

however, there are more accurate methods generally available, by which the navigator can find the position of his vessel—methods approximating to those of the astronomer in his observatory, whose more refined instruments and abstruse calculations supply the seaman with the data necessary to combine with his own observations, and fix the position of his ship with all needful accuracy. In a subsequent paper I will explain how this is done.¹

J. F. RUTHVEN.

ANNIVERSARY MEETING OF THE LINNEAN SOCIETY.

THE anniversary meeting of the Linnean Society of London, held at Burlington House on May 24, was the occasion of presentation, by its Fellows, to Sir Joseph Dalton Hooker, G.C.S.I., C.B., F.R.S., of a commemoration gold medal, in addition to that of the Society's annual gold medal, which was awarded to Surgeon-Major G. C. Wallich, M.D., the veteran naturalist of the cruise of H.M.S. *Bulldog*. In presenting the medal to Sir Joseph Hooker, the President, Dr. A. Günther, F.R.S., made the following remarks.

The completion of a monumental work in botany, the "Flora of British India," has been chosen by our Council as a fit occasion for the Linnean Society to pay its tribute to the recognition of the eminent services which have been rendered to biological science by Joseph Dalton Hooker. A gold medal, specially struck for the occasion, of which copies could be distributed among his numerous friends and admirers, was considered to be the most appropriate and the most enduring form to serve as a memorial of this desire of the Society.

If I attempted, or were competent, to pass in review the work by which J. D. Hooker has advanced botanical science and enriched its literature, the few words I intend to address to you would swell into a biography; for of the sixty years which have elapsed since he entered the service of science, there are but few in which he has not left his mark upon its history.

The four years which he passed with the Antarctic expedition, and the three years during which he wandered among the ranges of the Himalayas, were the period in which he saw nature in her most diversified, grandest and purest aspects, and was brought face to face with the mysteries of the distribution of life over the globe. Then and for many years afterwards he made these phenomena and their causes the object of his special study. His writings on the subject have had the most powerful influence on, and were the guide in all subsequent inquiries. His travels were of the highest importance, and that not with regard to our biological knowledge alone; his intimate acquaintance with geology, meteorology, his proficiency as a surveyor have rendered his accounts of the countries visited by him equally valuable to the geographer.

When biology entered upon that eventful period of its history, in which the doctrine of continuous evolution by natural selection was striving to replace that of distinct creations, Hooker was one of the foremost champions of the former. Many systematic workers in zoology and botany were apprehensive at the time of dangers arising to their methods from the new doctrine. Hooker dispelled such fears by his own example; he continued his systematic work, but he showed at the same time that it was not the end, but only the means to the end, of biological research.

The part which he took, during the lifetime of his father, and during the twenty years of his directorship, in raising the Royal Gardens at Kew to their importance and eminence, is known to all of you. But I cannot pass this short allusion to his official work without referring to the position which Kew has taken as the centre of advice and help for the kindred institutions in India and the Colonies. This bond had been already established by the father; but it was strengthened by the son's personal acquaintance with their capabilities, and his sympathy with their needs.

His official duties, sufficiently arduous by themselves, did not

¹ Throughout this paper the earth has been treated as a sphere. Of course it is really a spheroid with a compression of $1/300$ in the polar axis. This hardly affects general principles, though it introduces slight modifications and corrections in detail. For these, and the rules of computation *in extenso*, the reader is referred to such standard and practical works as Riddle, Raper, Merrifield, Lecky, and others.

prevent him from obeying other demands of science, when he was called upon to perform the functions of President of the British Association in 1868, and of the Royal Society from 1873-1878. And since his retirement from the public service in 1885, at an age when most men seek for rest from their labours, we have seen him still prosecuting his work with that single-minded devotion to science which has been characteristic of the whole of his life.

The prosperity of the Linnean Society, of which he has been a Fellow since 1842, has always been to him an object of special interest. Some of his most remarkable memoirs appeared in our *Transactions*; Bentham, who devoted years of care to the welfare of the Society, was connected with him by ties of closest friendship. And last, but not least, we remember that in honouring the son we are doing homage to the memories of the father and grandfather, both of whom were illustrious Fellows of the Society.

Sir Joseph Hooker, in acknowledging the presentation, said:

Mr. President, I cannot express my sense of the great, the exceptionally great honour which your Council has conferred upon me in the founding and awarding of this beautiful medal. In receiving it, let me assure you that I value it as much for the evidence it bears of the friendly regard of my associates as for their all too high estimate of my endeavours towards the promotion of science. Furthermore, let me say that from no scientific body could it be received by me with more cordial welcome than from the Linnean Society, which was the first to which I have the honour of belonging to enrol me amongst its Fellows, and which especially cultivates those branches of knowledge to which I have devoted the best years of my life. To these considerations must be added what you yourself have alluded to, namely, my hereditary interest in a Society of which my father and grandfather were very early Fellows, and both of them contributors to its *Transactions*. To this latter circumstance it may perhaps be due that I was elected at a very early age, being, I believe, the youngest member of our body with no further scientific claims on the support of my electors than that I was serving as a naturalist in the Antarctic expedition under Captain Ross, where I happened to be the youngest, as I am now the only surviving officer of those then under the command of that intrepid navigator. I may mention that Captain Ross was himself a Fellow, and had a copy of our *Transactions* in his cabin, which was a godsend to me. I was in the Falkland Isles when my election took place, and nearly a year and a half elapsed before my captain and I knew that we were fellow Linneans.

In 1842 the Lord Bishop of Norwich was President. He was the first of ten under whom I have been privileged to sit. Had the Society adopted the rule of biennial presidents I should have sat under thirty at least, which, in my estimation, would have detracted greatly from the dignity which I attach to the chair, and I venture to think from its utility also. In the year 1842 there were 610 members of the Society (including fellows, foreign members and associates) with fully one-fourth of whom I soon became personally acquainted. Twenty-eight years afterwards, that is about midway between the former date and the present time, the number of my personal friends in the Society had risen to one-half of the whole body. Our numbers are now 820, but the proportion of my personal friends among them has inevitably shrunk from my having outlived so many associates of my middle age. And this leads me to ask your indulgence for one more egotistical detail. It is that I am perhaps the only Fellow who personally knew four of the 169 naturalists who, 110 years ago, formed the nucleus of our Society. Of these four I knew two during my later teens—they were the Rev. W. Kirby, the author, with Spence, of the "Immortal Introduction to Entomology"; and Dr. Heysham, of Carlisle, an excellent entomologist and ornithologist. The others were Aylmer Bourke Lambert, a former President, and the last, as I have been informed, who wore in the chair the presidential three-cornered hat; and Archibald Menzies, who as naturalist accompanied Vancouver in his voyage in the Pacific, and who introduced the *Araucaria imbricata* into England. These all died very near the year of my election.

Referring now to the progress of the Society in status and efficiency during the years that have elapsed since 1842, the record cannot but be gratifying to its Fellows. Of this the best proofs are the increment in extent and value of its publications,

and the interest taken in its meetings. From its foundation up to the date referred to (fifty-four years) eighteen volumes of the *Transactions* in quarto had been published. During the succeeding fifty-four years about double that amount have been produced in the same form, besides fifty-eight volumes of the *Journal* in octavo, which latter was not commenced till 1857.

Then as regards attendance at the meetings during the first years of my fellowship, it was miserably small. If my memory does not deceive me, I recall a night in Soho Square when only five Fellows supported the President and Secretary. There was a dearth of papers too, and the discussion of such as were brought forward was discountenanced by the chair. All this is now happily a thing of the past, and I should not have alluded to those bad times had not the Society given proof of that inherent vitality which supported it under a temporary depression, and subsequently raised it to its present position.

It remains, sir, to thank you cordially for coupling my father's name with my own in this award, but for which, indeed, I could not have accepted it without a protest. I inherited from him my love of knowledge for its own sake, but this would have availed me little were it not for the guiding hand of one who had himself attained scientific eminence; who by example, precept and encouragement kept me to the paths which I should follow; launched me in the fields of exploration and research, liberally aided me during his lifetime, and paved for me the way to the position he so long held at Kew with so great credit to himself, and benefit especially to our Indian and Colonial possessions.

The gold medal of the Linnean Society was received on behalf of Surgeon-Major Wallich by his son, and, in presenting it, Dr. Günther spoke as follows:—

The gold medal of the Society is awarded this year to a zoologist, to Dr. George Charles Wallich. Although Dr. Wallich's scientific work commenced some years before, it was the year 1860 in which he entered upon the line of inquiry with which his name will be ever associated. On the recommendation of Sir Roderick Murchison and Prof. Huxley he was attached in that year as naturalist to H. M. S. *Bulldog*, on her voyage across the Atlantic to survey the sea bottom for the laying of the proposed Atlantic cable. The materials obtained by the sounding operations were slender; but in working them out, Dr. Wallich showed that he had already grasped all the principal problems of deep-sea research. To the solution of these problems he applied his wide range of knowledge, the soundness and power of his reasoning, his originality and independence of thought. His work, "The North Atlantic Sea-Bed," incomplete as it is, stands as a lasting record of the progress made by him in our knowledge of deep-sea life, and of the impetus which he gave to subsequent deep-sea exploration.

For more than twenty years he continued to work in the same line of inquiry, and in investigating collateral subjects, notably the life-history, structure and relationships of those unicellular organisms which play so important a part in pelagic and bathyal life, the lithological identity of the ancient chalk formation, and of the calcareous deposits in the oceans of the present time.

The remarkable results which he obtained in his investigations were due not only to his accuracy and keenness as an observer, but also to the ingenuity of the methods applied by him. Thus at a time when our modern micro-chemical methods were unknown, he employed the electric discharge as a means of differentiating the nucleus, and he determined the excretory function of the contractile vacuole.

Your Council were of opinion that work of such originality, advancing so many branches of biology, was peculiarly fit to be honoured by the award of the Linnean medal.

NOTES.

WE notice with deep regret the announcement that Lord Playfair died on Sunday. The funeral will take place on Saturday at St. Andrews, Fifeshire.

WE are requested to state that the Chemical Society's banquet to the past presidents on June 9, and also Dr. Mond's garden party on June 10, are postponed in consequence of the death of Lord Playfair, the senior past president and the last surviving founder of the Society.

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THE Ladies Soirée of the Royal Society will take place next Wednesday, June 8.

SIR WILLIAM H. FLOWER, K.C.B., has received, from the German Emperor, the Royal Prussian order "Pour le Mérite" for Science and Art.

THE death is announced of Prof. F. Müller, distinguished for his works on ethnology and philology.

PROF. G. H. DARWIN, F.R.S., has been elected a foreign honorary member of the American Academy of Arts and Sciences, in succession to the late Prof. J. J. Sylvester.

AN exhibition of specimens of practical work of candidates at the technological examinations of the City and Guilds of London Institute will be opened at the Imperial Institute next Thursday, June 9, by the Right Hon. Lord Herschell.

THE Albert Medal of the Society of Arts for the present year has been awarded, with the approval of the Prince of Wales, the President of the Society, to Prof. Robert Wilhelm Bunsen, Foreign Member of the Royal Society, "in recognition of his numerous and most valuable applications of chemistry and physics to the arts and to manufactures."

INFORMATION of the death of Mr. W. M. Maskell, Registrar of the University of New Zealand, has been received by the *Entomologist's Monthly Magazine*. Mr. Maskell was well known for his researches in *Coccide*; he also published papers on *Aleurodidae* and *Psyllide* amongst insects, and on Desmids in microscopic botany. The majority of his papers have appeared in the *Transactions* of the New Zealand Institute, the first having been published in 1879. At first he restricted himself to the species found in New Zealand, but later on those of Australia (especially the curious gall-making *Brachyscelidæ*), Asia, &c., came under his notice, he having become a recognised authority on the subject of *Coccide*. He usually published at least one paper a year in New Zealand, the later ones being lengthy, and all copiously illustrated by his own drawings.

THE Berlin correspondent of the *Times* announces that the German steamship *Helgoland* has just started on an expedition to the North Pole. The ship is built entirely of steel. She carries on board provisions for thirteen months and four boats, two of which she picks up at Tromsø. Special care has been taken in the selection of her crew, some eleven in all. The leader of the expedition, Herr Theodor Lerner, is accompanied by Dr. Brühl, Dr. Römer, and Dr. Schaudien, who are all experienced travellers and men of science. Two other expeditions—both of American origin—are about to set out with the object of reaching the North Pole. Lieut. Peary will attempt the Pole from North Greenland, while Mr. Walter Wellman will make the effort from Franz Josef Land. Mr. Wellman is now in London, and will leave in a few days for Tromsø, Norway, where his ice steamer, the *Frithyof*, is ready for him, and whence she will sail in about three weeks for the Far North. In his party are Prof. James H. Gore, of Columbia University, who will make gravity determinations in Franz Josef Land; Lieut. Evelyn B. Baldwin, of the United States Weather Bureau, who was on the Greenland ice cap with Lieut. Peary, and who is an accomplished meteorologist and geologist; Dr. Edward Hofma, of the University of Michigan, naturalist and medical officer; and Mr. Quirof Harlan, physicist from the United States Coast and Geodetic Survey, a Norwegian experienced in Arctic work.

THE Home Secretary has appointed Dr. Oliver, of Newcastle-upon-Tyne, and Dr. T. E. Thorpe, F.R.S., Government Analyst, as experts to proceed to the Potteries for the purpose of inquiring