

which he believed he demonstrated in every being. Moreover, it is by virtue of its specific "gas" that an object is alive. "Life" in this sense means what later Glisson, carrying Van Helmont's conception a step further, called the "Energetic Nature of Substance". This was the point of view of Leibniz's monadology. Van Helmont, Glisson and Leibniz believed in 'forces' intrinsic in matter and its finest particles, but not acting on it. Thus the unsatisfactory dualism of 'soul' and 'body' was replaced by the idea of specifically different 'biological units' with spiritual and corporeal aspects. This was a kind of 'pluralism' which foreshadows certain modern biological concepts.

Each of these thinkers based his theories on certain scientific experiences of the day. Leibniz had in mind the innumerable organized units which the microscope had revealed in drops of water. Glisson had experience of tissue fibres and visualized intrinsic 'perception and appetite' in their fine anatomical organization, their irritability and formation of sphincters. It is no accident that it was he who discovered the rhythmic entry of bile into the duodenum and the sphincter at the orifice of the common bile duct. Van Helmont regarded the qualitatively different volatile products which he studied as the essence of various objects in Nature from which they were obtained. 'Gas' represented 'disposed' or 'organised matter' in the widest sense. Hence 'gas' as a chemical entity cannot be separated in his writings from its philosophical connotation. This is the stumbling block in his writings for most modern scientific readers. The inseparability of scientific result and philosophical implication applies to his achievements in physiology, pathology and his biological concept of time⁷.

Such philosophical implications cannot be ignored in the works of seventeenth century scientific workers. Science was not yet an organized body of specialized subjects associated with the activities of full-time research workers and lecturers engaged in specially directed studies. Its status was, therefore, quite different from that which it came to assume in the following centuries. Nature as a whole, *Philosophia Naturalis* rather than a number of scientific subjects, presented itself to the scientific worker. His activities were bound to cover a much wider field and to be mingled with philosophical elements. It could not be taken for granted that the results of any particular worker were purely scientific or scientific at all, since there was no separation of philosophy and science, of belief and knowledge; though such a separation is the elementary premise of the scientific worker of the nineteenth and twentieth century. In discussing a writer of the time of Van Helmont, it is impossible to avoid discussing the original—philosophical—meaning of concepts which have now become exclusively scientific. "L'Historien des Sciences doit se faire le Contemporain des Savants dont il parle⁸." The case of Van Helmont is no isolated example of this claim.

¹"Acetosum Esurinum." De morb. tartar., cap. 16.

²"De simpl. medicam temp.", I, 39; ed. Kuehn. 11, 453.

³Partington, J. R., "Jean Baptista Van Helmont", *Annals of Science*, 1, 359 (1936).

⁴Partington, *loc. cit.*, p. 368.

⁵Pagel, W., "The Religious and Philosophical Aspects of Van Helmont's Science and Medicine", *Suppl. Bull. Hist. Med.*, No. 2 (Baltimore, 1944).

⁶Partington, *loc. cit.*, p. 373, lists fifteen kinds of gas described by Van Helmont and rightly emphasizes the qualitative differences which Van Helmont ascribed to them.

⁷Pagel, W., "Van Helmont De Tempore and the History of the Biological Concept of Time", *Isis*, 33, 621 (1942).

⁸Metzger, H., "L'Historien des Sciences doit-il se faire le contemporain des savants dont il parle?" *Archeion*, 15, 34 (1933).

OBITUARIES

Mr. Frederick Chapman

THE sudden death of Frederick Chapman, a prominent authority on the Foraminifera and a distinguished Australian palaeontologist, at his home at Kew, Victoria, on December 10, 1943, within a few weeks of his eightieth birthday, severs almost the last link in the chain of workers who for nearly a century have kept Britain in the forefront of the study of the Foraminifera.

Chapman was born at Camden Town, London, his father being Robert Chapman, who was assistant to Michael Faraday and John Tyndall. At an early age, through the influence of his brother Robert, he became interested in entomology and botany, but his appointment at the age of eighteen as laboratory assistant to Prof. J. W. Judd at the Royal College of Science led to his taking up geology as his life's work. He remained at the Royal College of Science until 1902, when, on the recommendation of Judd, he was appointed palaeontologist to the National Museum, Melbourne. He occupied this position until 1927, when he was engaged by the Commonwealth Government as first Commonwealth palaeontologist. He retired from his official duties in 1935, but continued to engage in scientific work until his death. From 1920 until 1932 he was part-time lecturer in palaeontology at the University of Melbourne. He also occupied a number of honorary positions and served as a member of the International Commission on Zoological Nomenclature for more than twenty years.

Throughout his life, Chapman possessed good health and abundant energy as well as an absorbing interest in his work, and his scientific output was exceptionally large, comprising more than five hundred books and papers. While he had a special interest in the Foraminifera, on which he covered a wider field than any other writer on the group, his publications deal with geology, palaeontology and zoology. Of these may be mentioned his papers, "The Foraminifera of the Gault of Folkestone", "New or Little Known Fossils in the National Museum", his reports on the Foraminifera and Ostracoda of the Shackleton and Mawson Expeditions to the Antarctic, and his books, "The Foraminifera", "Australasian Fossils", and "Open Air Studies in Australia". It has been said that in his work in Australia he attempted too much; but, as Prof. J. W. Gregory remarked when Chapman was awarded the Lyell Medal of the Geological Society of London in 1930, "A man single-handed, in charge of a great palaeontological collection, cannot however specialize. He has to do what comes to him and not what he would choose. Mr. Chapman loyally and valiantly dealt with an unusually wide range of fossils . . ." Chapman's last work was a paper dealing with the conclusion of the investigation, begun by him nearly fifty years before, of the cores from the borings put down at Funafuti by the Royal Society of London to test the correctness of Charles Darwin's theory of the formation of coral reefs. This is still unpublished.

Chapman's great services to science were recognized by his election as an associate of the Linnean Society of London (1896), the honorary fellowship of the Royal Microscopical Society (1929), the award of the Lyell Fund (1899) and the Lyell Medal (1930) of the Geological Society of London, and other distinctions conferred on him in Australia, New Zealand and the United States. One of the finest tributes to his work

in Australia was paid by the late Prof. T. W. Edgeworth David, who said: "No one in Australia since the time of Robert Etheridge, Jnr., has more enriched our knowledge of the past forms of life in Australia than has this worker, whose ability is matched to a marvellous industry".

Chapman was personally a charming companion and loyal friend. He was ever willing to give those who sought his aid the benefit of his wide knowledge and great experience. Blessed with an even temperament, he had an old-world courtesy which never deserted him. His wide circle of correspondents throughout the world particularly will regret his passing.

W. J. PARR.

Mr. Arthur Earland supplements this account as follows:

Of recent years, much of Chapman's work on the Foraminifera was done in collaboration with Mr. W. J. Parr, including "A Classification of the Foraminifera", published in 1936, which is probably the best and most natural of the many efforts to deal with this difficult subject. They were also jointly responsible for the long-delayed report on the Foraminifera of the Australasian Antarctic (Mawson) Expedition of 1911-14, published in 1937.

Mr. C. B. Rickett

C. B. RICKETT, who died on April 8 at the age of ninety-two, was the last of a triumvirate of British ornithologists who did so much for the study of Chinese ornithology at the end of the nineteenth and beginning of the twentieth centuries.

Charles Boughey Rickett was born in Hong Kong on December 10, 1851, and was the son of John Rickett, who was in the service of the East India Company. At an early age he joined the Hong Kong and Shanghai Banking Corporation, and after serving in branches in India, Japan and Java, was appointed agent at Penang in 1885, and five years later was transferred to Foochow. He had been collecting birds while in the Straits, but he did

not take this up seriously until he arrived at Foochow. J. D. La Touche had already written about the birds of that area, but Rickett, after four years work, was able to add much additional information.

The two ornithologists became great friends and wrote more than one joint paper. Through La Touche, Rickett came to know F. W. Styan, who was engaged in the tea trade and an authority on the birds found in the Yangtse Valley. The three carried out a joint trip to the hills north of Foochow which resulted in several interesting discoveries; later they combined to send Chinese collectors to less accessible parts of China—with valuable results.

Rickett was a good field observer, and his papers contained many interesting notes. His collections, amounting to some four thousand skins and a thousand eggs, and a considerable number of mammals, were presented to the British Museum. After his retirement he lived in England and finally settled in Reading. He was a very regular attendant at the monthly meetings of the British Ornithologists' Club up to his eightieth year, and was one of the best known and popular members.

N. B. KINNEAR.

WE regret to announce the following deaths:

Prof. Wilhelm von Mollendorf, professor of anatomy and director of the Anatomical Institute at the University of Zurich, aged fifty-seven.

Dr. Daniel M. Molloy, field director in Central America for the International Health Division of the Rockefeller Foundation, on January 29, aged sixty-one.

Mr. J. R. Norman, deputy keeper in the Department of Zoology, British Museum (Natural History), an authority on fishes, on May 26, aged forty-five.

Prof. S. Oberndorfer, director of the Institute of General and Experimental Pathology and of the Cancer Institute of Istamboul University, on March 1.

Prof. Wolfgang Ostwald, professor of colloid chemistry in the University of Leipzig, aged sixty.

Sir Herbert Thompson, Bart., the well-known Coptic scholar, on May 26, aged eighty-four.

NEWS and VIEWS

Association of Teachers in Technical Institutions

SOME problems likely to face the technical colleges as a result of the application of the 1944 Education Bill formed the main theme of Mr. H. Wragg's presidential address to the Association of Teachers in Technical Institutions at the thirty-fifth annual conference. After indicating the needs of democracy for a knowledgeable and discerning electorate and ability "to create and develop ideas which will ameliorate the life of the community", Mr. Wragg surveyed the deficiencies of past educational legislation in so far as it touched the technical field, and welcomed the recognition given to the present junior technical schools by their being placed on the same footing as the grammar and modern schools. He directed attention to the problems involved in providing more school buildings and additional teachers to meet the expanding situation. The erection of new buildings takes considerable time but "time and cost of manufacture and erection are greatly reduced

when many things of the same pattern are required". Mr. Wragg felt that teachers of building would find in this problem great scope for their energies. Already new junior technical schools of building have been opened. As to teachers, the vast number required (estimated at 50,000-100,000) "can only be secured if the profession is attractive to new entrants"; and revised salary scales are now under discussion (see also p. 663 of this issue). The need for close co-operation of technical colleges in compulsory part-time education from fifteen to eighteen was indicated, and the hope expressed that part-time day release would extend (voluntarily) until the age of twenty-one. Opportunities should be seized for expanding full-time courses for suitable students. The new Bill gives unsurpassed opportunities for local education authorities to erect "an all-embracing educational structure on the firm broad basis of primary and secondary education for all", with towers corresponding respectively to the universities and the technical, commercial and art colleges.