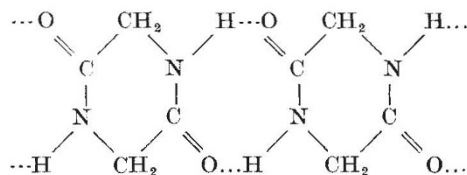


The hydrogen bond may be of great importance biologically, and two papers of the discussion were concerned with the role of hydrogen in determining the structure of the proteins and starch. Our knowledge of the detailed structure of these molecules is still far from complete, and consequently it was not possible to do more than to survey the possible part which hydrogen bonds might take in determining the structure of these substances. In this short summary, one can only restate the conclusion reached by Dr. W. T. Astbury after a critical discussion of the way in which hydrogen bonds may intervene in protein structures, "that whichever way we turn it is impossible to reach a verdict that is really satisfying". However, X-ray analysis of crystalline diketo-piperazine, a substance related to the proteins, shows that the molecules are linked together by hydrogen bonds between their respective oxygen atoms and =NH groups, to form flat continuous chains throughout the structure.



It may be expected that the formation of hydrogen bonds may be important in determining the behaviour of complex molecules containing multiple active hydrogen bond-forming groups, for example, polysaccharides. A critical consideration of this possibility for starch by Prof. E. L. Hirst, Dr. G. T. Young and the present writer shows that the properties of this molecule are inconsistent with those of a structure held together by hydrogen bonds. Analysis of physico-chemical data indicates that the repeating units in starch are held together by normal glucosidic linkages. It is pointed out, however, that the macro-molecules may be associated by hydrogen bonds in native starch.

OBITUARIES

Dr. A. C. Haddon, F.R.S.

ON April 10 there passed away in his eighty-fifth year Dr. Alfred Cort Haddon, the doyen of British anthropologists*. Haddon came of Northamptonshire stock, his grandfather founding the firm of John Haddon and Co., printers and typefounders and also produce brokers. The family business connexion brought people from all parts of the world to Haddon's home, and this may well have influenced his choice of a career. From his mother, who wrote children's books, came an interest in natural history, and young Haddon spent much of his time at the Zoo studying and drawing animals. This led friends to advise his father to send him to Cambridge to study zoology, but the boy was destined for his father's business, which he entered on leaving Mill Hill School.

According to Haddon's own account, it took his father scarcely two years to discover that it might be less costly to send his son to Cambridge than to retain him in the firm. So to Cambridge he went, entering Christ's College at the age of twenty, where he worked at zoology under F. M. Balfour and also came under the influence of Michael Foster. It was the former who inspired his first big book, the "Introduction to Embryology" (1887). He took his B.A. in 1879, and was appointed demonstrator in comparative anatomy almost immediately, holding this post until 1880, when he migrated to Dublin as professor of zoology in the Royal College of Science. The M.A. followed in 1882 and the Sc.D. in 1897; he

* I wish to thank Miss E. S. Fegan for invaluable assistance in the preparation of this notice.

was a fellow of Christ's from 1901 onwards. In 1881 he married Fanny Elizabeth Rose, the sister of his college friend J. Holland Rose (later Harmsworth professor of naval history), by whom he had three children.

In Dublin, Haddon was active in marine biology, being secretary of the Dredging Committee, which did much work off the south-west coast of Ireland, and this led to a series of papers, mostly on the Actinozoa, in the *Proceedings of the Royal Dublin Society* and the *Royal Irish Academy*. For some years he divided his time between Dublin and Cambridge, lecturing in Dublin during the winter and spending the summers at Cambridge.

So far there is little evidence that Haddon was anything more than a zoologist of recognized ability, and it was in this capacity that he was sent to Torres Straits in 1888, where he spent nearly a year, though an early interest in decorative art (he was then twenty-five) is shown by a letter to *NATURE* (23, 9-10; 1880) on the Greek fret. The zoological material brought back from this expedition was published in the *Proceedings of the Royal Society* and in the *Transactions of the Royal Dublin Society*. However significant these results may have been, their importance is entirely eclipsed by the alteration that occurred in the man himself, for it was on this first expedition to Torres Straits that Haddon's interest was largely transferred from marine zoology to anthropology. He would relate how, canoeing with the natives and living very much as they did, he became conscious of the change in their old mode of

life, that with this came the conviction that it was his duty to save for science what could be saved, whether of their beliefs, language, or arts and crafts. Haddon was, in fact, in time to save most important evidence both of language and of art—witness the splendid collection of turtleshell masks in the British Museum, and the papers written in conjunction with S. H. Ray on the Torres Straits languages.

There was, however, no immediate change of allegiance. When, after his return, Sir William Flower suggested that he should seriously devote himself to anthropology, Haddon, in his own words, "was not very ready to do [so]". There is in existence a most interesting letter written (Nov. 6, 1889) by T. H. Huxley in reply to a request for his advice. "I know of no department of Natural Science more likely to reward a man who goes into it thoroughly than Anthropology. There is an immense deal to be done in the science pure and simple and it is one of those branches of inquiry which brings one into contact with the great problems of humanity in every direction. I once dabbled in it a good deal and I should have liked nothing better than to give myself to it". He goes on to outline the training necessary, and continues: "The only part of your project in which I am afraid to give you any encouragement is the expectation that when the labourer is thus carefully prepared his hire will be forthcoming. I admire Mrs. Haddon's and your pluck immensely, but after all, you know, there is an irreducible minimum of bread and butter, the need of which is patent to a physiologist, if not a morphologist, and I declare with sorrow that—I do not see any way by which a devotee of anthropology is to come at the bread—let alone the butter. And you must recollect (*experto crede*) that the necessity of having to make an income independently of one's proper work—is a frightful burden upon anyone who desires to do that work as it ought to be done. Don't burn your ship in a hurry."

Nevertheless, the leaven worked, and Haddon burnt his ship. Finding little scope for his new interests in Dublin, he resigned his professorship within a few years and settled permanently in Cambridge in 1900, having been appointed lecturer in physical anthropology at a salary of £50 per

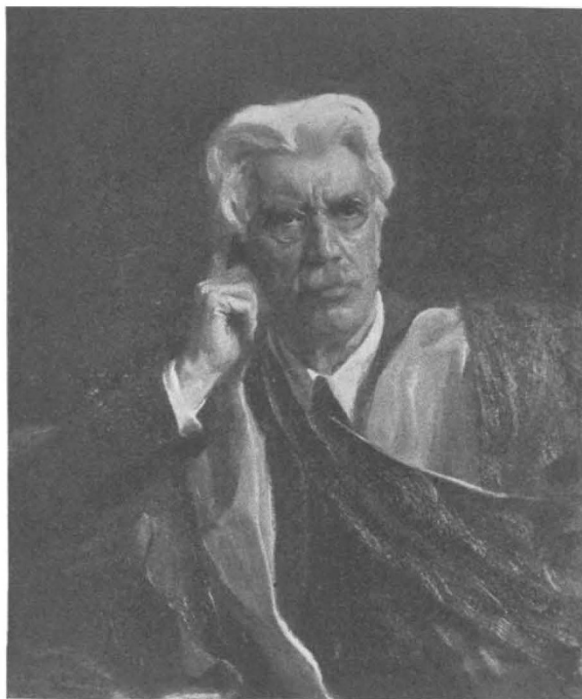
annum the year before. This entailed a considerable financial sacrifice, and he used to allude to this period as one of acute struggle, always emphasizing the encouragement he received from his wife and her constant self-sacrificing assistance.

The idea of revisiting Torres Straits soon crystallized into a definite project, and clearly became an increasing purpose during the next few years. Funds were raised, and on April 22, 1898, the Cambridge Expedition to Torres Straits reached Murray Island, with Haddon as leader. The expedition had from the beginning been planned as something far bigger than a rescue party to a decaying culture, though naturally

all possible information bearing on the islanders past and present was collected. It was Haddon who in Great Britain first appreciated the need to study the psychology of 'primitive' peoples, and the importance of that science in relation to what we now call social anthropology. Thus it was that Rivers, McDougall and C. S. Myers became members of the expedition. Here the leader—like so many outstanding men—was ahead of his time; apart from the study of the senses, the psychologists were not yet ready for the anthropologists, nor had more than a limited attention been paid to the unconscious, while the technique of its investigation had scarcely been explored. Nevertheless, this inclusion of psychologists was to lead

almost immediately to a most important anthropological development, for it was in the Torres Straits that Rivers elaborated the genealogical method, the most valuable single instrument of investigation that has yet been put into the hands of the social anthropologist. Its importance did not escape Haddon, and in after years he would speak of the conversion of Rivers from psychologist to anthropologist as one of the really important results of the expedition. Haddon did not spend the whole of his time in Torres Straits, but with Ray and Seligman visited New Guinea, where in a few weeks he accumulated an amazing amount of material in every branch of anthropology. On leaving the Straits, he and some other members of the Expedition visited Sarawak, at the invitation of Charles Hose, then Resident of the Baram District.

Election to the fellowship of the Royal Society coincided with Haddon's return in 1899, and from



ALFRED CORT HADDON

Reproduction of a portrait by De Laszlo now in the Museum of Archaeology and Ethnology, Cambridge.

then on his life was so bound up with anthropology as almost to be an epitome of the progress of the science in Great Britain. He was appointed University lecturer in ethnology, becoming reader in 1909 and retaining this post until his retirement in 1926. He was also lecturer in ethnology (Martin White Benefaction) in the University of London during 1904-9. He was president of the Royal Anthropological Institute during 1901-1902, its Huxley Memorial Medallist in 1920, and its first Rivers Medallist in 1924. He was a constant attendant at the meetings of the British Association, presiding over Section H in 1902 (Belfast) and 1905 (South Africa); he was also president of the Folk-lore Society, and of the Cambridge Antiquarian Society. In company with his daughter, now Mrs. Rishbeth, he re-visited Australia and New Guinea in 1914, collecting some fresh material for the "Reports" and greatly increasing his knowledge of Papuan canoes, knowledge which later led to the publication, with James Hornell, of "Canoes of Oceania".

On his retirement from the Cambridge readership in 1926, he retained his post of honorary curator of the New Guinea collections, which he arranged and catalogued, intending later to do the same for the Borneo material. Leisure from teaching, and intensified contact with museum material, led to the planning of a new work largely concerned with decorative art. This required much museum research—especially in Holland, where he was enthusiastically received—and the MS. of "Smoking and Tobacco Pipes in New Guinea" was completed only a week before his death.

Haddon reviewed for several papers; he was a contributor to NATURE for sixty years, and was the author of countless memoirs and papers, as well as an unusual number of important volumes. This is no place to discuss the Torres Straits "Reports", which he edited and so largely wrote; they speak for themselves. Of his other works, "Iban or Sea Dyak Fabrics and their Patterns" (1936), written in conjunction with L. E. Start, again indicates his persistent interest in decorative art. "Races of Man" (1909, 1924 editions), and "The Wanderings of Peoples" (1911), both illustrate the influence of his zoological training, while the latter book is an exhibition of the extremely condensed style he could at need employ. "We Europeans", written in collaboration with Julian Huxley, is an example of the best form of *œuvre de vulgarization*, produced in the hope of countering some of the insane theories of race now prevailing.

It is surpassingly difficult to give any idea of Haddon the man in a short notice such as this. His strength of build, prominent features, and later his shock of snow-white hair, made him a conspicuous figure in any assembly. Intensely energetic, he had a great capacity for work (in Torres Straits he worked a longer day than any of us), and accuracy of detail seemed to come naturally to him. While the outstanding feature of his character was a broad humanity and kindness, there was a somewhat unexpected streak of Puritanism, which, however,

mellowed greatly as time went on, his wife persuading him to smoke and even to take a drink now and then. He had a keen sense of humour, could be frivolous, and thoroughly enjoyed a holiday as a rest, but in the main his thought and conversation were directed and constructive, and apart from his work he had no hobbies. He was working for an hour or two a day until within a couple of weeks of his death. Far more disinterested than most, there was no one whom he would not go out of his way to help, provided that the claimant was himself doing his best. He hated pretence, and 'side' withered in his presence.

Haddon's work shows a capacity for wide generalizations with, as it seems, a preference for the intensive study of smaller areas in which the intrinsic characters of a people can be compared and contrasted with foreign traits. His method and capacity in this direction are particularly well shown in much of volume I (the last written) of the "Reports". It was no doubt his kindness, tolerance, and honesty of purpose that enabled him to make friends with natives and to gain their confidence in the way he did. "He close up alongside God, he savvy too much" ("too much", that is, a great deal), was the phrase used of him by a Murray Islander, and indeed probably expresses the opinion of all his friends. To have known, appreciated, and been the pupil of A. C. Haddon has been one of my greatest privileges.

C. G. SELIGMAN.

W. R. King

MR. W. R. KING, who died on April 8, aged seventy-two, was Wimshurst's assistant in the development of the Wimshurst electrical 'influence' machine, which of course displaced the frictional machine for the generation of static electricity in the laboratory. This type of apparatus seems to have required quite special skill in the selection and application of apparently simple materials, such as suitable glass and varnishes, necessary for reliability for experiments in static electricity; and Mr. King's experience in this respect was exceptional. The old Nairn machine of Sir Humphry Davy, now standing in the hall of the Royal Institution, owes its restoration to his skill, and he has also carried out similar work for the Science Museum.

In the early days of electrical knowledge numerous and ingenious working models were used to illustrate the behaviour of charged bodies. Many of these were quaint but very striking; Mr. King's collection was unique, and at one of the Friday Evening Exhibitions at the Royal Institution especially, when he showed many of them in action, he easily kept the members interested and delighted to a late hour. He also distinguished himself at the Faraday Exhibition at the Albert Hall in 1931 by a very striking continuous display of lightning from a battery of Leyden jars charged by his largest power machine.

Mr. King's strength had been ebbing for two or three years, continually weakened by bronchial attacks; but he died quietly in his workshop chair. W. J. G.