on bush vegetation carried out at Kongwa for the Overseas Food Corporation.

The Colonial Economic Research Committee states in its brief second report that the Committee has been concerned with advising the Colonial Office on technical economic problems arising in the appreciation of economic conditions in Colonial territories, and has collaborated with the Colonial Office in preparing a comprehensive programme of Colonial economic research to be undertaken as and when qualified research workers become available. Two research studies undertaken by Colonial Research Fellows, and supervised by the Committee, are being prepared for publication, namely, Miss P. Deane's inquiry into national income, production and expenditure in Northern Rhodesia and Nyasaland, and Miss P. Ady's study of the occupational structure of representative communities in the Gold Coast as influenced by war-time Government expenditure.

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J. B. DELAMBRE (1749-1822)

By ENG.-CAPT. EDGAR C. SMITH, O.B.E.

JEAN BAPTISTE JOSEPH DELAMBRE, an illustrious French astronomer, was born at Amiens on September 19, 1749. He was educated at the gymnasium of his native town, and there came under the influence of the poet Delille, with whom he began a life-long friendship. Afterwards, he was enabled to attend the Collège de Plessis in Paris, and at the close of his academic career began to earn a precarious living by the aid of his pen. His knowledge of languages was extensive, and he made many translations from Greek, Latin, Italian and English. He also undertook the duties of a private tutor, continuing meanwhile his own studies in mathematics.

At about the age of thirty-five, Delambre attended lectures at the Collège de France and there formed a friendship with Lalande. His first important scientific work was the preparation of the tables of the newly discovered planet Uranus, for which he received in 1790 a prize from the Academy of Sciences. Two years later, he was awarded a second prize, for his tables of Jupiter and Saturn, and was also elected a member of the Academy.

In 1790 the Revolutionary Government in France brought forward the project of determining a national system of weights and measures, and in connexion with this a commission including Lagrange, Laplace, Prunty and Delambre was formed to consider the matter. Besides the length of the seconds pendulum, two other units of length were suggested, namely, a quarter of the earth's circumference at the equator and a quadrant of the meridian. The latter was the one accepted, and Delambre and Mechain were detailed to measure an arc from Dunkirk to Barcelona. The operation extended over the years 1792-99, and the results were given to the world by Delambre in his work entitled "Base du System metrique decimal", the first volume being published in 1806, the third in 1810. Owing to the unsettled state of the country, the work of measurement was often difficult and dangerous, and at one time the operations were suspended altogether by a decree of Robespierre, who deposed Delambre and some of his colleagues from the commission as being deficient in "republican virtues and their hatred of kings". Arago and Biot eventually extended the arc measured by Delambre and Mechain to Formentera.

Delambre was given a seat in the Bureau des Longitudes, in 1802 he was appointed inspector-general of studies, and in the following year he was chosen permanent secretary to the Paris Academy of Sciences, in which capacity he wrote many *éloges*, reports, etc. In 1807 he succeeded Lalande at the Collège de France, and in 1808 was made treasurer of the Imperial Ministry. As an acknowledgment of his merits the Institute of France in 1810 gave him one of the decennial prizes instituted by Napoleon; but the Emperor for some reason refused to ratify the decision. The latter part of Delambre's life was taken up by his numerous duties and the collection of materials for his great "History of Astronomy". This work appeared in six volumes, five being published between 1817 and 1821 and the last in 1829, five years after his death. He died in Paris on August 19, 1822, after suffering for some time from severe fainting fits.

Delambre was distinguished no less for his impartiality than for his profound learning. "He was a man in whom the love of truth and accuracy was conspicuous. Learned and patient, he spared no pains in acquiring knowledge and in using it to the best purpose. He laboured as earnestly to restore to Hipparchus the credit due to him as to hold the balance between the merits of French and British astronomers. His character was as amiable as his life was blameless, and the frugal and simple habits of his early life were not abandoned when he occupied a distinguished position and was a chevalier of St. Michael and an officer of the Legion of Honour." His *éloge* was pronounced by Cuvier, who paid an eloquent tribute to his memory.

OBITUARIES

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Prof. S. H. Reynolds

By the death of Sidney Hugh Reynolds on August 20, geology has lost one who made important contributions both as an investigator and as a teacher. Born at Brighton in 1867, he passed from Marlborough to Trinity College, Cambridge, where he studied natural science and, under the influence of T. McKenny Hughes and J. E. Marr, began to specialize in geology.

He was appointed to the staff of University College, Bristol, in 1894, teaching both geology and zoology under Lloyd Morgan. This wide range of activities was not unattractive to him, for he was fundamentally a naturalist with an interest in all field studies. Indeed, his text-book on "The Vertebrate Skeleton" remained for many years a standard work for students of zoology, while much later he showed how this interest had been continued by undertaking the preparation of Volume 3 (1922-39) of the Palaeontographical Society's monographs on the Pleistocene Mammalia, the first two volumes of which had been written by Boyd Dawkins in 1872 and 1878. But his principal work in Bristol was in field geology, and he was appointed to the chair of geology in 1910, a position which he held until his retirement in 1933.

Reynolds's geological writings cover a wide variety of topics. His early work dealt with the Lower Palaeozoic rocks of western Ireland; in this he collaborated with C. I. Gardiner, with whom he continued to work for many years. As his interest in the Bristol district grew, he wrote many papers on local

geology, describing the Silurian rocks of the Mendips and the Carboniferous Limestone of many areas. The stimulating association with Vaughan led to great activity in this field, and Reynolds and his co-workers continued for many years to make known the structure of parts of Somerset and Gloucestershire. His views on the Lower Carboniferous were summarized in his presidential address to Section C of the British Association in 1926.

Throughout these years his department produced a flow of men varying in special interests, but all characterized by that width of view which was so typical of their professor. An energetic traveller and an indefatigable collector, he brought together material for an admirable museum. Nor were his energies confined to the work of the University, for he did much to foster the band of amateur geologists for which the Bristol district had long been known, and the geological section of the Bristol Naturalists' Society owes much to his devotion. An excursion handbook to the Bristol district, first published in 1912, contributed to local activities, and also helped to make the area one of the most widely known for student parties.

Prof. Reynolds served for a time on the Council of the Geological Society, from which he received the Lyell Medal in 1928. Among his many services to geology mention must be made of his work as secretary of the British Association Committee on Geological Photographs, which has done so much for the illustration of geological phenomena. The efforts which he made to replace material destroyed by enemy action in order to hand over the collections in good condition will not be forgotten by his colleagues. Always modest and unassuming, charitable in his judgments and warm in his appreciation, Reynolds made many friends and lost none. He will be remembered with gratitude and affection by many besides his own students. He leaves a widow and a daughter.

A. E. TRUEMAN

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Prof. Edward L. Thorndike

EDWARD LEE THORNDIKE was born on August 31, 1874, and died a few days before his seventy-fifth birthday. In conformity with family tradition, he took his first degree at Wesleyan University and then went to Harvard, where he worked with William James on the methods by which animals learn, a subject which was to be his life task, though in later decades it was the animal 'man' which chiefly interested him, individually and in communities. Then at Columbia University he took the Ph.D. in 1898 with a dissertation which made psychological history, and in the same year James Russell initiated Thorndike's lifelong connexion with Teachers College, Columbia, by inviting him to an instructorship.

Largely on those early experiments were based Thorndike's three laws of learning, of which that called the Law of Effect has evoked most controversy. It is that learning is due to the glow of satisfaction which accompanies success. At first he emphasized equally the importance of the dissatisfaction which follows failure; but in his experiments on humans he considered that he had definitely proved that reward is more effective than punishment, a principle naturally of great importance in school, especially when combined with his stress on the desirability of the satisfaction coming as soon as possible after the success (not to be told until a week later which of one's golf strokes had been good would seriously

delay learning!). He thought effect more important than frequency, and pointed out that in the early stages of learning to ride a bicycle we practice falling off much oftener than staying on. His psychology of learning has been attacked as mechanistic, and as not explaining sudden insight into a problem; and it is perhaps a little crude. But it works.

In 1904 his "Introduction to the Theory of Mental and Social Measurements" appeared, in the same year as Spearman's paper on the "Theory of Two Factors". Thorndike took up arms against Spearman's view, and though they approached one another somewhat in later years, they can never be said to have agreed. Thorndike's "Quantity Hypothesis", expounded in "The Measurement of Intelligence" (1926), perhaps indicates the nearest approach. In that same book appeared Thorndike's famous "C.A.V.D." tests of intelligence and his attempt at an absolute scale of intellect.

In later years Thorndike turned to the study of communities, his chief publication here being "Human Nature and the Social Order" (see *Nature*, Sept. 27, 1941). Like all his books and papers, this is too meaty to be light reading. But every here and there a striking phrase flashes out.

Thorndike received many honorary degrees, was a member of the U.S. National Academy of Sciences, and president in 1934 of the American Association for the Advancement of Science.

Early in his career he bought a wide tract of land up the Hudson, in what was then primeval woodland, built himself a house, and encouraged colleagues to settle around him, until there was quite a colony, to whom he was the tribal chieftain. He adored his wife, who survives him, as also do his daughter and three sons, all scientific workers, Robert Ladd being the psychologist among them. "Eddie" Thorndike had a great heart, as well as a great mind, and I wish that I had more space, and a readier pen, to tell of his wisdom and goodness.

GODFREY THOMSON

Mr. H. O. Newbould

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HAROLD NEWBOULT, who died on August 11 at the age of fifty-two after a short illness, was educated at Kingswood School and served in the First World War as an artillery officer on the Italian front. He took up his mathematical scholarship at Balliol College, Oxford, after the War; his undergraduate career, which included the sharing of the junior mathematical scholarship with E. C. Titchmarsh, was all that was expected of an able and gifted mathematician. Immediately after taking finals he succeeded his tutor, J. W. Russell, as lecturer at St. John's, and in 1925 was appointed fellow and tutor at Merton.

For some twenty-five years Newbould taught the mathematicians at Merton and St. John's, acquiring a high reputation as a tutor. Throughout this time he gave lectures, which were not only exceedingly popular with undergraduates, but which became an important and essential part of the Oxford mathematical school. He also undertook much examining and an increasing burden of administrative work in his College and the University. He acted as bursar of Merton in the war years and was proctor during 1944-45. He had wide interests in both the academic and athletic sides of University and College, and was for a long time treasurer of the Greyhounds R.F.C. In 1946 he published his book on "Analytical Method