

I will conclude with a few general remarks. When I first came across the method I knew it was of the greatest importance, but I doubted if the middle of a war was the time to start it. I asked this very question of two of the experts in the Bell Laboratory, and both contradicted this first thought of mine and said that it could be applied piecemeal to one process after another without delay in production. Then, as showing how quickly people could adapt themselves to it, I may recount an incident I experienced. Immediately after visiting Colonel Simon, I happened to be at Frankford Arsenal, which in peace-time was the principal factory making ammunition for the U.S. Army. As such, I expected it would be rather conservative and that it might be suspicious of new-fangled methods, and I therefore asked one of the chief colonels there what he thought of these methods, which, I may emphasize, are quite new in their application to military stores. His reply was that it seemed the only sensible way of doing the business.

Another point well worth consideration is that many works have already existing a mass of data of the kind used by the statistician, but they do not submit them to the same analysis. In such cases the change of procedure would be only slight, and a greatly improved control would be obtained by applying the statistical method.

Thirdly, the method gives information about the size of sample that should be tested. In some cases it may be inadequate, whereas in others it will be found that testing a much smaller sample would give sufficiently reliable information on the quality of the whole.

We cannot, of course, expect that the method is a panacea for all troubles, and I expect in some cases it will be tried and prove unsuitable; but I will venture the forecast that the opposite will much more often be the case, and that many processes to which at first sight it seems inapplicable will later be found to benefit greatly by the introduction of statistical control.

## OBITUARIES

### Mr. W. P. Pycraft

WILLIAM PLANE PYCRAFT, who died on May 1, was a well-known ornithologist and comparative anatomist. He was born at Great Yarmouth in 1868 and while a schoolboy was attracted to natural history by the wild life of the Norfolk Broads. He became a keen observer of all living things, but devoted himself specially to birds. After leaving school, he desired to follow natural history as a profession, and started as a private pupil with the curator of the Leicester Museum, where he learned the art of preserving and preparing animals for study and exhibition. In 1892 he was introduced to Prof. (afterwards Sir) Ray Lankester, who invited him to be his assistant in making preparations for the Oxford University Museum. While thus occupied he attended Lankester's lectures and demonstrations, and thus extended his outlook by acquiring a good knowledge of the structures and relationships of animals. When Lankester was appointed director of the British Museum (Natural History) in 1898, Pycraft accompanied him to London and became his temporary assistant there. Soon afterwards he joined the permanent staff of the Zoological Department of the Museum, where he remained as an

assistant until his retirement in 1933. He spent his later life at Longcross near Chertsey, Surrey, in surroundings where he could continue the field observations which he had begun in early youth.

The original researches carried out by Mr. Pycraft were concerned chiefly with the anatomy of birds. His first paper, published in the *Ibis* in 1895, described and discussed the arrangement of the feathers in the Tinamous, and in 1898 he contributed a memoir on the feathering of the owls to the *Transactions of the Linnean Society*. Between 1898 and 1907 he wrote a valuable series of nine papers on the osteology of birds published in the *Proceedings of the Zoological Society*, and in 1900 he discussed the morphology and phylogeny of the Palæognathæ and Neognathæ in an extensive memoir in the *Transactions of the same Society*.

Mr. Pycraft also began to take much interest in the variations of the human skull, and in 1915 he proposed to substitute for the Frankfort baseline another line which passed wholly through the cranium avoiding the upper part of the face. This proved to be not generally acceptable, and he returned to the subject in a paper in *Man* in 1925. He wrote several accounts of human skulls, the most noteworthy being his description of the Boskop fossil from South Africa in the *Journal of the Royal Anthropological Institute* of 1913, and a description of the Rhodesian fossil skull in a British Museum volume in 1928. He took part in several discussions on the Piltown skull, and in 1917 published in *Science Progress* an account of the lower jaw which pointed out its differences from the jaw of an ape.

Mr. Pycraft was also a prolific writer of popular books and articles on natural history, which brought him a large correspondence and not infrequently led to the discovery of new facts. His first popular books were the small "Stories of Bird Life", "Fish Life" and "Reptile Life", published by Newnes in London between 1900 and 1905. "A History of Birds", a more serious work, appeared in 1910, and his "Birds of Great Britain" followed in 1934. His volumes on the "Infancy of Animals", "The Courtship of Animals" (1913) and "Camouflage in Nature" (1925) are especially readable and contain original observations. His weekly article in the *Illustrated London News* was a much-appreciated feature of this paper for many years, and attracted wide attention.

In all his writings Mr. Pycraft showed great interest in the possible mode of evolution of the various structures and habits which he described, and an address on "Some New Aspects of Evolution" which he delivered to the Norfolk and Norwich Naturalists' Society in 1935 was reprinted in the annual report of the Smithsonian Institution, Washington, in the following year. His style was sometimes forceful, for when he had formed an opinion he could not readily be persuaded that it might be mistaken; but he had a versatile mind and was always inspiring. He is mourned by a large circle of friends who learned the more to appreciate him the closer they were associated with him.

A. S. WOODWARD.

WE regret to announce the following deaths:

Prof. Charles Cohen, formerly of the Brussels Pasteur Institute, aged sixty-one.

Dr. R. L. Ditmars, the distinguished herpetologist, formerly curator of mammals and reptiles in New York Zoological Park, on May 12, aged sixty-five.

Dr. Bernhard Fischer-Wasels, professor of morbid anatomy at Frankfort-on-Main, president of the German Pathological Society and editor of the *Frankfurter Zeitschrift für Pathologie*, aged sixty-five.

Sir James Larmor, F.R.S., formerly Lucasian professor of mathematics in the University of Cambridge, on May 19, aged eighty-four.

Prof. B. Malinowski, professor of anthropology in Yale University, formerly University professor of anthropology in the London School of Economics, on May 16, aged fifty-eight.

Dr. C. Hart Merriam, founder in 1885 and until 1910 chief of the United States Bureau of Biological Survey, now known as the Fish and Wild Life Service, on March 19, aged eighty-six.

Dr. John Miller, director of aircraft production (factories), formerly chief engineer, London and North-Eastern Railway (N.E. Area), on May 16.

The Rev. T. E. R. Phillips, a past-president of the Royal Astronomical Society and of the British Astronomical Association, on May 13, aged seventy-four.

Dr. G. G. Stoney, F.R.S., who for many years was associated with C. A. Parsons and Co. Ltd., particularly in connexion with the development of the steam turbine, on May 15, aged seventy-eight.

Prof. G. A. Witherington, formerly professor of mathematics in the Royal Naval College, Greenwich, on May 1, aged sixty-nine.

Prof. W. J. Young, professor of biochemistry in the University of Melbourne, aged sixty-three.

## NEWS and VIEWS

### World Mineral Resources and Post-War Needs

IN the fourth clause of the Atlantic Charter, Mr. Roosevelt and Mr. Churchill state "that they will endeavour, with due respect for their existing obligations, to further enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are necessary for their economic prosperity". The Division for the Social and International Relations of Science of the British Association is therefore arranging a conference on "Raw Materials and Industrial Needs: Mineral Resources and Outlook", to be held in London at or about the end of July. As Sir Richard Gregory, president of the Association, pointed out in submitting the proposal for such a conference, the world's natural resources—both organic and inorganic—are much too large a subject to be dealt with in a single conference, but a survey of the present position of minerals of industrial importance, with suggestions for further investigations into their geographical distributions and research into the production of substitutes, will show the close contact between science and fundamental national and international problems. The Conference will indeed be similar to a joint meeting of the Sections of Geology, Geography, Physics and Chemistry at an annual assembly of the British Association, and its papers will be of the nature of contributions to a report upon the distribution, output and industrial uses of the chief mineral deposits of the world. Such energy resources as solid, liquid and gaseous fuels belong to a class of their own, and the facts relating to them have been brought before a number of World Power Conferences. Whatever is known about the nature, distribution and uses of minerals in the earth's crust has been gained by scientific inquiry, and the knowledge is international in origin and scope. By presenting the chief facts as to natural resources of minerals and their geographical control, such a conference can do much to promote recognition of the interdependence of nations and the need for collaboration between them.

### Scientific Workers of the Argentine

DURING last March, Prof. E. D. Adrian, professor of physiology in the University of Cambridge, paid a visit to the Argentine at the invitation of the Argentine National Academy of Medicine. He was

welcomed with much cordiality and was frequently assured of the sympathy of Argentine medical men and scientific workers for the Allied cause. Towards the end of his visit, Prof. Adrian was asked to receive a deputation from the Comisión Sanitaria Argentina de Ayuda a las Democracias (Health Committee to Aid Democratic Countries). This deputation asked Prof. Adrian to convey a message of solidarity to members of the medical profession and scientific men in Great Britain. The Committee said that the example set by British men of science working in their laboratories and clinics, holding congresses even in war-time to promote the application of scientific discovery to the progress of mankind, and arranging the co-ordination of the scientific work of Great Britain, the U.S.S.R. and the United States, strengthens their faith in the triumph of democracy through science. This very cordial message from the Argentine will be received with much satisfaction by scientific workers in Great Britain, who will be encouraged to pursue the course they have set for themselves in helping to rid the world of totalitarianism.

### Illuminating Engineering Society

AT the annual general meeting of the Illuminating Engineering Society on May 12, Mr. W. J. Jones (president) was able to present an encouraging record for the past session. A feature has been the further development of centres and groups, of which there are now eleven, and which are expected to do useful work in studying the lighting requirements of special local industries. The position in regard to the Society's work on A.R.P. lighting, undertaken jointly with the Ministry of Home Security, has for the time become stabilized, but a number of committees are now exploring various aspects of lighting in relation to after-war reconstruction. The "Recommended Values of Illumination" put forward by the Society (I.E.S. Code) has been adopted by the Ministry of Supply, the Admiralty and the Ministry of Aircraft Production, in applying the Factories (Standards of Lighting) Regulations (1941). Many members of the Society are engaged in the task of designing lighting installations for factories engaged on national work. The Society in 1940 initiated the practice of conferring fellowship on those of its members having the requisite technical qualifications. The number of fellows created is now 96—rather less