

bird lover can fully realise the joy of the owner at the completion of the series, in 1894, by the arrival of a specimen of the wattled species.

Lord Lilford, in his published letters, constantly depreciates his own claims to be regarded as a scientific ornithologist; but, altogether apart from his beautiful work on British birds, we venture to think that the work of the field-naturalist, which he did so much to advance, is at least as important as that of the systematist. Not that the late peer was in any way out of sympathy with the latter line of research; quite the contrary, as is demonstrated by the letter from Mr. O. Thomas, referring to his generous aid in assisting to complete the collection of European mammals in the British Museum with a view to a future exhaustive work on the subject. In addition to his energetic efforts on behalf of bird protection (including the prohibition of indiscriminate egg-collecting), Lord Lilford displayed especial interest in the fauna of Spain—an interest which has been happily commemorated by the name assigned by Mr. de Winton to the Spanish hare, which has been recently found entitled to specific distinction.

In the main the letters which the author of the memoir has selected for publication help in forming a true estimate of the character of their writer; but, in our opinion, some of those to artists and taxidermists referring to minute details in their works might advantageously have been omitted. One of the most interesting portions of the volume is the concluding chapter, which is made up by extracts from Lord Lilford's notes on his own collection of living birds and other animals. And the interest of this is much enhanced by the beautiful sketches of birds in the collection from the talented pencil of Mr. Thorburn, one of which we are enabled to reproduce. One of the objects dear to Lord Lilford's heart was to obtain portraits of birds in their natural and characteristic attitudes, and thus to improve the system of mounting specimens in museums, where it was formerly the exception to find a species in anything approaching a natural pose.

Apart from the noble example of his life to mankind in general, the loss to natural history of a man like Lord Lilford is one that will not easily be replaced, as, unfortunately, but few of those endowed with wealth and leisure display any inclination to follow in his footsteps.

R. L.

#### PROF. J. G. AGARDH.

JACOB GEORG AGARDH, the great Swedish phycologist, was born at Lund on December 13, 1813. His father was the celebrated Dr. Carl Adolf Agardh, professor at Lund University, and afterwards bishop in the diocese of Karlstad. The elder Agardh was the author of the "Synopsis Algarum Scandinaviæ," the "Systema Algarum" and the "Species Algarum," which laid the foundation for the brilliant work accomplished by his son.

Jacob Agardh entered as a student in the University of Lund in the year 1826, became doctor of philosophy in 1832, docent in 1834 and demonstrator of botany in 1836. In 1847 he became extraordinary professor, and in 1854 he was made ordinary professor, which post he held till 1879, when he retired.

His first paper, on *Pilularia*, was published in 1833 and was followed by several others on botanical subjects, mainly systematic. In 1836 appeared his first paper on algæ, and from that time till shortly before his death he continued with unflinching activity to publish papers and books on marine botany. The greatest work of his life was the "Species, Genera et Ordines Algarum," in which he laid down for the first time the lines of a natural system of classification in algæ. The English phycologists, Gréville and Harvey, had helped to pave the

way for this monumental work, and the elder Agardh had prepared some of the ground in his "Species Algarum" already mentioned. Dr. Kützing in Germany had already begun, in 1845, his "Tabulæ Phycologicæ," but it remained for Jacob Agardh to bring into order the many genera of marine algæ which had been left untouched, and to divide up the whole group into series, orders and genera. It is difficult for a worker in these days to realise the chaos in which the whole subject of algæ was involved when Prof. Agardh began his great work. Records were scattered throughout botanical literature, and it is no marvel that a species was described more than once through ignorance of an already existing diagnosis. The "Species, Genera et Ordines" brought together all the hitherto described species and added many new ones. These were arranged according to a natural system, and their synonymy, literature and geographical distribution were appended. From that time all work on algæ was straightforward, and although in time this book of Prof. Agardh may be superseded, it will long remain the ground plan of systematic phycology. The first volume dealt only with *Phæophyceæ*, and was published in 1848. Four volumes on *Florideæ* followed, of which the last is a revision and enlargement of the first part. The *Corallineæ* were worked out by Prof. Areschoug and included in the third volume of the work. In the introduction to the last volume, published in 1876, the author states that he has treated of "the disposition and description of forms" rather than "of the organs which have been considered of the greatest importance"—the trichogyne and antheridia, and the functions of these organs. This statement is specially interesting in regard to the classification of Prof. Schmitz, which is now so largely followed. There the differences which form the groundwork of the classification consist in the various forms of development in the carpoogonium after fertilisation has taken place, thus forming a system which, however correct scientifically, is wholly unpractical for systematic workers. (It is, however, only fair to add that in this respect the system was perhaps only left incomplete through the premature death of its author.) In Prof. Agardh's system the algæ are classified according to their mature form, and indeed, as is only natural, the whole of his earlier work makes more of macroscopic, or at least of the less minute characters, than is usual in these days. In some cases this led him into error, but, on the whole, it is interesting to see how much his work is confirmed in the main points by the investigations of later botanists working on different lines.

In 1872 there appeared the first part of "Till Algernes Systematik," which was published at intervals till 1890, and dealt at length with genera in all groups of algæ. The treatment of the genus *Caulerpa* has been alluded to by Mdme. Weber van Bosse in the dedication of her monograph of this genus, in which she declares Prof. Agardh to be the first to give a natural system to *Caulerpa* and to open the road for a special study of these algæ. These words apply to many another genus as well. In 1879 an important work, "Florideernes Morphologi," appeared, followed by "Species Sargassorum Australiæ" in 1889; and in 1892, when in his eightieth year, a new work was undertaken entitled "Analecta Algologica." Parts were issued at intervals, and, although it was supposed a few years ago that the aged botanist had finished his work, and that the "Analecta" had come to an end, he still continued writing, and even published a part so late as last year. The work of these years cannot be ranked so highly as that of his middle life; but nothing can ever detract from the brilliancy and lasting worth of his work in earlier years.

Prof. Agardh was referee to Kew for algæ, and many specimens in that herbarium bear their names in his handwriting. In later life he received much material

from Australia, where Miss Hussey and others collected for him. The herbarium of the late Mr. Bracebridge Wilson, which was bought by the British Museum in 1896, had been referred to Prof. Agardh, and some of his notes are found in Mr. Wilson's handwriting copied on the sheets.

Of the kindness of the late professor it is possible to speak from personal experience. He was always ready to help and advise any student of algæ; he would examine a plant sent to him and endeavour to identify it, and, when the circumstances warranted the risk, he would send his own valuable type-specimens for examination. Never did Prof. Agardh fail to give of his best, though from his position in the world of phycology requests must sometimes have been numerous, and leisure uncommon. So late as December of last year it was my privilege to receive from him on loan a type-specimen of one of his species of Siphonææ, and for the first time there was in his letter a strong vein of anxiety concerning the alga, and an urgent request that it might be speedily and carefully returned. The whole letter showed most markedly the advance of age, and the evident relief when the alga reached him safely on its return was almost touching. Quite shortly afterwards came the news of his death on January 17 of this year.

His knowledge of English was excellent, and he wrote it well and idiomatically.

His herbarium was given by him some years ago to Lund University, the home of his own work and of his father before him.

Medals and honours came to him from all sides. He was member of the Vetenskaps Academy, honorary member of the Göteborg Scientific and Literary Society, as well as of the Scientific Society of Upsala and the Agricultural Academy and Physiographical Society in Lund. In 1862 he was appointed to confer the degree of Ph.D. at Lund, in 1879, at the jubilee of the Copenhagen University, he received the honorary title of doctor of medicine, and in 1883 he became a "jubeldoktor" of philosophy. In 1893 he was decorated with the Grand Cross of the Nordstjern Order, in 1886 the Vetenskaps Academy presented him with the Letterstedt prize for original work, and in 1897 he received the gold medal of the Linnean Society. He was also knight of the Prussian Order Pour le Mérite.

As delegate for the University of Lund he attended the two last sessions of the Ecclesiastical Council, and after the change in the representation he was member for the town of Lund in the second Chamber from 1867-1869 and from 1870-1872. He was also member of the Mint Committee of 1872.

He married, in 1848, Margareta Helena Sofia Meck, who survives him; and he leaves two sons, one of whom continues the family tradition of being attached to the University of Lund. E. S. B.

#### PROF. ELISHA GRAY.

IT is with great regret that we learn of the death of Prof. Elisha Gray on January 21. Prof. Gray was born at Barnesville, Ohio, in 1835; he was apprenticed to a carpenter, and during the time of his apprenticeship he studied physical science. At the age of twenty-one he went to Oberlin College, where he worked for five years, and at which he afterwards became professor. Prof. Gray first turned his attention to electrical invention when at the age of about thirty; he then invented a self-adjusting telegraphic relay. This was soon followed by other inventions of telegraphic apparatus. In all he took out about fifty patents, mostly dealing with telegraphy and telephony; one of the latest of these, and one of the best known, was the telautograph, a telegraphic apparatus for transmitting handwriting to a distance. At the time of his death he was engaged in carrying out ex-

periments on a method of marine signalling with electric bells by which the sounds could be transmitted several miles through the water. In the course of these experiments, we understand from an American contemporary, he caught a chill which caused his sudden death.

Prof. Gray's name will be perhaps best known and remembered in connection with the invention of the telephone. On February 14, 1876, he lodged a caveat with the American patent office for the invention of a telephone. On the same day, but a little later, Graham Bell lodged a caveat for his similar invention. Bell was, however, the first to perfect his instrument, and in consequence Gray yielded to him in the dispute as to priority which arose, and the matter was compromised by the purchase of both patents by the same company. In later years, in the course of legal cases which arose in connection with the Bell patents, disclosures were made by which Gray was led to believe that his caveat had been betrayed to Bell by one of the patent examiners. Whether this actually was true or not seems to be uncertain, but in any case Gray firmly believed in its truth, and his later years are said to have been embittered by the thought that he had been cheated out of the money and credit he deserved. In 1878 his work in connection with the telephone was recognised at the Paris Exhibition, and he was decorated with the Legion of Honour. In 1893 he was Chairman of the International Congress of Electricians at the World's Fair at Chicago. He was the author of a popular book on electricity, and also of several papers communicated to scientific societies.

#### THE INDIAN ENGINEERING COLLEGE, COOPERS HILL.

A DEPUTATION waited on Lord George Hamilton on Tuesday last with respect to the recent dismissals from Coopers Hill College, and in support of the following memorial, with 374 signatures attached, including the names of the principal leaders of science in the country. The deputation was introduced by Lord Kelvin, and there were present Lord Lister, Lord Rayleigh, Sir H. Roscoe, Prof. Armstrong, and Dr. G. J. Stoney, who spoke in relation to the question; Sir F. Bramwell, Sir F. Abel, Sir Norman Lockyer, Sir William Crookes, Prof. Carey Foster, Prof. Meldola, Prof. Le Neve Foster, Prof. Everett, Prof. Perry, Prof. Poynting, Dr. G. Johnston, and many others.

#### *Memorial to the Right Honourable the Secretary of State for India.*

The correspondence regarding Coopers Hill College which has been published in the *Times* of January 3, 1901, which includes Sir Horace Walpole's letter to Colonel Outley of December 14, 1900, and Colonel Outley's letter of December 17, 1900, has caused a painful shock to those engaged in higher education throughout the United Kingdom, and to all who are interested in the training of engineers.

This correspondence relates to the sudden and arbitrary dismissal of able and distinguished scientific teachers, who have been doing duty in the College for periods of from nine to thirty years, and the value of whose past services is at the same time officially recognised.

Such arbitrary dismissal is likely to affect adversely the cause of scientific teaching in the United Kingdom. It cannot fail to injure the future of the College. During the correspondence which has ensued it has become apparent that the teaching staff have no voice in the educational policy of the College, and are not consulted when any change in the curriculum is contemplated. We wish to draw the attention of the Secretary of State to this unsatisfactory state of affairs, which must militate against the success of the College as an educational centre.

The sudden dismissal is action of a kind which we were not prepared to expect in any institution under the control of the British Government; and we think that the seven members of