

the former (*W. bancrofti*) infections and in the latter (*W. pacifica*), we are dealing with separate entities which necessitate different methods of prophylaxis and possibly of treatment as well. (The statement made by McGregor and colleagues that out of 603 Gambians examined there were only six with signs of filarial disease and that the people regard it as altogether of minor importance must also be borne in mind.)

Owing to the uncertainty of the dosage and length of treatment with 'Hetrazan' in order to banish microfilariae from the peripheral blood for a sufficient time to render mass application a practical proposition, added to the almost insuperable difficulties which arise in carrying through such a programme in Polynesians, there exists at present a prejudice against this form of causal prophylaxis. The minimal infective microfilarial concentration in the blood (after 'Hetrazan' treatment) for *A. pseudoscutellaris* and *A. polynesiensis* has yet to be determined. According to my observations²³ it is about four microfilariae per 20 c.mm. of blood.

It appears probable that 'species sanitation' against the main vector, as had been practised in Fiji and Rarotonga, and now in Tahiti, promises to be the most effective measure in the ultimate eradication of Pacific filariasis, and that the actual carrying out of repressive measures should be left to specially trained teams of Polynesians.

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OBITUARIES

Dr. C. S. Hudson

THE death occurred suddenly on December 27, 1952, of Dr. C. S. Hudson at the age of seventy-one, and carbohydrate chemists all over the world mourn the passing of one of their greatest leaders.

Claude Silbert Hudson was born in Atlanta, Georgia, and spent a happy boyhood in Mobile. He entered Princeton University in 1897 in order to study for the Presbyterian ministry. He became so interested in chemistry during his course for the B.S. degree that eventually he decided to become a scientist. After graduation (1901) he was elected into an endowed fellowship in experimental science at Princeton and began an investigation on the mutarotation of milk sugar, under W. F. Magie, then professor of physics. This first investigation, published in 1902 when he was twenty-one, marks the beginning of his brilliant series of more than two hundred and fifty publications on the carbohydrate group.

Hudson's first leanings were towards the physical side of chemistry, and he spent a profitable year with Nernst at Göttingen (1902-3). On returning to the United States he became a research assistant to A. A. Noyes in Boston, and then he held an instructorship in physics at Princeton (1904-5) and at Illinois University (1905-7); after holding several other posts he was appointed chemist to the Bureau of Chemistry at Washington, where he stayed until 1919. He then became a consultant chemist for four years, afterwards joining Frederick J. Bates at the National Bureau of Standards, where he carried out many notable researches up to 1929. In this year he was invited to the professorship of chemistry in the U.S. Public Health Service, where he remained until his retirement at the age of seventy. During his tenure of this latter post he was enabled to secure the assistance of a succession of brilliant young scientists who, inspired by his able leadership, have achieved world-wide distinction.

Among his many great works on carbohydrates, Hudson's contributions to preparative methods and to the relationship between rotatory power and structure stand out, while his famous 'lactone rule' was perhaps his greatest single personal contribution and was one of the most notable landmarks in carbohydrate chemistry. He was a brilliant experimentalist and his writings bear the stamp of a master mind. He infused his passion for the sugars into his many pupils, who bore him great respect and devotion.

In the late 1920's he engaged in a notable controversy with the late Sir Norman Haworth regarding the ring structure of certain of the sugars, and following his eventual acknowledgment of the correctness of Haworth's views the two began a friendship which both greatly treasured. The results of this friendship were seen in the founding of the "Advances in Carbohydrate Chemistry", to which Hudson as the senior editor particularly devoted the last few years of his life and from the guidance of which he will, indeed, be sadly missed. He was largely instrumental also for founding the "Starch Round Table", which provides an annual forum for discussions on this important foodstuff.

Many honours came to him, particularly from the American Chemical Society. He received the Borden Medal and Award (1941), the Nichols Medal of the

New York Section (1916), the Willard Gibbs Medal of the Chicago Section (1929), the Richards Medal of the North-Eastern Section (1940) and the Hillebrand Prize of the Washington Section in 1931, etc. He was a member of the National Academy of Sciences, and the Chemical Society in London elected him to honorary fellowship. He received the major share of the Sugar Research Foundation Grand Award in 1950.

Hudson loved life and lived it to the full. He was a delightful companion with an inexhaustible fund of 'true' stories, and he engaged the affection of all who knew and admired his wisdom. He is survived by his wife (Erin Gilmer) and by two married daughters.

M. STACEY

Prof. C. J. Hawkes, O.B.E.

CHARLES JOHN HAWKES commenced his professional career in the engine rooms of the Navy, and from there, in 1912, he became joint secretary of the Royal Commission on Fuel and Engines under the chairmanship of Admiral of the Fleet Lord Fisher. Thenceforward, Commander Hawkes was in the forefront of naval research at a crucial period in naval history, and as the first superintendent of the Admiralty Engineering Laboratory he did much to develop the heavy-oil engine for submarines.

His reputation as a leading authority on the heavy-oil engine accompanied him when, in 1920, he was appointed professor of mechanical, marine and civil engineering in the University of Durham. His work at King's College, Newcastle upon Tyne, was paralleled by his zealous participation in the activities of the North East Coast Institution of Engineers and Shipbuilders. Of this important body he eventually became president, gold medallist and honorary fellow, and his papers, including the fourth Andrew Laing Lecture, were outstanding contributions to the Institution's *Transactions*. Prof. Hawkes's work was well known abroad and his knowledge of his subject won the regard of many engineering bodies. He was elected an honorary member of the American Society of Naval Architects and Marine Engineers, and, in 1938, had the unusual experience of making an after-dinner speech by radio on the occasion of the Society's annual dinner in New York. His research was not confined to heavy-oil engines. In Newcastle upon Tyne he inspired and superintended university research and served on the Heat Engines Trial Committee of the Institution of Civil Engineers, of which he was a full member. Insistent always on the importance of practical training as a basis for academic studies, he underlined this belief by distinguished work on the Board of Trade Departmental Committee on Marine Engineers' Certificates, for which service he was awarded the O.B.E.

To the younger generation of engineers and to his university colleagues in Newcastle upon Tyne, Hawkes will be remembered for his buoyant and witty spirit, and for his sincere interest in the good of his students and mechanics. He was always approachable and was as much at home, and greeted with as much affection, in the workshops as in the lecture theatre. His rich store of naval anecdotes, through many of which he recalled his work under Admiral Fisher, are still remembered along Tyneside. Though coming relatively late to university work, he did much on Faculty and Senate to raise standards, and it fell largely to his credit that Armstrong College was well known as a centre of progressive engineering

education. Prof. Hawkes helped to carry the College through to its new status of King's College, and it was for his valuable work over a period of twenty-six years that the University of Durham conferred on him the title of emeritus professor, and the honorary degree of doctor of science. His death on January 30 at the age of seventy-two represents a loss to his many friends on Tyneside, and to the related spheres of engineering and education.

W. FISHER CASSIE

Prof. Nathan Banks

PROF. NATHAN BANKS, emeritus curator of insects in the Museum of Comparative Zoology, Harvard University, died on January 24 at the age of eighty-four. Prof. Banks was born at Roslyn, N.Y., on April 13, 1868. He received a B.S. degree from Cornell University in 1889 and an M.S. from the same University in 1890. He was employed by the Division of Entomology, U.S. Department of Agriculture, during 1890-1916. In 1916 he was appointed curator of insects in the Museum of Comparative Zoology, Harvard University, a post which he held until 1944. Banks was one of the best-known entomologists of his time. He published extensively on Neuroptera and other orders of insects and also on spiders, and he built up and maintained in the Museum of Comparative Zoology at Harvard one of the finest collections of insects in America. He is noted also for his bibliographical work on the literature of insects. We, his associates at the Museum of Comparative Zoology, feel his loss very deeply.

P. J. DARLINGTON, JUN.

Mr. Rhys Jenkins

WITH the death at Hastings on January 27 of Rhys Jenkins, the engineering world loses its oldest and its foremost historian. Born so long ago as September 29, 1859, in the village of Mountain Ash, Glamorganshire, Jenkins served an apprenticeship in the engineering works of Richard Nevill at Llanelly and then was a draughtsman in well-known works in Leeds, Grantham and Gainsborough; in 1884 he joined the examining staff of the Patent Office, from which he retired as a senior examiner in 1920 after thirty-six years service. He had joined the Institution of Mechanical Engineers in 1880 and had therefore been a member for more than seventy years.

Immersed as he was at the Patent Office in the history of inventions, he devoted his leisure to the systematic study of a great variety of industries, visiting many localities, collating material from manuscripts, local histories, State records and the like, and thus amassed a wealth of information which was critically examined and arranged. His first work of note was his book "Power Locomotion on the Highway" (1896), followed six years later by his "Application of Mechanical Power to Road Vehicles" — a mine of information for researchers. These were followed by a succession of historical surveys published in the technical press and various journals.

With other engineers and students of engineering history, he attended the Watt centenary celebrations at Birmingham in 1919, and on the formation next year of the Newcomen Society for furthering the study of the history of engineering and technology, became one of its most active members and served as president during 1924-25. He enriched its *Transactions* with paper after paper, dealing with such