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**Edwin Ray Lankester,**

1847-1929.

AMONG the many notable services rendered to Zoological Science by the late Sir Edwin Ray Lankester, probably none is more enduring, certainly none stood higher in his own estimation, than the part he played in the foundation of the Marine Biological Association of the United Kingdom. For he was indeed its Founder. It is true that the conception of a Marine Laboratory, with an Aquarium attached to it, staffed and equipped for the concurrent study of Zoological Science and the practical investigation of problems bearing upon the maintenance and improvement of our sea fisheries, was borrowed, partly from Dr. Anton Dohrn's famous Zoological Station at Naples, partly from the Marine Station established by Professor McIntosh at St. Andrews and the Scottish Marine Station at Granton. It is also true that from the moment of its inception the Marine Biological Association had the cordial support of and received invaluable assistance from all the leading British Zoologists of the day, but such considerations serve only to emphasize the fact that it was due to Sir Ray Lankester's initiative that the Association was planned upon a scale that made it of national and not merely local importance, and that it was through his influence, persuasiveness, and perseverance that the funds for the building and maintenance of the Laboratory were raised. If he received generous help from others it was because he put forward his proposals in so well-thought out and concrete a form as to give assurance of success and because he was willing and competent to take upon himself the burden of overcoming difficulties which might well have deterred a less resolute character.

In retrospect it is sufficiently remarkable that so young a man—he was only thirty-six years old when the project of a Marine Biological Station was first mooted—should have commanded so much influence, not only among his scientific colleagues but among persons of all ranks and callings, as to be able to bring a scheme conceived on such generous lines to a successful issue. The truth is that this relatively young Professor had already made for himself a European reputation and was universally recognized as the only possible successor to Huxley in the leadership of Zoological Science in Great Britain. His lectures in

University College, London, were famous and were attended by many besides those who were preparing themselves for examinations, and he was the author of many scientific memoirs of first-rate importance. He had begun young, for when, at the age of thirteen, he was required in the course of his studies to dissect an earthworm, he was so dissatisfied with the existing accounts of the anatomy of that animal that he published an account of his own observations on the subject in a treatise which, if it bears the marks of immaturity, testifies to his remarkable powers of observation and analysis of morphological fact.

The eldest son of Dr. Edwin Lankester, Coroner for Central Middlesex and Founder and Editor of the *Quarterly Journal of Microscopical Science*, Ray Lankester was brought up in scientific surroundings from his earliest years and as a boy became acquainted with many of the leading zoologists of the day. He was educated at St. Paul's School and at the age of eighteen matriculated at Downing College, Cambridge, where, among his other activities, he represented his College on the river. After two years' residence at Cambridge he entered for and was elected to a Junior Studentship at Christ Church, Oxford, and finished his scientific education in Professor Rolleston's laboratory. There he met and became a close friend of Henry Nottidge Moseley, who was destined to succeed Rolleston as Linacre Professor of Comparative Anatomy at Oxford. The two friends were inseparable; they were placed together in the first class in the Honour School of Natural Science in 1868; both gained Radcliffe Travelling Fellowships and went abroad together, to Vienna in 1870 and to Leipzig in 1871. On his return from Leipzig Lankester was elected to a Fellowship and Lectureship at Exeter College, Oxford, and in 1874 he was appointed to the Professorship of Zoology and Comparative Anatomy at University College, London, a chair which he filled with great distinction, and the years in which he occupied it, 1874 to 1890, were perhaps the most active in his busy life. On the death of his friend, Professor Moseley, in 1891, he succeeded him in the Linacre Professorship of Comparative Anatomy at Oxford, but held the chair for only seven years, as in 1898 he was promoted to the Directorship of the British Museum of Natural History. He became a Knight Companion of the Bath (Civil Division) in 1907 and retired in 1908, after which year, though without an official post, he continued for a long time to exercise a guiding influence in zoological thought and did much to awaken general interest in biological problems by a series of essays entitled "Science from an Easy Chair." In 1919 he completed the fiftieth year of his editorship of the *Quarterly Journal of Microscopical Science* and received the congratulations of his many colleagues and pupils in a special number of the *Journal* dedicated to himself.

The honours bestowed upon Lankester by various Universities and

Scientific Institutions at home and abroad are too numerous to recapitulate here, but it may be recorded that he was awarded the Royal Medal of the Royal Society in 1885 and the Copley Medal in 1913, and he was President of the British Association for the advancement of Science in 1906.

This is hardly the place to survey or to attempt to write an appreciation of Lankester's numerous contributions to Zoological Science, but it will not be out of place to mention a single example as an illustration of his method of treating a zoological problem. The so-called King-Crab, *Limulus polyphemus*, is an example of a persistent type which appeared in triassic times and survives to the present day. Being an aquatic form, with respiratory organs attached to certain of its limbs, it came under the definition of a Crustacean and was classed as such by the leading authorities of the nineteenth century, although Straus-Durckheim had drawn attention to its many resemblances to Arachnida as long ago as 1829. An examination of such specimens as he had in his museum convinced Lankester that Straus-Durckheim was right, and he set out to prove it much in the same way as an eminent counsel accumulates and marshals his evidence until he leaves no loop-hole for doubt in the minds of the jury he is addressing. He obtained a consignment of *Limulus* from America (it is common enough on the Atlantic coast of N. America, but is not found in our seas) and submitted its anatomy to an exhaustive analysis, the results of which were published in a famous treatise entitled "*Limulus* an Arachnid" (*Q.J.M.S.*, Vol. XXI, 1881). Of this, and subsequent memoirs on the same subject, it has been well said that he and his pupils compared the King-Crab with the Scorpion, segment with segment, organ with organ, tissue with tissue, almost cell with cell, until he had established the connection between them beyond all possible doubt. For thoroughness, exactitude, and morphological insight this work cannot be surpassed, and we mention it here as a characteristic example of the close attention to detail and the clarity of exposition which are the hall-mark of all his scientific work. He himself regarded this essay as the best he had produced, and in the well-known portrait by Collier he is represented as lecturing on *Limulus*, with a specimen lying on the table and diagrams of its appendages on the blackboard.

The story of the foundation of the Marine Biological Association is told in the first number of the *Journal of the Association*, now out of print and difficult to obtain. A leading article in *The Times* of March 1st, 1884, announced that a meeting would be held on that day in the rooms of the Linnean Society to consider a proposal to found a Marine Station for the joint purpose of encouraging the study of marine zoology and making a scientific study of questions relating to sea fisheries. The article was written by Ray Lankester. The time was propitious, for public attention

had been attracted to our sea fisheries by the successful Fisheries Exhibition recently held in South Kensington, and the meeting was largely attended. Professor Huxley was in the chair, and among those who spoke in favour of the proposal were the Duke of Argyll, Sir Lyon Playfair, Sir John Lubbock (afterwards Lord Avebury), the Earl of Dalhousie, Professor H. N. Moseley, and Professor (afterwards Sir William) Flower. The ground had been carefully prepared; the proposals submitted to the meeting were of a kind to appeal with equal force to scientists, statesmen, and men of business, and were adopted unanimously. The Association was launched on its career with Professor Huxley as President and E. Ray Lankester as Honorary Secretary. The first step had been taken, but much remained to be done, in particular it was necessary to raise a large sum of money to build and provide for the maintenance of the projected Laboratory and aquarium. The burden of this work fell upon the Honorary Secretary, and so successful was he in his appeal to various interests that at the first Annual Meeting held in June, 1885, he was able to announce that the subscriptions amounted to £8000 and a year later this sum was increased to £15,000. After much discussion and enquiry it was resolved that the Laboratory should be built at Plymouth, the deciding factors in the choice being the generous contributions made by Messrs. John and Robert Bayly, who were deeply interested in the welfare of the fishermen of the district, and the richness of the marine fauna testified to by Mr. C. Spence-Bate, F.R.S., a resident in the city, and there was the additional advantage that the War Office offered on very favourable terms the site on which the Laboratory now stands. No time was lost in getting to work. Mr. Walter Heape was appointed Director of the Laboratory and Assistant Secretary, and Mr. J. T. Cunningham, who had been for three years Superintendent of the Scottish Marine Laboratory at Granton, was appointed Naturalist in charge of fishery investigations. In spite of great difficulties, due to lack of accommodation and equipment, work was begun almost before the commencement of the building of the Laboratory, and in spite of the unfavourable conditions a large amount of research was got through in the two years before the Laboratory was ready for occupation. After the many delays apparently inseparable from a building contract, the Laboratory was formally opened on June 30th, 1888, when the large and distinguished company present was entertained at lunch by the Prime Warden of the Fishmongers' Company who had been, and continue to be, generous patrons of the Association.

Though the Association was fairly launched on its career, the difficulties confronting it were great. So much had been spent on building that only a small sum remained for maintenance. The income amounted to less than £900 per annum, and this had to provide for the salaries of a

Director, a Naturalist, a caretaker and engineer, a fisherman and his assistant, and a Laboratory servant, in addition to the upkeep of the Laboratory and library, the hire of boats, and the publication of the Journal. The work of the naturalists was restricted for want of sea-going boats and fishing-gear. At first the only boat available for daily use was a half-decked 4-ton hook-and-line fishing-smack, to which a rowing boat and a small and not very seaworthy steam-launch were subsequently added, but none of these could venture far outside Plymouth Sound except in settled fine weather, and much time was cut to waste in beating against unfavourable winds and in the calms so frequent at Plymouth in the summer months. At times it seemed impossible to achieve the ends proposed by the Association, but Lankester was not to be deterred by difficulties and had the gift of imparting a large share of his own resolution to those who worked under him. In those early days, also, the work of the Association was largely assisted by voluntary helpers, notably by the late Professor W. F. R. Weldon and Dr. G. H. Fowler, who were inspired by Lankester's enthusiasm to take up their residence at Plymouth and to work whole-heartedly for the success of his venture.

In the difficult years following the opening of the Laboratory, Lankester was a frequent visitor to Plymouth and entered with great care and minuteness into all the details of its organisation. In those days the scientific staff spent a large part of their time at sea, sometimes in trawlers, more often in the little fishing-smack belonging to the Association; sometimes in a tug hired for the purpose of a more distant expedition. This aspect of the work had a great attraction for Lankester and he took as full a share in it as his constitutional inability to find his sea-legs would admit. He would sail across the Sound and make long expeditions on foot for the purpose of shore collecting, but only on rare occasions, usually when Canon A. M. Norman was staying at Plymouth, would he venture outside the Breakwater. In most respects there was little in common between the Professor and the dignitary of the Church, but the latter's knowledge of the British marine fauna was unrivalled and Lankester held him in great respect on this account. The Canon was no better a sailor than the Professor, and united as they were in their love of marine zoology they were equally at one in their sufferings when the dredge was brought aboard and its contents had to be examined whilst the little vessel was pitching heavily in a lively sea.

Though there were changes in the staff of the Laboratory Lankester's unremitting exertions, backed by the goodwill of his friends, maintained the work of the Association in such a state of efficiency that when in 1899-1901 the Government was asked to co-operate in an International Investigation of the North Sea, he could claim successfully that the only organisation in England with a staff trained to undertake the particular

kind of work required was to be found in the Marine Biological Association. From that date it has received the steady support of successive Governments and its activities have increased until it has arrived at its present position, a tribute to the energy and foresight of its Founder and President for the last thirty-nine years.

It is difficult to estimate how much of the success of Lankester's undertakings, including the Marine Biological Association, was due to his pre-eminent ability as a zoologist and how much to the influence he exercised over men in all stations of life who were not primarily interested in any branch of science. It cannot be said that his influence extended over all sorts and manners of men, for it was his foible that he was called upon to detect and wage war upon imposture in whatsoever form it might present itself. On one occasion at least his exposure of a spiritualistic impostor was a subject for much merriment and won general approval. But as he was equally intolerant of pedantry and pretentiousness, and did not always discriminate sufficiently clearly between these weaknesses and imposture, he incurred a good deal of hostility by carrying his war into the camps of people who took themselves and their opinions and conventions very seriously. But his too great readiness to scent out imposture was balanced by an unerring faculty for discovering real talent, and he was cordial in his appreciation of those in whom he discerned it. By the exercise of this faculty he surrounded himself with a devoted band of pupils and colleagues to whom he was at once master and *bon camarade*. To his pupils and assistants he was indeed something of a hard master, expecting from them attainments commensurate with his own. But if exacting he was appreciative, never withholding a generous meed of praise for good work; praise that was the more esteemed because the recipients knew well that it was bestowed only where it was deserved. If he made his assistants slave for him, he was ever mindful of their interest and exerted himself to obtain for them the promotion that he considered their due. His manner with young men was charming. Once he was assured of their worth he admitted them to terms of close though always respectful intimacy, and those who had the privilege of being included among his protégés can recall many an evening's gathering in which wit and wisdom were blended in discussions that lasted well into the small hours of the morning.

Though much of his earlier experience had been gained in Vienna and Leipzig, and he had been largely influenced in his youth by the writings of Ernst Hæckel, in later years Lankester attached himself to the French school of zoologists rather than to the German. For him Paris was a more congenial city than a German university town, and he liked serious discussion to be salted with humour and gaiety. Not that he confined his appreciation to Gallic wit, for he reckoned among his most intimate

friends such kindred spirits as Professor A. A. W. Hubrecht of Utrecht and Professor Ed. van Beneden of Liège.

Born in the tenth year of Queen Victoria's long reign, Lankester must be counted among the great scientific figures of the late Victorian period. It is now the fashion, among such as think to increase their own stature by belittling the giants of a former age, to depreciate that period. But should we not rather say, in the words and the spirit of the University bidding-prayer, "let us praise great men"? For not only did they add largely to our knowledge, but they also fought for and won the freedom of scientific thought which is our inheritance.

G. C. B.

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