGDEN

REV. T. FIELD

MR. F. SANGSTER

MR. G. A. STORY

MR. S. HORSLEY

MR. SIBERT SAUNDERS.

## M E M B E R S .

---

|                                         |                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------|
| Abbott, Miss                            | Walnut Cottage, Whitstable Road, Canterbury.                            |
| Amos, Mr. F.                            | 1, Parade, Canterbury.                                                  |
| Baker, Mr. F., C.E.,                    | Vernon House, Canterbury.                                               |
| Bell, Mr. Matthew                       | Bourne Park, Canterbury.                                                |
| Beeby, Rev. Wm. Marden                  | <del>The Manse, Watling Street,</del> <i>Gordon House</i> , Canterbury. |
| Biggleston, Mr. H.                      | Old Dover Road, Canterbury.                                             |
| Blofeld, Mr. J. A.                      | Mill Bank, London Road, Canterbury.                                     |
| Blore, Rev. Dr.                         | St. Stephen's House, Canterbury.                                        |
| Briggs, Mr. H. M.                       | 37, Nunnery Fields, Canterbury.                                         |
| Cantis, Colonel                         | St. Stephen's Lodge, Canterbury.                                        |
| Chapman, Mr. H. M.                      | The Priory, St. Martin's Hill, Canterbury.                              |
| Chapman, Mrs. H. M.                     | The Priory, St. Martin's Hill, Canterbury.                              |
| Clinch, Mr. J.                          | 1, Albion Place, Canterbury.                                            |
| Cole, Miss                              | 53, London Road, Canterbury.                                            |
| Cozens, Mr. W.                          | Le Byrtons, Old Dover Road, Canterbury.                                 |
| Coutts, Mrs.                            | Stone House, Canterbury.                                                |
| Davies, Rev. J. Sanger, M.A.            | St. Mary Bredin's Vicarage, Canterbury.                                 |
| Davies, Mrs. J. Sanger                  | St. Mary Bredin's Vicarage, Canterbury.                                 |
| Davies, Mrs.                            | 14, St. Dunstan's Terrace, Canterbury.                                  |
| Dowker, Mr. G., F.G.S.                  | 2, Laburnam Villas, Station Road, Ramsgate.                             |
| Evens, Mr. John                         | St. Stephen's, Canterbury.                                              |
| Farren, General                         | Great Bealings, Woodbridge.                                             |
| Field, Rev. T., M.A.                    | King's School, Canterbury.                                              |
| Forest, Mrs.                            | 22, Hanover Place, Canterbury.                                          |
| Fowler, Mr. H.                          | 1, Parade, Canterbury.                                                  |
| Fremantle, Hon. and Rev. Canon,<br>M.A. | Precincts, Canterbury.                                                  |
| Furley, Mr. George                      | Barton Fields, Canterbury.                                              |
| Flint, Mr. Benjamin H.                  | Leigh House, Canterbury.                                                |
| Gandy, Rev. Richard Norris, M.A.        | St. Andrew's Rectory, Canterbury.                                       |
| Gardner, Mrs.                           | Precincts, Canterbury.                                                  |
| Goulden, Mr. E. B.                      | Ethelbert Road, Canterbury.                                             |
| Greenwood, Miss D.                      | 48, St. George's Street, Canterbury.                                    |
| Hamm, Miss                              | Whitefriars, Canterbury.                                                |
| Hammond, Mr. W. O.                      | St. Alban's Court, Wingham.                                             |
| Hammond, Mr. W. H.                      | Milton Chapel, Thanington.                                              |
| Harvey, Mr. Sidney, F.I.C., F.C.S.      | 19, Watling Street, Canterbury                                          |
| Heaton, Mr. J. Henniker, M.P.           | 38, Eaton Square, London, W.                                            |
| Hitchens, Rev. F. H., M.A.              | St. Stephen's Vicarage, Canterbury.                                     |

- Holland, Rev. Canon, M.A.  
 Horsley, Mr. W. H.  
 Horsley, Mr. Stephen  
 Hussey, Mr. Arthur  
 Iron, Miss Henrietta
- Jennings, Mr. W. J.  
 Johnson, Mr. J. G.
- Kearney, Mrs.  
 Kingsford, Mr. M.  
 Kingsford, Miss
- Laurie, Colonel, C.B.
- McDakin, Captain J. G.  
 McMaster, Mr. J., J.P.,  
 Mann, Mr. W. P., B.A.,  
 Money, General R.  
 Mohun, Mrs.
- Patterson, Rev. John  
 Payne-Smith, Very Rev. R., Dean  
 of Canterbury.  
 Pratt, Mr. F.
- Reid, Mr. James, F.R.C.S.,  
 Reid, Mr. A. S., M.A., F.G.S.  
 Rigden, Mr. G., M.R.C.S.,  
 Rigden, Mrs. G.  
 Rigden, Miss  
 Russell, Mr. W. J.
- Sangster, Mr. Francis  
 Saunders, Mr. Sibert  
 Slater, Mr. F.  
 Sondes, Right Hon. Earl.  
 Skerrin, Mr. W. R.  
 Stead, Captain  
 Story, Mr. Geo. A., L.D.S., R.C.S.
- Townsend, Rev. W.
- Wacher, Mr. F., M.R.C.S.  
 Wacher, Mr. Sidney, F.R.C.S.  
 Webb, Mr. Sidney  
 Wetherelt, Mr. A.  
 Whichcord, Mr. J. F.
- Precincts, Canterbury.  
 The Old Vicarage, St. Stephen's, Canterbury.  
 St. Peter's House, Canterbury.  
 Wingham, Dover.  
 39, St. Margaret's Street, Canterbury.
- Westbere.  
 Barton Mills, Canterbury.
- Aucher Villas, London Road, Canterbury.  
 Littlebourne.  
 14, St. Dunstan's Terrace, Canterbury.
- Hardres Court, Upper Hardres.  
 15, Esplanade, Dover.  
 The Holt, Harbledown.  
 Simon Langton Schools, Canterbury.  
 Hopebourne, Harbledown.  
 3, Lawn Villas, Herne Bay.
- Bridge Street, Canterbury.  
 The Deanery, Canterbury.  
 St. Lawrence Villas, Canterbury
- Bridge Street, Canterbury.  
 Trinity College, Glenalmond, Perth.  
 Burgate, Canterbury.  
 Burgate, Canterbury.  
 Burgate, Canterbury.  
 110, Northgate, Canterbury.
- 27, Old Dover Road, Canterbury.  
 Whitstable.  
 Alkham Rectory House, Dover.  
 Lees Court, Faversham.  
 3, Codrington Villas, Ramsgate.  
 Rose Lawn, London Road, Canterbury.  
 Vale House, Canterbury.
- 38, St. George's Place, Canterbury.
- Monastery House, Canterbury.  
 Fairbourne House, Dane John, Canterbury.  
 Maidstone House, Dover.  
 61, Havelock Street, Canterbury.  
 1, Castle Street, Canterbury.

## CORRESPONDING MEMBERS.

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|                                  |                                                           |
|----------------------------------|-----------------------------------------------------------|
| Bartlett, Mr. A. D.              | Zoological Gardens, London                                |
| Bates, Mr. H. W.                 | London                                                    |
| Britton, Mr. J.                  | Royal Herbarium, Kew                                      |
| Marshall, Rev. E. S.             | Witley, Godalming, Surrey                                 |
| Masters, Dr. Maxwell T., F.R.S., | Eastling                                                  |
| Mitchinson, Right Rev. Dr.,      | Sibstone Rectory, Atherstone                              |
| Saunders, Mr. G. S.              | Care of Mrs. Horsley, St. Stephen's<br>Lodge, Canterbury. |
| Trimen, Mr. H.                   | Botanical Department British Museum                       |
| Whitaker, Mr. W., F.R.S.,        | 33, East Park Terrace, Southampton                        |

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## HONORARY MEMBERS.

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|                                |                         |
|--------------------------------|-------------------------|
| Kemp, Dr. William              | Wellington, New Zealand |
| Linford, Mr. J. S.             | Hull                    |
| Rossiter, Mr. T. B., F.R.M.S., | Canterbury              |

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## ASSOCIATES.

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|                    |                                      |
|--------------------|--------------------------------------|
| Dean, Mr. H.       | St. Peter's Street, Canterbury       |
| Fiddian, Mr. W. H. | "Kentish Express" Office, Canterbury |
| Hayward, Mr. E. B. | 6, Burgate Lane, Canterbury          |
| Pugh, Mr.          | Vernon Place, Canterbury             |

# EAST KENT NATURAL HISTORY SOCIETY.

## THIRTY-SEVENTH ANNUAL REPORT.

REPORT FOR 1894. BEING THE 37TH REPORT OF THE SOCIETY

The Society comprises 76 Ordinary Members, 9 Corresponding Members, 3 Honorary Members, and 4 Associates.

The Annual Meeting of the Society was held at the Society's New Rooms, Watling Chambers, 19, Watling Street, Canterbury, on Tuesday, January 29th, 1895, at 4 p.m., the President in the chair.

### REPORT OF THE COMMITTEE FOR 1894.

The number of Members now stands at 76. During the year two members have died, viz., Earl Sondes, one of the Vice-Presidents, and the Rev. C. A. Molony. Seven new Members have joined the Society.

In addition to the ordinary Members there are 9 Corresponding Members, 3 Honorary Members, and 4 Associates.

The Scientific Evenings devoted, firstly, to the inspection of exhibits brought or sent by members and, secondly, to a paper or lecture have been very well attended. The papers and lectures have been as follows:—

|       |     |                                                           |                        |
|-------|-----|-----------------------------------------------------------|------------------------|
| JAN.  | 8.  | “Reminiscences of Selborne” .. .. .                       | THE REV. R. N. GANDY.  |
| FEB.  | 12. | “Recent Geological Discoveries in Canada”                 | MR. F. BAKER, C.E.     |
| MARCH | 12. | “Atrophy and Degeneration in Nature and in Society”       |                        |
|       |     |                                                           | REV. T. FIELD.         |
| APRIL | 9.  | “Crocodiles and Personal Experiences” .. .. .             | CAPT. MCDAKIN.         |
| MAY   | 7.  | “Sketch of the Geology of the South Yorkshire Coal Field” |                        |
|       |     |                                                           | MR. F. BAKER, C.E.     |
| OCT.  | 8.  | “Address on Chemistry as applied to Agriculture”          |                        |
|       |     |                                                           | THE PRESIDENT.         |
| NOV.  | 12. | “Dolomites of Austria” .. .. .                            | REV. J. SANGER-DAVIES. |
| DEC.  | 10. | “Coal in East Kent” .. .. .                               | CAPT. MCDAKIN.         |

The Chief Exhibits at these Evening Meetings have been :

|           |                                              |                    |
|-----------|----------------------------------------------|--------------------|
| FEB. 12.  | New Zealand Catapillar .. .. .               | CAPTAIN STEAD.     |
|           | Parasites from Dianthus .. .. .              | HON. SEC.          |
|           | Pupa of Swallow Tailed Butterfly .. .. .     | MR. A. B. HARVEY.  |
| MARCH 12. | Botanical Specimens .. .. .                  | MR. W. H. HAMMOND. |
| APRIL 9.  | Botanical and Geological Specimens .. .. .   | MR. J. REID.       |
|           | Cancer on Trees .. .. .                      | MR. W. H. HAMMOND. |
|           | Witches Broom on Birch Tree .. .. .          | “                  |
| MAY 7.    | Dyticus Marginalis and larva of same .. .. . | MR. C. BAKER.      |
|           | Larva Common Gnat.                           |                    |
|           | Glass Larva of Plumed Gnat.                  |                    |
|           | Larva Cockchafer.                            |                    |

Oct. 8. Some specimens added to the Herbarium during 1894, amongst which was the Cloudberry (*Rubus Cham-cemorus*) a Northern Plant with an Orange-Yellow Berry in the form of a Black Berry much enjoyed for its juiciness and flavour .. .. . MR. J. REID.

Corpuscles of Blood of the Common English Snake

THE PRESIDENT.

|                                                    |                            |                                 |
|----------------------------------------------------|----------------------------|---------------------------------|
| Indian Seeds, including <i>Lathyrus Sativus</i> .. | Mr. STEPHEN HORSLEY        |                                 |
| <i>Phaseolus Munger.</i>                           | <i>Cicer Arietinum.</i>    | <i>Sesamum.</i>                 |
| <i>Lablab Vulgaris.</i>                            | <i>Piper Nigrum.</i>       | <i>Phaseolus Aconitifolium.</i> |
| <i>Cassia Auriculata.</i>                          | <i>Holcis Saccharatus.</i> | <i>Oriza Sativa.</i>            |
| Photos of the <i>Calamintha Officialis</i> .. ..   | THE PRESIDENT.             |                                 |

Four excursions were arranged for the Summer months, and to two of them it was thought advisable to try to add a little additional interest by including a visit to some place—notable either for its historical associations or for its position and artistic or scientific collections.

The first excursion was on 17th May, to Olantigh Towers and Wye Downs and it was attended by a large number of members and their friends.

The second excursion, June 14, for combined Societies' Meeting to the East Cliff at Folkestone, when the appended list of flowers were noticed—

FOLKESTONE, JUNE 14—

|                                    |                              |                            |
|------------------------------------|------------------------------|----------------------------|
| <i>Ophrys Apifera.</i>             | <i>Hippophae Rhamnoides.</i> | <i>Brassica Nigra.</i>     |
| <i>Brassica Arvensis</i> in Bloom. | <i>Diploxaxis Muralis.</i>   | <i>Carduus Lanceolatus</i> |
| <i>Carduus Palustris.</i>          | <i>Plantago Coronopus.</i>   |                            |

The third excursion, on the 13th July, to Perry Wood, was abandoned on account of the unfavourable weather.

The fourth to the Warren, near Folkestone, on August 9th, was well attended and was an interesting and pleasant excursion. A large number of botanical specimens were collected.

The last on 13th September was to Faversham with a visit to Belmont, the residence of Lord Harris. Permission had been given for the members to inspect the valuable collections which the house contains, and also to ramble in the beautiful park which has so many objects of great interest to botanists, a variety of very fine trees, amongst them several large *Auricularias* 3 feet is girth. The Mayor of Faversham met the party at the station, and not only placed the Town Hall at their service but exerted himself to make the visit agreeable. One very important part of the day's pleasure was the inspection of the remarkable and valuable collection of shells belonging to Miss Oldroyd who with great kindness threw her house open to the party and exerted herself to show as much as was possible in the time at disposal. The fine

collection of Kentish Coleoptera, belonging to Mr. Frank Crosier were on view at the Town Hall.

During the year another part of the South Eastern Naturalist has been published and issued to members. The contents will show that a good deal of interesting and valuable work has been done by the combined societies, the Dover Natural History and Antiquarian Society, and the East Kent Natural History Society.

It is worthy of mention that many of the papers in the preceding parts of the South Eastern Naturalist have been specially noted by the Corresponding Societies' Committee of the British Association as deserving of particular attention and that they have, along with others from other Societies, been tabulated for reference in the Annual Report of the British Association.

The editing of the transactions would be made much easier, and delay in publication would be lessened if members who read papers would, immediately after the reading, hand over to the officers of the Society either the full manuscript or a carefully prepared abstract. When this is not done at the meeting it is sometimes impossible and always somewhat difficult to obtain the paper afterwards, and thus if the publication of it is not entirely prevented, much delay and unnecessary labour are caused.

It is to be regretted also that a complete record of the Exhibits at the Evening Meetings cannot be kept for want of full and correct descriptions. If those members who are kind enough to bring or send objects would also have the kindness to add an accurate description with date and locality they would make a valuable part of the Society's work still more valuable, and a full record of the Exhibits could be kept and periodically published in the Reports.

The Herbarium, which has been mentioned in previous reports is now complete and it contains such a collection of Kentish and British plants as few Societies possess. This completeness could not have been attained but for the fact that Mr. James Reid has supplied a great number of specimens from his own collections. But this supply of specimens to make up deficiencies is perhaps the least of Mr. Reid's services, for the admirable arrangements and the skilful and careful mounting of the whole, as well as the preparation of a minutely detailed manuscript catalogue, are entirely Mr. Reid's own work—a work on which he has been diligently engaged for several years. The Herbarium is now a monument of his patience and skill and the Committee feels that the Society is most deeply indebted to him for his



devoted services and wishes to record its grateful appreciation of them.

It is desirable that Members and their friends should have easy access to the Herbarium, but it is clearly impossible that it should be allowed to be consulted in the same way as books in the Library. The Committee has therefore decided that it shall be in the care of a Custodian who will make a report on the collection and the mode of consulting it.

At the meeting of the British Association held at Oxford in August Mr. A. S. Reid, M.A., F.G.S., represented the Society as a delegate to the Committee of Corresponding Societies. As in former years he has sent in a full and suggestive report in which the following points are especially mentioned.

A paper was read at the Conference on Local Museums in which much valuable advice was given respecting methods of cataloguing, labelling, and registering specimens, the kind of drawers most suitable, and the best methods of preventing dust in cupboards.

A resolution was passed at this meeting in the following form :—  
 “That in the opinion of this Conference of Delegates of the  
 “Corresponding Societies of the British Association, all Local  
 “Natural History Societies should at once communicate with the  
 “Technical Instruction Committee of their County Councils requesting  
 “them to grant money for lectures and specimens to illustrate such  
 “lectures, or for demonstrations by competent persons in the Museum.”

The Meteorological Photographs Committee reported that they had collected as many photographs as they required, although they would still be glad to receive photographs showing really abnormal or unusual features.

The Committee on the Pollution of Air in towns reported some interesting experiments made in Manchester. This Committee is about to issue a Schedule of instructions by which a practical chemist can obtain definite data, and Mr. Reid hopes that the work will be taken up for Canterbury.

The final report of the Coast Erosion Committee will not be presented till next year, when the final report of the “Underground Waters” Committee will also be presented.

With regard to Coast Erosion there is still need of *continuous* observation and Mr. Reid wishes that members, especially those of the Dover Society, may be able to add to the valuable work that has already been done.

The Geological Photographs Committee reported that 1055 photos

had been received and yet some districts are unrepresented. The Committee will probably finish its work next year and therefore our Society has only a short time in which to complete the series for East Kent. Some excellent and valuable photographs have been sent by two of our members.

Mr. Reid most strongly urges the members of the East Kent and Dover Societies to do their utmost to help in the formation of such records as he has alluded to.

The Committee feels that much more than is at present effected ought to be done by the Society for the promotion and recording of research and observation in the domain of Natural History. It is certainly difficult to induce members to undertake systematic work in sub-committees but such work ought not to be regarded as impossible, and the Committee would be glad if members would intimate their desire to join the sub-committees already formed and be willing to send in periodical reports of their work and observations.

But even when members have not joined any sub-committee they might help in the acquisition of a large amount of valuable knowledge if they would even individually send to the Secretary or President a notice of any observations, experiments, or discoveries they may make. Such information would be carefully recorded with dates, author and locality, and it would then be ready for the consideration of the editors of the South Eastern Naturalist who desire to intimate to members that they regard such information as one of the most valuable parts of the transactions of a society. They are anxious to have as many notes as possible in addition to the more formal records of the work of the sub-committees.

In connection with the sub-committee on Coast Erosion, during the year, notes have been received from Mr. George Dowker, F.G.S., on Coast Erosion and changes in the Coast lines between Dover and Thanet, and also between Thanet and Whitstable since his report to the British Association in 1884. Mr. Dowker has for the last 30 years been periodically noticing and recording the changes on the Kentish Coast. He has also sent in five photographs and descriptions taken in Pegwell Bay showing the junction of the Chalk and the Thanet beds, Faults in the Chalk, and Drift beds over the Chalk.

Several additions, to the collection of Geological photographs have been made during the year by Captain J. Gordon McDakin and Mr. J. Reid and are alluded to by the Librarian in his report, the Album kept for this purpose being under his custody.

## REPORT ON THE HERBARIUM, 1894.

Thirty two specimens have been added to the collection of plants during the year ; 13 of these, however, were received and recorded last year. Nineteen, therefore representing 17 orders have been contributed this year ; only four of these have been received from East Kent, presented by two members of the Society. One specimen is particularly interesting, as growing abundantly in a new habitat. It is the Golden Saxifrage. The *fifteen* other contributions are included in the 2nd Division of the collection being received from North Britain by the hands of two members.

As this collection of Kentish and British Plants cannot from its character and precise arrangement be left free for the handling of any member seeking a summary view of it, the Committee, in January last, made certain Regulations for its use with a view to its safe preservation, as follows :—

1.—Any Member of the Society, or, a friend introduced by a Member, desiring to examine the Collection or to refer to any orders or specimens in it, should make an application to the Hon. Custodian of the Collection, who will make an appointment to show what is required.

2.—It will be necessary to state beforehand any particular specimens or orders required to be seen, and to give notice not less than *24 hours* before hand in order that the necessary arrangements may be made for the appointment.

3.—A Manuscript Catalogue of the Collection, which is divided into *Kentish Division 1*, and other British Plants *Division 2*, with directions and descriptions of its arrangement and use in the Preface will be found on the lower shelf of E Division of the Library.

\* Present Custodian, Mr. J. Reid, 12, Lower Bridge Street, Canterbury.

## LIBRARIAN'S REPORT, 1894.

The Library now contains 826 volumes of General and Serial Publications and 334 parts of Periodicals, Reports and Transactions of Societies waiting to be bound ; there are also a large number of Papers and Pamphlets unavailable for reference until they are bound. Beyond the purchase of Six Periodicals regularly supplied, no purchases have been made, owing to the depressed state of the finances for three years. The Committee have even been obliged on this account to discontinue one expensive quarterly serial, and make conditional the annual subscription to the Ray Society. Any increase during the period has been largely due to the donations of members and friends of the Society to whom its thanks are therefore more especially tendered. The suspension of binding the Periodicals since 1892 is due to the same cause, and is a great hindrance to the ready use and reference to these.

works. The weakness of the Society's funds has also staid the publication of a catalogue which would give greater facility to the use of the books. No list of books has been published since 1887. The publication of a new catalogue has been in abeyance since 1891. The lists of deficiencies in and additions to the Library have not been made known to members since 1890 and 1891; for the efficiency of the Library and information of members, it is very desirable that these should be annually published.

The enumeration of additions to the Library during 1894 is as follows:—

Presented—

|                               |     |
|-------------------------------|-----|
| Pamphlets, &c. ... ..         | 7   |
| Volumes of Serials ... ..     | 4   |
| Books and Reports ... ..      | 25* |
| Reports by Exchange ... ..    | 10  |
| By Purchase of Serials ... .. | 6   |

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52 Publications.

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\*Sixteen of these were presented by the Smithsonian Institute, the National Museum, U.S.A.; Geological Survey, U.S.A.; University of Minnesota, U.S.A.

To the Album of Geological Photographs there have been added 26 Photos relating to the Cliffs of Chalk between Folkestone and St. Margaret's, and the Landslip (1893) at Folkestone, by Capt. J. Gordon McDakin on behalf of the Sub-Committee of Coast Erosion, and Mr. J. Reid.

The use of the Library during the year shows that—

56 Volumes and parts of volumes have been taken on Loan.

25 Serials on four days Loan.

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81\*

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\*Six volumes remained on Loan in December.

During the year 15 volumes have been detained beyond the full period (three months) allowed. One volume was missing over six months and no trace could be found of it till it was returned. It had been passed from one member to another who ultimately returned. There was no record of the transfer.

In view of these irregularities the committee limited the time of a Loan and the number of Books to be taken at one time. Still, further, regarding the increase value of the Library and its fuller use, they deem it necessary that more definite Laws and Regulations should be made for its preservation and use and accordingly recommend to the meeting the adoption of a new code which the Hon. Librarian has submitted to them.

## HON. TREASURER'S REPORT FOR 1894.

The Subscriptions received proper to the year 1894 is £29 16s., various for year 1893 £1, and for 1892 £1 10s., making a total of £32 6s. The expenditure is £32 12s. 1d., but this sum includes £3 4s, a debt due on account of the *Conversazione* of 1892. If this sum had not been paid the receipts would have exceeded the expenditure by £2 17s. 11d.

During the year one Subscriber has died, and four have resigned; on the other hand nine members have joined the Society. The number of members now on the books is seventy-six, being nine more than there were when the last list was printed, viz., in January 1894.

The Subscriptions in arrears amount to £5 10s. of which sum I think about £2 only is likely to be realized.

As to the liability of £10 17s. 11½d., to the estate of the late Colonel Horsley, the society is much indebted to the Executors for their very kind consideration in not having put forward any claim. The case remains precisely the same as it did when the Financial Statements for the year 1893 was made.\*

The amount of Publishing Fund Subscriptions brought into the General Fund of the Society during the year 1894 is £1 5s., that Fund now reaches £9 18s., which sum is placed as a liability against the Society.

During the year a debt of £3 4s., in connection with the *Conversazione* of 1892 has been paid, there is now no further claim in respect of that entertainment.

The sum of £7 5s. 9d. for Printing the Report of 1893, cards, &c. has been paid within the year 1894. The account for 1894 amounting to £7 17s. 6d., is a liability carried to the year 1895.

Although the accounts show that the Society is £2 6s. 2d. better off than it was at the annual meeting last year, yet, I am sorry not to be able to place a more satisfactory statement before this meeting. The balance is still unfortunately on the wrong side, and shows that great care should continue to be observed in regard to expenditure in order to clear off the existing liabilities.

J. A. BLOFELD,  
*Hon. Treasurer.*

29th January, 1895.

\* On February 5th, 1895, while this Report was being prepared for the Press the President received a letter from Mr. W. H. Horsley stating that the trustees and family of the late Colonel Horsley desired that the sum due to the estate should be considered as paid.



# East Kent Natural History Society.

PUBLISHING FUND FOR 1894.

| RECEIPTS.                                     |         |                | LIABILITIES.                      |        |                |
|-----------------------------------------------|---------|----------------|-----------------------------------|--------|----------------|
| Dr.                                           |         | £ s. d.        | Cr.                               |        | £ s. d.        |
| To Balance in hand from year                  |         |                | Balance due from General          |        |                |
| 1893                                          | .. .. . | 8 13 0         | Fund carried to year 1895.        | 9 18 0 |                |
| <i>Received for year 1894:—</i>               |         |                |                                   |        |                |
| Miss Kingsford                                | .. .. . | 0 5 0          |                                   |        |                |
| Mrs. Davis                                    | .. .. . | 0 5 0          |                                   |        |                |
| Mr. James Reid                                | .. .. . | 0 10 0         |                                   |        |                |
| Mr. S. Saunders                               | .. .. . | 0 5 0          |                                   |        |                |
|                                               |         | <u>£9 18 0</u> |                                   |        | <u>£9 18 0</u> |
| Examined and found correct,<br>GEORGE RIGDEN. |         |                | J. A. BLOFELD,<br>Hon. Treasurer. |        |                |

## ANNUAL MEETING.

The Annual Meeting was held at the Society's Rooms, Watling Chambers, on Tuesday, January 29th, 1895. Present—The President (in the chair), Rev. W. Patterson, Mr. G. Story, Mr. S. Horsley, Mr. W. P. Mann, Mr. G. Rigden, Mr. G. Evens, Captain Stead, Mr. J. Sangster, Rev. Beeby, the Hon. Librarian, the Hon. Treasurer, and the Hon. Secretary and Assistant Secretary.

The Minutes of the Annual Meeting held on January 30th, 1894, were read and confirmed.

The Report of the Committee, the Treasurer's Report and Financial Statement, the Librarian's Report, and the Report on the Herbarium were read and passed.

Proposed by Rev. Beeby and seconded by Mr. S. Horsley that the Rules and Regulations as well as a Catalogue of the Books of the Library be printed at a cost not to exceed £5, and that a charge of sixpence each be made for copies of the Library Catalogue.

Moved by Mr. Mann and seconded by Mr. S. Horsley, and resolved that the Report on the Herbarium be printed.

The President was unanimously re-elected and a hearty vote of thanks accorded.

A vote of thanks was also passed to the Hon. Librarian, Hon. Treasurer, and Hon. Secretary and also to the Assistant Secretary and Mr. G. Story for the gratuitous use of his lantern for the lectures.

FRANK BAKER, C.E.,  
Hon. Sec.

9 MAY 95



# East Kent Natural History Society.

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## SCIENTIFIC MEETINGS, SESSION, 1895-6.

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PLACE :

WATLING CHAMBERS, No. 19, WATLING STREET, CANTERBURY.

TIME : 7 O'CLOCK P.M. FOR EXHIBITS.

8 " " FOR PAPER.

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On the Second Monday each month, viz :

|                                    |       |          |       |
|------------------------------------|-------|----------|-------|
| 1895.                              |       | 1895.    |       |
| January                            | 14th. | October  | 14th. |
| February                           | 11th. | November | 11th. |
| March                              | 11th. | December | 9th.  |
| April                              | 8th.  |          | 1896. |
| From May to September there        |       | January  | 13th. |
| will be Excursions, and due notice |       | February | 10th. |
| of them will be given.             |       | March    | 9th.  |
|                                    |       | April    | 13th. |

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## ANNUAL MEETING,

Tuesday, January 28th, 1896, at 4 p.m.







