microbiological section and is thus in organic association with the International Council of Scientific Unions (I.C.S.U.) and with the Division of Natural Sciences of the United Nations Educational, Scientific and Cultural Organisation (U.N.E.S.C.O.). Meetings of the Permanent International Committee on Bacteriological Nomenclature and of the Judicial Commission on Bacteriological Nomenclature were also held at which the "Proposed Bacteriological Code of Nomenclature" edited by R. E. Buchanan and R. St. John-Brooks was presented for approval and for subsequent publication in the *Proceedings* of the Congress.

Action was also taken by the Nomenclature Committee and the Permanent Commission in welcoming the proposal that the Centre de Collection de Type Microbiens, Lausanne, Switzerland, under the direction of Prof. Paul Hauduroy, should be associated with the International Association of Microbiologists, both with regard to the preparation of a "World Catalogue of Strains of Micro-organisms" and also in the formation of an International Federation of Culture Collections of Micro-organisms. These matters had already received the support and approval of U.N.E.S.C.O., and a small *ad hoc* Commission of the Nomenclature Committee of the Association was formed under the chairmanship of Prof. A. J. Kluyver for overall advice and the administration of any grants-in-aid that might in future be allocated.

A meeting of the *Salmonella* Sub-committee also took place under the chairmanship of Dr. F. Kauffmann. A new and revised report of the work of the *Salmonella* Sub-committee was presented for publication in the Congress *Proceedings*, and the sub-committee was reconstituted under the name of the "Enterobacteriaceae Sub-committee" so as to include the consideration of problems dealing with *Shigella* and the *coli* group. New sub-committees of the Nomenclature Committee were also constituted dealing with the immediate study of the taxonomy and nomenclature of *Streptococcus*, *Clostridium* and *Mycobacterium*, and for the general outline classification of Schizomycetes to be considered at the next Congress. A meeting of a committee for Phage Typing, to which representatives from fourteen countries had been invited, was held under the chairmanship of Dr. A. Felix.

It was, perhaps, inevitable that the subject of biological warfare should obtrude itself at a congress of this nature, and the matter being raised at the meeting of the International Commission the following resolution was drafted for presentation at the plenary session of the Congress, where it was afterwards passed by acclamation:

"The Fourth International Congress for Microbiology joins the International Society of Cellbiology in condemning in the strongest possible terms all forms of biological warfare. The Congress considers such barbaric methods as absolutely unworthy of any civilized community and trusts that all Microbiologists throughout the world will do everything in their power to prevent their exploitation."

An invitation from the Brazilian Government to hold the Fifth International Congress for Microbiology in Rio de Janeiro in the latter part of 1950 was presented at the meeting of the Permanent Commission by the chief of the Brazilian delegation to the Congress—Dr. H. C. de Souza Araujo. This invitation was accepted by the members present with applause and was afterwards ratified at the plenary meeting of the Congress.

Apart from the exchange of scientific knowledge and the exploration of the ever-widening horizons of research, one of the most important functions of international congresses of this kind is the formation of fresh personal contacts and the renewal of old associations and friendships. This was peculiarly applicable to the present occasion when, owing to the brutal intervention of global war, nearly eight years had passed since a similar concourse had gathered in New York City under the shadow of a world catastrophe. The social side of the Congress's activities, which included much public and private entertainment, was an unqualified success, and it speaks much for the Danish Organising Committee, its general secretary, Dr. M. Björneboe, and the many friends of the Congress that their efforts were so completely vindicated. At the end of the week the delegates returned to their scattered homes with happy recollections of good fellowship, of high endeavour and of successful achievement.

RALPH ST. JOHN-BROOKS

OBITUARIES

Dr. H. T. Calvert, M.B.E.

WITH the death from heart failure of Harry Thornton Calvert in his seventieth year on September 23, there has passed away a leading authority on the science and technology of water supplies, sanitation, and the prevention of pollution of rivers and underground water resources. He was born in Leeds, Yorkshire, on May 3, 1878. Following his early education he proceeded to the Yorkshire College (now the University of Leeds), to study in the honours school of chemistry. Calvert was soon recognized as a student of more than average ability. On graduation in 1898, he was at once awarded an 1851 Exhibition and went to Leipzig, where he remained until 1901 and took the Ph.D. degree.

On return from Germany, Calvert served for a short time as a demonstrator under the late Prof. Arthur Smithells at the University of Leeds, before taking up an appointment as chemist to Messrs. Reckitt and Sons, of Hull, with which firm he gained valuable experience in chemistry applied to industrial problems. In 1903, he moved to become chemist to the West Riding of Yorkshire Rivers Board, a joint committee of local authorities which had been set up to administer the Rivers Pollution Prevention Acts. This change in his scientific activities marked the beginning of his interest in the problems of water supply and sanitation generally, a subject which remained his chief interest throughout the rest of his career.

At that time Dr. Maclean Wilson was chief inspector of the Rivers Board. Calvert and he were ideal partners in guiding this important work. They were not inspectors in the narrow sense of the word; but studied in detail the problems of treatment and disposal of sewage and the manufacturing processes in the West Riding which gave rise to the discharge of polluted waste waters. As a result they fully recognized the difficulties to be overcome, and devoted their energies largely to guiding and assisting managers of sewage disposal works and manufacturers in solving their problems. In consequence, the work of the Rivers Board reached a high standard and set an example to the rest of the world. Wilson and Calvert collaborated in writing the book "Trade

Waste Waters: Their Nature and Disposal", which has long been the authoritative work on this subject. It was while he was with the Rivers Board that Calvert was awarded in 1915 the D.Sc. degree of Leeds.

In 1920 Calvert moved to London to take up a new appointment as chemical inspector of the Ministry of Health, a post which gave him wide scope and in which he was eminently successful. When in 1927 the Department of Scientific and Industrial Research set up a water pollution research organisation, Calvert was the obvious choice as director of research, and he undertook this responsibility in addition to continuing his work for the Ministry of Health. He did not believe in rapidly developed schemes of a grandiose character, but in steadily building up on a sure foundation. This policy he followed in guiding the work of the Water Pollution Research Board in excellent partnership with every member of the Board, which was under the chairmanship of Sir Robert Robertson. By 1939, the research organisation had several outstanding achievements to its credit, including a comprehensive survey of the River Tees, an investigation into the effects of discharges of sewage into the River Mersey in relation to problems of navigation, improvements in methods of treatment of sewage, and the development of practicable methods of dealing with the problems of reducing pollution by such trade waste waters as those from beet sugar factories, milk depots, cheese and butter factories, to mention only a few items.

Calvert was recognized as an authority in his field not only in Great Britain, but also throughout the world; and he had close friendship with many professional colleagues on the Continent and in the United States. In addition to his many papers and addresses in Great Britain, including a Chadwick Public Lecture in 1926, he accepted an invitation in 1939 to give the Sedgwick Lecture in the following year at the Massachusetts Institute of Technology, but unfortunately was prevented by the outbreak of war from delivering the lecture. In 1944 he received the Kenneth Allen Award of the American Federation of Sewage Works Associations.

He took a keen interest in the work of the Institute of Sewage Purification, of which he was president in 1927, 1928 and 1939, and was a member of the Council of the Institute for many years. Calvert was also a prominent fellow of the Royal Sanitary Institute, and the Institution of Sanitary Engineers, a professional associate of the Institution of Water Engineers, a member of the Society of Chemical Industry, and a fellow of the Royal Institute of Chemistry and of the Chemical Society.

During the First World War, from 1916 until 1919, he was with the Department of Explosives Supply of the Ministry of Munitions, and his work was recognized by the award of the M.B.E. On the outbreak of war in 1939 he was seconded to the Ministry of Supply as deputy controller of sulphuric acid, which post he retained until his retirement early in 1947.

Calvert was a man of kind heart and generous disposition, with a marked ability in quietly getting boards, committees and staff working together amicably and efficiently, and all who worked with him came to know him as a close friend. He was devoted to his family. The death of his wife in 1937 was a severe blow to him. All three of his sons have had distinguished university careers, one in physics, a second in chemistry and engineering, and a third in arts and law.

A. PARKER

Surgeon Rear-Admiral C. M. Beadnell, C.B.

SURGEON REAR-ADMIRAL CHARLES MARSH BEADNELL, who died at Petersfield, Hampshire, on September 27, was president of the Rationalist Press Association, Ltd., and the author of several scientific books. Born at Rawalpindi in 1872, he was educated at Cheltenham College; and after studying medicine at Guy's Hospital he joined the Navy as a surgeon in 1896. He came to intellectual maturity while the great evolution controversy was still raging, and fell under the spell of Huxley. He became an ardent rationalist, and although service conditions somewhat restricted the propagation of his views, he frequently contrived to give lectures on evolution to the 'lower deck'. On one occasion the commander-in-chief attended, and instead of administering the expected rebuke, he merely remarked that he had enjoyed the lecture very much; but, he added: "On second thoughts, Adam and Eve are good enough for me".

Beadnell's enthusiasm for science led him to buy, out of his own earnings, an X-ray apparatus, the first to be used in the Royal Navy. In the American-Filipino War he collected specimens of bullet injuries to skulls, when he found that the Filipinos did not bury their dead. During the Boer War, when pronounced medically unfit for front-line service he broke away from a hospital train and tramped all night to take part in the fighting at Graspan. The *Titanic* disaster stimulated him to invent an air-distensible waistcoat.

In 1922 Beadnell represented the Navy and Army Medical Departments at the International Congress of Surgeons at Washington. On his return he became head of Chatham Hospital, retiring at his own request four years later. Retirement brought him the opportunity to devote much of his time, and his gift for simple exposition, to general science and the cause of rationalism. The fire kindled in the great days of Huxley never died; but perhaps the strongest influence was that of W. K. Clifford. His intellectual integrity was as unquestionable as his physical courage, but he was no fanatic. In a revealing letter, written the day before he died, he declared that Clifford had brought him from "the respectable sphere of Agnosticism to that of Atheism; not of the blatant type, but of a convinced, quiet kind in which I would not argue in public on religious questions, if other officers I knew to be religiously persuaded happened to be present". He became a director of the Rationalist Press Association and succeeded Lord Snell as president in 1940. Among his publications were: "Evolution of Speech", "Picture Book of Evolution (after Dennis Hird)", "Origin of the Kiss", "Dictionary of Scientific Terms" and "An Encyclopædic Dictionary of Science and War".

Prof. Paul Guthnick

PROF. PAUL GUTHNICK was born at Hitdorf am Rhein on January 12, 1879. After studying under Küstner at Bonn, he became an assistant at the Berlin Observatory in 1901. After three years at the Bothkamp Observatory, he returned to Berlin in 1906 and moved steadily up in the scale of Observatory and University posts until 1921, when he succeeded Hermann Struve as professor of astronomy in the University of Berlin and director of the University Observatory at Berlin-Babelsberg. In 1927 he was elected an associate of the Royal Astronomical Society.