

the addition of predetermined amounts of ammonia salts (such as ammonium sulphate) to straw. The commercial value of this development may be considerable. With the advent of the motor the supply of town dung has fallen off. Many market-gardeners are, consequently, in straits, for the so-called artificial manures are lacking in organic matter (humus), without which many garden and glasshouse crops cannot be grown satisfactorily. It may be that the ordinary farmer, too, will find a use for the artificial product. It is difficult under modern conditions to maintain sufficient animals to make all the straw produced into dung. Again, where animal excrements exist in abundance (as in milk production), lack of knowledge of the principles of the interaction between

urine and straw leads to much waste of valuable fertilising material.

Another direction in which these discoveries may have a practical outcome is in removing the soluble compounds of nitrogen present in sewage. Under the existing sludge processes very little of this soluble matter is recovered. It has been shown that if liquid sewage is used to ferment straw, the effluent is practically free from nitrogen; it has all been retained by the straw.

Enough has, perhaps, been said to indicate the great practical importance of the discovery made by the Rothamsted workers. The scientific advance is not less notable, and marks another stage in the capture by the biologists of the agricultural field of research.

West Indian Zoology.¹

By PROF. J. STANLEY GARDINER, F.R.S.

IN 1895 the State University of Iowa, acting through Prof. C. C. Nutting, who was already well known as a member of several marine expeditions, organised a zoological exploration of the Bahamas. Its object was twofold: to give their people experience of marine life in tropical seas, and to secure material for morphological and systematic research and for ordinary laboratory purposes. So satisfactory were the results that Prof. Nutting's staff themselves suggested a further expedition, this time to the Lesser Antilles. Preparations were commenced in 1916, so little was the entry of the United States into the war anticipated. Prof. Nutting himself went down to prospect in 1917, and finally the expedition sailed in April, 1918, the party consisting of nineteen persons, including six ladies.

Barbados was first visited, the party camping for six weeks in the quarantine station on Pelican Island, which was placed at its disposal by the Barbados Government. Groups were formed for shore collecting, row-boat work, launch dredging to 200 fathoms, land work, and laboratory observations.

Barbados Island itself is the most eastern of the Antilles, and, although now consisting largely of elevated coral and limestone rocks, contains the remains of land connecting it in early Tertiary times to South America. It was then sunk to great depths and overlaid by beds of ooze, "Barbados earth," noted for their richness in radiolaria and foraminifera. The uplift raised the sea bottom high enough for corals to thrive, and subsequent elevations are responsible for the terraced effects so apparent in the topography of the present land. The island is about 21 by 14 miles, and has now a population of nearly 200,000. All is cultivated, and land collecting was hence little likely to yield results of much value. The expedition, indeed, mainly concentrated on marine work, and the more striking animals of different

groups are described; the whole forms a guide which will be of value to future workers. The general variety of life is interesting, but the uniformity of all tropical marine life in the coral-reef regions of the world is still more striking; indeed, Prof. Nutting's descriptions would apply almost equally well to faunas from similar grounds off Ceylon, Seychelles, or Fiji.

The second camping place was in the British dockyard in English Harbour, Antigua. Here, on account of the heavy swell, work had to be concentrated in the harbour and in the neighbouring Falmouth and Willoughby Bays. There were compensations in a neighbouring mangrove swamp with its peculiar fauna, in fairly smooth bottom, and in the land being little altered and still largely wild, covered with close tropical jungle. There are volcanic rocks of some age on this side, limestone rocks occurring principally in the north of the island, off which are the chief living coral reefs. The marine crustacean, holothurian, and worm faunas proved particularly interesting, and there are many observations on the modes of life of different forms. Clearly, while the whole surroundings were not so exciting to the party as those of the coral reefs of Barbados, the expedition must have obtained a large number of animals of great interest. Geographically, the mollusca in the clearly capable hands of Mr. Henderson, and the fossil geology in those of Prof. Thomas, may be expected to yield valuable information.

The immediate scientific results of this expedition are not likely to be great, but the whole idea underlying it, and its scope, are of great interest, for it might well be copied by British universities. Here was a party of nineteen charming people, half of whom were interested professionally, while the rest were students. They went off for a term, and came back to their university with a glimpse of what tropical life really is, an abiding picture which will make those who teach interesting to their students, for they will be describing what they have seen, living forms in their natural environments.

¹ University of Iowa Studies in Natural History. Vol. viii., No. 3. "Barbados-Antigua Expedition." By C. C. Nutting. Pp. 274. (Iowa City: University of Iowa, n.d.)

Thomas Wharton Jones, F.R.S.

SIR RICKMAN GODLEE'S memoir of Wharton Jones, reprinted from the *British Journal of Ophthalmology*, March and April, 1921 (London: Geo. Pulman and Sons, Ltd.), is a most admirable short study. It gives us in close compass not only the man's work, but also the man, from 1808 to 1891—a long life in the service of physiology and ophthalmology. Wharton Jones's

work on the capillary circulation and on the processes of inflammation is memorable, and was recognised and honoured by all men of science: but the advance of the medical sciences carried the younger men far ahead of him. From Edinburgh, where Wharton Jones was one of Knox's assistants, and suffered a share of the public hatred which flared up over the Burke and Hare murders, he came to London in 1838

as lecturer on anatomy and physiology at Charing Cross Hospital; among his pupils were Huxley and Fayrer. In 1840 he was elected to the Royal Society. From 1851 to 1881 he was professor of ophthalmic medicine and surgery at University College. His thirty years of teaching and writing failed to shield him in later life from miserable poverty; he fell out of the running. He was found at last, in the bitter winter of 1880-81, "crouched over a fireless grate, his shoulders hunched up under a mass of shawls and shabby wraps, the picture of destitution . . . not only very ill, but penniless and starving." Friends saved him, and collected money for him; Huxley and Fayrer obtained from Mr. Gladstone a Civil List pension for him; Jenner obtained a Tancred pension for him. The work was ended in London, and for the last ten years he lived in a couple of tiny rooms in a cottage in Ventnor.

And here is the immense value of this memoir: that we are able to see why Wharton Jones made a better job of science than he made of life. His intense individualism, his combativeness, his opposition to the Darwinian new learning, his perverse liking for small personal grievances, his oddities of dress—these hindrances, none of them insuperable, yet were combined to keep him back from anything like the full happiness of success. "He seems to have missed," says Sir Rickman Godlee, "by so little, much that might have made him happy and successful. But this little made all the difference. . . . When all is said, it is impossible to believe that, on the whole, he had more than a very moderate share of happiness, or even of contentment."

Perhaps, as there are martyrs of science, so there are profiteers of science, men who inflate the value of scientific discoveries or seek to "corner" scientific facts. Wharton Jones was neither martyr nor profiteer. Only he could not get clear away from self-preoccupation; and it is a rather unhappy and perplexed face that looks out at us from the frontispiece of this masterly study of him.

University and Educational Intelligence.

CAMBRIDGE.—Baron R. von Hügel has resigned the curatorship of the Museum of Archaeology and Ethnology, and Dr. A. C. Haddon, Christ's College, has been appointed deputy curator. Mr. R. W. Stanners, Gonville and Caius College, has been appointed University lecturer in historical and economic geography. Mr. T. G. Bedford, Sidney Sussex College, and Dr. J. A. Crowther, St. John's College, have been reappointed demonstrators in experimental physics.

Mr. F. J. W. Roughton, Trinity College, has been elected to the Michael Foster research studentship in physiology, and Mr. J. H. Richardson, Emmanuel College, Wrenbury scholar in political economy. Dr. R. L. M. Wallis, Downing College, has been awarded the Raymond Horton-Smith prize in medicine.

Mr. T. F. T. Plucknett, Emmanuel College, has been elected Choate memorial fellow at Harvard College.

Mr. H. H. Thomas, curator of the Herbarium, has been re-elected fellow of Downing College.

Two University lecturers in biochemistry are to be appointed shortly.

PROF. H. LEBESQUE, of the Faculty of Sciences, University of Paris, has been elected professor of mathematics at the Collège de France.

MR. H. P. PHILPOT, assistant professor at University College, has been appointed to the professorship of

civil and mechanical engineering at the Finsbury Technical College; and Mr. A. J. Hale, chief assistant in the department of applied chemistry, to the professorship in that department. The entrance examination of the college will be held on Tuesday, September 20

LOUGHBOROUGH COLLEGE, Leicestershire, has issued a calendar for the academic year 1921-22, in which full accounts of the intellectual and social activities of the college will be found. Work is distributed over a number of faculties, of which the most prominent appear to be those concerned with engineering and pure and applied science. Full details of the courses followed are given, together with a number of full-page reproductions of photographs of the workshops and laboratories. The engineering departments were opened in 1918, and they are designed to give specialised training to boys above sixteen years of age. The course covers five years, during which time the student passes through every department found in an engineering works. On the social side there are, among other societies, engineering, wireless, and chemical and metallurgical societies, while in June last the council of the Junior Institution of Engineers sanctioned the formation of a sub-section, with headquarters at the college. These societies are doing much to bring the student into contact with industrial methods, and should serve as the much-desired link between the technical school and the works.

THE "Handbook of Lectures and Classes for Teachers for the Session 1921-22," which has been issued by the London County Council, contains a number of features likely to interest readers of NATURE. The teaching of mathematics in elementary and continuation schools forms the subjects of courses in the section on mathematics; geography in secondary schools and as a pivotal subject in education are the themes of two courses in the section on geography. Natural science is well represented by a number of courses and lectures: Prof. A. Wolf is giving five lectures on "Pioneers of Science"; Sir William H. Bragg, six lectures on crystal structure; Prof. C. Spearman and the Rev. F. Aveling, ten lectures on the mentality of individual children; Dr. W. H. R. Rivers, five lectures on the psychology of dreams; Mr. C. Burt, ten lectures on intelligence tests; Mr. P. R. Coursey, five lectures on war developments in wireless telegraphy and telephony; and Dr. C. A. Keane, ten lectures on science in elementary schools. There will also be two courses of lectures on laboratory arts. The special science lectures are as follows: "Modern Astronomical Theories," by Prof. H. H. Turner, on October 15; "The Wonders and Problems of Food," by Prof. H. E. Armstrong, on November 12; "Falcacies," by Prof. Karl Pearson, on November 26; "Geology as a Basis for Geography," by Prof. W. W. Watts, on December 10; "Yeast, what it is and what it does," by Mr. A. Chaston-Chapman, on January 21; "Aluminium and its Alloys," by Dr. W. Rosenhain, on March 16; "The Relation between Pure and Applied Chemistry," by Dr. M. O. Forster, on February 4; "The Migration of Birds," by Prof. J. A. Thomson, on February 18; and "Vitamins," by Prof. A. Harden, on March 4. All lectures are open to teachers employed within the county of London; those outside the administrative county will be admitted where accommodation permits. The Council has also arranged for the issue to teachers of science in London schools of tickets of admission to the meetings of certain scientific societies. Communications should be addressed to the Education Officer, New County Hall, S.E.1.