SPECIAL GENERAL MEETING.

14th June, 1920.

In Commemoration of the Centenary of the Birth of Sir William Macleay.

Mr. J. J. Fletcher, M.A., B.Sc., President, in the Chair.

Presidential Address,

"THE SOCIETY'S HERITAGE FROM THE MACLEAYS."

Yesterday (Sunday, 13th June) was the centenary of Sir William Macleay's birth. At that time George iv. was King. The Princess Alexandrina Victoria, afterwards Queen Victoria, was an infant about thirteen months old. "Science all over the world" was about to lose "its Nestor," Sir Joseph Banks, whose splendid labours ended six days later (on June 19th, 1820). William Sharp Macleay, cousin of William, had published his first contribution to scientific knowledge, Part i. of the Horæ Entomologicæ, in the preceding year, 1819. Part ii. of the same work was published in the year following (1821), so that William Macleay was born in the interval between the issue of the two Parts.

Coming nearer home—Sydney, the first British settlement in Australia, had been founded a few months over thirty-two years. Major-General Lachlan Macquarie was Governor of New South Wales. Not quite five years before, the explorations of Blaxland, Lawson and Wentworth, and later of Evans, and the subsequent construction of a road over the Blue Mountains by William Cox, had made it possible for the Governor, "accompanied by his lady, and followed by a numerous retinue," including J. W. Lewin, artist, to journey to Bathurst Plains, and fix upon the site for the township of Bathurst. Railways, telegraphs, steamers, penny postage and postage stamps were then unknown.

Of the century now ended, into which William Macleay was born, he spent about eighteen years and nine months in Scotland, his native land, and on the voyage out to Australia. For nearly fifty-three years he resided in New South Wales, except for a few months on his expedition to New Guinea in 1875. His fruitful labours ended somewhat more than twenty-eight years ago.

Sir William Macleay, by his example and influence, and by his own efforts during a period of about seventeen years, and by his benefactions, largely made the Linnean Society of New South Wales possible in its present developed form. The sustained co-operation and help of a long succession of members, extending over a period of more than forty-five years, have contributed to make it what it is to-day. A question in which we are interested, and that may be asked in a legitimate way, is: How came he to be so interested in science as to become first of

all a scientific worker; and then later on, to undertake the role of benefactor and promoter of Natural History, in the broad sense, in New South Wales? What were the elemental circumstances which shaped his career, from a scientific standpoint?

Unfortunately we have no autobiographical information, and very little in the way of biographical details, which will supply satisfactory answers to these questions. Nevertheless, there are some records of important facts, which, when one knows how to correlate them, will supply an outline of the story of his scientific life. These will be considered later in their proper place. Just at the present stage, it suffices to say that, when the facts are appreciated, it is realised that William Macleay does not stand alone; but that, primarily, he was largely the product of family influence and example; and the last and youngest of a succession of Macleays interested in science, in which, under the circumstances, it was natural that he should take his place. For this reason alone, the Society is interested in the Macleays. But there are other reasons also.

The Society's Hall, which it owes to the generosity of Sir William, is located on part of the old garden, which was laid out by Alexander Macleay about ninety-two years ago. The old home is in the immediate neighbourhood. Many distinguished visitors, who knew the occupants of Elizabeth Bay House, have left records of their visits and experiences.

Alexander Macleay may be called the "Father of Zoology" in Australia. He brought his collection of insects and his library with him from England in 1825, and ended his days here. When he left England, his collection was considered to be the finest in the possession of a private individual. The amalgamated collections of Alexander Macleay, W. S. Macleay, and William Macleay were presented to the University of Sydney in 1889, to form the nucleus of the Macleay Museum. I may remind you that one of the conditions attached to the gift was—"That the [Macleay] Museum should be made easily accessible to students of Natural History and members of the Linnean Society of New South Wales."

The Macleays were uninterruptedly associated with the Linnean Society of London, as Fellows, for a period of ninety-seven years (1794-1891), and for twenty-seven years Alexander Macleay was Secretary. For about forty-seven years they were Members of the governing body of the Australian Museum or of its forerunner, the Colonial Museum.

The Society has interesting memorials of all of them, as well as of some of their scientific and other friends and contemporaries.

The two branches of the family in which we are interested have now come to an end, in the direct line. In the sense in which I mean it, the Society may be considered to have inherited the family scientific traditions, as well as some of the family possessions.

The original sources of information of a biographical character concerning A. and W. S. Macleay are brief obituary notices which were published in the *Sydney Morning Herald*, and the memorial notices of them, as Fellows, communicated to the Linnean Society of London. Later notes in various Biographical Dictionaries or elsewhere, are based on one or other of these, usually the second. It is possible to amplify these to some extent in respect of matters in which we are specially interested, but the sources of information are fragmentary and scattered. Anything like detailed formal biographies, or even satisfactory biographical sketches, are not possible, from a lack of adequate material.

It is to be remembered, too, that the Macleays were interested in Science for its own sake, and as a study to be cultivated in their leisure hours. Less than a century ago, an interest in Zoology was a good asset for a hobby, especially for a man of means and leisure, but an unfruitful one for embarking on a professional career. One of a later generation who ventured to make the experiment, Edward Forbes (1815-54), almost repented of his choice of Zoology as a profession. Writing to his friend Thompson in January, 1847, he said: "The more I see, the more I am convinced, that no man should take up Science as his profession, unless he has some independence to fall back on." (Memoir of Edward Forbes, F.R.S., by G. Wilson and A. Geikie, p. 410, 1861.)

A lack of uniformity in the mode of spelling the family surname will be noticeable. By the members of the family in the old days, MacLeay was the customary way; but, in their later years, both W. S. and William Macleay signed their names in the manner to which we are accustomed. By writers outside the family, the name was sometimes written McLeay or M'Leay.

W. S. Macleay's Christian names were William Sharp, and not William Sharpe, as so often printed.

Alexander Macleay, F.R.S., F.L.S.

Born in the County of Ross, June 24th, 1767—Chief Clerk of the Prisoners of War Office, 1795—Head of the Department of Correspondence of the Transport Board, 1797—Secretary of the Board, 1806-1818—Colonial Secretary of New South Wales, 1825-1836—First Speaker of the Legislative Council, 1843-46—Died in Sydney, July 19th, 1848.

No definite record of the beginning of Alexander Macleay's interest in Entomology is available. But his election to the Linnean Society, in 1794, offers a suggestive clue. The inaugural meeting of the Society, convened by Dr. J. E. Smith, the possessor of the Linnean collections, was held on 26th February, 1788, seven Naturalists being present, one of whom was Thomas Marsham. At the second meeting, on 18th March, six gentlemen were present. The roll of the foundation members was made up consisting of twenty ordinary Fellows, including the Rev. William Kirby, three Honorary Fellows, including Sir Joseph Banks, and eleven Associates. Dr. J. E. Smith was elected President, and T. Marsham Secretary. At the third meeting, "at the Opening of the Linnean Society," on 8th April, the President delivered a "Discourse on the Rise and Progress of Natural History."

A. Macleay was elected a Fellow of the Society about six years afterwards, in 1794. In the absence of more exact information, his election may be taken to imply an awakening interest in natural history, and particularly entomology. It is probably true that his friendship with Marsham and Kirby spurred his pursuit of entomology; just as, at a later period, "close relations" with Kirby and Spence, and Alexander Macleay, are said to have spurred W. J. Hooker's pursuit of entomology in his early days, before he devoted himself entirely to botany. In 1798, Marsham retired from the position of Secretary, and was appointed Treasurer; while A. Macleay succeeded him as Secretary. His service in this capacity lasted for twenty-seven years, until May, 1825, when he resigned, in consequence of his contemplated removal to Australia, to fill the position of Colonial Secretary of New South Wales.

We have, unfortunately, no autobiographical details of his experiences as Secretary of the Linnean Society, or of the eminent scientific men of the day whom he came to know; and very little can be gleaned from the Society's printed records. Nor, beyond the bare statement of his official connection with the Transport Board, have any details of his work in that direction come down to us.

The obituary notice of Alexander Macleay read at the Anniversary Meeting of the Linnean Society of London, 24th May, 1849, subsequently printed in the Proceedings (Vol. ii., p. 45), brief as it is, is the most complete biographical sketch at present available. In this it is stated that—"As a naturalist, Mr. MacLeay devoted himself almost exclusively to the study of insects, of which he had formed, previous to his quitting England, the finest and most extensive collection then existing in the possession of a private individual. Of this great class of animals he possessed an intimate knowledge, without, however, having published anything on the subject, although he had made preparations for a monograph of the singular genus *Paussus*, in which his cabinet was peculiarly rich."

The history of the collection is briefly but imperfectly given in Barff's "Short Historical Account of the University of Sydney" (1902). To this I shall refer later. I am now able to give a more complete account of it. In outline, but the particulars will be given in chronological order as far as possible, the collection at the time of its arrival in Australia, in 1826, represented the British or European insects collected by Alexander and W. S. Macleay themselves, of the results of exchanges with their friends, of specimens purchased from at least six noted private collections, in one case during the owner's lifetime, or in the others on the dispersal of their collections by sale after the decease of the owners, and of acquisitions of specimens from Brazil, India, North Africa, Australia, and elsewhere, some of them possibly donations, but the details of their acquisition are wanting. The fragmentary history of A. Macleay's collection is the most important source of information we have about the development of his interest in zoology.

Thomas Marsham (ob. 1819), and the Rev. William Kirby (1759-1850), Rector of Barham, near Ipswich, in Suffolk, seem to have been the two earliest scientific friends of Alexander Macleay, who profoundly influenced him. They were both senior in age, and as Fellows of the Linnean Society, keen entomologists, and owners of important collections. Marsham's collection was eventually sold in 1819, a few months before his decease; Kirby's was presented to the Entomological Society soon after its foundation, in 1833. As Kirby lived in the country, when railways were unknown, his visits to London were infrequent; but he corresponded regularly with his scientific friends. His biography, "Life of the Rev. Wm. Kirby," by John Freeman, now a scarce book, was published in 1852. This is the only available source of information about much that relates to Alexander Macleay that is of interest to us. I have been glad to make use of it, and gratefully acknowledge my indebtedness.

A very interesting account of an entomological excursion by Marsham and Kirby into the Isle of Ely, Northamptonshire, and home by Huntingdonshire, Cambridge, and Norwich, in July, 1797, is given in Freeman's "Life." Brief reference is also made to an entomological excursion by Kirby, Marsham, and Alexander Macleay; but neither the date nor scientific details are given.

But a letter, to Kirby, dated "Transport Office, 5th November, 1802," is of the greatest interest, because it is the earliest record, by himself, of his interest

in entomology that we have, written after his return from a visit to Scotland: "My dear Friend,—I return you my best thanks for your letter, which I would have answered from Caithness, if I had met with anything worth communicating. But I could only tell you of my being prevented from looking after insects by continued rains, snow, and high winds, during the whole of my stay in the county. Indeed, so bad a season was never known; and a more serious consequence than my entomological disappointment is, that the crop of oats in Caithness has almost entirely failed. Notwithstanding the unfavourable state of the weather, however, I was much gratified by my visit to the north. I had reason to believe that very considerable improvement had been made in my native county during the sixteen years I had been absent; but, I assure you, I found the county improved far beyond my most sanguine expectations." . . . .

"In order that I might see as much as possible of the north of Scotland, I visited the Orkney Islands, and the north coast of Scotland, as far as Cape Wrath." . . . .

"Through the whole of my travels, I lost no opportunity of collecting insects. Indeed, I collected almost every one that I saw. I have, in the whole, about 250 or 300 specimens, but they are not yet arrived here; and I know not whether there be anything new. There are very few Hymenoptera. If there be any duplicates worth your having, they are yours."

The offer of duplicates of Hymenoptera recalls the fact that, in the early part of the year, one of Kirby's many contributions to science had been published, "Monographia Apum Angliæ," Ipswich, 1802.

Alexander Macleay's collection thus probably began with British insects which he himself collected, or obtained by exchange with his entomological friends. The earliest published reference to his active interest in exotic insects known to me is to be found in a "Memoir of Dru Drury," contained in Vol. xv., of "The Naturalist's Library," presumably written by the Editor, Sir William Jardine (1846). The writer says: "An individual to whom Drury showed much kindness, in the hope of being supplied through his means with the insects of New South Wales, was J. W. Lewin, author of a small, but original, and really valuable work, entitled "A Natural History of the Lepidopterous Insects of New South Wales." It appears from Lewin's letters that he was in a great measure illiterate, and had been subjected to many difficulties so that it was a good while before he could do much towards the fulfilment of Drury's wishes. They continued, however, to communicate with each other for a considerable time; Drury supplying goods to no small amount, which were to be repaid in insects. In his necessities, Lewin is not backward in his demands on the liberality of his friend, who supplied him, among many other miscellaneous articles, with the copperplates on which he engraved his insects and birds, and even with the paper for printing them. Thomas Marsham, author of the Entomologia Britannica, and Alexander Macleay, afterwards united with Drury in advancing money to Lewin while he was at Botany Bay, expecting the value to be returned to them in insects."

Dru Drury [1725-1804] was a very remarkable man, a goldsmith, silversmith, and cutler, and one of the "most zealous and successful collectors of insects that ever prosecuted the study in this country." He was also the author of "Illustrations of Exotic Entomology," 3 vols. (1770-82), "in which he made the most interesting objects of his collection known to the public."

After his death the collection was sold, the sale lasting for three days (May 23-25, 1805). Professor J. O. Westwood issued a second edition of the "Illustra-

tions" (3 vols., 1837), and, in the preface, he gives the names of the purchasers of some of the lots, and the prices paid, as an interesting record. Among those given, Mr. Macleay was the purchaser of Lot 64, "*Papilio claviger* and five others (£7/10/)"; Lot 104, "Thirteen species of the Buprestis genus (£8)"; Lot 112, "*Cetonia hamata, nitens, grandis, Scarabaeus festivus,* and 12 others (£17)"; and Lot 123, "A variety of small insects of the *Mordella, Forficula,* and other genera, among which are *Diopsis Ichneumonia,* and also a species of Paussus, 37 specimens (£7)."

The first published reference to Alexander Macleay's collection, that I know of, is to be found in the Preface to "An Epitome of the Natural History of the Insects of New Holland, New Zealand, New Guinea, Otaheite, and other Islands in the Indian, Southern and Pacific Oceans; with Descriptions and one hundred and fifty-three beautifully-coloured Plates of the more splendid, beautiful, and interesting Insects, hitherto discovered in those Countries," &c.: By E. Donovan, F.L.S., published in 1805. Besides specimens in Sir Joseph Banks' collection, and in his own, some of them purchased at the sale of Drury's Collection, "The author has also further to acknowledge the benefit he has derived from inspecting two other cabinets of celebrity in this country, without the assistance of which the present illustration would have been far less copious and interesting than it is at this time: these are the cabinets of Mr. Francillon, and that of A. Macleay, Esq., to both of whom he begs leave to express his warmest thanks for this testimony of their friendship." The copy of this rare book in the Society's library was purchased and presented by Sir William Macleay, the only copy of it which he had seen.

Another letter from A. Macleay to Kirby, dated 20th February, 1805, is of very special interest. The writer says: "I have been describing eighteen Botany Bay Lepidopterous insects which are about to be published by Lewin, with all their changes and natural history. Amongst them there is a most distinct new genus (in my opinion), which I propose to name *Nycterobius* from Νυκτοροβιος *Noctu victum quaerens.* The caterpillars form for themselves holes in the trunks of trees, where they hide themselves in the daytime: at night, they come out and gnaw off leaves, which they drag to their holes; and when they have provided a sufficiency for the next day's consumption, they retire and feed leisurely, with their heads towards the mouth of the hole, which is covered by a curious contrivance. . . . Pray when shall we see you in town?"

The first edition of Lewin's book, entitled "A Natural History of the Lepidopterous Insects of New South Wales. Collected, engraved, and faithfully painted after Nature. By John William Lewin, A.L.S., late of Parramatta, New South Wales. Illustrated with 18 Plates (small 4to)," was published in London in the same year, 1805. Some time before its publication, however, a circular entitled "Proposals for publishing by subscription a small work of Phalæna Insects of New South Wales" had been distributed. A second edition, with an additional plate, was issued in 1822. The book was dedicated to the Right Hon. Lady Arden, "in grateful remembrance of that goodness which gave the author an opportunity of employing his talent, as it were, in a new world." As already mentioned, Drury, Marsham, and Macleay also assisted Lewin.

J. W. Lewin and Thomas Lewin were the sons of William Lewin, F.L.S. (ob. *c.* 1795), the "best zoological painter, and one of the most practical naturalists of his day" (Swainson), and author of "The Birds of Great Britain" (7 vols.,

1789-95; second edition, 8 vols, 4to., 1796-1801), "The Insects of Great Britain" (1 vol., 4to., containing the Papilios only, 1795), and of a paper, "Observations respecting some rare British Insects" (Trans. Linn. Soc., Vol. iii., 1797); and a contemporary of Dru Drury, and A. Macleay. Drury was always on the lookout for opportunities of getting into touch with intending travellers and others about to visit foreign countries. In 1771, with the financial co-operation of Sir Joseph Banks, the Duchess of Portland and some others, he had enabled Henry Smeathman to go to Africa as a travelling naturalist and collector. With his knowledge of the Lewin family, he was able to get into touch with J. W. Lewin before the latter left for Australia.

J. W. Lewin arrived in Sydney in 1800. The plates for his book were engraved and coloured by himself in 1803, in Parramatta. They were the earliest engravings produced in Australia. The text was printed in London, bound up with the plates as sent home to his brother Thomas Lewin, and issued as a book in 1805. But with the plates, J. W. Lewin sent home a made-up complete copy, with a title-page and some text in manuscript, as far as he could complete it. This copy, together with the original coloured drawings of some of the larvæ and pupæ, were afterwards acquired by Alexander Macleay, and are now in the Society's possession. Possibly examples of the perfect insects, and a letter of supplementary information may also have been sent; but if so, there is no available record of them. A comparison of the original copy with the book as published, explains what is stated in Macleay's letter to Kirby.

J. W. Lewin was an artist, a good observer, and a practical entomologist, but without technical knowledge, and without books. The text, as he sent it to England, was insufficient, and not in a suitable form for publication. It consisted merely of the explanations of the figures, more or less copious, of the larvæ and their habits, but without descriptions of the perfect insects, to which only fanciful vernacular names were given. The title-page was "Natural History of Eighteen Nondescript Moths with Descriptions," &c.

Thomas Lewin was an artist, and had not quite all the necessary technical knowledge to enable him to supply the deficiencies in the text, as written by his brother, notwithstanding the statement in the last sentence of the Preface: "Of the style of the publication, and the arrangement of the subject, we can only say, being well instructed in the Field of Nature, we have endeavoured to render the book useful." As Editor of the contemplated book, therefore, he sought the advice and assistance of the President and Secretary of the Linnean Society, as narrated in the Preface: "And all that was left for us to do was merely to define the genus, and name the individual in some cases, which we have done sometimes from the plant on which the insect is found; and for the names of those plants we make our acknowledgments to the learned President of the Linnean Society, Dr. Smith, and also acknowledge the kind observations of the Secretary of the Linnean Society, Alexander Macleay, Esq., for whose abilities as an Entomologist, we have the highest respect, though we cannot avoid differing greatly from him on some points." Dr. Smith supplied the names of the food-plants, as well as he could, for some of them were without flowers or fruits. A. Macleay offered, or consented after being asked, to draw up the necessary technical descriptions of the perfect insects, with the addition of binomial names; and, judging from his letter to Kirby, did so. What, then, were the points on which Thomas Lewin, as editor of the book, differed from him?

On the evidence, it seems to be a reasonable conclusion that Dr. Smith and A. Macleay successfully opposed the publication of nondescript insects, and that T. Lewin accepted and made use of the technical descriptions; but that, wishing to keep the naming of the insects as much as possible in his own hands, he did not accept all the binomial names proposed by Mr. Macleay, and altered some at least of them to suit his own ideas. The proposed new generic name did not get into print; and A. Macleay certainly cannot be held responsible for the specific names of *Sphinx Ardenia, Tortrix Australana,* and especially that of the insect now known as *Charagia lignivora* Lewin, but described and figured in Plate xvi., and referred to in the index, as *Hepialus Ligniveren.* Nor is the expression "Noctua Hepialus" likely to have been his, in the statement—"The larvæ of this beautiful Noctua Hepialus feeds" (sic), &c. From these, and other peculiarities, T. Lewin seems to have been responsible for the form in which all the text, except the technical descriptions and the sectional names, finally appeared.

Another relic of J. W. Lewin acquired by A. Macleay was what seem to be first impressions of three of the plates of Lewin's "Birds of New Holland," the first edition of which was published in 1808. The plates are roughly bound-up with three pages of text in manuscript, without binomial names, or descriptions which an ornithologist would consider satisfactory. They were perhaps intended as a sort of prospectus for possible subscribers to the work.

Some very interesting information about Alexander Macleay's entomological acquisitions are given in a letter from Kirby to his friend Spence, in a letter of date September 24th, 1806: "I have boxes [of insects] from Haworth and [W. J.] Hooker to name. . . . . In London, I went over Sir Joseph's [Banks] *Staphylini;* but there was nothing very remarkable among them, except *S. aureus,* which is of the same family with *S. murinus,* &c. I found several nondescript species in Mr. M'Leay's cabinet, which he purchased from the Leverian Museum, and one large and blue one from old Drury's cabinet. And the piece of entomological news I can tell you—that M'Leay has purchased all Donovan's foreign insects, a most valuable addition to his collection, which, in value, falls not far short of Francillon's." [p. 281.] These are the only records of purchases from the two collections mentioned that I know of. Sir Ashton Lever, who lived at Alkington, near Manchester, brought his collection to London about 1775, where it was opened to the public. It was subsequently disposed of by lottery in 1785, and came into the possession of Mr. Parkinson. It was eventually sold by auction in 1806, the sale lasting about a month. It was a celebrated collection in its day, and the sale attracted much attention. Some of the specimens had been presented to Lever by Captain Cook.

Alexander Macleay's Collection was supplemented by extensive purchases from the collections of Mr. Francillon and Mr. Marsham, in the years 1818 and 1819. We have, in the Society's library, Mr. Macleay's copies of the sale-catalogues of these collections, with MS. notes, possibly representing his purchases. I have been unable to find any biographical details respecting these two entomologists.

The Francillon Collection, a celebrated one in its day, was sold by auction, in June, 1818, shortly after the owner's decease. Charles Lyell, the geologist, was interested in entomology in his younger days. In a letter to his father, written from Yarmouth, on July 20th, 1817, after a visit to London, he says: "I visited

the cast of Phidias and (talking of things on a grand scale) the elephant at Exeter Change; also Bullock's Museum. . . . . Saw the whole of Francillon's collection of British and foreign insects, the finest in the world . . . . Let those who wish to have an idea of the magnificence of Nature, visit the elephant, those who wish to judge of her *varietas insatiabilis*, see Francillon's collection" [Life, Letters, and Journals, Vol. i., pp. 40-41, 1881]. The Catalogue speaks of it as undoubtedly "the most magnificent Cabinet of Insects that has ever been brought to sale in this country; containing many unique and remarkable Specimens, and generally in a high state of Preservation." The sale lasted eight days, and realised £725/11/6. The collection was offered in 122 lots, contained in 72 drawers, in three cabinets, of 64, 36, and 24 drawers. One feature of the collection of interest is, that it contained specimens collected and presented to the owner, by Surgeon-General John White, who came out to Australia with the First Fleet, under Captain Phillip, in January, 1788.

Freeman, Kirby's biographer, gives some very interesting details about the sale of Francillon's collection. Kirby attended the sale: "He made some considerable additions to his treasures, though not nearly to the extent of his friend Mr. [A.] McLeay, who purchased little short of half the collection. Mr. W. [S.] McLeay thus notices the circumstances [in a letter to Kirby]—'I understand, from my father, that you are one of the *souls* of the sale of Mr. Francillon's cabinet, giving it life, activity, and, above all, value. I suppose you have added extensively to your collection: as for my father, he has made his as brilliant for the amateur as it is instructive for the entomological student, but to arrange it, 'hic labor, hoc opus est.' The French Museum has been prevailed on to let my father have one of the Hexodons; so that now he will have every described genus of Latreille's family of Lamellicornes'" [p. 349].

Mr. Marsham's collection was sold by auction in September, 1819, about two months before his decease on 26th November following. The owner was a foundation member of the Linnean Society, the first Secretary (1788-98), and Treasurer from 1798-1816. He was the author of the "Entomologica Britannica," of which only the first volume (Coleoptera) was published (1802); and of nine entomological papers contributed to the Transactions of the Linnean Society. His collection was an important one, though not so extensive as Francillon's. The sale lasted for three days. The collection was offered in 115 lots, contained in 36 drawers, in two cabinets, each of 24 drawers. The cabinet of British insects, described in the Ent. Brit. was offered separately in one lot. Twenty-eight additional lots, including the two cabinets, five boxes of insects, a microscope, and sundries, were also offered. But beyond some pencil entries of prices in A. Macleay's copy of the catalogue, no further information is available.

Another important collection, from which Alexander Macleay purchased specimens, was that of General Thomas Davies, of the Royal Artillery, "well known as a most accurate observer of nature, and an indefatigable collector of her treasures, as well as a most admirable painter of them" [Kirby and Spence, Introd. to Entom., i., 108]. W. S. Macleay, in his paper on the "Annulosa of South Africa" (p. 74), published in London in 1838, shortly before he left for Australia, says of *Cerapterus latipes* [Paussidæ]—"The original specimen which General Davies sent to Swederus for description is now in my collection, my father having purchased it at the sale of the General's museum." But neither the sale-catalogue nor any further information are available.

General Davies was interested in birds as well as insects; and he described, with a coloured figure, the Lyre-bird of Australia, in his paper "Description of *Maenura superba*, a Bird of New South Wales," Trans. Linn. Soc., Vol. vi., 1802, p. 207.

Another important addition to the Macleay Collection was the specimens of insects and some miscellaneous invertebrata collected by Captain P. P. King. These are referred to by W. S. Macleay in his paper, "On the Structure of the Tarsus in the Tetramerous and Trimerous Coleoptera" [Trans. Linn. Soc., Vol. xv., p. 68] in these words:—"I had scarcely, however, corrected the press of the first number of that work [Annulosa Javanica], when Captain King of the Navy, one of those enterprising and accomplished navigators who at the present moment confer so much honour on our country, requested me to examine the insects which he had collected during his late expedition to explore the coasts of New Holland." The record of this collection, comprising 192 species of insects, of which 81 were described as new, four species of Arachnida, and about 30 of marine invertebrata, collected, under great drawbacks, by Captain P. P. King during his survey of the Intertropical and Western Coasts of Australia between the years 1818 and 1822, is given in King's "Narrative of a Survey," &c. [Vol. ii., Appendix, p. 438, 1827]. The collection was apparently presented to W. S. Macleay by Captain King. In his paper on "The Genera and Species of the Amycteridæ," communicated to the Entomological Society of New South Wales, by William Macleay, on 7th August, 1865, the author says that the insects originally described by W. S. Macleay in the work above cited, "are in the late Mr. [W. S.] MacLeay's collection now in my possession" [Trans. Ent. Soc. N.S. Wales, Vol. i., p. 267]. The rest of Captain King's collection was apparently presented either to the British Museum or to the Museum of the Linnean Society [Trans. Linn. Soc., xiv., p. 603].

A. Macleay's collection of sale-catalogues comprises five others besides the two mentioned—one of the "collection of insects of a gentleman well-known for his knowledge of Nat. History" [name not given] sold in June, 1814; two of the three parts of the Catalogue of Bullock's London Museum, sold in April-May, 1819, the sale lasting for eighteen days; the catalogue of the duplicates from Mr. Stephens' collection, sold in May, 1825; and W. S. Macleay's copy of the South African Museum [vertebrates, especially birds, and anthropological specimens] sold in June, 1838. The first and second of these have marginal notes in pencil. and may indicate purchases.

Numerous specimens in Alexander Macleay's collection were described, and, in some cases, figured, while in his possession; but others had become type-specimens before he acquired them. Donovan, in his "Epitome" (1805) described and figured certain species, as already mentioned. At a later date, descriptions, sometimes with figures, of specimens in the Macleay Collection were published by Dr. W. E. Leach in his "Zoological Miscellany" (3 vols., 1814-17); by E. Donovan, in the Naturalist's Repository (Vols. i.-iii., 1823-25); by N. A. Vigors, in a series of papers entitled "Descriptions of some rare, interesting, or hitherto uncharacterized subjects of Zoology," in the Zoological Journal, Vol. i., pp. 413 *et seq.*, 537 *et seq.;* Vol. ii., pp 238 *et seq.;* 514 *et seq.* (1825-26); and especially by W. S. Macleay, in the Horæ Entomologicæ (1819-21).

The specimens, mostly of Australian species, described by Dr. Leach from Alexander Macleay's collection, in addition to birds (one, *Polophilus phasianus*,

an Australian species), included a Volute (*V. lineata*) and various insects from Australia, including *Phasma violescens* (figured from the splendid collection of Mr. Macleay); *Myrmeleon erythrocephala, Mantis Australiae, Nymphes myrmeleonides, Hipparchia Banksiae*, and *Papilio Macleayanus*, "named after my much esteemed friend, Alexander Macleay, Esq., Secretary of the Linnean Society, to whom I cannot sufficiently express my full sense of his repeated marks of kindness and friendship"; one species from New Caledonia; and one or two from uncertain localities.

The insects described by Vigors included specimens collected in the vicinity of Madras, and brought to England by Major Sale, of the East India Company's service; others from North Africa, collected by Captain Lyon, R.N., the companion of Mr. Ritchie, who died at Mourzouk, on 20th November, 1819; and some from Brazil, collected by Mr. Such.

In the first part of the Horæ Entomologicæ (1819), W. S. Macleay mentions that his father possessed a cabinet containing nearly 1800 species of the Linnean genus *Scarabaeus;* and the study of these, mainly, resulted in his first contribution to knowledge. Specimens were described or recorded from Northern and Southern Europe, North Africa, Cape of Good Hope, Mauritius, Isle of Bourbon, India, East India, China, Java, North America, Georgia, South America, Brazil, Demerara, Cayenne, Trinidad, Jamaica, Australasia, New Holland, and Van Dieman's Land. The material studied in the second part was in other collections, chiefly that of the British Museum.

As evidence that Alexander Macleay's official connection with the Linnean Society had broadened his interest in Natural History, it is interesting to note that this was not wholly confined to insects. At one time he seems to have had a collection of South American bird-skins. This is referred to by two writers. Dr. Leach says of *Lanius lineatus*: "This elegant bird, which is figured from Mr. MacLeay's collection, inhabits Berbice" [Naturalists' Miscellany, Vol. i., p. 22, 1817].

Mr. G. Such, of Magdalen Hall, Oxford, who had resided for some time in Brazil, in describing a new species of the family *Laniadae, Thamnophilus maculatus*, says of it: "I had originally conceived that my specimen was the first which had been brought to England; but I found a second in Mr. MacLeay's collection. . . . . Its chief difference, as has been pointed out to me by Mr. W. S. MacLeay," &c. [Zoological Journal, i., p. 557]. In both these cases the specimens referred to were probably included in the first two of Alexander Macleay's donations to the Museum of the Linnean Society—"34 Birds from Berbice [Trans. Linn. Soc., vol. x., p. 413, 1811]; and "11 specimens of Birds from New South Wales, not before in the Society's collection" [Vol. xii., p. 598, 1818]. This and his third donation of "Two specimens of Quadrupeds, and six Birds from New South Wales," as recorded in Vol. xiii., p. 636, 1822, show that he was in receipt of specimens from Australia, other than insects, from undisclosed sources, even at this early period.

Except for a few specimens which W. S. Macleay needed to retain for study, the Macleay Collection, as it was brought out to Australia by Alexander Macleay, in 1825, comprised British insects collected by A. Macleay; British or other European insects collected by W. S. Macleay; gifts from or exchanges with their friends; specimens purchased from at least six important private collections [Dru Drury's, Ashton Lever's (Parkinson's), E. Donovan's, Francillon's, Marsham's,

General Davies', and possibly some others]; and acquisitions of specimens from Brazil, India, North Africa, Australia, and elsewhere, possibly some of them donations, but the records of them are indefinite. As mentioned later, some specimens were left with W. S. Macleay to enable him to continue his work on them. These were afterwards brought to Australia by him in 1839.

With the removal of the Macleay Collection to Australia, the most important private entomological collections in England seem to have been the Rev. F. W. Hope's, Kirby's, Stephen's, Haworth's, Westwood's, and Melley's.

Kirby and Spence, authors of the well-known "Introduction to Entomology," thus express their appreciation of the Macleay Collection and of the owner's encouragement: "To Alexander MacLeay, Esq., they are under particular obligations for the warm interest he has all along taken in the work, the judicious advice he has on many occasions given, the free access in which he has indulged the authors to his unrivalled cabinet and well-stored library, and the numerous other attentions and accommodations by which he has materially assisted them in its progress" [first ed., p. xxi., 1815].

Alexander Macleay's official connection with the Linnean Society must have stimulated and widened his interest in Natural History, and, at the same time, have brought him into personal contact with many of the eminent men of the day. He was elected a Fellow of the Royal Society in 1809, when Sir Joseph Banks was President; and to the Council in 1824, when Sir Humphry Davy was President. Sir Stamford Raffles, first President of the Zoological Society, was also a member of the Council at this time. Macleay's friends of whom we have records, besides the entomologists Kirby and Marsham, included Robert Brown, and Sir James E. Smith, Founder and President of the Linnean Society.

Robert Brown (1773-1858) had collected zoological specimens, including insects, as well as botanical material, during his visit to Australia and Tasmania. We may be sure, therefore, that before accepting the offer of an appointment in Australia, A. Macleay had discussed the prospects with the great botanist. The fact that he brought his collection with him seems to show that the fauna was one of the attractions to migrate. The records of their friendship are meagre, but indicative of warm regard. R. Brown named the new genus, *Macleaya*, in honour of his much valued friend, in 1826. Our Society is fortunate in having in the library four reprints of papers by Robert Brown, with inscriptions to Alex. McLeay, Esq., from his "affectionate friend" or from his "attached friend."

A pleasing record of Alexander Macleay's friendship with Sir James E. Smith is given in the Proceedings of the Linnean Society, 1872-73, p. i. At the meeting of the Society held on November 7th, 1872, Mr. G. Bentham, President, in the chair—"The President read two letters, in her own hand, from Lady Smith (now in her 100th year), offering for the acceptance of the Society, seventy-four letters, addressed to its Founder by the late Alexander M'Leay, Esq., Secretary to the Society from 1798-1825. The letters were accompanied by a photograph from the portrait of Lady Smith, taken by Opie in 1798, signed, and bearing the date of her birth, May 11, 1793. Resolved, that the Special Thanks of the Society be presented to Lady Smith for this very valuable and acceptable donation." The number of the letters is perhaps to be accounted for by the fact, that Sir James Smith's home was in Norwich, though for some time he occupied a house in London.

After the death of W. S. Macleay, in January, 1865, his brother, George Macleay, inherited the family heirlooms. At a meeting of the Linnean Society, on

December 16th, 1886—"The President [W. Carruthers, F.R.S.] announced that Sir George MacLeay, K.C.M.G., F.L.S., had presented to the Society a framed water-colour portrait of the Rev. William Kirby, F.L.S., the distinguished entomologist; also the manuscripts and correspondence of his father, Alexander MacLeay (elected F.L.S. 1794), for many years Secretary to the Society" [Proceedings, 1886-87, p. 6]. But these have not so far been utilised for biographical purposes.

In anticipation of this evening's meeting, I wrote to the Council of the Linnean Society of London some time ago, pointing out the scanty documentary details of the early scientific life of Alexander and W. S. Macleay available to us here in Australia, and that we were without a portrait of any kind of W. S. Macleay; and, at the same time, asking if the Council would be good enough to spare me copies of any documents that would be of special interest in connection with our celebration of the centenary of Sir William Macleay's birth. I have pleasure in recording my indebtedness, and cordial thanks, both to the Council and to Dr. B. Daydon Jackson, General Secretary, who has kindly sent me copies of five very interesting letters, and a photograph of the bust of W. S. Macleay in the Society's possession.

One of the letters referred to, from Sir James E. Smith [1759-1828] to Alexander Macleay, dated "Norwich, March 13th, 1825," was apparently written in reply to a letter announcing the writer's acceptance of the appointment of Colonial Secretary of New South Wales, and of his contemplated departure to the antipodes. The portion of the letter of most interest to us is as follows:—

"My dear Friend,—Now that I have got through the irksome correspondence that so much opprest me—(rendered most irksome, I assure you, by the continual association of your departure, which weighed like a millstone upon my heart), I may indulge in more pleasant writing. I am not a man of compliments, but your wide removal, as it were to another world (and it may really be so with respect to me), seems to excuse and indeed require an opening of heart between us. I am happy to recall the 31 years [1794-1825] to which you advert, and to say with all sincerity, that so far from misunderstanding or *coolness,* I have ever felt the *warmest* estimation for your character, the most grateful sensibility to your constant active friendship and attention. I have always known where to find you, and was always sure you would do the kindest and most judicious thing. Judge then if I can part with you unmoved, or if I can avoid being warmly interested for all that belongs to you!—I speak now not with much reference to our Society, for which you have done so much. I trust we shall choose no unworthy successor to you—and as to yourself, I would not suggest gloomy ideas of your great undertaking, which I trust will be advantageous, as it is certainly highly honourable. It must on some accounts be delightful to you, and as a naturalist I almost envy you. For the sake of the public I am well persuaded I ought to rejoice. May God preserve your life to do all the good you can, and to benefit your family, who I am confident will be worthy of you. Let me, my valued friend, urge one thing especially. Take the utmost care of your health—do not work too hard, or expose yourself to anything which experienced people think hazardous. If you feel well and strong, *spare yourself,* that you may do the more good. . . . . I hope your portrait will be well done. We shall gratify ourselves by it, more than we honour you. . . . . Farewell my excellent friend—I need not say how often I shall think of you, nor how entirely I am ever yours, J. E. Smith."

The portrait referred to was painted in oils by Sir Thomas Lawrence, P.R.A., and presented by subscribing Fellows to the Linnean Society. A steel engraving reproduced from this portrait by C. Fox was subsequently issued. The late Lady Macleay was good enough to give me three copies of the engraving. One is hung in the Society's Hall. The other two, I presented to the Australian Museum and the Public Library.

A report of the Anniversary Meeting of the Linnean Society, held on 24th May, 1825, concludes thus: "The Society afterwards dined at the Freemason's Tavern, where the presence of Sir J. E. Smith in improved health added much to the enjoyment of the day. Addresses on subjects interesting to cultivators of Natural History were delivered by various members, and other men of science; amongst others, by the venerable Bishop of Carlisle, Lord Stanley, the Rev. Dr. Fleming, and the respective Presidents of the Horticultural and Geological Societies. Numerous expressions of respect and cordial esteem were called forth towards the late Secretary of the Society, Alexander MacLeay, Esq., F.R.S., on the occasion of his quitting this country for a time, to occupy the important station of Colonial Secretary in New South Wales" [Zoological Journal, Vol. ii., p. 278].

At the next meeting, on June 7th, 1825, it is recorded that—"On the retirement of Alexander MacLeay, Esq., F.R.S., &c., from the office of Secretary of the Society, the following Minute, recommended by the Council was adopted by the General Meeting of the above date, viz.—The Linnean Society of London take the earliest opportunity after the retirement of Alexander MacLeay, Esq., from the Secretaryship of the Society, to record upon their Minutes the high estimation in which he is held by them on account of twenty-seven years of unremitted and unrequited labour devoted to the interests of science; and that in quitting for a time this sphere of usefulness to fill an honourable station in a distant country, he carries with him the cordial esteem and sincere regret of this Society."

There is very little, in the way of records of his own, of Alexander Macleay's interest in the fauna and flora after his arrival in Australia in January, 1826. But evidence of it is afforded by his donations of zoological and botanical specimens to the Linnean Society's Museum, and a donation to the Zoological Society; and, locally, by his active interest in the Colonial Museum, later the Australian Museum. Vigors and Horsfield had completed the first part of an important paper, entitled "Catalogue of the New Holland Birds in the Collection of the Linnean Society" [read on June 21st, 1825], shortly before A. Macleay left London. "In the introductory remarks to this paper, the authors express their confident expectation that the deficiency of our knowledge of the habits of the Birds of Australia, will be in great measure supplied by the researches of Mr. A. MacLeay during his future residence in that interesting country" [Zool. Journ., ii., p. 279]. Mr. Macleay's official duties and other engagements left him little time for studying the habits of Australian birds, as was afterwards done by John Gould and Gilbert; but he did what he could in the way of sending specimens for the Linnean collection, as follows:—"41 skins of Birds from New Holland; 54 skins of Birds. 2 spp. of Squalus, and a skull of a third, and of a species of Delphinus [Trans., Vol. xv., p. 533 (1827)]—34 skins of Birds, one Bat [Trans., Vol. xvi., p. 794 (1829-33)]—A Collection of Bird-Skins and Insects from New Holland [Trans., Vol. xvii., p. 597]—Specimens of 126 species of Fruits and Seeds indigenous to New South Wales [Trans., Vol. xx., p. 505].

At a meeting of the Zoological Society of London, on May 12th, 1835—"A letter was read, addressed to the Secretary by A. MacLeay, Esq., Colonial Secretary, New South Wales, dated Sydney, October 25, 1834. It stated that the writer had, in consequence of the application made to him, set on foot inquiries respecting that interesting *Bird* of New Zealand, the *Apteryx Australis* Shaw, and that he had succeeded in obtaining a skin of it (destitute, however, of the legs), which he had forwarded to the Society. The specimen was exhibited, and further particulars given [Proc. Zool. Soc., iii., p. 61]. The notice ends thus:—"He concludes by expressing his intention of forwarding to the Society the white-fleshed Pigeon of the Colony, which, he conceives, would be a great acquisition in England: it is certainly, he says, far superior to Partridge."

Shortly before his decease, the late Mr. R. Etheridge, Junr., Director and Curator of the Australian Museum, completed his inquiries into the early history of the Museum, from official and other records. His paper, in two Parts, is entitled "The Australian Museum: Fragments of its early History," for unfortunately the earliest records are not as complete as could be wished. But he was able to show that "a Museum, therefore, was evidently resolved on as early as 1827," and "that a Museum of some kind was established between the years 1827-9." He also says: "Whatever connection the Honbl. Alexander Macleay had with the inception of the Australian Museum, there can be no doubt of his long and lasting interest in the establishment; the old minutes prove this'" [Records of the Australian Museum, Vol. xi., p. 67 (1916); xii., p. 339 (1919)].

In the obituary notice of Mr. Alexander Macleay, which appeared in the *Sydney Morning Herald* of July 26th, 1848, the day after the funeral, it is stated that—"He was always active in the management of colonial institutions: he was President of the Australian Subscription Library, of the Benevolent Society and the Infirmary; and was the founder of the Australian Museum." This statement is repeated in Flanagan's "History of New South Wales [Vol. ii., p. 192 (1862)].

In regard to the location of the Colonial Museum in its early days, Mr. Etheridge says: "It has been stated that the Museum occupied 'a small room attached to the Legislative Council' [quoted from Fowles, "Sydney in 1848," p. 83], but like other of Fowles' statements, lacks confirmation, as I have been unable to find any evidence in support" [p. 342]. Confirmatory evidence is to be had however. For example, *The Sydney Herald,* No. 19, November 21st, 1831, p. 4, records the fact that—"The Sydney Museum has been removed from the Old Post Office in Bent-street, to the spacious rooms over the Council Chamber in Macquarie street." And it was there that Dr. George Bennett first saw it, in August, 1832—"In company with a friend, I visited the Colonial Museum, which is arranged for the present in a small room, assigned for the purpose, in the Council-House, and which had been recently established in Sydney."

From Mrs. Boswell's narrative, it appears that Alexander Macleay spent his eightieth birthday (June 24th, 1847) at Port Macquarie, during a visit to Major and Mrs. Innes. It is mentioned that the visitor could speak Gaelic quite well, that he was much pleased at being musically welcomed, on his arrival, by a piper, who used to play for the special delectation of the guest as opportunity offered, and that Mr. Macleay was entertained at luncheon on his birthday.

Mrs. Macleay, born 13th March, 1769, died a few weeks later, on 13th August, 1847, after a happy union of more than fifty years. Her husband's long and useful life ended less than a year afterwards, on 19th July, 1848, in his

eighty-second year. His end was hastened by a severe shock received in a carriage accident, when returning from a visit to Government House. The horses took fright, and got out of control just as they were about to pass through the entrance-gates to Macquarie street, and the carriage collided with one of the stone pillars. By his own request, Mr. Macleay was removed to "Tivoli," Rose Bay, the residence of his son-in-law, Captain W. J. Dumaresque; but, at his advanced age, his recovery was hopeless. In the obituary notice in the *Sydney Morning Herald* of July 26th, 1848, the day after the obsequies, it is stated that—"There was a very large attendance at the funeral, the number of carriages being fifty. Among those present were—the Commander of the Forces, the three Judges, and nearly the whole of the Government officers, and a large number of old colonists of all classes. The pall-bearers were the Colonial Secretary, the Colonial Treasurer, Colonel Gordon, Mr. Baker, Attorney-General, Mr. Macpherson, Mr. Mitchell, and Mr. Campbell. . . . Mr. M'Leay was a man almost universally respected, and has descended into the grave full of years and full of honour; and from his consistent character, we may feel sure he has gone to his reward."

Alexander Macleay seems to have been a man of an attractive personality, and to have had many warm friends, both in England and in Australia. He did not escape hostile criticism in party political matters in this part of the world, at a time when the Emancipist question, among others, evoked much bitterness. But as a man of probity, who had the welfare of the infant Australia at heart, there are numerous eloquent tributes to his ability and worthiness, on record. On his retirement from the office of Colonial Secretary, he was the recipient of two addresses expressive of esteem and regret—one from 556 of his fellow-colonists, who also requested his acceptance of a piece of plate, in further proof of personal regard; the other, from twenty-five gentlemen who had been officially associated with him in public life, and who asked "that you will do us the favour to allow your portrait to be taken at our expense, for the purpose of being placed in some appropriate situation in the colony, as a lasting memorial of our regard and esteem for your private worth, and of the grateful sense entertained by us, of the co-operation we have always experienced from you, in conducting the business of our respective departments." The order for the piece of plate was sent to England; and a very handsome centre-ornament for the dinner-table was selected, on which were engraved the Arms of the Colony, and of the Royal Burgh of Wick, by the special permission of the respective Authorities, as well as the Arms of the recipient. This was sent out to Australia and presented in due course. There is a copy of a rare pamphlet in the Mitchell Library, giving the details of the gift, with an illustration; and bound up with it is a lithographic plate of the plant *Macleaya cordata* R.Br. The piece of plate was probably taken to England by Sir George Macleay, after the death of W. S. Macleay. I have not been able to ascertain the history of the contemplated portrait, or, if painted, where it was or is located unless it be in some Government building. Or it may be the portrait now hanging in the Curator's room at the Australian Museum, whose history is unrecorded. If so, it may have been presented to the Museum by George Macleay when he revisited Australia (before 1876).

The family tomb, without inscriptions save the surnames Macleay and Harrington in large letters, and the family crests, is in the same enclosure with that of Captain W. J. Dumaresque in what used to be known as the Camperdown Cemetery—which was opened when the Devonshire-street Cemetery was closed—

in proximity to St. Stephen's Church, Newtown. But there are cenotaphs to the memories of Alexander and Mrs. Macleay, of Mrs. Harrington, eldest daughter and wife of Mr. T. C. Harrington, Assistant Colonial Secretary, and of W. S. Macleay, as well as of Captain Dumaresque, in St. James' Church, King-street.

Elizabeth Bay House and the Garden.

After his arrival in Sydney on January 3rd, 1826, Mr. Alexander Macleay occupied the middle one of the three official residences on the south side of Bridge-street. The late Judge Forbes contributed a letter to the *Sydney Morning Herald* of March 17, 1899, entitled "Old Government House, Sydney," in which he recorded his recollections of old Sydney. He was the son of the first Chief Justice of New South Wales, and came to Sydney, a child of four years, with his father in 1823. The Judge wrote: "My father lived in a house which stood in the centre of the site of the present Lands Office. . . . . Bridge-street, which ran from George-street up to Government House gate (the gate of that time), after passing Bent-street (which it joined then at the same place as now) had, on the south side of it, four detached houses, built in a row, and going from George-street towards the Government House gate. The first of these you came to was that in which my father lived, bounded on the south and west by Bent-street; next to it was the house which was the residence of Alexander Macleay, the Colonial Secretary; and next to that was another house, the residence of Mr. Lithgow, Auditor-General and Collector of Internal Revenue; (that house is now standing, having a large native figtree growing in the front of it) [since demolished to make way for the present Education Department Building]; and next to that was the Guard-house close to Government House gate. The first three houses mentioned, viz., my father's, Macleay's, and Lithgow's, had gardens in front and yards at the back, and were divided by walls from one another. The Guard-house was close to the gate of Government House, and Government House was about 30 or 40 yards to the east of it, which fixes the site at the place where the plate with the inscription on it was lately found. I was often at Government House when Sir Thomas Brisbane was there, and also when Darling and Bourke were Governors, and I know the localities well, and remember them perfectly."

Another early notice of the Macleay's first house is to be found in an article entitled "A Journal of Early Australia," contributed to the *Sydney Morning Herald* of August 30th, 1911, by Miss Mary Salmon. This is a review of a small volume, with the title, "Some Recollections of My Early Days. By [Mrs.] A. A. C. D. Boswell," printed for private circulation only among friends and relatives. There is a copy of it in the Mitchell Library. The authoress was born in 1826 at "Yarrows," in Bathurst, and was living in Scotland when Miss Salmon's article was written. Mrs. Boswell was the daughter of Mr. George Innes, who came to Australia in 1823 with his brother, Captain Archibald Clunes Innes. The following is Mrs. Boswell's account:—"Early in 1834, I found myself at school in Bridge-street, under the care of Mrs. Evans and her friend and partner, Miss Ferris. Mr. Evans (he was George W. Evans, who had been deputy surveyor when he made the remarkable discovery of the plains beyond the Blue Mountains, which led to a road to Bathurst) had a bookseller and stationer's shop, and we used the rest of the house, which was thought handsome, and in a fashionable street. Our house faced the old Government stores or depot, and close by flowed the Tank Stream, now arched and made into the main drain of that part

of the populous city. We were quite close to the old Government House and Macquarie-place, where lived the leading Government officials. These houses were back from the street, and had pretty gardens and deep verandahs, shaded by climbing roses and other flowering plants. I do not remember ever being in Government House, but I made many happy visits to our kind friends, Mr. and Mrs. Macleay at Macquarie-place. He was Colonial Secretary, and one of his daughters [Margaret] had been married to my uncle, Major Innes, of Lake Innes, Port Macquarie. Miss Macleay (Mrs. Harrington) wanted to adopt and educate me. She died a few weeks after her marriage, in 1836."

Among the relics of W. S. Macleay is a small pencil-drawing of the residence in Bridge-street, made by Miss Macleay, with her signature on the back. This was probably sent to her brother in Cuba, before 1836. I exhibit this, together with the photograph of a pencil-drawing of the same house by the artist Conrad Martens. The original of the latter is in possession of the Royal Society of Tasmania. By the kind permission of the Council, Mr. Clive Lord, the Secretary, has been able to furnish me with the photograph of this interesting drawing.

In a letter from Mrs. Eliza Macleay, in Sydney, to her son, W. S. Macleay, in Cuba, undated but written on paper with watermark 1824 [from internal evidence written about June, 1827] she says: "We have been very unsettled in our house ever since we got in to it, which was the first night of our arrival [January 3rd, 1826]; in the first place, it was much too small for us, which, on proper representation was ordered to have two bedrooms and two smaller rooms built over the library, and eating-room, and a verandah added, which has now been about ten months and not nearly finished, so slow do the prisoner-workmen get on; and when you consider what sort of people they are, you may suppose we cannot feel very comfortable while they are about. They contrived, I must say through the carelessness of our free servants, to carry off sixty pounds' worth of plate, which we could never hear the least account of since. . . . . Your father . . . . . has little time to think of family-affairs, his whole time being occupied with Government business. We have now been here a year and a-half, and, during that time, I think he has not been absent from Sydney above ten days; the very little recreation that he has consists of his going out before breakfast or after five o'clock, sometimes to a place called Elizabeth Bay, of which he has got a grant of between fifty and sixty acres, where he is making a garden, and [hopes at] some future time to build a house; he is now building stabling, and has built a gardener's cottage."

[For the copy of this extremely interesting letter, kindly forwarded by Dr. Daydon Jackson, I am indebted to the Council of the Linnean Society of London.]

Mr. J. A. Dowling has recently given a very interesting account of the early settlement of the eastern suburbs contiguous to the harbour and the city. The author points out that, as shown in Roe's map of Sydney (1822), Darlinghurst, including Woolloomooloo, used to be called Henrietta Town, and was a reserve set apart for the Blacks. The name was given by Governor Macquarie, after the first Christian name of his wife. Elizabeth Bay and Elizabeth Point were also named by the Governor after the second Christian name of the same lady.

Of the grant to Alexander Macleay, Mr. Dowling says: "The Macleay property was fifty-four acres in extent, and was granted to Mr. Alexander Macleay by Governor Darling in 1828, who, in a despatch to the Right Hon. William Huskisson, dated the 28th of March, 1828, stated: 'The land granted to Mr.

Macleay at Elizabeth Bay, a mile and a half from Sydney, was for the purpose of erecting a family house and cultivating a garden. Mr. Macleay's knowledge as a horticulturist is likely to prove beneficial to the colony. He has already spent a considerable sum on the improvement and cultivation of his grounds and in erecting a stable and other offices preparatory to building a house, which it is his intention shortly to commence. From the manner in which he has entered into this undertaking and the scale on which he has commenced to settle and stock the land he has received for agricultural purposes (the usual grant of 2500 acres), he will no doubt prove an important acquisition to the colony. In this respect alone, the capital which he has already vested in stock, and is still continuing to expend, being considerable.' . . . . The formal grant was dated 19th October, 1831." ["Potts' Point, Darling Point and Neighbourhood, in the Early Days," by J. A. Darling, Journ. Proc. Aust. Historical Soc., Vol. ii., 1906, Part 3, p. 55 (1909).]

The conditions on which the grant was made were loyally fulfilled, and there is ample evidence that the expectations of the value of his horticultural knowledge were realised.

Alexander Macleay seems to have been interested in horticulture before he came to Australia. Robert Brown contributed a botanical supplement to the "Narrative of Travels and Discoveries in North and Central Africa, by Denham and Clapperton," published in 1826 [Reprinted in R. Brown's Collected Works, Vol. i., p. 270], from which I quote the following: "Respecting *Bocconia cordata*, though it is so closely allied to *Bocconia* as to afford an excellent argument in favour of the hypothesis in question, it is still sufficiently different, especially in its polyspermous ovarium, to constitute a distinct genus, to which I have given the name (MACLEAYA *cordata*) of my much valued friend, Alexander Macleay, Esq., Secretary to the Colony of New South Wales, whose merits as a general naturalist, a profound entomologist, and a practical botanist, are well known."

Mr. Macleay may have brought out to Australia with him plants or seeds from England, as he certainly did from Rio Janeiro, where the vessel called on the voyage out, as mentioned in Dr. Bennett's account of his visit to Elizabeth Bay in 1832 [*postea*]. We have no family record of the progress of the garden later than Mrs. Macleay's letter written in June, 1827, until about 1836, when Mr Macleay began to keep separate records, in two small books, of the plants and seeds which he obtained, and of the sources from which they came.

But most interesting references to the garden by three visitors—Allan Cunningham, Dr. George Bennett, and James Backhouse—during the intervening period, are available. These accounts show that much progress had been made in clearing, laying out, and planting the originally sterile area of Hawkesbury Sandstone.

Allan Cunningham visited Elizabeth Bay in 1830, and again in 1831, just before leaving for England in the ship "The Forth" on February 25th, 1831. The following is his account:—"I now left Parramatta, and accompanied by a friend, reached Sydney in the afternoon, where I learnt that the departure of the ship was postponed until the 16th [February, 1831]. This gave me more time to settle certain matters of business in Sydney, as also to call on several friends living at this port, and among them was Mr. Macleay, our worthy colonial secretary, whom I accompanied to his retreat on the shores of Elizabeth Bay, where I was not a little delighted to find so much had been done in planting and improving the

sterile ground amidst high sandstone rocks since I visited the Bay last year. . . . . As there were several plants of [*Calostemma album*] in the garden, where it periodically puts forth its small white flowers, Mr. Macleay presented me with four bulbs for Kew, so that the royal gardens will soon boast of possessing a fourth species of this genus, so nearly related to Pancratium. [Hooker's London Journal of Botany, Vol. i., p. 126.]

Dr. George Bennett visited Sydney in 1829, and a second time, in August, 1832. Shortly after he journeyed to Elizabeth Bay, of which he says:—"In company with my friend, Lieutenant Breton, R.N., I visited *Elizabeth Bay*, about two miles distant from Sydney, and the property of the Honourable Alexander Macleay. The situation is beautiful, being in a retired bay or cove of Port Jackson, and the garden and farm is near the sea. This spot, naturally of the most sterile description, has been rendered, at a great expense and perseverance, in some degree productive as a nursery for rare trees, shrubs, and plants, from all parts of the world. We were much gratified with the valuable and rare specimens the garden contained, and surprised that a spot possessed of no natural advantages should have been rendered, comparatively, a little paradise. In the garden, a species of *cactus* was pointed out to me by the gardener, Mr. Henderson, which Mr. Macleay had brought some years ago from Rio Janeiro." Then follow particulars of the teratological fruits of this plant. [Wanderings in New South Wales, &c., Vol. i., p. 71 (1834)].

James Backhouse, the Quaker missionary, in his "Narrative of a Visit to the Australian Colonies" (1843), thus describes his experience: "January 15th, 1835—We [including his colleagues, D. and C. Wheeler, and G. W. Walker] walked to Elizabeth Bay, and met the Colonial Secretary, at his beautiful garden, which is formed on a rocky slope, on the margin of Port Jackson, of which it commands a fine view. Here are cultivated, specimens of many of the interesting trees and shrubs of this Colony, along with others from various parts of the world, intermixed with some growing in their native localities. . . . The walks at this place are judiciously accommodated to the inequalities of the sinuous bay, and are continued round a point covered with native bush. Peaches are ripe in the open ground in abundance, and liberty to partake of them freely was kindly given, by the open-hearted proprietor. *Dendrobium speciosum* and *D. linguiforme*, remarkable plants of the Orchis tribe, are wild here, upon the rocks, and *D. tetragonum* is naturalised on a branch of *Avicennia tomentosa*, covered with oyster-shells, and suspended in a tree near the shore. A fine patch of the Elks-horn Fern, *Acrosticum alcicorne*, retains its native station on a rocky point in the garden" [p. 239].

Returning now to the family records relating to the garden, one of the two books already mentioned, has, on the title-page, the entry "Plants received at Elizabeth Bay." The watermark of the paper of this book is 1833. The first four entries are not dated. The first of these is a list of thirty-three species, including four of Magnolia, and six varieties of *Camellia japonica*, received from the Messrs. Loddige, of Hackney, the well-known nurserymen of that time.—No. 2, three species of *Diplarrhoena morea* and *Sarcochilus falcatus*, from Van Dieman's Land; and *Alsophila australis* from Norfolk Island, received from Mr. J. Backhouse, whose visit to Australia lasted from 1832 to 1838.—No. 3, twelve species, from Messrs. Loddige.—No. 4, eighteen species (two unnamed), from Mr. W. Macarthur, Camden.—No. 5, 6th April, 1836, four species, also from Mr. W.

Macarthur.—No. 6, not dated, thirteen species (five undetermined), "From China, Mr. Jones." Below the last entry appears the date, 1835, followed by a list of twelve additional species from the same source.—No. 7, twelve varieties of Dahlia. "From Mr. J. B. Richards. London, 27th April, 1836."—No. 8, seven species , including three of Passiflora, and five varieties of *Chrysanthemum sinense* from Messre. Loddige, Feb. 7, 1827 [? 1837].—No. 9, thirteen species from Mr. W. Macarthur, March, 1837. This is of interest because it shows that, at this early period, the horticulturists were trying to cultivate native plants in their gardens, three of the plants in the list being *Bauera rubioides, Eriostemon* sp., and *Boronia* sp.—No. 10. eight species "From Valparaiso, Mr. [Allan] Cunninghame, March, 1838."—No. 11, nineteen species from Camden and Brownlow Hill, August, 1837, —No. 12, forty-seven species of "Bulbs from Captain Farquand Campbell, from Cape of Good Hope, March, 1838," and three species of *Pelargonium*.—No. 13, nineteen species from Mr. W. Macarthur, May, 1838.—No. 14, not dated, is a single entry of Huon Pine from Capt. Drinkwater Bethune, H.M.S. Conway.—No. 15, also a single entry of Amaryllis, from Miss Macarthur, 27th August, 1838.—No. 16 is very interesting, "From Capt. [Charles] Sturt, December, 1838, a large collection of Bulbs collected on his late journey in South Australia."—No. 17 is a list of "Plants brought by W. S. Macleay, per Royal George, March, 1839," which may have been supplied by Loddige. These comprise forty-six species, beginning with five species of *Magnolia*, and ending with *Verbena Melindris*. A number of "Cape of Good Hope Bulbs" (particulars not given), as well as an assortment of seeds, were also brought from the Cape by W. S. Macleay. At a later date, some of the entries had a line drawn across them, and the word "Dead" written opposite to them.—No. 18, two species from Mr. W. Macarthur, April, 1839.—Nos. 19-21, apparently received in the same month, merely record collections received, without particulars, from Mr. Cloete, Baron Ludwig, and Mr. Gordon.—No. 22, sixteen species received from Dr. Wallich, of Calcutta, May, 1839. All the foregoing records are in the handwriting of Alexander Macleay. The continuation of the records was written by W. S. Macleay.—No. 23, forty-five species from Mr. Wm. Macarthur, August, 1840.—No. 24, seventy-two species from Dr. Wallich, Calcutta, October, 1840.—No. 25, thirty-eight species, including *Macleaya cordata* R.Br., from Loddige, January, 1840.—No. 26, and last, seventy-two species "from Mr. Backhouse, 1843." Mr. Maiden, in his biographical notice of William Carron, says that —"His daughter informs me that he arrived in Sydney in 1843, in charge of plants for one of the Macleays." [Journ. Proc. R. Soc. N.S. Wales, xlii., p. 95.] The collection from Mr. Backhouse would, therefore, be the one he took charge of. A number of blank pages follow the last entry. Then comes a long list (9¼ pages) of "Desiderata of Plants," in Alexander Macleay's writing. At a later date, some of the plants were obtained. The names of these are crossed out, and the dates of receipt, and sometimes the initials of the senders, are written in the margin. This is followed by a table of the "Subgenera of *Dendrobium*" in W. S. Macleay's writing. Then, after more blank pages, at the end, is a list of "Epiphytal Orchids," forty-two species, in W. S. Macleay's writing.

The entries in the Seed-book are by years, and numbered throughout. They are in the handwriting of a lady, presumably one of A. Macleay's daughters, or in his own, or in that of W. S. Macleay. For the years 1836-43 (both inclusive) the number of separate entries of seeds is 886, 347, 502, 498, 317, 101, 39, 186;

and for the years 1845, 1851 and 1853, the numbers are 184, 133, 93 (there are no records for 1844 and 1852); total, 3806. These include seeds for the orchard and kitchen-garden, as well as for the flower-garden. Some species are not named. The seeds were received from England, Madeira, Mauritius, India (Calcutta, Madras, Neilgherry Hills), China. Java, East Indies, Brazil, Bolivia, Chili, Valparaiso, Tahiti, Sandwich Islands, Society Islands, Cape of Good Hope, Australia (seeds of native plants from many localities), Van Dieman's Land, New Zealand, and Norfolk Island. W. S. Macleay brought with him seeds of 89 species from England; and of 107 species (including five species of *Erica*, five of *Leucadendron*, and six of *Protea*) from the Cape of Good Hope.

These records are of interest as contributions to the early horticultural annals of New South Wales. It is worth mentioning that the Botanic Gardens in Sydney were first opened to the public in 1831, and on Sundays in 1838.

Taking into account Alexander Macleay's efforts to foster horticulture in the early days, as represented by the foregoing records of his efforts to obtain plants and seeds, and also that the garden was in charge of an expert gardener, Mr. Henderson, it is not surprising that visitors were delighted with what they saw, when the garden was well established and at its best. Of some of these, of a later date than those already mentioned, there are records.

The first is a very brief notice of Allan Cunningham's third visit to Elizabeth Bay, in a letter to Heward, dated November 10th, 1838: "How fine *Grevillea robusta* (forty feet high) is at this time [in the Botanic Gardens], and at Mr. Macleay's at Elizabeth Bay, it is a mass of orange blossoms [Hooker's London Journ. Bot., Vol. i., p. 286].

H.M.SS. "Erebus" and "Terror," under the command of Captain James Clark Ross, visited Sydney in 1841, their stay lasting from July 7th to August 5th. Dr. Joseph Dalton Hooker was Assistant Surgeon and Botanist attached to the "Erebus." The following brief notice of this visit from "An account of the Voyage of the Erebus and Terror" by his father, based on his letters sent home during the voyage, which appeared in the London Journal of Botany" [Vol. ii., p. 272, 1843]—"A short time only was allowed here [Hobart, after the return from the Antarctic] for the needful refreshment and repairs, when the 'Erebus' and 'Terror' sailed for Sydney, where numerous excursions were made and plants collected, though few of these could have the charm of novelty; and after much kindness received from Messrs. M'Leay (father and son) they then pursued their course to the Bay of Islands, New Zealand."

The recent publication of the "Life and Letters of Sir Joseph Dalton Hooker, O.M., G.S.I., based on materials collected and arranged by Lady Hooker; by Leonard Huxley" (1918), is of very great value, not only from the intrinsic interest of the book, but because it supplements and completes the set of the three biographies which relate to the inauguration of modern ideas of evolution, namely "The Life and Letters of Charles Darwin. Edited by his son, Francis Darwin" (Second Edition, 1887), and the "Life and Letters of Thomas Henry Huxley. By his son, Leonard Huxley" (1st Edition, 1900). This gives fuller particulars about Hooker's visit to Sydney, though nothing is said about the numerous excursions and the collecting of plants nor are the Botanic Gardens mentioned. The following extract [Vol. i., p. 120] contains the earliest reference to Elizabeth Bay House known to me: "From Tasmania, a short visit was paid to Sydney in connection with the magnetic observatory, lasting from July 7th to August 5, 1841. Syd-

ney in those days, only one year since the importation of convicts had ceased, could boast no shops finer than the Hobart Town ones; round the beautiful harbour stood a few fine houses, in particular the new Government House, still uninhabited, built in the Elizabethan style, the new Custom House, and Mr. M'Leay's house with its garden full of interesting plants." . . . . "A long visit to M'Leay's garden proved it to be a botanist's paradise. My surprise was unbounded at the natural beauties of the spot, the inimitable taste with which the grounds were laid out, and the number and rarity of the plants which were collected together. . . The interior of the house, a striking specimen of Colonial architecture, the individual trees and creepers, flowers and shrubs, the revival of nature when the rain ceased, and a few insects came out, the Diamond birds flitted from tree to tree, and the large Sea Eagle or Osprey left his lovely lair and commenced wheeling over the calm waters of the bay, and beyond the bay 'a rocky precipice christened Sunium, on which it is the intention to build a temple'—all this is fully set forth in the Journal, with one very homely touch as to 'Mr. William's workshop': 'The smell of camphor and specimens, so well known to me at home, reminded me strongly of olden times, especially as I found everything in the inimitable mixture of confusion and order in which Mr. [R.] Brown's shop at the Museum and his rooms in Deane-street are wont to be.'" . . . . "The record of the visit ends with the entry for August 5th: 'at 11 a.m. sailing down Port Jackson along the cold-looking sandstone cliffs, leaving Sydney with few regrets but leaving Mr. McLeay's fine establishment where there was much to see.'"

A most interesting account of a visit to Elizabeth Bay by Mrs. Robert Lowe, towards the end of 1842 or early in 1843, is thus recorded in Patchett Martin's "Life and Letters of Viscount Sherbrooke, Vol. i., p. 162 (1893): "A few days ago I saw one of the most perfect places I ever saw in my life, belonging to Mr. Macleay. How I longed that Mrs. Sherbrooke could but see this splendid sight. The drive to the house is cut through rocks covered with the splendid wild shrubs and flowers of this country, and here and there an immense primeval tree; the house is built of white stone, and looks like a nobleman's place. Mr. Macleay took us through the grounds; they were along the side of the water. In this garden are the plants of every climate—flowers and trees from Rio, the West Indies, the East Indies, China, and even England. The bulbs from the Cape are splendid, and unless you could see them, you would not believe how beautiful the roses are here. The orange-trees, lemons, citrons, guavas are immense, and the pomegranate is now in full flower. Mr. Macleay has also an immense collection from New Zealand. I must not omit some drawbacks to this lovely garden: it is too dry, and the plants grow out of a white, sandy soil. I must admit a few English showers would improve it. As we went along the wild walks, cut through the woods, the native trees, covered with flowers, the views of rock, trees, and water were enchanting. The bays are innumerable, and resemble the Scotch salt-water locks."

Sir George Macleay, then resident in England, inherited the property at Elizabeth Bay, after the death of his elder brother, W. S. Macleay, in January, 1865. The subsequent history of the old garden is briefly told by Robert Lowe's biographer in these words: "The beautifully situated home of the scholar and naturalist is now no more, and on the site of its grounds stand the villas and houses of a 'genteel' suburb. Sir George Macleay, when showing me a picture of the house and grounds said: My brother would never have consented to its demolition; but Sir Henry Parkes thought fit to tax the land exorbitantly, with the view

of "bursting up" such estates near Sydney, and I at length was forced to subdivide it, and let it out on lease. But my brother,' he added, 'however much it might have added to his income, would never have allowed a tree or shrub to be removed.'" [Life and Letters of Viscount Sherbrooke, Vol. i., p. 163, footnote.]

This statement is one aspect of an old story—the inevitably increasing pressure, due to the expansion of a young and steadily growing city and its suburbs, on the open spaces within or contiguous to their boundaries, necessitating the subordination of private interests to general needs. The writer of the remarks quoted slightly misunderstood his informant. As a matter of fact, Elizabeth Bay House, surrounded by a much circumscribed garden, was left intact. But, by the formation of new streets, including Ithaca Road, Billyard Avenue, and Onslow Avenue, the outlying portion of the original garden was cut off from the remnant adjacent to the house, subdivided, and let on long leases in 1875, as the entail could not be cut off during the lifetime of any male member of the family. In the meantime, as soon as circumstances permitted, Sir William Macleay became the tenant on long lease, of the house and of some of the allotments bounded by Ithaca Road and Billyard Avenue, on two of which the Society's Hall now stands. His occupancy of the house lasted for the rest of his lifetime, until December 1891; and, thereafter, Lady Macleay's continued until her decease in August, 1903. With the exception of one year, when the house was sublet furnished during Lady Macleay's absence in England, after Sir William's death, the old house was continuously occupied by members of the family, from 1837 to 1903. The fate of the old garden has been similar to that of many others in Sydney and its neighbourhood. But under the circumstances of the case, its history and associations are worthy of record. The picture referred to may have been painted by Conrad Martens, for the view of the house and grounds from slightly different standpoints at Darling Point was a favourite one of this well-known artist. By the kindness of the Council of the Royal Society of Tasmania and Mr. Clive Lord I am able to exhibit a photograph of a pencil drawing of Elizabeth Bay House taken from Darling Point, by Conrad Martens.

But Alexander Macleay was not interested in horticulture only so far as the garden at Elizabeth Bay was concerned. In the letter from Mrs. Macleay to her son W. S. Macleay, from which I have already quoted, she says [about June, 1827]: "Your Father will soon become a large landed proprietor here; he has purchased 15,000 acres about 40 miles out of Sydney; and he has got a son of David Brodie's for an overseer there." The property here referred to comprised Brownlow Hill, near Camden, and Glendarewel farm attached to Brownlow Hill, as mentioned by Captain Sturt in the account of his second expedition "to follow the waters of the Morumbidgee" ["Two Expeditions," Vol. ii., pp. 9 and 11.]

Mr. A. Macleay's efforts to develop horticulture were not confined to Elizabeth Bay, but were extended to Brownlow Hill. Mr. J. Backhouse records, in his "Narrative," under date October 19th, 1836—"Departing from Jarvis Field [the residence of the Police-magistrate] we . . . . proceeded through open grassy-forest, to the Cow-pastures, where, at Brownlowe Hill, we were welcomed by George and James M'Leay, sons of our kind friend the Colonial Secretary. . . . . We visited the agricultural establishment of the M'Leays, on the Mount Hunter Creek, where they have a garden, producing Oranges, Apples, Loquats, Pears, Plums, Cherries, Figs, Mulberries, Medlars, Raspberries, Strawberries, and Gooseberries, and where Roses are in great profusion."

George Macleay subsequently became the owner of the Brownlow Hill property, and it was his home until his return to England in 1859. In a letter to his mother, written from Brownlow Hill on June 5th, 1857, the Governor, Sir William Denison, who had visited George Macleay there on two previous occasions, says—"The place where we are stopping is very prettily situated on a curious flat-topped knoll, rising out of a plain by the side of a brook; the soil is beautiful; I never saw such a growth either of flowers or fruit-trees as is shown in a garden which has just been made in the alluvial soil of the flat." [Varieties of Vice-Regal Life, Vol. i., p. 385, 1870.]

Additional testimony is afforded by a reprint of a lecture delivered at the Sydney School of Arts, in 1834, by Mr. Thomas Shepherd. This pioneer nurseryman and horticulturist arrived in Sydney on February 12th, 1826. He received a grant of land, at what is now Chippendale, from Governor Darling, to enable him to establish a public nursery and fruit-garden, long afterwards known as the Darling Nursery. In giving an account of his early experiences, Mr. Shepherd said: "About this time [January, 1827] I began to collect stock for budding and grafting fruit-trees upon; and also other plants of various kinds, to commence the nursery. Mr. William Macarthur, of Camden, furnished me with a choice collection of grafts and trees. Mr. Alexander Macleay, of Elizabeth Bay, was also a benefactor in supplying me with numerous species and varieties of fruit, ornamental trees, shrubs, and flower-roots; and it is to these two gentlemen that the early settlers were principally indebted for the numerous varieties of fruit and other trees raised in those days." ["In the 'Thirties': A Pioneer Gardener," by A.P.C. In "On the Land" column, *Sydney Morning Herald*, July 2nd, 1913.]

Elizabeth Bay House apparently was not occupied until after Mr. Macleay's retirement from the position of Colonial Secretary. In the Mitchell Library there is a copy of a "catalogue of an extensive and valuable library of nearly 4000 volumes, comprising the major part of the well-selected Library of Alexander McLeay, Esqr., M.C., who is removing to the country," to be sold by auction in 1-4 April [the year not given, probably 1837]. This may be taken to indicate that the removal from Bridge Street to Elizabeth Bay was carried out soon after. At this time Alexander Macleay was in his 70th year. The expenditure on the Elizabeth Bay property amounted to not less than £10,000; and the successful way in which the garden had been developed is said to have given a marked stimulus to ornamental gardening in Sydney.

William Sharp Macleay, M.A., F.L.S.

Eldest son of Alexander Macleay, born in London, July 21st, 1792—Educated at Westminster, and Trinity College, Cambridge—On leaving the University, appointed Attaché to the British Embassy in France: subsequently Secretary to the Board for liquidating British claims on the French Government, established at the peace of 1815—1825, Commissioner of Arbitration to the Mixed British and Spanish Court of Commission for the Abolition of the Slave Trade established at Havana, Cuba: 1830, Commissary Judge of the same Court: 1836, Judge of the Mixed British and Spanish Court of Justice established under the Treaty of 1835—1836, returned to England; 1837, retired from the Public Service, upon a pension—1838, left England for Australia with his cousins William and John, arriving in Sydney in March, 1839—1865, died in Sydney, on January 26th: buried in the family tomb in Camperdown Cemetery: cenotaph in St. James' Church.

Among the sources of our interest in W. S. Macleay, the following may be particularised. In due time he succeeded to the collection of his father, added considerably to it, and eventually passed on the joint collections to William Macleay. He had worked up the *Scarabaeidae* in his father's collection; also Captain P. P. King's collection of Australian Annulosa. The results of his work and of his influence are contributions to a not unimportant, Pre-Darwinian, English chapter in the history of Zoology. He was universally recognised as the leading representative of Zoology resident in Sydney from 1839 up to the time of his death in 1865. But a special source of interest is that he was the guide and mentor of William Macleay; and a most potent influence in starting his cousin on the first stage of his career, as a working entomologist, preparatory to becoming a member of the succession. And finally, we have a very interesting series of memorials of him.

The two original sources of biographical information concerning W. S. Macleay that we have are an obituary notice published in the *Sydney Morning Herald* of January 30th, 1865; and the memorial sketch communicated by the Senior Secretary, at the Anniversary Meeting of the Linnean Society of London, on May 24th, 1865 [Journ., Zool., ix., Proc., p.c.]. Later notices in Biographical Dictionaries are based on one or other of these. The first was utilised by the Rev. R. L. King in the preparation of his first Presidential Address to the Entomological Society of New South Wales, on January 30th, 1865 [Trans. Ent. Soc. N.S. Wales, Vol. i., p. xliii.]. Mr. King adds: "The following memoir I have taken principally from a notice which has lately appeared from the pen of an old friend." This would be, almost certainly, the Rev. W. B. Clarke, probably after a consultation with William Macleay. Mr. Clarke was one of the oldest and closest Australian scientific friends of W. S. Macleay. Their acquaintance probably began at the meeting of the British Association for the Advancement of Science at Liverpool, in 1837, when both were thinking of migrating to Australia.

The biographical sketch communicated to the Linnean Society, from internal evidence, was apparently drawn up by Mr. Busk, Senior Secretary, after consultation with George Macleay, possibly also with Professor Huxley. George Macleay, at this time, was a Member of the Council, and would have received full particulars of W. S. Macleay's decease from William Macleay.

W. S. Macleay graduated with honours at Trinity College, Cambridge, in 1814. His University career seems to have been without direct influence on his interest in Natural History, as might be expected from his own remarks on the backward state of Zoology in England in his day. Of this, he says: "Well may the foreigner who beholds our learned establishments so splendidly endowed, note, among the most remarkable circumstances attending them, that in none whatever should there be a zoological chair. It is not for me to enter into the causes of this, else it were desirable to know why plants should have been deemed worthy of attention, while animals have been utterly neglected. . . . It is true that there are professors of Natural History in three of our Northern Universities. . . . . But we must not conceal the fact that a professorship of Natural History is necessarily charged with duties that give ample employment in Paris to thirteen professors with their numerous assistants. I have ventured to give this humiliating picture of the state of zoological instruction in Great Britain, because there are persons who affect surprise, that in that science which relates to the animated works of God, France should take precedence over a nation incomparably more religious" [Hor. Ent. p. 457, footnote].

What awakened and developed W. S. Macleay's interest in Zoology seems primarily to have been his father's example, influence, and fine collection of insects; and, secondarily, his sojourn in Paris, where he had the opportunity of meeting Cuvier, Latreille, and other distinguished naturalists of that time, as well as of appreciating the importance of the magnificent establishment of the Jardin des Plantes.

It is quite possible to understand, from his own record, what W. S. Macleay's aims were; and, from the modern standpoint, to estimate fairly what was amiss in his method of trying to realise them, if Huxley's notable maxim be kept in mind, that "the ablest of us is a child of his time, profiting by one set of influences, limited by another."

W. S. Macleay had profited by his intercourse with the French naturalists in that, as a Zoologist, his status had improved, his horizon had enlarged, and his standpoint had advanced. Dr. Leach, Keeper of the Natural History of the British Museum, in succession to Dr. G. Shaw, from 1813-21, who was older than W. S. Macleay, is said to have been the British naturalist who "opened the eyes of English zoologists to the importance of those principles which had long guided the French naturalists." W. S. Macleay supported him in this respect. In the Horae Entomologicae, he recognised that, until the last few years, England stood still at the bottom of the steps where Linnaeus had left her, while her neighbours were advancing rapidly towards the entrance of the temple. He, therefore, endeavoured to pursue the example set by the new school of naturalists. He acknowledges his indebtedness to the labours of Cuvier, Lamarck, Latreille, and Savigny, and refers to Latreille as the father of entomology. He recognised, also, more clearly than his contemporaries did, that there was a profound difference between affinity and analogy.

But as a systematiser—the propounder of principles, and of a system, of classification—his limitations, apart from the imperfections of the knowledge of his time, and from the fact that he was a private individual, unattached to a teaching-institution or a museum, cultivating an interest in natural history in his leisure-hours, came in no small degree from his English traditions and nurture, from the earlier influence of the Time-Spirit of the land of his birth. For it was in England, in his day, that the views respecting the significance of the Natural System, which he advocated, chiefly prevailed.

In his paper "Remarks on the Comparative Anatomy of certain Birds of Cuba," read to the Linnean Society of London on November 21, 1826, W. S. Macleay says: "If it be well said by M. Cuvier, that the natural history of an ainmal is the knowledge of everything that regards that animal—then Natural History, as a science, is only studied in effect when we are engaged in the pursuit of the natural system" (p. 13). W. S. Macleay was a naturalist in the special sense that the primary and avowed object of his studies was the pursuit of the natural system. Descriptive zoology, therefore, to him, was but a means to that end; otherwise, it had little or no attraction for him; and, unless for special reasons, he did not attempt it. It was the philosophical side of the subject that appealed to him so strongly. But what is the natural system? He recurs again and again to the theme, either in stating his own case, or in criticising the views of others. For example, in the Preface to the Horae Ent., p. xiii., he says: "Thus it requires neither talent nor ingenuity to invent an artificial system, and there may be as many hundreds of such as there are heads to devise them; but of natural

systems there is and can be only one. Finally, the former is the miserable resource of the feeble mind of man, unable to comprehend in one view the innumerable works of the creation; whereas the natural system is the plan of creation itself, the work of an all-wise, all-powerful Deity."

In his last paper "Annulosa of South Africa," before leaving England (1838), he says (p. 52): "It must not be supposed, however, that I offer this essay as perfect and complete, or that I absurdly pretend, as some have most unjustly laid to my charge, to have positively arrived at the *Natural System.* I merely publish this paper on *Cetoniidae* as another, and perhaps closer approximation to that Divine plan, which, every hour I have devoted to nature, whether in tropical forests or in the museums of Europe, has shown to be the branch of natural history most worthy of being studied by rational beings. But the truth is that this divine plan is not one particular branch of natural history, but the study of of every branch. It is the whole, of which it necessarily includes the knowledge every branch of natural history is but a part, and which I shall ever regard with gratitude, as having been the source of many moments of the purest pleasure while my residence was in an unhealthy climate."

Such views as these were entirely in keeping with the English Time-Spirit of the day. They were fostered by some of the current English literature of the time, notably a book entitled "The Wisdom of God manifested in the Works of the Creator," written by John Ray (1628-1705), the "father of modern zoology," a divine as well as a naturalist. It was a very popular book a century ago. W. S. Macleay quotes from it approvingly more than once in the Horae Entomologicae (pp. 468, 488). Another treatise breathing the same pious spirit was the "Reflections on the Study of Nature: translated from the Latin of the celebrated Linnaeus," by Dr. J. E. Smith, President of the Linnean Society, and issued together with his Inaugural Address to the Society, and some of his smaller botanical papers, in one volume, entitled "Tracts relating to Natural History," in 1798. In due time there followed the "Bridgewater Treatises on the Power, Wisdom, and Goodness of God as manifested in the Creation" (numerous volumes by various authors), and Paley's "Natural Theology."

The incentive to begin active work, with a view to publication, came quite simply. The first edition of Cuvier's "Règne Animal," in 4 vols., was published in 1817, while W. S. Macleay was officially resident in Paris. The entomological portion of this important work was contributed by Latreille, who therein "applied the name of *Lamellicornes* to an artificial division comprising all the insects which compose the genera *Lucanus* and *Scarabaeus,* as they were left by Linnaeus in his last edition of the Systema Naturae." W. S. Macleay, therefore, decided to revise the group, as his father's cabinet contained representatives of nearly 1800 species of the Linnean genus *Scarabaeus;* and, as an additional qualification for undertaking the work, he had had the good fortune to visit almost every collection of note in Europe, excepting those of Vienna and Berlin. The results of this investigation were published, as a separate work, in London, Part i. in 1819, and Part ii. in 1821, under the title of "Horae Entomologicae: or Essays on the Annulose Animals, Part i., containing general Observations on the Geography Manners, and Natural Affinities of the Insects which compose the Genus *Scarabaeus* of Linnaeus; to which are added a few incidental Remarks on the Genera *Lucanus* and *Hister* of the same author. With an Appendix and Plates." A second part was published two years after, in 1821, under the title "Part ii.: An

attempt to ascertain the Rank and Situation which the celebrated Egyptian Insect, *Scarabaeus sacer,* holds among Organised Beings."

These two contributions to knowledge, in some respects perhaps his most important ones, were something more than merely entomological treatises, as the Title and Sub-titles might be taken to indicate. The arrangement of the Lamellicorn Insects in the first part was the result of rigid analysis, whereby the author arrived at some new principles of classification. These, in the second part, were applied to an arrangement of the entire animal kingdom, chiefly deduced from synthetical investigation, and confined, moreover, to the larger and more important groups, as pointed out by Jenyns. But in the course of his synthetical investigation, the author finds occasion to discuss the great problems of Philosophy, as they present themselves to the philosophical Theist.

W. S. Macleay's new principles of classification were incidentally treated of, but not formulated by him. This was afterwards done by the Rev. L. Jenyns, in a valuable "Report on the Recent Progress and Present State of Zoology," covering the period from the publication of the first edition of Cuvier's "Règne Animal" (1817) to date, drawn up at the request of the Section for Natural History of the British Association for the Advancement of Science, and included in the "Report of the Fourth Meeting held at Edinburgh in 1834" [pp. 143-251, especially pp. 152-155, *et seq.* (1835)]. The writer ably and fairly reviews W. S. Macleay's views on classification, gives references to the work of the new school of English zoologists [including, besides Macleay, Kirby, Vigors, Swainson, Horsfield, and J. E. Gray], and enables the reader to understand the zoological Time-Spirit of the period. He thus formally states Macleay's new principles:—"Mr. MacLeay [in the Hor. Ent.] announced some new principles connected with the classification of animals, which, from the circumstance of their having led to a peculiar school of zoologists in England it will be necessary to consider a little more in detail. The most important of these principles* [*Footnote*—* It may be observed that Mr. MacLeay has nowhere formally stated these principles as above. They are only gathered from what he has written on the subject.] are: (1st) That all natural groups, of whatever denomination, return into themselves, forming circles; (2ndly), That each of these circular groups is resolvable into exactly five others; (3rdly), That these five groups always admit of a binary arrangement, two of them being what he calls typical, the other three aberrant; (4thly) That while proximate groups in any circle are connected by relations of affinity, corresponding groups in two contiguous circles are connected by relations of analogy. Mr. Macleay has also observed [Hor. Ent. p. 518] that, in almost every group, one of the five minor groups into which it is resolvable, bears a resemblance to all the rest; or, more strictly speaking, consists of types which represent those of each of the four other groups, together with a type peculiar to itself." These views came to be known as the "Quinary System" or the "Circular and Quinary System."

Jenyns came to the conclusion that W. S. Macleay had pointed out more exactly than others the difference between affinity and analogy in natural history; and that he was also the first to establish by proof circular affinities. He then proceeds: "Whatever of error there may be in the rest of his views, whatever modifications already have been, or may yet further be made in them, by the help of the above principles he appears to have approached nearer than any before him to the true natural system, and (as has already been twice observed) [Kirby,

Introd. to Entom., Vol. iv., p. 359; and Swainson, Fn. Bor.-Am., part 2, p. xlvi.] been enabled to reconcile facts which upon no other plan can be reconciled."

Ten years later, H. E. Strickland communicated a "Report on the Recent Progress and Present State of Ornithology" at the Fourteenth Meeting of the British Association held at York in 1844 [Fourteenth Report, pp. 170-221]. This also is a valuable report. It is of special interest, because it includes a critical review of the Quinary Theory, and of the work of Vigors and Swainson as exponents of it. At the same time, it illustrates the insuperable difficulty of finding a scientific meaning of affinity under the influence of the creation-hypothesis. Strickland rejects the Quinary System "as a theory which the most careful inductions and the most unprejudiced reasonings of subsequent naturalists have shown to have no claim to our adoption as a general law. . . . . The point at issue is this,—whether or not it formed a part of the plan of Creative Wisdom, when engaged in peopling the earth with living beings, that when arranged into abstract groups conformably with their characters, they should follow any regular geometrical or numerical law." After much interesting argument, too lengthy to quote, he concludes that irregularity and not symmetry may be expected to characterise the natural system; and that this view is more consistent with the benevolence of an all-wise Creator.

Strickland, reviewing Vigors' paper on "The Natural Affinities that connect the Orders and Families of Birds" [Trans. Linn. Soc., Vol. xiv.] says: "This treatise abounds with original observations and philosophical references, but unfortunately they are applied in support of a theory which the most careful inductions and the most unprejudiced reasonings of subsequent naturalists have shown to have no claim to our adoption as a general law. . . . . The application by Mr. Vigors of these novel and singular doctrines to the class of birds contributed in no small degree to the advancement of ornithological science; for, however erroneous a theory may be, yet the researches which are entered upon with a view to its support or refutation invariably advance the cause of truth. Alchemy was the parent of chemistry, astrology of astronomy, and quinarianism has at least been one of the foster-parents of philosophical zoology."

Reviewing Swainson's "Classification of Birds" forming part of Lardner's Cyclopaedia (1836-37), Strickland says of Swainson's method, that it is "only a modification of the quinary theory, originally propounded by Macleay and further developed by Vigors. In following Mr. Swainson into the details of his method, we miss the philosophical spirit and logical though not always well-founded reasoning of the last two authors. Firmly wedded to a theory, he is driven, in applying it to facts, to the most forced and fanciful conclusions. Compelled to show that the components of every group assume a *circular* figure, that they amount in the aggregate to a *definite number*, into which each of them is again subdivisible, and that there is a system of *analogical representation* between the corresponding members of every circle, which forms the sole test of its conformity to the natural arrangement, we need not wonder at the difficulties with which our author is beset; and we may certainly admire the ingenuity with which he has grappled with the Protean forms of nature, and forced them into an apparent coincidence with a predetermined system. I need not follow out the details of this Procrustean process, having already treated of it elsewhere" [p. 175. Reprinted in "Memoirs of Hugh Edwin Strickland." By Sir William Jardine (1848). This also includes a Selection from Strickland's scientific writings].

But Swainson did not confine his attention to the application of the Quinary System, as modified by himself to the classification of Birds. He narrates, in his autobiography, included in one of his books, how, under financial stress, he became a "professional author," and, as such, the contributor of about a dozen popular textbooks on Natural History, to Lardner's "Cabinet of Natural History," later "The Cabinet Cyclopaedia," during the years 1834-40. In some of these he applied his views to the classification of Quadrupeds, Reptiles and Fishes, Mollusca, and Insecta, as well as to the Principles of Classification and cognate matters. He became, in this way, the most voluminous expounder of the Quinary System. His books contain much useful information, but they are also open to Strickland's objection to the fanciful way in which he forced the Protean forms of nature into an apparent coincidence with a predetermined system.

These quotations are given because, without a knowledge of what they represent, it is difficult to understand the condensed statements about W. S. Macleay's work, as given in the Obituary Notices, to which reference has been made. Vigors, and especially Swainson, were the "injudicious friends" referred to by Mr. Busk.

Other Pre-Darwinian reviewers or critics of Macleay's system besides those mentioned, include Kirby and Spence [Introduction to Entomology. Fifth Edition (1828), Vol. iii., p. 12; Vol. iv., p. 477], E. Newman [Entomological Magazine, Vol. v., p. ix., 1838], J. O. Westwood [Arcana Entomologica, Vol. i., p. 188, 1845], W. Whewell [History of the Inductive Sciences, Vol. iii., p. 295, 1857], and Louis Agassiz [Essay on Classification, p. 234, 1859].

In his obituary notice of W. S. Macleay, Mr. Busk remarks: "It would be out of place here to enter into an analysis or criticism of this work [The Hor. Ent.], in which, however, it may be said are contained some of the most important speculations as to the affinities or relations of various groups of animals to each other ever offered to the world, and of which it is almost impossible to overrate the suggestive value. Speculative ideas, however, of such a general kind, even in the hands of their author, are apt to be carried too far in their application, and, when they fall into those of other speculators of less information and less capacity, can hardly fail to be grossly misused. This has been the case with Mr. MacLeay's ideas; and thus, as observed by the author of a notice in the 'Reader,' of his labours, the name of the 'circular system' and of 'quinarianism' became almost bywords, and the work of one of the most thoughtful and original of English biologists sank at one time into most unmerited neglect."

It is a reasonable, and very probably a correct surmise, that the notice of W. S. Macleay in the "Reader" referred to by Mr. Busk, was written by Huxley. Particulars of Huxley's association with the "Reader," as promoter and editor-in-chief, are given in the "Life and Letters" of Huxley [Vol. i., p. 305]. This weekly journal was established after the quarterly Natural History Review was given up, and lasted from 1863-66. It was the forerunner of the current "Nature," established in 1869. As far as one can judge, Huxley was the only one of those associated with the management of the "Reader" who had personally known W. S. Macleay. If so, his notice was his last tribute to the Sydney friend of 1847-50. Unfortunately no copy of the "Reader" is available in Sydney.

W. S. Macleay did reply to minor critics, like Bicheno and Fleming, on such subjects as Systems in the abstract, Natural, Artificial, or Dichotomous. But how was the finite mind of man to grapple successfully with such supernatural

problems as symmetry in the natural system *versus* irregularity, as indicative of the benevolence of an all-wise Creator?

His only reply to Swainson is contained in his paper on the "Natural System of Fishes," dated Elizabeth Bay, near Sydney, September 12th, 1840, sent as a letter to Dr. J. McClelland, of Calcutta, published in the Calcutta Journal of Nat. Hist., July, 1841, and republished in the Ann. Mag. Nat. Hist., Vol. ix., p. 197 (1842). In this, he says: "I assure you that your excellent work on *Cyprinidae* has afforded me the greatest delight, and the more so, inasmuch as I am convinced natural arrangement is always best tested by accurate analysis, and also inasmuch as I am not by any means satisfied with Swainson's arrangement of Fishes. As from everything Swainson writes there is information to be derived, so I assure you, his little volume on Reptiles and Fishes has not been lost on me. . . . . I am often afraid of trusting myself to Mr. Swainson's method of drawing analogies between things in themselves wide apart. . . . . The nearer two groups are in general structure, the more striking their parallel analogies will be; and therefore I think, that by comparing fish with fish, we may obtain more striking analogies than by comparing them, as Swainson does, with Mammalia, birds, or insects; at all events, we shall have less reason to distrust the efforts of a fertile imagination. Still I am far from denying that such analogies as he delights in exist in nature. I only say that they are dangerous things to deal with, and that in his hands they often become far-fetched and even ludicrous" (pp. 203, 204).

Professor Ray Lankester, in his valuable Essay on "the History and Scope of Zoology," points out that the history of Zoology as a science is the history of the great biological doctrine of organic evolution as put forward, on a new basis, by Charles Darwin in his "Origin of Species," published in the year 1859. It is a long and involved story, and some of the details are still in question.

W. S. Macleay's published work covers the period 1819-47. Therefore, in time, as well as in character, in so far as it has to do with the significance of the natural system and with the principles of classification, it is pre-Darwinian.

What was needed then, no less than when Darwin offered it, in 1859, was what Huxley said: "That which we were looking for, and could not find, was a hypothesis respecting the origin of known organic forms, which assumed the operation of no causes but such as could be proved to be actually at work. We wanted not to pin our faith to that or any other speculation, but to get hold of clear and definite conceptions which could be brought face to face with facts and have their validity tested. The 'Origin' provided us with the working-hypothesis we sought. Moreover, it did the immense service of freeing us for ever from the dilemma—refuse to accept the creation-hypothesis, and what have you to propose that can be accepted by any cautious reasoner?" [Darwin's "Life," Vol. ii., p. 197].

In offering his working-hypothesis, Darwin first grouped his predecessors: "Naturalists try to arrange the species, genera, and families in each class, on what is called the Natural System. But what is meant by this system? Some authors look at it merely as a scheme for arranging together those living objects which are most alike, and for separating those which are most unlike; or as an artificial means for enumerating, as briefly as possible, general propositions. . . . But many naturalists think that something more is meant by the Natural System; they believe that it reveals the plan of the Creator; but unless it be specified whether in order, time or space, or what else is meant by the plan of the Creator, it

seems to me that nothing is thus added to our knowledge. . . . I believe that something more is included; and that propinquity of descent—the only known cause of the similarity of organic beings—is the bond, hidden as it is by various degrees of modification, which is partially revealed to us by our classifications" [Origin of Species, p. 413, 1860].

The first group included the French school, led by Cuvier, and also other Continental zoologists. The second comprised the English zoologists who concerned themselves with the pursuit of the natural system in the first half of the last century, among whom W. S. Macleay was pre-eminent. It included also Louis Agassiz, a great teacher and an eminent naturalist, whose "Essay on Classification" was published in England as a separate work in 1859, the year in which Darwin's "Origin of Species" was issued.

After grouping his predecessors, Darwin presented his working-hypothesis in the following words:—"All the foregoing rules and aids and difficulties in classification are explained, if I do not greatly deceive myself, on the view that the natural system is founded on descent with modification; that the characters which naturalists consider as showing true affinity between any two or more species, are those which have been inherited from a common parent, and, in so far, all true classification is genealogical; that community of descent is the hidden bond which naturalists have been unconsciously seeking, and not some unknown plan of creation, or the enunciation of general propositions, and the putting together and separating objects more or less alike. . . . . On my view of characters being of real importance for classification, only in so far as they reveal descent, we can clearly understand why analogical or adaptive characters, although of the utmost importance to the welfare of the being, are almost valueless to the systematist. For animals, belonging to two most distinct lines of descent, may readily become adapted to similar conditions, and thus assume a close external resemblance; but such resemblances will not reveal—will rather tend to conceal their blood-relationship to their proper lines of descent" [Origin of Species, pp. 421, 426].

Viewed in the light of these illuminating propositions, it is obvious that the Circular and Quinary System did not fulfil the requirements of a working hypothesis, such as was needed. It was an artificial system, the fruit of philosophical speculation. Within its limitations, and from the particular standpoint from which it was attempted, the Horae Entomologicae was thoughtfully and ably written; and a stimulating contribution to the English scientific literature of the time. The defects of the principles and of the system were the inherent scientific weakness of the foundation on which they were based. They were the product of a studied attempt to develop the Natural System under the influence of the creation-hypothesis—in the belief that "the Natural System is the plan of creation itself, the work of an all-wise all-powerful Deity." This assumed the operation of causes outside the domain of science, involving the obscuration of both the need, and the possibility of finding a scientific meaning of natural affinity, and all that it connotes. The author's conceptions of circular affinities, of quinary groups, and of no true affinities unconnected with relations of analogy, were speculative ideas without a scientific basis; because, in the belief that devisers of systems were merely endeavouring to translate the thoughts of the Creator into human language, affinity and analogy could be interpreted only in terms of something supernatural and beyond the domain of science.

W. S. Macleay's views had apparently, not profoundly changed up to the time that Huxley said farewell to him in Sydney, in May, 1850. Huxley's second letter to Macleay, the only one which has come down to us, was written on November 9th, 1851, just a year after the "Rattlesnake" was paid off, after her return to England. In this, Huxley writes: "I am every day becoming more and more certain that you were on the right track thirty years ago in your views of the order and symmetry to be traced in the true natural system." These were not empty words merely intended to please. The reference to "thirty years ago," signifies 1821, the year in which the second part of the Horae Entomologicae was published. The extract quoted reveals the fact that Huxley had read the book, possibly on the homeward voyage, as he had an absorbing source of interest, apart from science, to claim his attention during his brief periodical visits to Sydney. Macleay had some spare copies of his book, and probably gave one to Huxley, perhaps as a parting gift. Moreover, in 1851, Huxley could write as he did, because, though he may have given up the "Pentateuchal cosmogony," he could still say, at this time: "But my mind was unbiassed in respect of any doctrine which presented itself, if it professed to be based on purely philosophical and scientific reasoning." When the letter was written, Huxley was still an Assistant-Surgeon in the Navy, on leave, in order to prepare his scientific work for publication. His future prospects were very uncertain; and, so early in his career, he had not as yet been brought into serious contact with the Species-question. "My last letter," he says, "is, I am afraid, nine or ten months old, but here in England, the fighting and scratching to keep your place in the crowd exclude almost all other thoughts. When I last wrote, I was but on the edge of the crush at the pit-door of this great fools' theatre—now I have worked my way into it and through it, and am, I hope, not far from the check-takers. . . . . In the meanwhile, I have not been idle, as I hope to show you by the various papers enclosed with this." It was after this, but before the publication of the "Origin," that, as his biographer says, he took up "a thoroughly agnostic attitude with regard to the species-question, for he could not accept the creational theory, yet sought in vain among the transmutationists for any cause adequate to produce transmutation." Or, in his own words, "I imagine that most of those of my contemporaries who thought seriously about the matter, were very much in my own state of mind—inclined to say to both Mosaists and Evolutionists, "a plague on both your houses!" and disposed to turn aside from an interminable and apparently fruitless discussion, to labour in the fertile fields of ascertainable fact" [Life and Letters.]

It is a matter of history that Darwin's "Origin" made no favourable appeal for consideration as a working-hypothesis for the solution of scientific problems, either to Agassiz or to W. S. Macleay, not to speak of many others; and merely presented itself as a menace to their religious beliefs. But how few there were, who merely from a perusal of the book, without, or even with, verbal or epistolary explanations from the author, were ready to accept it at its face-value?

It is not surprising, therefore, that the receipt of a copy of Darwin's "Origin" sent by Mrs. Lowe, with a request for an expression of his opinion about it, should furnish W. S. Macleay with an opportunity only for a theological discussion. In his reply to Robert Lowe, he says [May, 1860]: "It is lucky for me therefore, that both you and Mrs. Lowe have given me the subject of this letter in asking me for my opinion of Darwin's book. To me, now on the verge of the tomb, I must confess the subject of it is more interesting than either the ex-

tension of British commerce or even the extension of national education. This question is no less than 'What am I?' 'What is man?', a created being under the direct government of his Creator, or only an accidental sprout of some primordial type that was the common progenitor of both animals and vegetables. The theologian has no doubt answered those questions, but leaving the Mosaic account of the Creation to Doctors of Divinity, the naturalist finds himself on the horns of a dilemma. For, either from the facts he observes, he must believe in a special creation of organised species, which creation has been progressive and is now in full operation, or he must adopt some such view as that of Darwin, viz., that the primordial cell of life has been constantly sprouting forth of itself by 'natural selection' into all the various forms of animals and vegetables. . . . . I am myself so far a Pantheist that I see God in everything: but then I believe in His special Providence, and that he is the constant and active sole Creator and all-wise Administrator of the Universe" [Life and letters of the Right Hon. Robert Lowe, Viscount Sherbrooke, Vol. ii., p. 204 (1893)].

It is to be remembered, of course, that the letter was a private one, not intended for publication.

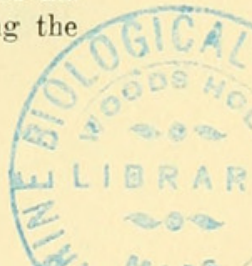
From the foregoing, it is evident that the words which Sachs applies to the contemporary botanists, are also applicable to the zoologists:—"It is easy to understand why the first feeble attempts at a theory of descent encountered such obstinate, nay fanatical opposition from professed systematists, who looked upon the system as something above nature, a component part of their religion" [History of Botany, p. 111].

It is not necessary to enter into details respecting W. S. Macleay's published papers. Work done from upwards of seventy years to more than a century ago, whether relating to the significance of the natural system, to the morphology of insects, or to descriptive zoology, is now chiefly of historic interest, because, since then, all branches of knowledge have progressed. Twenty-six papers—not including the Horae Entomologicae, Annulosa Javanica, Annulosa of New Holland, collected by Captain P. P. King, and the Annulosa of South Africa, which were not published by Societies—are listed in the Royal Society's Catalogue of Scientific Papers, Vol. iv. The entire series can be consulted in the Society's library.

W. S. Macleay left England for Cuba in October, 1825, to take up his duties in connection with the Mixed British and Spanish Court of Commission for the Abolition of the Slave Trade established at the Havana. His residence in Cuba lasted from December, 1825 to early in the year 1836.

At a Meeting of the Zoological Club on February 14th, 1826, "Mr. Vigors read some extracts from a letter which he had received from W. S. Macleay, Esqr., F.L.S., from the Havannah, December 27th, 1825. The extracts consisted of Ornithological observations made by that gentleman, during his voyage from England to the Island of Cuba, in the months of October, November, and December, 1825; including remarks on the Ornithology of the Islands of Madeira, Teneriffe and St. Jago; as also a few cursory observations made at Barbadoes, Martinique, and off the coast of St. Domingo, on the same subject" [Zoological Journal, Vol. ii., p. 553, 1826].

With the exception of one interesting letter to his friend Kirby, dated January 3rd, 1827, about a year after his arrival, few particulars of this period of his life are available, except what can be gleaned from casual remarks in some of his papers. To Kirby, he wrote: "I fear that you will imagine that, by crossing the



Atlantic, I have forgotten my old friends; but the fact is that I was unwilling to write to you until I had carefully studied the 'Introduction' [Kirby and Spence's Introduction to Entomology] and had enabled myself to give you some opinion upon this very useful and laborious work, for which I beg leave to return you best thanks. It contains, indeed, much information quite new to me; and although we differ in some important points, time, I have no doubt, will set all things right.

"The climate has, I thank God, hitherto agreed with me much better than that of England: but there is a languor attendant upon every kind of exertion, which makes reading or study here a very different thing from what it is in England.

"This is a good place for Wading Birds, Lizards, Butterflies, and Sphinges, but apparently nothing else.

"I live in the country, where I have a large house and garden; this is my principal amusement, as I take great pleasure in cultivating Orchideae, particularly those which are parasitical on trees. The disagreeables are ants, scorpions, mygales, and musquetoes. The latter were quite a pest on my first arrival within the tropics; but now I mind them about as much as I did gnats in England." Then follow some particulars of his having been stung by an immense scorpion and a large wasp [Freeman's Life of Kirby, p. 422].

This letter is of special interest, because of the reference to his interest in horticulture. The garden would be at Guanabanacoa. For in his description of a curious spider with two eyes, *Nops Guanabanacoae,* g.et sp.n., in the Annals of Nat. History [Vol. ii., No. 7, p. 1, 1839] published after his return to England, he says—"the trivial name of this remarkable spider will serve to commemorate Guanabanacoa, the place where first I found it, a place in which I long resided, devoting many delightful hours to the science of natural history."

Natural history soon began to claim his attention in his leisure, but in the absence of any other records, the particulars have to be gleaned from his own papers, or from those who recorded or described the collections or specimens he sent to England.

Specimens of lizards, bats, and of forty-five species of birds were sent to England, exhibited at meetings of the Zoological Club of the Linnean Society, and recorded by Bell, Horsfield, and Vigors in the Zoological Journal [Vol. iii., pp. 235, 236, and 434 (1828)]. J. E. Gray, at a later date, described a collection of Cuban bats sent by W. S. Macleay; and he mentions also a foetal specimen of a dolphin [Ann. Nat. Hist., Vol. iv., Sept., 1839, p. 16].

The curious rodent, *Capromys,* birds, and Annulosa, especially interested W. S. Macleay. His acquisition of a copy of Oviedo's book "Historia general de las 'Indias,'" the oldest and one of the rarest and best books on the Natural History of the West Indies, published in 1547, led him to take an interest in the remarkable rodents referable to the genus *Capromys.* In the first of two notes about them, published in the Zoological Journal [Vols. iv., 269; v., 179, 1829-30] he says: "Having now three species of *Capromys* alive in my garden, and ready to be sent by the first opportunity to the Zoological Society, I shall avail myself of the information to be found in Oviedo, to correct some of the absurd errors which have been lately propagated on the subject of this genus." He records also his own observations on the animals in their native haunts. It appears, from the second note, that he sent five living specimens by the "Aurora Frigate," but that they did not survive the voyage.

One of the papers sent home during his residence in Cuba was entitled "Remarks on the Comparative Anatomy of certain Birds of Cuba, with a view to their respective places in the System of Nature." [Trans. Linn. Soc., Vol. xvi., Part i., p. 149]. But, as remarked in a lengthy review of the paper in the Zoological Journal [Vol. iv., p. 483], "of comparative anatomy they contain but little, and appear rather to be designed as prefatory observations introductory to anatomical notices which are intended hereafter to be given." It was the author's intention to examine anatomically particular genera, which were not within the reach of naturalists at home; but the supplementary details were never published.

No papers dealing especially with Cuban insects were published by W. S. Macleay. But among our memorials of him there are thirty-nine water-colour drawings of lepidopterous larvae, from which he may have bred the perfect insects. Besides these, there are a number of pencil or pen and ink sketches of lepidoptera, scorpions, ticks, and mites.

After his return to England, he contributed a short paper "On some new Forms of Arachnida," to the Annals of Natural History [Vol. ii., No. 7, Sept., 1838] in which he described and figured the types of four new genera, and the type of a new subgenus of Dufour's genus *Selenops*. Four of the species were Cuban, and one Indian. These particular species were selected for their singularity "out of a great variety of new forms in my cabinet," "in order to prove how little is as yet known of even that part of the class *Arachnida* which has been the most studied, namely Spiders"; and thus to enable him to re-define the Order *Araneidea*.

Poulton [Essays on Evolution, Chap. viii., p. 220, 1908] has pointed out that "W. S. Macleay, in his Hor. Ent. alluded to certain cases which are now included under Mimicry, viz., the likeness of some Diptera to Hymenoptera, and interpreted them, together with many other resemblances of structure and life-history, by the principle of Analogy, as distinct from Affinity in Nature [Pt. ii., p. 365]." In the paper above referred to, W. S. Macleay described an Indian spider, in appearance resembling an ant, as the type of the new genus *Myrmarachne*, of which he says: "Nothing is certainly known with respect to the manners of these curious spiders, but I suppose from analogy, that they may eventually be found to feed on ants. It has long been known that the *Voluceltae* in their larva state live in the nests of the *Bombi* they so much resemble; and I have discovered that the larvae of those tropical *Bombylii* which have such a bee-like form live on the larvae of the bees they so strikingly represent. Perhaps, in like manner, the object of nature in giving such a striking form to this spider is to deceive the ants on which they prey" (p. 12).

Only the most meagre record of W. S. Macleay's experiences as a collector, before he went to Cuba, has come down to us. One cannot believe that the attractions of Combe Wood, "classical ground to entomologists" (Lyell), Wimbledon Common, Battersea Fields, and other favourite localities for the entomological collector resident in London a century ago, were unappreciated either by him or his father. Probably, too, during his undergraduate days, he may have had experiences like those of Charles Darwin about seventeen years later, in collecting insects in the neighbourhood of Cambridge, and in having fellow-students who shared his interest.

Nevertheless the solitary record of a collecting excursion before he left England in 1825, known to me, is a casual remark in the Horae Entomologicae (Part

i., p. 62)—"Mr. Kirby mentions in the Introduction to Entomology, his having found these insects [Troges] on a ram's horn. I was myself present in the forest of Fontainebleau, with the last-mentioned entomologist, when he took a specimen of *Trox* from off a horse's scull" This was in June, 1817. Kirby, in a letter to his friend Sutton, has given an account of his first visit to Paris, of his introduction to Latreille, and of W. S. Macleay's kindness and helpfulness to him.

It is evident that W. S. Macleay had the opportunity of making a good collection of the Cuban groups in which he was interested, sufficient not only for his own requirements, but for purposes of exchange with his scientific friends; as well as of supplementing it, to some extent, at the places which he visited on the voyages outwards and homewards.

He does not appear to have had a separate collection of his own prior to his departure for Cuba in 1825. Any specimens which came into his possession, whether as the results of his own collecting, or as gifts or exchanges, were added to the paternal collection. But just before the time of parting came, his father allowed him to take over such specimens as he was particularly interested in, as an aid to work he may have had in hand, or in prospect. These formed the nucleus of the collection he eventually brought out to Australia in 1838. Some of the items, as well as some of his records of observational zoology, are mentioned in his paper "On the Annulosa of South Africa." On p. 22, he says—"I have found *Diplognatha Gagates* common at Porto Praya in the Cape de Verds; but I cannot say that it is a flower-frequenting insect, as I never met with it except in the cocoa-nut groves below the town, and always on the foliage of the underwood which grows beneath the Palms." On p. 54 he refers to "the Decapods of my own collection." On p. 63, he remarks—"It becomes necessary to point out the families of a stirps [*Grapsina*] which is very common in warm climates, and the study of whose manners afforded me much amusement whilst I resided in the West Indies." On p. 65, of a crab, he adds—"I have found in Cuba the species of *Sesarma* to live generally under stones on the banks of the muddy mouths of rivers." And on p. 66, of another crab, he says—"The type of this genus is the *Grapsus ruricola* of Degeer, a crab whose manners are detailed by me in the first volume of the Transactions of the Zoological Society. Also on p. 67—"I have taken abundance [of *Neutilograpsus minutus* Fabr.] in the Atlantic Ocean, adhering to the gulf-weed."

After his return to England, W. S. Macleay undertook the description of the Annulosa, chiefly collected during an Expedition into the Interior of South Africa, under the direction of Dr. Andrew Smith, in the years 1834, 1835, and 1836; fitted out by the Cape of Good Hope Association for exploring Central Africa. The first portion only of his intended contribution was published, in 1838, shortly before his departure for Australia. In the preface (p. 1) he says—"It may be well that I should mention here my having lately acquired, by purchase, the very extensive collection of *Annulosa* made by M. Verreaux during his long residence at the Cape, and also his manuscript notes on the species collected. Perhaps therefore no naturalist is better provided than I am with those materials which are necessary to enable us to form accurate notions of South African entomology. Upon this subject also, my personal acquaintance with the habits of many exotic genera, may to a certain degree be brought to bear."

Early in the year 1836, after completing more than ten years' service, W. S. Macleay set out on his return to England. On the way, he visited the United

States. This gave him the opportunity of getting into touch with American entomologists, of doing some collecting, and the chance of entering into exchanges; and led up to his election as a Corresponding Member of the Academy of Natural Sciences of Philadelphia. His own brief record of this visit is given in the "Annulosa of South Africa" (p. 17) in the following words:—"The species of *Cremastocheilus* are not common. In company with Dr. Pickering, and Mr. Titian Peale, I found *G. castaneae* of Koch, in June, 1836, on the banks of the Delaware, on the New Jersey side, opposite Philadelphia. These singular beetles are never found except flying, like Cicindelae, over the sand which there lines the bank of that noble river."

Soon after his arrival in England in the autumn of 1836, W. S. Macleay was presented at Court, as a mark of approbation of the way in which he had carried out his responsible official duties in Cuba.

He soon received a welcome back into scientific circles in London. In 1837, he was elected to the Council of the Linnean Society. The Lord Bishop of Norwich, Dr. Stanley, father of Dean Stanley, and of Captain Owen Stanley, was President. Among the Members of Council were J. J. Bennett of the British Museum, George Bentham, Robert Brown, the Earl of Derby, President of the Zoological Society, Dr. Horsfield, and Richard Owen.

In the same year, he was elected to the Council of the Zoological Society. Thomas Bell and Richard Owen were Members of the Council at this time. We have some interesting relics of W. S. Macleay's connection with the Society, in the shape of notices to attend Council or other meetings, signed by W. H. Yarrell as secretary; and proofs of two papers submitted to him as a member of the Publication Committee.

About the same time, too, W. S. Macleay was elected to the Council of the British Association for the Advancement of Science, and President of Section D at the meeting of the Association held at Liverpool in September, 1837. The Earl of Burlington was President, but the Address was delivered by Professor Traill. The Presidents of Sections were: Sec. A, Sir David Brewster; Sec. B, Dr. Faraday; Sec. C, Professor A. Sedgwick; Sec. D (Botany and Zoology), W. Sharp Macleay; and Sec. E, Professor Clark. The Vice-Presidents of Sec. D. were Dr. Richardson, Professor Graham, and Professor Lindley; and the Secretaries, Professor Babington, W. Swainson, and the Rev. L. Jenyns. No papers of particular interest to us were communicated to Section D. But John Gould exhibited coloured drawings of Australian and New Zealand birds; and W. S. Macleay and the Rev. F. W. Hope described some insects from the fine collection of Mr. Melly, then resident in Liverpool. It was a very successful and interesting meeting, as described by R. Murchison, General Secretary, in a letter to his wife ["Life of Sir Roderick Murchison," Vol. i., p. 238]. The Rev. W. B. Clarke attended; and he, John Gould, who left England for Tasmania in 1838, and W. S. Macleay had the opportunity of meeting again in Sydney in 1839.

After the "Beagle" had completed her voyage, and W. S. Macleay had returned to England from Cuba, Charles Darwin and he seem to have met, in 1836 or early in 1837. For, in a letter dated April 10th, 1837, written by Darwin to the Rev. L. Jenyns, he says—"During the last week several of the zoologists of this place [London] have been urging me to consider the possibility of publishing the 'Zoology of the *Beagle's* Voyage' on some uniform plan. Mr. [W. S.] Macleay has taken a great deal of interest in the subject, and maintains that such

a publication is very desirable because it keeps together a series of observations made respecting animals inhabiting the same part of the world, and allows any future traveller taking them with him" ["Life," Vol. i., p. 281].

The concluding sentence of the "Annulosa of South Africa" contains the first announcement of W. S. Macleay's intended visit to Australia—"I hope, however, as I am about to visit Australia, soon to be able to make myself master of the economy of these insects [Australian *Paussi*], and also to publish a correct representation of the parts of the mouth" (p. 75).

A more definite statement about his contemplated departure, and a request for exchanges of specimens, is to be found in a letter from W. S. Macleay to his friend John McClelland, Assistant Surgeon, Bengal Medical Service, at Calcutta. The latter, wishing to make known Macleay's wishes for exchanges, appended the following extract from the letter to his own paper on "Indian Cyprinidae," which was communicated to the Asiatic Society of Bengal, on 5th September, 1838, subsequently printed in Vol. xix., Part ii., of the Asiatic Researches, and reprinted in the Annals and Magazine of Natural History [Vol. viii., 1842, p. 199]—"Mr. MacLeay writes from London, 12th August, 1838: 'I am now on the eve of embarking for Sydney, where I intend to remain for the next three or four years; and what I would ask of you is, to exchange invertebrated animals, collected in India, as the Annelida, Annulosa, Cirripedes, Radiata, and Acrita, for other objects collected in New Holland; insects, spiders, and crustacea of India I at present desire above all, and shall feel obliged by any notes on their metamorphoses or oeconomy. With regard to such notes, I need not say I shall bear in mind the axiom *"Suum cuique."* If you will point out your particular *desiderata* in natural history, I will endeavour to add to your collections.'" By way of commending the request, Dr. McClelland adds—"Considering the intimate intercourse now established between Calcutta and Sydney, it is to be hoped that an appeal to India from such a quarter will not be made in vain, and that all who are interested in the advancement of natural history will collect and forward whatever objects their particular localities may afford, with a view to facilitate the researches of the illustrious author of 'Horae Entomologicae.'"

Some interesting details relating to this period are furnished by two letters among the W. S. Macleay relics, from Edward Macarthur, eldest son of John Macarthur of Camden, and afterwards Major-General Sir Edward Macarthur. One of these, dated, "Thursday, 4 Jany." [? 1838] is an intimation that his brother, possibly James, and his cousin, Captain Macarthur, were intending to call on W. S. Macleay; that the latter, who had been appointed to conduct the new settlement on the north shore of New Holland [Port Essington], was desirous of taking out a good selection of plants, especially such as were of commercial value, suitable for cultivation in the tropics; and asking W. S. Macleay if he would supply a list of desirable plants. The interview, doubtless, took place, and we may be sure that W. S. Macleay did his best to supply a list of plants, based mainly on his experiences in Cuba.

The second, unfortunately not dated, but probably written in July, 1838, is as follows—"I believe that I have found, at length, the sort of ship we want. If you could call on me to-morrow, about eleven, we might talk it over. It is very necessary that your friends should inform you, whether they will accompany you; for, on the 1st of August, the owner of the ship is to have a positive answer from me. . . . . Believe me, very truly yours, Edw. Macarthur."

What is here meant seems to be, either that Macarthur, or perhaps his brother James, was arranging to return to Australia as soon as he could hear of a suitable ship, and that W. S. Macleay was hoping to accompany him as a fellow-passenger. Or it may, perhaps, have meant that he had merely undertaken, on W. S. Macleay's behalf, to make inquiries for a suitable ship for the latter and his friends, his cousins, William and John. W. S. Macleay was prepared to depart in August, as appears from his letter to Dr. McClelland, written on August 12th, 1838, "I am now on the eve of embarking for Sydney," meaning approximately, and not on the following day. But the cousins were not ready to sail so soon, possibly on account of the last illness of their mother, or of John's delicate health. The Plant-book gives the date of receipt of the plants brought by W. S. Macleay, per Royal George, as March, 1839. Allowing four months for the voyage, the embarkation of the party must have been postponed from August to November or early in December, 1838.

W. S. Macleay's motives for visiting Australia, besides a desire to rejoin his relatives, from whom he had been separated for more than twelve years, may very well have been to give the climate a trial, as that of England did not suit his health after ten years' residence in the tropics; and to see something of the wonderful fauna and flora, under very favourable conditions. After some experience, the attractiveness of the mild and sunny climate, of congenial friends, of the beautiful garden, and of the harbour and the bush close at hand, irresistibly appealed to him; the idea of remaining for three or four years only was given up, and Sydney became his permanent home for the rest of his life. Indeed, he never seems to have left it, except to visit Brownlow Hill, and possibly Illawarra. He would certainly never have left Australia while Robert Lowe was a resident of Sydney (1842-50).

W. S. Macleay and his two cousins arrived in Sydney in March, 1839. Other notable arrivals in the same year were the Rev. W. B. Clarke, Mr. John Rae, and Mr., afterwards Sir Alfred Stephen (from Tasmania), all three of whom spent the rest of their days in Sydney; and John Gould, and Mr. and Mrs. Charles Meredith, who came as visitors.

After his arrival in Sydney, W. S. Macleay seems to have been most attracted by the marine fauna. This is not surprising, as he had never before been so favourably situated for marine collecting and study. Tow-netting, dredging, and shore-collecting could be carried out under most favourable conditions. The fishermen used to draw their nets on the sandy beach at the bottom of the garden; and it was easy to get into touch with them, for the supply of remarkable or other specimens desired, that they might capture. It was from this source, evidently, that the sea-snake, offered to Dr. Cantor, was obtained.

The first contribution to Science after his arrival was a paper on the "Natural arrangement of Fishes," sent as a letter to his friend Dr. McClelland, in Calcutta, dated 12th September, 1840. This was published in the Calcutta Journal of Natural History for July, 1841; and reprinted in the Ann. Mag. Nat. Hist., Vol. ix., p. 197 (1842). It was written partly to express W. S. Macleay's appreciation of McClelland's paper on Indian *Cyprinidae*, to which family the author had applied Macleay's principles of classification; partly to apply his principles to the classification of Fishes in general; and partly because he was not satisfied with Swainson's arrangement. His objections to Swainson's methods have been quoted above. A number of outline sketches of Sydney fishes among the W. S. Macleay relics were probably made in the preparation of the paper.

In concluding his letter, W. S. Macleay says of himself—"I am sorry that I have not been able as yet to get any *Cyprinidae* from our New Holland rivers; but I attribute it to my own residence so far from any river, not to the absence of them. I am promised by friends, who have better opportunities, the result of their researches; but *I receive nothing,* as they know not how to catch the minute fish of the river. However, I intend to try the Nepean River myself when I go down there, which I soon propose to do [this would be near Brownlow Hill]. In the meantime my residence on the sea-side enables me to increase my collection of marine genera, and if there be any you wish for, I shall be most happy to send them. A thousand thanks for your kind method of *beating up* for insects to be sent me from India. I shall be happy to pay any fair price for the collector's time and trouble. Tell Dr. Cantor that I depend on *him* to increase my collection of Annulose animals, and that I hope he will soon write to me. Tell him also that I have got a marine serpent of the genus *Pelamys,* caught in the mouth of Port Jackson harbour, the only one our fishermen have ever seen. If he wishes for it, it is at his service; for he knows infinitely more of Serpents than I do, and my grand desire is, to increase my collection of Annulose animals. . . . I shall write you on *Echinidae* in my next, and send you some the very first opportunity." It was not known at this time that the family *Cyprinidae* is not represented in the Australian fauna. But several species have been introduced.

I do not know what collections W. S. Macleay may have received from India as the result of his offer to Dr. McClelland. But among the memorials of W. S. Macleay are four beautiful coloured drawings of Indian spiders, two of the sexes of a remarkable antlike spider *Myrmecarachne macleayi* Cantor; and three of remarkable Membracid insects, with remarks on the back of the drawings signed Theo Cantor, Calcutta, May-June, 1841. These were evidently sent to him by Dr. Cantor; but I have not been able to find out in what Journal the original descriptions of these were published. We have also several reprints of Dr. Cantor's papers, but no letters from him, or from Dr. McClelland.

Another interesting scrap of information is the following notice of a letter to the editor of the Annals and Magazine of Natural History [Vol. viii., No. 48, September 1841, p. 153].—"Mr. W. S. Macleay writes from Sydney, April 28, 1841, that he is much occupied with Natural History, and making large additions to his collection. He gratifies us with good accounts of the health of his excellent father, who is always most affectionately remembered here. R.T."[aylor].

John Gould, accompanied by Mrs. Gould, left England for Tasmania in May, 1838, in order to study the birds of Australia; and returned to England in August, 1840. After spending some months in Tasmania, he visited New South Wales in 1839-40, and South Australia. In the Preface to the "Birds of Australia," he records his best thanks for kindness and help during his stay in New South Wales, among others, to Alexander and W. S. MacLeay, Esqs. Gould probably visited Sydney at least twice, before setting out to collect, with Gilbert, in the interior, and after returning. The letter which he conveyed to Shuckard was dated April, 1840. During one of the visits, W. S. Macleay furnished Gould with the description, and possibly showed him specimens, of a nest-building rat, which he named *Hapalotis arboricola,* in the belief that it was indigenous, as it was not uncommon in the garden. The description was afterwards published in the Introduction to Gould's "Mammals of Australia," p. xxxv., 1863. Mr. E. R. Waite subsequently gave full particulars of the remarkable habits of

this rat [Proc. Zool. Soc., 1897, p. 857]. By Mr. O. Thomas, this rat is regarded as a variety of the Black Rat, *Mus rattus* [*see*, an appendix to Waite's paper].

I have already referred to the visit of H.M.SS. "Erebus" and "Terror" to Sydney, from 7th July to 5th August, 1841. Dr. J. D. Hooker, Assistant-Surgeon and Botanist, in a letter to his father, says of W. S. Macleay that, "Twice the naturalist came on board the 'Erebus' and spent all day looking over the Southern collections. He is delighted with my drawings of sea-animals, of which many are entirely new; I must, however, redouble my efforts on that head, little as I care about them, as I hear that the Americans [U.S. Exploring Expedition, 1838-42, in command of Commodore Wilkes] have done much during their voyage to them, and that, McLeay says, is the only thing they have done." Captain P. P. King also visited the ship to see the collections. Some of the shells he "recognised as South American, especially the small yellow bivalves from the Macrocystis" ["Life", Vol. i., pp. 121-122].

Within two years after W. S. Macleay's arrival in Sydney, he made the acquaintance of Dr. James Stuart. Their friendship had a sequel, in which the Society is directly interested. I have not been able to learn anything more about this worthy man than is given by W. S. Macleay himself, in the following extracts [date not given]—"J. Stuart, Esq., is a surgeon in the army, who has been frequently employed by the Colonial Government in superintending the quarantine to which vessels arriving unhealthily in Port Jackson are subjected. . . . Here [at Spring Cove] they remain under the care of a surgeon for the necessary period; and Mr. Stuart, who has often undertaken this painful charge, has, by means of his admirable skill in drawing objects of natural history, and his powers of accurate observation, been enabled to employ to the advantage of every department of science those spare hours which otherwise, in the midst of contagion and disease, would have proved so dreary."

"From among several great novelties which I have found in his collection of drawings, I have selected the representation (nat. size) here given, Pl. vii., of a quadruped which I shall call *Antechinus Stuartii*, and of which Mr. Stuart killed one male specimen at Spring Cove in August, 1837. As this specimen has been unfortunately lost, and I have never seen it, I am obliged to describe it from his notes, hoping that the attention of naturalists will be drawn to the animal, and that some further knowledge may soon be acquired with respect to the habits and structure of the species." Then follows a description based on Dr. Stuart's notes [Ann. Mag., viii., p. 242, 1842].

Shortly afterwards, under date 9th August, 1841, W. S. Macleay sent a note to the same Journal [viii., p. 337] giving "Additional particulars respecting *Antechinus Stuartii*, a new Marsupial Quadruped." In this he says—"Since I wrote to you concerning what I had reason at that time to think might possibly prove to be a new quadruped belonging to the group of *Insectivora*, I have had an opportunity of examining a skeleton, now in the possession of Major Christie, and which Mr. Stuart himself had prepared at the time the animal was killed. This skeleton, by the presence of the marsupial bones, distinctly shows that the quadruped in question belongs to the group *Marsupialia*. It also demonstrates that there was an important error in the dental formula as given me in the manuscript of Mr. Stuart,—the very error, indeed, that led me to think that the animal might eventually be found to belong to the Insectivora." The dental for-

mula was corrected, and recognised as that of *Phascogale* [*Phascologale*] "from which genus our animal differs in the three lateral incisors of the upper jaw being of equal size, and also in the pseudomolars being all of equal size." But there is no record of W. S. Macleay's "hopes of soon possessing a specimen from Spring Cove, when I shall be liable to determine how far this animal differs from the genus *Phascogale*, or whether it may not be safely assigned to it." Thomas, in the British Museum Catalogue of Marsupials, reduces *Antechinus Stuartii* Macleay to a synonym of *Phascologale flavipes* Waterhouse. Nevertheless, Krefft (1871) still retained both Macleay's genus and the species.

Under date 5th July, 1847, W. S. Macleay sent a letter to the *Sydney Morning Herald*, entitled "On the skull now exhibited at the Colonial Museum of Sydney, as that of the 'Bunyip'." The skull had been sent to him for report by the Speaker of the Legislative Council [Dr., afterwards Sir Charles Nicholson] to whom it had been forwarded by Mr. Edward Curr of Port Phillip, as that of the so-called *Bunyip* or *Kine Pratie*. He was induced to send the description of it for publication, "as another and still more extraordinary skull in my possession offers very considerable means for throwing light on the subject." After describing the skull sent by Dr. Nicholson, he proceeds—"I have, however, I repeat, in my possession the skull of a foetus of a mare, which was found floating on the River Hawkesbury, in the year 1841. This skull was prepared by the lamented late Dr. Stewart [Dr. Stuart], and he has made drawings and notes of it, which I intend before long to publish, with his other observations on various branches of natural history." The letter concludes with the statement—"In my judgment, however, the animal is not new, and this skull, when compared with the one from the Hawkesbury only serves to show the extreme limits between which all monstrous variation of the place of the eyes in the horse can possibly occur."

From this letter, it appears that Dr. Stuart died before July, 1847, but I have not been able to ascertain exactly when. Also that his drawings and notes were then in the possession of W. S. Macleay; for they were a bequest from the artist.

While the drawings were in the possession of W. S. Macleay, they were shown to the Governor, Sir William Denison, under the circumstances narrated in a letter to his son, dated 6th February, 1859—"I told you in my last letter, that Sir Daniel Cooper and I were about to send a schooner down the coast to trawl for fish and dredge for shells. . . Great excitement has been caused in the Legislative Assembly by the production of a tortoise, which was said to have been found alive in a cavity in the rock 13 feet under ground, and 4 feet from the surface of the rock, by the men employed upon the railway cutting. The Speaker sent it to me, and I took it to Mr. W. [S.] Macleay, who pronounced it to be a young specimen of the 'Emys longicollis,' or long-necked tortoise, which is common in this country. There must have been a crevice in the stone, through which the animal had penetrated into its receptacle. . . . . When I went to Mr. Macleay to ask him about the tortoise, he showed us a set of drawings of Australian fish, many of which, he said, were to be caught in Middle Harbor, so we had decided to go down and try for them both with hook and line and the seine; but a southerly wind set in, which made it impracticable to get into Middle Harbour with any comfort, and as the fish never bite in a southerly wind, we gave up our expedition" [Varieties of Vice-Regal Life, Vol. ii., p. 458].

The Stuart Drawings were inherited by George Macleay from his brother, and by him were taken to England on the termination of his visit to Australia, after W. S. Macleay's death. George Macleay eventually presented them to William Macleay in the year 1887. I was present when the box containing them was opened by Mr. Masters. After going over the contents carefully, Sir William handed them over to me for the Society; and until Dr. Walkom relieved me, I had had charge of them ever since. There are 161 drawings, all water-colour sketches, with the exception of five pencil or crayon drawings—Mammals, 13; Birds, 35; Reptiles, 6; Amphibia, 1; Fishes, 82; Crustacea, 8; Mollusca, 13; Echinoderms, 2; Insects, 1.

Now that I know the complete history of them, I hope to contribute a paper giving a complete list of them, as soon as I can enlist the help of an ichthyologist to name the fishes for me. With the Stuart drawings also came the rare coloured portrait of Linnaeus in his Lapland dress, published by Dr. Thornton in June, 1805, reproduced from a painting by Hoffmann, now framed and hung in the Hall; and a good watercolour drawing of the rare Marsupial, *Chaeropus ecaudatus*, by Gerard Krefft. The entire collection was insured by George Macleay for the sum of £200, when it was sent out.

Another short paper, entitled "On doubts respecting the existence of Bird-Catching Spiders," dated Elizabeth Bay, July 8th, 1841, also appeared in the eighth volume of the Ann. Mag. Nat. Hist., p. 324. This was written in correction of a mis-statement in the "History and Natural Arrangement of Insects" (1840), by Swainson, in collaboration with W. E. Shuckard, a copy of which W. S. Macleay had recently received. Speaking of the large and powerful ground-spiders of the genus *Mygale*, Shuckard says—"The fact has been doubted, of these catching birds in their nets, and feeding upon them; but the probability of this has been substantiated and confirmed by a communication we have recently received from W. S. Macleay, Esq., who informs us, that in the vicinity of Sydney, N.S.W., he has met with a true bird-catching spider,—having himself found one of the *Epeiridae* actually devouring the young of a *Gasterops*, that had, no doubt, lately flown from the nest; and which is not a solitary instance, as his father, A. MacLeay, Esq., had previously observed a similar fact. He therefore retracts his observations upon *Mygale* in the *Zoological Transactions;* for here, evidently, is a spider which feeds upon the juices of a warm-blooded animal." He adds in a footnote—"From a letter to me dated 7th April, 1840, brought by Mr. Gould from Sydney."

In reply to this, W. S. Macleay pointed out in his paper, that the correct name of the bird was *Zosterops dorsalis;* that the spider was a species of the *Epeiridae*, and not of *Mygale;* and that the reason for mentioning the circumstance, when writing to Shuckard on another subject, was, that he was "anxious, from the love of truth, to retract a remark which I had made in a paper of mine printed in the Transactions of the Zoological Society, some years before, namely that 'I disbelieved the existence of any bird-catching spider.'" But he still held to the belief that no *Mygale* can catch birds in its net. The observations of Bates, however, without being conclusive, cast some doubt on this opinion [Naturalist on the River Amazon, p. 83, 1879].

The four papers contained in the Ann. Mag. Nat. Hist., Vols. viii. and ix. (1842), from which I have quoted, are W. S. Macleay's only contributions to science published in England after his removal to Australia. Two others were

communicated as letters to the *Sydney Morning Herald*, of July 5th, and December 2nd, 1847. One, descriptive of the skull of the so-called Bunyip, has already been mentioned in speaking of Dr. J. Stuart. It was reprinted in the Tasmanian Journal of Science, Vol. iii., p. 275, 1849. The second, descriptive of some bones of the Diprotodon, was written in response to a request from the Rev. W. B. Clarke; and is referred to later on These six communications, unfortunately, represent all the author's own printed records of his scientific work during his residence in Sydney, that we have. Particulars of what he actually succeeded in adding to the Macleay Collection are even more incomplete.

Information relating to his correspondence with scientific friends in England is very meagre. He certainly sent specimens to the Rev. F. W. Hope, but all that is known to me about them is, that when describing *Scarites* (*Scaraphites*) *MacLeaii*, J. O. Westwood adds—"Mr. Hope informs me that Mr. [W. S.] MacLeay has named this section in his manuscripts Scaraphites, and that he has discovered a new species on the east coast of New South Wales, at Elizabeth Bay, where it was found many feet deep in the earth, whilst trenching in sandy soil to form a Pinetum. I would suggest that it should be named in honour of its discoverer. . . . Mr. MacLeay has recently forwarded to Mr. Hope a Carenum, under the name of C. 4-punctatum. . . . . It is a native of New South Wales, and was found under stones at Illawarre" (*sic*) [Arcana Entomologica, Vol. i., pp. 157, 158].

He also corresponded with John Blackwall, the British authority on Spiders, in his day. A most friendly letter from the latter, dated November 18th, 1856, in reply to one from W. S. Macleay of date July 2nd., asking for specimens of certain British species of spiders, and for a good method of preserving Arachnida so as to retain their colours, is the only record available. The requests were complied with as far as possible, with an offer of future help in supplying additional material, if desired. A list of specimens of thirty species sent by post, by the same mail as his letter, is given. And a copy of his "List of Species of Araneida at present known to inhabit Great Britain," was enclosed.

With the exception of W. E. Shuckard, mentioned above, there are no other available records of correspondence with English scientific friends among the relics of W. S. Macleay. But this is hardly a matter of surprise, as I shall point out later on, in speaking of George and of William Macleay.

For any other particulars of W. S. Macleay's life in Australia, we are almost entirely dependent on the records of his friendship with Robert Lowe, who was a barrister and a politician, but not a man of science, as given in Patchett Martin's "Life and Letters of the Right Honourable Robert Lowe, Viscount Sherbrooke" (2 vols., 1893), who lived in Sydney from 1842-50; the published or unpublished records of casual or periodical visitors to Sydney, who were interested in science, including Huxley, or of resident friends, scientific or otherwise; and on the official or other records of his association with the Australian Museum, as a Trustee.

Apart from purely scientific matters, Robert Lowe's biography is the most important self-contained source of information about W. S. Macleay as a private individual, a man of ability and a scholar, a brilliant conversationalist, an inspirer of friendship to those who knew him intimately, and shared his interests; and, though keeping aloof from direct participation in politics, a colonist interested in the progress of Australia, and a believer in her future possibilities. This

well-written book, therefore, is a most important supplement to the published Obituary Notices of W. S. Macleay.

Robert Lowe (1811-1892) arrived in Sydney in October, 1842, when he was in his 31st year. He had graduated, with first-class honours, at Oxford in 1833; was a private tutor thereafter until he began to study for the Bar, Fellow of Magdalen in 1835; and was called to the Bar in 1842, and shortly after sailed for Australia, with his wife, to whom he was married in 1836. Robert Lowe was an albino, and his eyes were unprotected by a pigmentum nigrum. Three medical men, whom he had consulted, informed him that he would become blind in seven years, and recommended him to follow some out-of-door employment in Australia or New Zealand. Hence his migration to New South Wales. Shortly after his arrival, as he found that his eyes were prejudicially affected by the glare of the Australian summer, he consulted a doctor, who cupped him, and advised him that it was absolutely necessary to discontinue his practice of the law. To add to his depression, he was forbidden to read. He says, in his unfinished autobiographical sketch, in reference to these trials—"However, in this the lowest ebb of my fortunes, I found several alleviations. The principal was the extraordinary good fortune which gave me the acquaintance, and I am proud to say, the friendship, of Mr. William [S.] Macleay. He had been secretary at Paris for claims of English subjects, and afterwards had been a commissioner for the extinction of the slave trade at Cuba. He was an excellent classical scholar, he knew more of modern history and biography than anyone with whom I was ever acquainted, and in addition to all this he was a profoundly scientific man, thoroughly conversant with Zoology and entomology. An excellent companion, with a store of caustic wit, he reminded me continually of the best part of Scott's Antiquary. It fell to my lot to do him some service from which he never knew how to be sufficiently grateful. It would have been a good find to meet with such a person anywhere, but in a remote colony it was a good fortune for which one could not be sufficiently grateful. I have not seen and shall not see his like again" ["Life," i., p. 41].

Of this, Lowe's biographer says—"Such is Lord Sherbrooke's tribute to William Sharpe (*sic*) Macleay, his most cherished Australian friend, who fully returned his affection, and whose admiration for his great abilities, indomitable courage, and personal worth was unbounded. . . . . It is not difficult to imagine what a solace the conversation of so cultivated a man must have been to one who felt that, despite his own great powers and grasp of mind, his career, from impending blindness, was about to close before it had well begun" [Vol. i., p. 183].

The following extracts are of great interest:—"It must be frankly admitted that Mrs. Lowe's letters of this period [1845] are not very complimentary to the society of Sydney. But she thoroughly appreciated the high qualities of the one or two intimate friends whom they saw frequently at Nelson Bay. Of these she specially mentions three: Sir Thomas Mitchell, W. S. Macleay, and Sir Alfred Stephen. . . . .

"Sir Thomas Mitchell, Sir Alfred Stephen, William Sharpe Macleay, and the future Lord Sherbrooke, sitting together, as they frequently did at Nelson Bay, all in the full vigour of their rare conversational powers, would have been considered a distinguished group in any city in the world. Lord Sherbrooke always declared, though in after years he was intimate with the cleverest and most cultured men in England, that he had met no one whose conversation was more

varied and charming than William Macleay's. With such companions, one could not be said to be out of the only world worth living in—the world of ideas—and the leisure hours which Robert Lowe enjoyed with these old colonial friends, within sight and sound of the 'wide Pacific,' were amongst the happiest of his life" (p. 286-287).

"Also in these first years [after the return to England] he [Robert Lowe] received much Australian intelligence from the pen of his trusted and intimate friend in Sydney, the late William [S.] Macleay. At parting they made a kind of loose compact that they would regularly exchange the experiences and impressions of their widely-sundered lives; and this was done as far as possible until Macleay's death in 1865. Of this correspondence but a very small portion has been preserved, and of that, only a mere fraction in any way concerns this narrative,"

"Like all men of that highly refined and cultured type, Macleay was of a reserved nature, as well as of very studious habits, and admitted few to the inner sanctuary of his feelings. But he had an affection, surpassing that of a brother, for Robert Lowe, and he felt also a great liking and admiration for the courage and wifely devotion of Mrs. Lowe. His beloved Elizabeth Bay was never to him altogether the same after the departure of the young English barrister and his wife who had so strangely dropped into the orbit of his retired existence" [Vol. ii., p. 92].

Extracts from, or summaries of, some of W. S. Macleay's letters, relating to political or social matters, are given, as well as a few letters of special interest to us. Mrs. Lowe's description of Elizabeth Bay House and the garden, as well as a portion of W. S. Macleay's letter about Darwin's "Origin of Species," have been quoted above. His last letter, written about three months before his death, is given in its chronological place, in concluding my remarks.

An interesting memento of Robert Lowe's friendship with W. S. Macleay, among the relics of the latter, is a copy of the famous macaronic poem which Lowe composed on the visit of Queen Victoria—then the Princess Victoria—and her mother, the Duchess of Kent, to Oxford, in 1833. The author was then an undergraduate. The poem is reprinted in Lowe's "Life," with interesting comments [Vol i., p. 86]. Copies are now extremely rare, and the biographer had some difficulty in borrowing one, for, he says, "Lord Sherbrooke had indeed lost his own copy." I think it is extremely probable, that Lord Sherbrooke forgot that he had given his own copy to W. S. Macleay. The poem was published anonymously, but on the title-page of our copy is inscribed "a Roberto Lowe, A.M." in the author's handwriting, as I think.

Among other most pleasant interludes in W. S. Macleay's life in Australia, special mention may be made of his friendly intercourse with Lieutenant J. B. Emery, of H.M.S. "Beagle," in command of Captain Lort Stokes; Assistant-Surgeon Huxley, of H.M.S. "Rattlesnake"; and Surgeon F. Rayner, and Assistant Surgeon J. Denis Macdonald, of H.M.S. "Herald," in command of Captain Denham. These were all periodical visitors to Sydney during the time their vessels were on the Australian Station.

Lieutenant J. B. Emery, of H.M.S. "Beagle," in command of Captain Stokes, was interested in Zoology, as well as the Surgeon, Dr. Bynoe, who collected birds and mammals more particularly. While the "Beagle" was at Port Darwin in September (12th), 1839, Captain Stokes records that—"On this beach,

several unsuccessful hauls were made with the seine, though a few rare and curious fish were taken, which Lieutenant Emery added to his collection of coloured drawings of Australian fish; some of them will be found in the appendix to this volume." Also during the visit to Western Port, in Victoria (January 10-19th, 1839)—"A few rare insects were collected by Mr. Emery" [Stokes' "Discoveries in Australia," 2 vols., 1846]. One letter, undated, from Lieutenant Emery to W. S. Macleay, is included among the relics of W. S. Macleay. This returns thanks, in the name of the mess, for two baskets of delicious fruit. The writer also accepts an invitation to dinner on the following Wednesday. The letter concludes with—"Please to make my respects to your Brother."

Thomas Henry Huxley (1825-95), Assistant-Surgeon of H.M S. "Rattlesnake," in command of Captain Owen Stanley, arrived in Port Jackson on July 16, 1847. His biographer says of him—"He had not had, so far, much opportunity of entering the social world; but his visit to Sydney gave him an opportunity of entering a good society to which his commission in the navy was a sufficient introduction. He was eager to find friendships if he could, for his reserve was anything but misanthropic. It was not long before he made the acquaintance of William [S.] Macleay, a naturalist of wide research and great speculative ability; and struck up a close friendship with William Fanning, one of the leading merchants of the town" ["Life and Letters," (3 vols). Vol. i., p. 52].

In a letter to his sister, March 21, 1848, Huxley wrote—"I found it exceedingly disagreeable to come to a great place like Sydney and think that there was not a soul who cared whether I was alive or dead, so I determined to go into what society was to be had and see if I could not pick up a friend or two among the multitude of the empty and frivolous. I am happy to say that I have had more success than I hoped for or deserved, and there are now two or three houses where I can go and feel myself at home at all times. . . . . I am getting on capitally at present. Habit, inclination, and now a sense of duty keep me at work, and the nature of our cruise affords me opportunities such as none but a blind man would fail to make use of. I have sent two or three papers home already to be published, which I have great hopes will throw light upon some hitherto obscure branches of natural history, and I have just finished a more important one, which I intend to get read at the Royal Society. The other day I submitted it to William [S.] Macleay (the celebrated propounder of the Quinary system), who has a beautiful place near Sydney, and I hear, 'werry much approves what I have done' " [Life, Vol. i., p. 54].

In a letter to his mother, from Sydney, Feb. 1, 1849, Huxley wrote—"If my various papers meet with any success, I may perhaps be able to leave the service [after his return to England]. At present, however, I have not heard a word of anything I have sent. Professor Forbes has, I believe, published some of Macgillivray's letters to him, but he has apparently forgotten to write to Macgillivray himself or to me. So I shall certainly send him nothing more, especially as Mr. [W. S.] Macleay (of this place, and a great man in the naturalist world) has offered to get anything of mine sent to the Zoological Society" ["Life," Vol. i., p. 57].

The publication of Huxley's important paper on the "Oceanic Hydrozoa" was unfortunately delayed through lack of official support, and was ultimately issued by the Ray Society in 1859. The author, in the preface (p. viii.) says—"I made a good many observations during our cruise, and sent home sev-

eral papers to the Linnean and Royal Societies; but of these doves, or rather ravens, which left my ark, I had heard absolutely nothing up to the time of my return; and, save for the always kind and hearty encouragement of the celebrated William [S.] MacLeay, whenever our return to Sydney took me within reach of his hospitality, I know not whether I should have had the courage to continue labours which might, so far as I knew, be valueless."

The "Rattlesnake" was absent from England almost four years, and her stay in Australian waters lasted nearly three, about eleven months of this period being spent in Port Jackson. After his return to England, Huxley redeemed his promise to write to W. S. Macleay. His first letter is merely mentioned in the "Life." But the second, dated November 9th, 1851, a long and very interesting letter, amounting to nearly six printed pages, is given almost in full. In this, he gives a detailed account of the scientific news of the day, and of his own work. Of himself he says—"Had the Sydney University been carried out as originally proposed, I should certainly have become a candidate for the Natural History Chair. I know no finer field for exertion for any naturalist than Sydney Harbour itself. Should such a Professorship be hereafter established, I trust you will jog the memory of my Australian friends in my behalf. . . . . Believe me, I have not forgotten, nor ever shall forget, your kindness to me at a time when a little appreciation and encouragement were more grateful to me and of more service than they will perhaps ever be again. I have done my best to justify you. . . . . I send copies of all the papers I have published, with one exception, of which I have none separate. Of the Royal Society papers, I sent a double set. Will you be good enough to give one, with my kind regards and remembrances to Dr. Nicholson? . . . . I shall be very glad if you can find time to write" ["Life," Vol. i., p. 132].

All that Huxley has to say about, or in his letter to, W. S. Macleay goes to show that he was very favourably impressed by his friendly intercourse with the Sydney naturalist; and very appreciative of the advice and help that the latter was always ready to give. For it may be mentioned, that there was no scientific library for the naturalist on board the ship, though Captain Stanley had asked, but in vain, for some money to provide one.

I regret that the obituary notice of W. S. Macleay in the "Reader," which, I think, was Huxley's last tribute to his old friend, cannot be consulted in any of our libraries.

An interesting memento of Huxley's intercourse with W. S. Macleay, among the relics of the latter, is a pencil-sketch of a pelagic Tunicate (*Appendicularia*), by W. S. Macleay, with the legend—"This animal, forming a link between Ascidia and Salpa, was found in Torres Straits by Mr. Huxley, who caught it in his towing-net, swimming with the long, transparent tail." Apparently the sketch was made from a specimen given to him by its captor.

No complete narrative of the voyages of H.M.S. "Herald," employed on Surveying Service in the South-Western Pacific, was published, and it is difficult to follow the itinerary. But the "Herald" visited Sydney in 1858, and several times before and after this year. Surgeon Rayner was interested in, and collected insects and other land-animals, but he did not publish any papers. After his return to England, Mr. Adam White exhibited portion of Dr. Rayner's collection at a meeting of the Entomological Society of London, on November 4th, 1861. This exhibit included specimens from Aneiteum, New Hebrides, and

Lord Howe Island. On his visits to Elizabeth Bay, Dr. Rayner would have much to show to, and to discuss with W. S. Macleay. Dr. Rayner was also a friend of William Macleay, and used to accompany him on collecting excursions, as narrated later on.

Dr. J. Denis Macdonald was interested in marine organisms, and the author of thirty-five papers listed in the Royal Society's Catalogue, and covering the period 1853-63. Some of these were sent home for publication while he was on the Australian Station. In one of them, "On the Anatomy of *Eurybia Gaudichaudi*," he gives a synopsis of the Pteropoda, of which he says—"This table is advanced with a little more confidence, as it has benefited by the revising hand of Mr. W. S. Macleay" [Trans. Linn. Soc., xxii., p. 248, read Feb. 18th, 1858]. The relics of W. S. Macleay include a water-colour sketch of the remarkable, pelagic, footless slug, *Phyllirhoe Peronii*, described by Dr. Macdonald. This is signed and dated September, 1854. He, too, would have much to show, and to talk about, whenever the return of the ship to Sydney enabled him to visit Elizabeth Bay.

Captain Denham, Dr. Rayner, and Dr. Macdonald were elected Honorary Correspondents of the Australian Museum in July, 1857, as noted in Etheridge's History, wherein it is stated that—"All these gentlemen had performed excellent investigations in marine life, and the Museum gained much benefit thereby" (p. 385).

Dr. W. Stimpson, Naturalist on the U.S.N. "Vincennes," under the command of Captain John Rogers, visited Sydney, December 26th, 1853, to January 8th, 1854, and recorded his experiences, unpublished during his lifetime, but since published by Mr. C. Hedley, F.L.S. ["The Australian Journal of Dr. W. Stimpson, Zoologist." With an Introduction by C. Hedley, F.L.S. Journ. Proc. R. Soc. N.S. Wales, Vol. xlviii., p. 140, 1914]. After visiting the Australian Museum, when Mr. Wall was Curator, on December 31st, 1853, Dr. Stimpson records that "we went to see Mr. [W. S.] Macleay, who lives in a large house, having extensive grounds, situated beyond the town of Woolloomooloo. He treated us with kindness, and showed us his fine collection of insects, and the plants of his fine garden. He appeared to care little for marine invertebrata, and on the whole I was not much interested by my visit. He is a man of immense general information, having a remarkable memory, and is equally versed in zoology and botany. He is now about 80 [? 60] years of age, and his working days are over."

William Swainson seems to have visited Sydney about 1851 or 1853. But no particulars of his visit are available. He finally settled permanently in New Zealand.

Dr. W. H. Harvey, the Algologist, on his world-wide quest for seaweeds, spent some time in Sydney, in May, 1855. On May 12th, he records—"Visited Mr. [W. S.] McLeay, the celebrated entomologist, and author of what is called "the circular system," of which (once upon a time) I was an admirer. He has a fine house in a beautiful park of sixty acres, all within the city of Sydney. He cultivates many rare trees, shrubs, and plants, and from his grounds there are charming prospects" [Memoir of W. H. Harvey, M.D., F.R.S., p. 291, 1869.]

The Austrian Frigate, "Novara," on a circumnavigating cruise, visited Sydney in 1858, remaining from November 5th to December 7th. The historian

of the expedition, Dr. Karl Scherzer, says—[p. 14] . . . . "Among the excursions in the immediate neighbourhood of Sydney, we at once selected a visit to the well-known naturalist, Mr. [W. S.] Macleay, who resides at a beautiful estate near Elizabeth Bay. In his beautiful garden, one sees the most interesting plants of Australia side by side with splendid specimens from all other parts of the world. A stroll through the extensive grounds derives a double interest when in company with its highly-cultivated proprietor, and we are the more grateful for this good fortune, as the venerable old gentleman [æt. 66] lives in strict seclusion" [Narrative of the Circumnavigation of the Globe by the Austrian Frigate "Novara." By Dr. Karl Scherzer, English Edition. Vol. iii., p. 16, 1863].

Scientific or other friends of W. S. Macleay, who resided for some time or permanently in Australia, and of whom there are records or mementos of some kind, most of these forming part of the memorials of him, may next be mentioned. These include, besides Dr. James Stuart, to whom reference has already been made—Mrs. J. S. Calvert (*née* Louisa Atkinson), Dr. George Bennett, Rev. W. B. Clarke, Sir William Denison, Rear-Admiral P. P. King, Dr. L. Leichhardt, Sir William Macarthur, Baron von Mueller, Sir Charles Nicholson, Mr. A. W. Scott and his accomplished daughters, Harriet (Mrs. C. W. Morgan), and Helena (Mrs. Edward Forde) of Ash Island, Mr. Justice Therry, Dr. John Vaughan Thompson, and the Rev. Dr. Woolls. Sir Thomas Mitchell and Sir Alfred Stephen are referred to in the extracts given from Robert Lowe's biography.

Miss Louisa Atkinson (Mrs. J. S. Calvert) [1834-72] lived at "Fernhurst," Kurrajong Heights, before her marriage, in 1870. She collected plants for Dr. Woolls and Baron von Mueller, and many of them are recorded in the Baron's "Fragmenta," or in the "Flora Australiensis." Mr. Maiden has given a biographical notice and a portrait of this accomplished woman in his paper "Records of Australian Botanists—(*a*) General, (*b*) New South Wales" [Journ. Proc. R. Soc. N.S. Wales, Vol. xlii., 1908, p. 83]. Miss Atkinson was also interested in "Vegetable Caterpillars," and corresponded with W. S. Macleay on the subject. In a letter to Miss Scott of Ash Island, dated July 23rd, 1861, referred to again later on, W. S. Macleay wrote—"I know two species of *Sphaeria* that grow from the *Charagiae* of this Colony, and a Lady-friend of mine, who is a capital botanist, though no entomologist, is now preparing a work on the New Holland species of *Sphaeria*, which she is studying in the country." The Lady-friend referred to was Miss Louisa Atkinson. Her visiting-card, and some "Notes on the Sphaeria and Grub," written after a visit to Mount Tomah, in search of specimens, on April 22nd [year not given] are included among the relics of W. S. Macleay. Miss Atkinson says in her Notes, that she and her companion dug up about eighteen vegetable caterpillars, but they were old ones, not in good condition, as no fresh ones seemed to have developed since her last researches.

Most of W. S. Macleay's scientific friends in Sydney were members of the governing body of the Australian Museum. In those early days, when there was no scientific Society specially concerned with biology, the Colonial Museum, later the Australian Museum, was the rallying-ground for naturalists, especially those interested in zoology; and the Meetings of the Committee or of the Board brought them together and kept them in touch.

Dr. George Bennett (1804-93) paid two visits to Sydney as medical officer of passenger-ships in 1829-32. Finally he settled in Sydney in 1836, and began to practise medicine. Very soon after he became officially connected with the Colonial Museum, later the Australian Museum. His official record is: Director, Superintendent, Zoologist, Curator, previous to 1841, Hon. Secretary (1836?), July 1838-41, Committeeman (1836?) 1838-53, Elective Trustee, 1853-74 (Etheridge). W. S. Macleay was a Committeeman from 1841-53, and an Elective Trustee from 1853 until his resignation in 1862, on account of ill-health. Both Dr. Bennett and W. S. Macleay had known Professor Owen in London.

There is a reference to Dr. Bennett in W. S. Macleay's letter to Miss Scott, quoted later on. There is no memento of him among the memorials of W. S. Macleay.

But the Society has some very interesting memorials of him, in the shape of valuable books, all with book-plates, purchased by the Council, at the sale of his fine library, after his decease. One of these is J. D. Hooker's "Flora Novae Zealandiae" being the second section of "The Botany of the Antarctic Voyage of H.M. Discovery Ships "Erebus" and "Terror," 1839-43, &c." This would be the copy to which J. C. Bidwill refers in a letter to Captain P. P. King, dated February 8th, 1846—"I was much delighted at looking over the Flora Antarctica at Dr. Bennett's, not the less so as I see that in it I have credit done me for my early discoveries in New Zealand" [Maiden, "Records of Australian Botanists," p. 89]. Another scarce and valuable purchase was a set, complete except for one volume, of the Botanical Journals, in four successive series, published by Sir William J. Hooker, 1830-57 (23 vols.). Four of the volumes of the last series, Hooker's London Journal of Botany, have original letters, from Sir W. J. Hooker to Dr. Bennett, pasted in at the front or back, one in each volume. The first, not dated, relates to Vegetable Ivory; the second, November 29th, 1852, is about the Rice-paper Plant; the third, November 27th, 1857, returns thanks for Macrozamia-seeds sent in salt-water, and reports that Dr. Harvey is working at Kew; and the fourth, June 1st, 1859, is an invitation to Kew Gardens, when Dr. Bennett was visiting England.

The Rev. W. B. Clarke (1798-1878), M.A., F.R.S., F.G.S., the "Father of Australian Geology," and W. S. Macleay attended the meeting of the British Association for the Advancement of Science at Liverpool, in 1837; and both arrived in Sydney in the same year, 1839. On his arrival, Mr. Clarke was appointed to take charge of the King's School, Parramatta; he was afterwards Rector of Willoughby, 1846-70. He very soon became interested in the Australian Museum, the record of his official connection therewith being—Secretary 1839-41; Secretary and Curator, 1841-42; Committeeman, 1839-53; Elective Trustee, 1853-74 (Etheridge). The long association of Mr. Clarke and W. S. Macleay with the governing body of the Australian Museum provided them with abundant opportunities of meeting.

There is but one letter to W. S. Macleay, dated from St. Leonards, 29th November, 1847, among his memorials, which begins—"Had not this blessed rain kept me at home, to recruit after the fatigue of living till it came, I intended to call on you to talk over Turner's Diprotodon. He has requested me to draw up a notice, to help him. I have done so, but with much misgiving; and I have put to it my initials, that no one else may be blamed if I am wrong. I have taken the liberty of calling on you to give the public a benefit—I hope you will

'honour the bill.'" W. S. Macleay complied with the request by sending a long letter, "On the Bones brought to Sydney by Mr. Turner," dated December 2nd, 1847, to the Sydney Morning Herald. This, together with Mr. Clarke's letter, and one by Dr. L. Leichhardt on the same subject, were afterwards republished by Mr. Clarke as an appendix to his Report, No. x. [Further Papers relative to the Discovery of Gold in Australia, p. 38, 1855].

Owen's original description of the genus *Diprotodon* was based on a very incomplete series of specimens, including a molar tooth, and portions of broken bones of various parts of the skeleton. Turner's specimens were more complete, and included a shattered skull, which Mr. Wall of the Museum, with the co-operation of Mr. Clarke and Dr. Leichhardt, succeeded in putting together; this measured four feet in length from the frontal bone to the occiput. The pelvis was incomplete, and the marsupial bones were missing. W. S. Macleay, in his lengthy account, gave the dental formula, compared it with that of other marsupials, and discussed the relationship of *Diprotodon*. His conclusion was—"But this collection is above all interesting, as proving the truth of Professor Owen's suggestion, that there formerly existed in the Australian wilds a marsupial Pachyderm, thus serving to complete that series of analogies which quadrupeds with marsupial bones bear to the several classes of placental mammalia.'

Turner's collection of bones was afterwards sold, sent to London, and subsequently described and figured by Professor Owen.

Mr. Clarke conducted the burial service at the funeral of W. S. Macleay, on January 28th, 1865. An obituary notice appeared in the Sydney Morning Herald of January 30th. The Rev. R. L. King, in his Presidential Address to the Entomological Society of New South Wales, refers to this as from the pen of an old friend. It is, I think, almost certain that it was written by Mr. Clarke, perhaps after consultation with William Macleay. It is much to be regretted that no "Life and Letters" of this eminent Australian pioneer in geology has been published.

Sir William Denison, the Governor General, has recorded two visits to W. S. Macleay, in his "Varieties of Vice-Regal Life." Mr. Deas Thomson's position as Colonial Secretary was about to lapse, on the eve of the inauguration of Responsible Government; and the question for his Excellency to settle was, who should be asked to be Premier. Sir William, in a letter to Mr. Deas Thomson, dated January 15th, 1856, said [Vol. i., p. 332]—"I paid a visit to Mr. [W. S.] Macleay yesterday, and had a long conversation with him on political matters, of which I give you the substance, as it will serve to show you the views entertained by a man like him, not actually engaged in the strife of party. . . . . In the first place, great anxiety was expressed that you should take the lead, and constitute the Government: it was said that all expected you to do so; that the Government would be placed in great difficulty without your knowledge and experience to keep things steady. . . . . The conclusion of the whole matter is, that I very much wish you to form a Government, and assist me in working out the experiment which is about to be made." Mr. Deas Thomson, however, could not see his way to accept the Governor's offer. Mr. Stuart Donaldson was sent for, and subsequently formed the first Ministry, Mr. Deas Thomson being appointed President of the Legislative Council.

On his second visit on February 6th, 1859, [Vol. i., p. 458] to show Mr. W. S. Macleay a tortoise sent to him by the Speaker of the Legislative Assembly, Sir William saw the Stuart Drawings, as noted above.

Captain, afterwards Rear-Admiral Phillip Parker King (1793-1856) was an old friend of W. S. Macleay. They had met in London before 1826. At Captain King's request, W. S. Macleay described the collection of Annulosa accumulated by the former, during his survey of the Inter-tropical and Western Coasts of Australia between the years 1818 and 1822 [King's "Narrative," Vol. ii., Appendix, p. 438, 1827]. Captain King was a Committeeman or a Trustee of the Colonial or Australian Museum for many years, from 1836 onwards.

Rear-Admiral King is another distinguished Australian, born in Norfolk Island, of whom, unfortunately, no "Life and Letters" has been published. A very interesting biographical notice of this eminent man, by the late Mr. H. C. Russell, will be found in the First Report of the Australasian Association for the Advancement of Science (p. 48). In addition to what is therein stated, it may be pointed out that Captain King became very interested in zoology during his survey of the Southern Coasts of South America, 1826-30. The results of some of his observations, dated July 8th, 1827, were sent to Mr. Vigors, who published them, under the title of "Extracts from a letter addressed by Captain Phillip Parker King, R.N., F.R.S. and L.S., to N. A. Vigors, Esq., on the Animals of the Straits of Magellan," in the Zoological Journal, [Vol. iii., pp. 422-432; Vol. iv., pp. 91-105]. He was also the joint author of another paper, "Description of the Cirrhipeda, Conchifera and Mollusca, in a collection formed by the Officers of H.M.S. Adventure and Beagle employed between the years 1826 and 1830 in surveying the Southern Coasts of South America, including the Straits of Magalhaens and the Coast of Tierra del Fuego. By Captain Phillip P. King, R.N., F.R.S., &c., assisted by W. J. Broderip, Esq., F.R.S., &c." This paper likewise was published in the Zoological Journal, Vol. v., p. 332, 1835.

The existence of these papers helps to explain why, like W. S. Macleay, Captain King visited the "Erebus" in Port Jackson, to see Dr. J. D. Hooker's Southern collections, and his drawings of sea-animals, as already mentioned. He also contributed an article on "The Antarctic Expedition of Discovery" to the Sydney Herald of August 19th, 1841, a fortnight after the "Erebus" and "Terror" sailed from Port Jackson for New Zealand. This gives an account of the doings of the Expedition up to the time of its arrival in Port Jackson. A reprint of this article, no doubt presented to W. S. Macleay by the writer, is included among the memorials of the former.

Another interesting relic is portion of a letter from Captain King to W. S. Macleay, dated June 4th, 1842. The address is not mentioned, but it would be Tahlee, Port Stephens, where Captain King resided from 1839-48, and then removed to Sydney. The writer says—"I have found here to-day a sp. of Latr. genus *Mictyris* running on the sand at low tide. The above [a pencil-sketch of a crab] is, no doubt, a bad resemblance, but it will serve to show nearly what it is, and whether it is of use to your collection. The carapace is a dull blue, and the sides a yellow fawn colour. I believe I am right in assigning it to Latreille's genus *Mictyris*. I have him in spirits, at your disposal, if wanted."

Other interesting relics are three rare pamphlets, being the first, second, and fourth of the series mentioned by Mr. Russell as printed at Captain King's own private printing-press, when he resided at Tahlee. These relate to the specific gravity of sea-water, and to meteorological or astronomical observations. W. S. Macleay's three copies have inscriptions by the author.

A very interesting memento of Captain King, in the Society's library, is the copy of J. D. Hooker's "Flora Antarctica" being Section i. of "The Botany of the Antarctic Voyage," inscribed and presented to him by the author. This was subsequently handed over to his eldest son, Phillip Gidley King, who generously gave it to the Society in 1882, when the Council was trying to replace the original library destroyed in the Garden Palace Fire.

The Honourable Phillip Gidley King, M.L.C., (1817-1904) was an Original Member of the Society, and, for six years, a Member of the Council. An obituary notice of him, which includes his own account of his experiences as cabin-mate of Charles Darwin on the voyage of the "Beagle," and as his companion on some of Darwin's land-excursions, will be found in the Society's Proceedings, 1905, p. 5. Darwin paid a visit to Captain King, at "Dunheved," St. Mary's, on his return-journey from Bathurst, in January, 1836.

The Rev. Robert Lethbridge King, second son of Rear-Admiral King, was a valued friend and correspondent of both W. S. Macleay, and William Macleay; and a keen entomologist. The memorials of W. S. Macleay include an excellent pencil-sketch by Mr. King, of a remarkable Pselaphid beetle, initialled, and dated, Parramatta, April 4, 1858; and a very interesting letter dated July 28th, 1859, in which Mr. King says—"I send you a sketch in pen-and-ink [on p. 3 of the letter] of two ferns in my friend, Mr. Woolls' herbarium: Do you recognise them as South Sea Islanders? I should be very glad to introduce Mr. W. to you, that he might have a look over your garden. He is taking a very great interest in the science, and has a good knowledge of our Parramatta ferns. I think a trip to Elizabeth Bay would encourage him—if you will allow me to introduce him. I have had the *Eucalyptus globulus* (I think) in flower in my garden. Gen. Macarthur gave me a small plant 2 years ago. It is now 12ft. I think I wrote you before of the change of leaf—from sessile and amplexicaul, and opposite, to peduncled (?) and alternate." Dr. Woolls was duly introduced, and became W. S. Macleay's friend and correspondent.

In Mr. King's paper on Pselaphidae, in the Trans. Ent. Soc. N.S. Wales (Vol. i., p. 54), he described several species from specimens found by W. S. Macleay in his garden at Elizabeth Bay, and acknowledges his indebtedness for them. He mentions also that he had found a single specimen of one of them on the sea-beach in the same locality.

Dr. Leichhardt presented some insects to W. S. Macleay, as mentioned in one of William Macleay's papers. But this is all the available information about their intercourse.

Sir William Macarthur (1800-82) of Camden was a friend of all the Macleays. He exchanged plants with Alexander Macleay, and afterwards with W. S. Macleay. He was a neighbour of George Macleay at Brownlow Hill, for more than thirty-one years. Both of them, as well as James Macarthur, and others, were Magistrates in the district of Camden and Narellan. He was also a friend of William Macleay. Details of their friendship are given later. Sir William Macarthur was an Original Member and the first Vice-President of our Society. Captain Arthur Onslow, R.N., grandson, on his mother's side, of Alexander Macleay, married the daughter of James Macarthur, of Camden, in 1867.

W. S. Macleay corresponded with Baron von Mueller, but no letters are available. The Baron, in the Eucalyptographia, under *E. Foelschiana*, refers to some re-

marks by W. S. Macleay, on the possible hybridisation of Eucalypts by birds. These must have been communicated by letter to the Baron; as I cannot find any reference to the subject by W. S. Macleay in print. The remarks are quoted, with comments, by Dr. Woolls, in his "Contribution to the Flora of Australia" (p. 219), and in his "Lectures on the Vegetable Kingdom," (p. 95). And also by Mr. Maiden in his paper "On Hybridisation in the Genus Eucalyptus" [Report of the Dunedin Meeting Aust. Assoc. Adv. Science, January, 1904, p. 298]. Presentation-copies of some of the early numbers of the "Fragmenta," and of the "Plants of Victoria," duly inscribed, are included in our series of memorials of W. S. Macleay.

Dr., afterwards Sir Charles Nicholson was a friend of all the Macleays. He came to Sydney in 1834, and practised medicine. He was elected Speaker of the Legislative Council on the retirement of Alexander Macleay in 1846. He was also Chancellor of the University of Sydney. One of the extracts given above relates how Dr. Nicholson, as Speaker, sent the skull of the supposed Bunyip to W. S. Macleay. He is also mentioned in Huxley's letter to W. S. Macleay.

A very interesting memento of Dr. Nicholson, included among the memorials, is a letter dated only May 15th [probably 1859, and written in Sydney] to W. S. Macleay, in which he says—"In speaking to you the other day about the Native Bee, I mentioned a conversation I had with a Mr. Lubbock [when Dr. Nicholson was on a visit to England, in the previous year], who read a paper at the British Association on some subject connected with the economy of the Bee, which, I believe, was regarded as one of the most original Essays brought forward. I send you his pamphlet, which pray keep.

"I shall be obliged if you can intimate to me how I could manage to procure specimens illustrative of Mr. Lubbock's favorite study. . . . . If you would also give me any information on the points referred to in the accompanying note, I could send it to him."

The accompanying note by John Lubbock, afterwards Lord Avebury, was written to Sir Charles Nicholson, from London October 12th, 1858. At this time, Lubbock's home was at High Elms, close to Down, where Charles Darwin, whom Lubbock regarded as "his father in science," resided from 1842 onwards. The note is as follows—

"My Dear Sir Charles,

"If I remember right you told me on that pleasant afternoon we spent at Cookridge, that the Wild bee of Australia has a sting without barbs, and that it is being exterminated by the Common Hive Bee.

"Since then, these two facts struck me as being very interesting, and I therefore repeated them to Mr. Darwin, saying, at the same time, that I was not quite certain whether I had understood you correctly.

"Mr. Darwin has asked [me] to write to you, and enquire whether my memory is correct, and if so whether you would kindly allow him to mention the facts, giving you as his authority.

"He would also like to know in what districts especially this destruction of the Australian bee is taking place; and whether it is effected by the Hive bee actually attacking the Australian species, or, as Mr. Darwin presumes to be the case, by the appropriation by the Hive Bee of so much food that too little is left for the Aboriginal species.

"Mr. Darwin would also be very much obliged if you could send him a few specimens of the latter."

"I hope you will excuse the trouble I am giving you, and believe me, dear Sir Charles, Yours very truly, John Lubbock."

W. S. Macleay, doubtless, did his best to answer these questions. He could possibly have answered the first one, and could have supplied specimens of native bees. But the second one was probably unanswerable, for lack of information. Hive bees are said to have been introduced at Sydney, about 1822, and at Bathurst in 1839 and 1842, as mentioned in Henniker Heaton's "Australian Dictionary of Dates" (p. 39). I commend both Lubbock's questions to the notice of Members, as worthy of modern investigation.

Sir Charles Nicholson was a Trustee of the Australian Museum for some years. Both he and W. S. Macleay, together with J. H. Plunkett, as Chairman, were the Commissioners of National Education in Sydney, in 1848. There is, among the relics of W. S. Macleay, his copy of the "Regulations and Directions to be attended to in making application to the Commissioners of National Education, for and towards the building of School Houses or for the support of Schools." These signed by the three Commissioners, as above, were issued, with a preface, dated May 10th, 1848, by the Colonial Secretary, E. Deas Thomson.

Alexander Walter Scott (1800-83), and his accomplished daughters, Harriet (Mrs. Cosby W. Morgan) and Helena (Mrs. Edward Forde), lived for a number of years at Ash Island, Hunter River, but removed to Sydney about 1862. They were the authors of that most meritorious work "Australian Lepidoptera and their Transformations, drawn from the Life by Harriet and Helena Scott, with Descriptions, General and Systematic, by A. W. Scott, M.A., Ash Island, Hunter River, New South Wales," of which Vol. i., comprising Parts i.-iii., was published in London in 1864. Vol. ii., Parts i.-iv., with an amended title, was published in Sydney, in 1890-93, by the Trustees of the Australian Museum, who had purchased the unpublished matter, after the death of Mr. Scott in 1883. The second and last volume was edited and revised by Arthur Sidney Olliff and Helena Forde.

The Scotts were friends and correspondents of W. S. Macleay, and there are several acknowledgments of advice and help, in regard to literature, to him in the first volume. He was greatly interested in their work, not only for its intrinsic merit, but because they were continuing from a more modern standpoint the investigations begun by J. W. Lewin, in his "Lepidopterous Insects of New South Wales" (1805), and also because they were illustrating the life-histories of some of the Lepidoptera described by him, in 1827, from Captain P. P. King's Australian collection.

The only original, unpublished letter written by W. S. Macleay, that I have seen, is one to Miss Scott, dated July 23rd, 1861. For this, I am indebted to the thoughtfulness and kindness of the late Mrs. M. A. J. Shaw, cousin and residuary legatee of the late Mrs. Forde. The purport of this letter, of four closely written pages, is explained by the concluding words, "I have now told you pretty well all I know about *Charagia*."

Up to this time, four species of the genus had been described and re-described by Lewin and various European entomologists, but the synonymy was involved and complicated. Miss Scott had obtained a fifth species, which she thought was

new, but had not the necessary literature at hand to enable her to settle the point. She, therefore, appealed to W. S. Macleay for his advice, and the letter is his reply. After explaining the characteristics and synonymy of the four known species, the letter proceeds—"You have got a new and fifth species under the name of *C. Ramsayi* Ramsay Mss.; and my cousin has given me the ♀ of another quite new and sixth species from King George's Sound, under the name of *Charagia scripta,* Macleay Junr. Mss. It has the silver spots like letters, and small instead of being large and round as in *C. Ramsayi.* My cousin will, I am sure, be happy to show you ♂.♀. larva and chrysalis of this K. G. Sound species. He has the larvae now alive in the roots of a Leptospermum."

Mr. Scott afterwards contributed a monograph "On the genus *Charagia* of Walker," at a Meeting of the Entomological Society of New South Wales, held on September 2nd, 1867, in which he described four new species, including *C. Ramsayii* and *C. scripta* [Trans., Vol. ii., p. 25].

The letter continues—"The larvae of all the species of *Charagia,* when they die in the earth, give forth different species of a fungus called *Sphaeria.* At least the *Sphaeria Roberti* [*Robertsii*] of Hooker, a well-known species which proceeds from *C. virescens,* is altogether different from the *Sphaeria Atkinsonae* Macleay Mss. of this Colony. Indeed, I know two species of *Sphaeria* that grow from the *Charagiae* of this Colony, and a Lady-friend of mine, who is a capital botanist, though no entomologist, is now preparing a work on the New Holland species of *Sphaeria,* which she is studying in the country. Dr. Bennett is quite wrong, as I told him, in thinking that it was the *Sphaeria Roberti* [*i.e.,* the New Zealand species] which you found at Ash Island. It must have been some other species, and you had better let me see it."

The belief here expressed that the lignivorous larvae of the species of *Charagia,* which live in the tunnels excavated by them in the stems and branches of Banksia and other shrubs, were victimised by the fungus *Sphaeria* or *Cordyceps,* though generally accepted at that time, was incorrect. Mr. Scott, in 1864, showed that it was the root-feeding caterpillars of species of *Pielus,* etc., which pass some time underground, that serve as the hosts of *Cordyceps.* This was pointed out in the late Mr. A. S. Olliff's paper on "Australian Entomophytes," in the Agricultural Gazette of N.S. Wales for June, 1895. One of the two species from Mount Tomah, in which Miss Atkinson was interested, is therein described as *Cordyceps Selkirki,* sp.n., the other being identified as *C. Gunnii* Berkeley. But the host of the species from Ash Island, described as *C. scottianus,* was shown to be the larva of a Lucanid beetle.

The memorials of W. S. Macleay include fourteen beautiful water-colour drawings—seven of Ash Island spiders, six of Lepidoptera, and one of the Vegetable Caterpillar found by them; and one pen-and-ink sketch of two species of Ticks. The drawings were all done by one or other of the sisters, most of them by Helena. They are nearly all signed, or initialled, and dated, and were done during the period 1852-64. With the exception of two dated Sydney, 1864, the others were done at Ash Island. These were sent from time to time to W. S. Macleay by the Misses Scott. They were carefully treasured, and are as fresh almost as when they were done. The letter quoted above is, unfortunately, the only one that has been preserved.

I had the pleasure of knowing Mrs. Forde during the later years of her life.

She was a very gifted woman, keenly interested in science, and with a memory well stored with recollections of old times. I regret now that I did not ask her to give me some notes of her reminiscences of W. S. Macleay. She told me that, when living at Ash Island, her sister and she used to come to Sydney for periodical holidays; that W. S. Macleay used always to invite them to Elizabeth Bay; and, because they were interested in entomology, that he used to take delight in showing them the most attractive and beautiful specimens in his cabinets.

We have portraits of Mr. Scott, and of Mrs. Forde, but I have not been able to get one of Mrs. Morgan. Mrs. Forde, the last of the family, died on November 24th, 1910, at Parramatta, at the advanced age of nearly fourscore. An obituary notice of her, with references to her sister, will be found in the Society's Proceedings, 1911, p. 9.

Mr. Justice Therry (1800-74), of the Supreme Court of New South Wales (1846-59), author of "Reminiscences of Thirty Years' Residence in New South Wales and Victoria" (1863), thus refers to W. S. Macleay, in his book (p. 35). —On a slope at the eastern [? southern] side of a very snug little bay, with a lawn of English meadow-like verdure in front, stands the mansion of Mr. W. [S.] McLeay—a name known to Europe for the scientific acquirements of its occupant. As a botanist and entomologist, he holds a place in the foremost rank. There, to the friends who visit him he pours forth, with a memory quite astonishing, the stores of a varied and extensive knowledge from his encyclopaedic mind. Those who have the good fortune to know this accomplished scholar, will, like the writer, regard their visits to Elizabeth Bay amongst the most agreeable reminiscences of New South Wales." Some appreciative references to Alexander Macleay are also contained in this book.

Among the memorials of W. S. Macleay there is a pamphlet, inscribed by the author, entitled "Letter to the Right Hon. W. E. Gladstone, M.P.; with the Address to the Jury by His Honor Mr. Justice Therry at the Opening of the First Circuit Court, at Brisbane, Moreton Bay, May 13, 1850; and his Speech at the Dinner given to the Judge and Members of the Circuit, by the Magistracy and Gentry of the District" (8vo, Sydney, 1850).

Dr. John Vaughan Thompson (1779-1847) was appointed Deputy Inspector-General of Hospitals in Sydney on April 1st, 1836. His name appears among those of the gentlemen appointed "A Committee of Superintendence of the Australian Museum and Botanical Garden," on June 14th, 1836, as printed in the Sydney Gazette. Dr. Thompson was a distinguished zoologist. He was an army surgeon, who, when stationed at Cork, in 1830, took to the study of marine Invertebrata by the aid of the microscope. "Thompson made three great discoveries, which seem to have fallen in his way in the most natural and simple manner, but must be regarded really as the outcome of extraordinary genius. He showed that the organisms like *Flustra* are not hydroid Polyps, but of a more complex structure resembling Molluscs, and he gave them the name 'Polyzoa.' He discovered the *Pentacrinus europaeus*, and showed that it was the larval form of the Feather-Star *Antedon* (Comatula). He upset Cuvier's retention of the Cirripedes among Mollusca, and his subsequent treatment of them as an isolated class, by showing that they begin life as free-swimming Crustacea identical with the young forms of other Crustacea." [Ray Lankester, "The History and Scope of Zoology, p. 335, in his volume entitled "The Advancement of Science: Occasional Essays and Addresses," London, 1890].

The results of the three researches mentioned, were published separately by the author, with the title "Zoological Researches and Illustrations; or Natural History of nondescript or imperfectly known Animals, in a series of Memoirs, illustrated by numerous figures." Five Memoirs at least were published at Cork about 1830 or later. The memorials of W. S. Macleay include four of these, the first one bearing the inscription "W. S. McLeay, Esquire, with the Author's Compliments." The others are without covers.

W. S. Macleay appreciatively refers at length to Thompson's observations on Crustaceous animals in the second portion of the "Annulosa of South Africa," "On the Brachyurous Decapod Crustacea," p. 53. In a footnote he says—"The credit of confirming Thompson's observations belongs to my friend Captain Ducane [Du Cane], R.N., who has made at Southampton most interesting observations on the Metamorphosis of *Crustacea*, which I trust he will soon give to the Public" [as he did, in Ann. Mag. Nat. Hist., 1839]. Among the memorials of W. S. Macleay, there is a sketch of two larval shrimps, signed "C.D.C., Southampton, April 30th, 1838," sent to him by his friend.

After Dr. J. V. Thompson came to Sydney in 1836, there is no record of any interest, on his part, in the Port Jackson fauna. He was the author of numerous papers, of which nineteen, not including the "Zoological Researches," are listed in the Royal Society's Catalogue. The last four were apparently written in Sydney, but published in India, Agric. Soc. Journal, Vols. i., ii., iv., 1842-45. These relate to the culture of cotton and sugar-cane. The Journal containing them is not to be found in Sydney libraries.

Dr. Thompson was known to Alexander Macleay as a contributor of papers to, and a Fellow of, the Linnean Society as early as 1808. He was also the donor of seeds of Cotton to A. Macleay in Sydney, as shown in the Seed-book. Though often mentioned in text-books, I have never seen any reference to Dr. Thompson as a distinguished zoologist resident in Sydney, in any Australian publication. He died in Sydney in 1847. The following brief obituary notice appeared in the Sydney Morning Herald on January 26th.—"At his residence, Liverpool Street, Sydney, on Thursday 21st instant, John Vaughan Thompson, Esq., for several years Deputy Inspector General of Hospitals in New South Wales [1836-44], in his 63rd year, after long-continued illness—distinguished for his acquirements in zoology and botany—possessing talents of no common order—and estimable in every relative duty of life—he is deeply lamented by his afflicted family, to whom his loss is irreparable."

Dr. J. F. Watson, in his "History of the Sydney Hospital, 1811-1911" says that Dr. Thompson was an unsuccessful administrator, and that he was superseded in 1844. This need not obscure his fine record of work, as given in the National Dictionary of Biography.

The Rev. Dr. Woolls (1814-1893), referred to as Mr. Woolls in the Rev. R. L. King's letter to W. S. Macleay, in 1859, had not been ordained to Holy Orders at that time. The introduction to W. S. Macleay, suggested by Mr. King, was duly made, and thereafter they frequently corresponded, and Dr. Woolls paid visits. There are several references to W. S. Macleay in Dr. Woolls' two books. One of them records the fact that W. S. Macleay had collected *Dendrobium cucumerinum* near Brownlow Hill, growing on the swamp-oak; and another that he believed that *Corysanthes bicalcarata* had been found

near Sydney, though Dr. Woolls had not succeeded in finding it. It was also through Dr. Woolls, probably, that Miss Atkinson came to know W. S. Macleay. There are many references to her in Dr. Woolls' two books; as there are also to the Misses Scott, as well as a chapter in one of them on "The Botany of Ash Island."

The writer of the Obituary Notice of Mr. W. S. Macleay, which appeared in the Sydney Morning Herald, probably the Rev. W. B. Clarke, says that he was the life and soul of the Museum. But I have no information about his association with the Australian Museum, which will enable me to add to what is given in Etheridge's article, "The Australian Museum: Fragments of its Early History," namely—"For twenty years or more, that eminent Naturalist, William Sharp Macleay, gave his best energies to the welfare of the Institution. Committeeman from 1841 to 1853, Elective Trustee from 1853 onwards, ill-health compelled him to resign in January 1862. The Board presented him with an address," a copy of which is given [Records of the Australian Museum, Vol. xii., No. 12, p. 394, 1919]. But we have some interesting relics of his connection with the Museum. These include his father's copy of the now rare "Catalogue of the Specimens of Natural History and Miscellaneous Curiosities deposited in the Australian Museum," compiled by the Secretary, George Bennett, F.L.S., and published in 1837. This was apparently an official copy, as it is inscribed, not in his own handwriting, "Alex. McLeay, Esq." It was subsequently corrected, supplemented, and brought up to date, in so far as it relates to mammals and birds, by W. S. Macleay, the alterations and additions being in his handwriting. Charles Coxen, of Yarrundi, donor of many specimens recorded in the Catalogue, was John Gould's brother-in-law. Other relics are three letters about scientific or Museum matters from three successive officers, S. R. Pittard, G. F. Angas, and G. Krefft, the first and last Curators, and the second, Secretary for some time.

Of W. S. Macleay's declining days, Lowe's biographer says—"In 1865 occurred two events which, although hardly unexpected, were in their different ways and degrees a source of sorrow to Robert Lowe. These were the death of his much-valued Australian friend, William Sharpe Macleay, and that of his great political chief, Lord Palmerston. Lowe had kept up an intermittent correspondence with Macleay ever since he left Sydney, but latterly it had become painfully evident to him that the quaint old philosopher of Elizabeth Bay was fast declining. He had, indeed, received warning from others that the death of his old friend was impending" [Vol. ii., p. 236].

W. S. Macleay's last letter to Robert Lowe was dated, Elizabeth Bay, 21 September, 1864. In this, the writer said, concerning himself—"As to my health, it remains *in statu quo;* although I think that I am getting on the whole weaker. At times I am quite prostrated, and at times I am again more lively. I never was what you would call a decided beauty; but if you were to see me now, you would not know the ugly, lanky, thin, scraggy, toothless individual who is now writing to assure you that the immaterial part of him remains still the same, and that it has no friends on earth to which it is more attached than to you and your sensible, kind lady. So I subscribe myself ever, Your most affectionate friend, W. S. Macleay." [Vol. ii., p. 234]

Death ended his sufferings on January 26th, 1865, in his seventy-third year. An obituary notice appeared in the Sydney Morning Herald of 30th January.

The Rev. R. L. King, in his Presidential Address to the Entomological Society of New South Wales, on January 30th, 1865 [Trans. Ent. Soc. N.S. Wales, Vol. i., p. xliii.] quotes extensively from the notice referred to, and also supplements it. He refers to it as "from the pen of an old friend"—probably the Rev. W. B. Clarke, written perhaps, after consultation with William Macleay.

The cenotaph to his memory in St. James' Church, is above that in memory of his sister, Mrs. Harrington; but rather too high for close scrutiny. Below a medallion-portrait, head and shoulders, side-view, is the tersely appropriate inscription:—

GULIELMUS SHARP MACLEAY.
NATURAE INDAGATOR INDEFESSUS
INTERPRESQUE ERUDITUS ACUTISSIMUSQUE.
VIXIT ANNOS LXXII. DECESSIT DIE XXVI.
JAN. A.D. MDCCCLXV.

It is, I think, a reasonable conclusion that the marble portion, with the portrait and inscription, was prepared in England, brought out by George Macleay, and its erection arranged for while he was revisiting Australia between 1869 and 1874. In that case, it is also a reasonable supposition that the inscription was drawn up by Robert Lowe at George Macleay's request.

By several writers, W. S. Macleay, in his later years in Australia, is spoken of as a recluse. An explanation of what this was intended to mean, is not hard to find. He was naturally reserved; and his life in Cuba must have been rather a lonely one, as he could have had but few English friends, who shared his tastes and interests. This would lead to habits of self-dependence, and to his finding recreation and solace in his books, in his scientific work and collecting, and in his garden and culture of orchids. The tropical climate prejudicially affected his health, and seems to have prematurely aged him, as is evident from the remarks of Dr. Stimpson and Dr. Scherzer, quoted above. Long before the onset of diabetes, which caused his last lingering illness, he suffered from gout; and, no doubt, like Adam Sedgwick, the geologist, and other sufferers from this complaint, he found that gout was not conducive to amiability. But his friendship with Lowe, Huxley, and others shows that he was no misanthrope or hermit, when the environment was congenial. There is abundant evidence also that, as some have testified, he was always ready to advise and help those who were genuinely interested in science, and sought his assistance in a proper manner. W. S. Macleay did not marry.

W. S. Macleay's collection, as he brought it to Australia in 1839, comprised the specimens left with him by his father for study; what he may have collected or obtained by exchange or gift in Cuba, or at Philadelphia and the other ports of call on the outward and homeward voyages; and what he may have acquired in England, after his return, by exchange or otherwise; and especially Verreaux's South African collection of insects, which he purchased. Details of what he added to his collection after he came to Australia are not available. Sir William Macleay, in writing to the Chancellor of the University of Sydney in 1874, said that the joint collections of A. and W. S. Macleay amounted to 480 drawers, and his own to 320 drawers. But in addition to the specimens in the cabinets, there were a number of dry specimens on shelves. These are referred to later.

Sir George Macleay, K.C.M.G., F.L.S.

Third son of Alexander Macleay, born in London in 1809, educated at Westminster, resident in Australia for more than thirty years, removed to England in 1859, died at Mentone, June 26th, 1891.

George Macleay came out to Australia with his father, or soon after, but I am not sure which. He and his younger brother James were in charge of their father's property at Brownlow Hill and the farm at Glendarewel attached to it, near Camden, in 1829. The first record of George in print is as the companion of Captain Charles Sturt on his "Expedition down the Morumbidgee and Murray Rivers in 1829-30." The details of this adventurous undertaking were given in an "Official Report to the Colonial Government," which appeared in the Sydney Gazette in May 1830; and more fully in Sturt's Narrative of the Expedition, published in London in 1833, second edition 1834, as the second volume of the work entitled "Two Expeditions into the Interior of Southern Australia, 1828-31." The first volume gives the account of the expedition which resulted in the discovery of the Darling, in 1829.

Sturt, in his Narrative, speaks in the highest terms of Macleay. He mentions "the generous feelings that had prompted McLeay to participate in every danger with me"; and, "it was sufficiently evident to me, that the men were too much exhausted to perform the task that was before them without assistance [on the return-journey against the stream], and that it would be necessary both for McLeay and myself to take our share of labour at the oars. The cheerfulness and satisfaction that my young friend evinced at the opportunity that was thus afforded him of making himself useful, and of relieving those under him from some portion of their toil, at the same time that they increased my sincere esteem for him, were nothing more than what I expected from one who had endeavoured by every means in his power to contribute to the success of that enterprise upon which he had embarked."

Their association during this adventurous excursion was the beginning of a warm and lifelong friendship. Sturt's home for some years was at Bargo Brush, and afterwards at Varroville near Liverpool, so that their neighbourly intercourse continued. From 1839-53 he resided in South Australia, and then returned to England, where he and Macleay renewed their friendship.

Mrs. Napier George Sturt's biography of her father-in-law, "Life of Charles Sturt, sometime Captain 39th Regiment, and Australian Explorer" (London, 1899) gives numerous extracts from Sturt's letters to Macleay. The last of them, dated June 8th, 1869, was a sympathetic reply to one from his friend, announcing the serious illness of his wife, who suffered from bronchitic trouble, and that alarming symptoms had supervened. Sturt died peacefully, while he was alone, eight days later, on June 16th. Mrs. George Macleay died shortly after.

Another early notice of George Macleay and his brother James, is given in a recently published, most interesting book, "Some Early Records of the Macarthurs of Camden. Edited by Sibella Macarthur Onslow" (1914). In a letter dated Camden, December 27th, 1830, written by Mrs. John Macarthur to her eldest son, Edward, then in England, she narrates how two expected visitors, friends of her son, lost their way, were out in the bush all night in pouring rain, and—"in the morning they made their way to the abode of the young McLeays [Brownlow Hill]—apropos, these young McLeays are very agreeable neighbours of Wil-

liam—they come here frequently—having been well educated and really are well conducted—lively and conversant, with the manners of the times, their society tends to enliven the atmosphere around Camden, where the topics of the day are brought forward in an agreeable manner—from their father's situation as Colonial Secretary and the correspondence with their sisters—they hear early of all English intelligence" (p. 462). Reference is also made to Sturt's expedition, the members of which had returned to Sydney a few months before the letter was written. She also adds that "the younger brother, James, is going an interesting voyage—The *Comet* a King's ship sails from here to Pitcairn Island for the purpose of removing the Islanders to Otaheite—Mr. James McLeay and Capt. Walpole of the 39th go in the *Comet* as a little voyage of curiosity and amusement.

If James went in the "Comet," he returned again to Sydney, because he was still at Brownlow Hill at the time of Mr. Backhouse's visit in 1836, as already mentioned. He did eventually go back to England, entered the Foreign Office, was Secretary and Registrar to the mixed British and Portuguese Commission for the Suppression of the Slave Trade at the Cape of Good Hope (1843-58), and died in London in October, 1892, aged 81 years.

George Macleay was about eleven years older than his cousin William. They were always great friends, and corresponded as long as both were alive and well. They were elected to Parliament in the same year, 1854, George as Member for the Murrumbidgee in the Legislative Council, afterwards the Legislative Assembly, when a Constitution was granted in 1855; and William as the Member for the Lachlan and Lower Darling. After George's removal to England in 1859, William succeeded him as Member for the Murrumbidgee.

The list of gentlemen appointed "A Committee of Superintendence of the Australian Museum and Botanical Garden," dated June 14th, 1836, and published in the Government Gazette, 1836, includes the name of George Macleay. Later on, he became an Elective Trustee. There are a number of references to him, in that capacity, in Etheridge's History. In February, 1859, he resigned, in consequence of his removal to England. "On March 3rd, 1859, a resolution was passed commissioning George Macleay, in conjunction with Professor Owen, to select a suitable person," as Curator, in succession to Mr. Wall, who had retired. This resulted in the appointment of Mr. S. R. Pittard, M.R.C.S., who took up his duties in February, 1860.

George Macleay, being then young, was one of the few Members of the Committee of 1836, who was not a Fellow of the Linnean Society. It is very interesting to note how punctilious Alexander Macleay was in enlisting the co-operation of all the available old "Linneans"—to use an expression once employed by Mr. Bentham—in carrying out scientific enterprises.

He was elected F.L.S. on January 12th, 1860, soon after his return to England; and a Member of the Council on May 24th, 1864. His gift of his father's portrait of Kirby, and his MSS., and correspondence, in 1886; and his bequest of the bust of W. S. Macleay to the Society, have already been mentioned.

George Macleay's permanent home was in the country at Brownlow Hill, near Camden, the latter 40 miles from Sydney, on what was then the Great South Road. He was specially interested in farming and horticulture. Though not a working zoologist, he had a general interest in zoology, which was enlivened and fostered by his father's and brother's influence, the opportunities afforded by a

country-life for observing and collecting, and his connection with the Australian Museum as a Trustee from 1836-59. He collected specimens on Sturt's Expedition; he also added to his father's collection, though there is only one quite incidental record of it.

Sturt says in his Narrative of the Expedition—"McLeay, who was always indefatigable in his pursuit after subjects of natural history, shot a cockatoo, a new species, hereabouts" (p. 62). He says also that—"I have already mentioned that shortly after we first entered the Murray, flocks of a new paroquet passed over our heads. . . . . They always kept too high to be fired at, but on our return, hereabouts, we succeeded in killing one. It made a good addition to our scanty stock of subjects of natural history. It is impossible to conceive how few of the feathered tribe frequent these distant and lonely regions. The common white cockatoo is the most numerous, and there are also a few pigeons; but other birds descend only for water, and are soon again upon the wing. Our botanical specimens were as scanty as our zoological, indeed the expedition may, as regards these two particulars, almost be said to have been unproductive" (p. 188).

This report is not surprising. The journey of 1700 miles in a whale-boat was twice as long as was expected, by reason of the failure of the arrangements for the return of the party by sea. There was a shortage of provisions, rowing against the stream was very laborious in the weakened condition of the men, and a crowded boat did not offer satisfactory room for the stowage of specimens.

The only reference to George Macleay's collecting for his father, that I have seen, is to be found in the "Annulosa of South Africa" (p. 75). W. S. Macleay says, of *Arthropterus MacLeaii* Don.—"The only known specimen of this species was purchased by my father at the sale of Mr. Francillon's museum. None of the authors who have written on the species ever saw it, except Donovan, who was its first describer in his work on the "Insects of New Holland." There is another species of *Arthropterus*, which I have seen in the valuable collection of my friend, Mr. John Curtis. . . . . I am ignorant which of these two my brother, Mr. George MacLeay has lately found, or whether his discovery may not prove, on comparison, to be still a third species. But I learn, by a letter from my father, that my brother, 'in one of his late excursions into the interior of New South Wales, discovered several specimens of *'Cerapterus MacLeaii'* in the nests of ants, and, moreover, remarked, that when alive they had the power of exploding, after the manner of Brachini.'"

George Macleay at one time had a station on the Murrumbidgee. He may have collected the specimens mentioned above in visiting this locality. He would have had no trouble in making a good collection in the Camden district. But insect-collecting is not mentioned in Sturt's Narrative.

Sir William Denison and members of his family paid three visits to Brownlow Hill in 1855, 1856, and 1857. I have already referred to one of these.

George Macleay revisited Australia for a time after the death of his brother, W. S. Macleay, but I have not been able to ascertain exactly when. Professor Huxley read a paper "On *Ceratodus forsteri*, with Observations on the Classification of Fishes" at a Meeting of the Zoological Society of London, on January 4th, 1876, in which he said—"Two specimens of *Ceratodus forsteri* have come into my possession within the last two years. The first was kindly placed at my disposal by the Secretary of this Society some time ago; but I was unwilling to

dissect it until I had a second. This desideratum was supplied by my friend Sir George MacLeay, who, on a recent visit to Australia, was kind enough to undertake to obtain a *Ceratodus* for me, and fulfilled his promise by sending me a very fine and well-preserved fish, rather larger than the first" [Proc., 1876, p. 24].

W. S. Macleay, who was unmarried, died in January, 1865. George was his residuary legatee, and inherited, among other possessions, the Elizabeth Bay property, the family heirlooms, and his brother's library and papers, but not the Macleay Collections, which passed to William. The object of George's visit to Sydney was to put his Australian affairs in order. Mrs. George Macleay died in 1869. I have in my possession William Macleay's journals for several years, commencing with 1874. George's visit ended before this, as there is no reference to it; but there is a record on July 25th, 1874, that "Brazier finished packing the books to-day, thirteen cases in all. There are still a large number of books remaining on the shelves, but as I have no more cases, I shall not have any more packed at present." The books here referred to were packed for shipment to England to George Macleay, and the others were to follow. These represented the balance of W. S. Macleay's library after the books which George gave to William, had been taken out. An earlier notice is offered by the entry on July 22nd—"Brazier commenced packing up the books I am sending home to George Macleay." And one of July 28th, records, "Brazier has been making lists of the books given me by my cousin George." His visit to Australia, therefore, seems to have been made after 1869 and before 1874.

But in addition to the books, mostly entomological, George gave his cousin the letters, drawings, with the exception of the Stuart collection of drawings sent out from England as a gift in 1887, pamphlets, or memoranda, which I have so frequently spoken of, in the course of my remarks, as the relics or memorials of W. S. Macleay. These were put away in the library, and, after he was rather abruptly and completely prostrated by the onset of his last illness, forgotten by Sir William. Everything in the house at the time of his decease was bequeathed to his widow. When the time came for clearing-up the house, Lady Macleay very kindly handed them over to me, as Sir William's executor and trustee, who was interested in Natural History. This meeting has given me an opportunity that I had been looking for, of exhibiting and recording these interesting relics and memorials of the Macleays, preparatory to handing them over to my successor, as the Society's custodian of them.

The rest of W. S. Macleay's papers, including letters from Lowe, Huxley, and probably many others, as well as any MS. records of work that there may have been, were presumably taken to England by George Macleay.

The concluding portion of Mr. Busk's Obituary Notice of W. S. Macleay is as follows—"After his retirement to Australia, I am not aware that Mr. MacLeay published anything; but he has left, as I am informed, a large collection of MSS. on all subjects of natural history, which, as greatly to the advantage of science, it would be extremely desirable should be carefully examined, and those among them fitted for the purpose, published. There is reason, I believe, to hope that this may be done, and that we may, as in former days, again see the pages of the 'Linnean Transactions' graced by articles bearing the honoured name of William Sharp Macleay."

The Notice was written by Mr. Busk in May 1865, apparently after consultation with George Macleay, who was then a Member of the Council; perhaps

also with Professor Huxley, who, as I think, was the author of the notice in the "Reader," from which Mr. Busk quotes. By this time, George Macleay would have received particulars of W. S. Macleay's decease from William Macleay. The information supplied to Mr. Busk by George Macleay would be based mainly on recollections of his intercourse with his brother up to the year 1859, supplemented by anything William Macleay might have communicated by letter. Perhaps Huxley could speak of the work W. S. Macleay was interested in during his visits in 1847-50. Mr. Busk's hope of future results was based on the fact that George Macleay was his brother's heir, and that it was necessary for him to revisit Sydney as soon as possible, to deal with his Australian interests. The delicate health of his wife up to the time of her death in 1869, postponed this visit for about four years.

From what has been said above, it will be seen that the four papers published in England or Calcutta, after W. S. Macleay came to Australia, and the two letters published in Sydney, were overlooked by Mr. Busk. These communications, however, were not entomological. As a matter of fact, the only published records of his own, indicative of his interest in Australian insects after his arrival in Australia, beyond what has been stated above in speaking of his correspondence with the Rev. F. W. Hope, are some observations given by Mr. Hope in a Postscript to his paper, "Observations on the Stenochoridae of New Holland, with Descriptions of new Genera and Species of that Family," read to the Zoological Society on June 23rd, 1840, [Trans. Zool. Soc. Vol. iii., p. 187], but the publication of this was delayed for some time. And some observations on an exhibit, communicated by the Hon. Secretary, on his behalf at a Meeting of the Entomological Society of New South Wales on October 3rd, 1864. Both these records will be considered later, when I come to speak of the history of the latter Society.

In the concluding sentence of his paper on the "Annulosa of South Africa" (1838) W. S. Macleay said of the *Paussidae*—"I hope, however, as I am about to visit Australia, soon to be able to make myself master of the oeconomy of these interesting insects, and also to publish a correct representation of the parts of the mouth."

In his letter "On the Skull now exhibited at the Colonial Museum of Sydney as that of the Bunyip," he said, speaking of the teratological skull of a foal found floating in the Hawkesbury then in his possession—"This skull was prepared by the lamented late Dr. Stewart [Stuart], and he has made drawings and notes of it, which I intend before long to publish, with his other observations on various branches of natural history."

Mr. Hope, in the paper on *Stenochoridae*, just mentioned, says of *Meropachys MacLeaii*, n.sp.,—"This beautifully sericeous insect is named in honour of William Sharpe Macleay, Esq., from whom we may shortly expect some valuable communications relating to the entomology of Australia."

Nevertheless, neither W. S. Macleay's intentions, nor Hope's expectation, came to fruition.

Swainson's classificatory and other aberrations may perhaps have exercised some inhibitory influence on any inclination, W. S. Macleay otherwise may have had, to continue his literary efforts; and to this, the state of his health may also have contributed. But if he did put pen to paper on the subject of Australian insects or Dr. Stuart's notes, and did not subsequently destroy the results, George Macleay, perhaps after consultation with William, became the arbiter of their disposal, and dealt with whatever there may have been, as he thought fit. Mr.

Busk's hope was not realised. The memorials of W. S. Macleay, which George Macleay left with William, comprise nothing at all in the shape of original observations or publishable matter, nor do they include Dr. Stuart's notes.

After his arrival in England, George Macleay purchased a beautiful house and grounds, known as Pendell Court, at Bletchingly, Surrey, which became his home for the rest of his life. An illustrated account of Pendell Court, and of the garden, tropical house, fernery, stoves, orchid-houses, and aquaria, signed F. W. H., appeared in "The Garden," for February 5th, 1881, as one of a series of articles on "Country Seats and Gardens of Great Britain." Mr. Maiden has kindly given me the copy of this article, which is exhibited to-night. This will be added to the other mementos of George Macleay.

Sir George Macleay died, without issue, at Mentone on June 26th, 1891, in his 82nd year, about six months before his cousin William. His first wife died at Pendell Court in 1869. His second wife, a Tasmanian lady, died in England, as recently as 1919.

Mrs. Forde, who was good enough to let me have the portrait of Sir George Macleay, which has been hung in the Society's Hall for some years now, told me that she corresponded with him almost up to the last. And she added, that he was always her good and kind friend.

Before leaving for England in 1859, or while on his visit to Sydney between the years 1870 and 1874, George Macleay disposed of his property at Brownlow Hill to Mr. F. W. Downes, and it has been in possession of the family ever since. Mr. Downes, to whose memory there is a cenotaph in the old Church at Cobbity, died in 1917. By the kind permission of Mrs. Downes—to whom, and to her son, for his kindly guidance, I desire to record our cordial thanks—my friend and fellow-member, Mr. Charles W. Smith, and I were able to visit Brownlow Hill last December. Having a knowledge of Sir William Denison's and James Backhouse's descriptions of George Macleay's old home, and a somewhat faded photograph among the relics of W. S. Macleay, probably taken sixty or seventy years ago, we had no difficulty in realising where we were, or the interest of what we had come to see. Unfortunately it began to rain just as we arrived, which prevented a closer inspection of the interesting plants and trees in the garden. Allowing for the lapse of time, and for the fact that the maintenance of an extensive garden is a much more expensive hobby now than it used to be in the good old days, the old home and the garden have been consistently kept up, and are much as they used to be. The "genteel cottage," as Mr. Backhouse regarded it in 1836, was possibly enlarged about the time of George Macleay's marriage to Miss Barbara Innes in 1842, and may have been added to since. A mute but eloquent historic link with the past is the old sundial in the upper garden, close to the house, probably a gift from some friend. On the four corners of the dial are engraved the words—"George Macleay Esq.—Brownlow Hill—near Camden—New South Wales." In the centre, below the gnomon is the date, "1836." And below this again—"anno coloniae xlviii."

The date recalls the fact, that 1836 was the year in which James Backhouse and his colleagues spent three days at Brownlow Hill, with George and James Macleay, visiting Camden Park twice during their stay. Under date October 21st, Mr. Backhouse records—"I walked into the forest by moonlight, along with George McLeay, to see the Opossums."

(To be concluded, with Illustrations, in the next Part of the Proceedings.)