forbids us to conclude that it necessarily implies a close genetical relationship.

A full exposition of the statistical methods outlined above will be given elsewhere in due course.

[1] Allen, P., *Proc. Geol. Assoc. Lond.*, **52**, Fig. 57A (1941).
[2] Fisher, R. A., "Statistical Methods for Research Workers", 8th edit., 85 (1941).
[3] Butterfield, J. A., *Trans. Leeds Geol. Assoc.*, **5** (1940).
[4] Dryden, L., *Amer. J. Sci.*, **29**, 393 (1935).
[5] Eisenhart, C., *J. Sediment. Petrol.*, **5**, 137 (1935).

OBITUARY

Dr. H. D. S. Honigmann

DR. H. D. S. HONIGMANN, formerly director of the Zoological Gardens at Breslau, and recently scientific adviser to the Dudley Zoo, who died on November 17, was born at Breslau on July 5, 1891. He was educated at the Johannes-Gymnasium at Breslau, whence he proceeded to study zoology, physics and philosophy at the Universities of Breslau and Heidelberg. In 1916 he graduated at Breslau under W. Kükenthal; his thesis for his doctorate was on the primordial cranium of the hunchback whale. On his demobilization in 1918 he decided to round off his biological training by the study of medicine, and in 1921 he graduated in this subject with a thesis on parasitic flagellates of the human lung.

In 1927, after a few years of work as medical practitioner and public health officer, Honigmann was appointed director of the Zoological Gardens at Breslau. This appointment opened up for him a sphere of work which had been his ambition from early boyhood—the keeping, rearing and observation of animals. After years of war and post-war depression, it fell to him to rebuild and modernize the Breslau Zoo, a task which he performed with outstanding success. A number of scientific publications on observations on zoo animals were a by-product of this activity. He had just completed elaborate plans for a modern aquarium when his work was interrupted in 1934 by political events in Germany. He resigned his post and went to London where, following an invitation by Dr. Julian Huxley to work at the London Zoo, he carried out a series of studies on the nutrition of mammals, which led to the publication of a number of papers on the subject. His appointment in 1937 as scientific adviser to the newly founded zoo at Dudley gave him ample opportunity to make use of his wide experience in the scientific management of a modern zoo.

The outbreak of the War having brought his work at Dudley to an end, Honigmann took the post of science master at Blundell's School at Tiverton, whence the vicissitudes of the War took him to the Zoology Department of the University of Glasgow. There, on the invitation of Prof. E. Hindle and supported by a grant from the Society for the Protection of Science and Learning, he carried out a series of investigations in animal psychology, including work on the number conception in the fowl, a critical review of the problems of number conception in animals in general, and an analysis of movement vision in toads. His remarkable skill in the planning and execution of accurately controlled experiments, his thorough knowledge of the intricate problems of animal psychology, and not least his patience and experience in the handling of animals, make his publications in this field of lasting value; his last paper is still in the press and will appear in the *Proceedings of the Royal Society*. Plans for extensive further research in this field were frustrated by his death.

All who knew Dr. Honigmann will remember him as a scientific worker of great ability and experience, a warm friend and admirer of animals, and a person loved for his quiet charm, kindness and good-humoured companionship. OTTO LOWENSTEIN.

NEWS and VIEWS

Jet-Propelled Fighter Aircraft

THE R.A.F. and the U.S. Army Air Force recently released information upon the progress made with jet propulsion for aircraft. The development of this for the R.A.F. is stated to have been in the hands of Group Captain F. Whittle, with the late Flight Lieutenant P. E. G. Sayer as test pilot. The special engine was built by Power Jets, Ltd., and the original aircraft by the Gloster Aircraft Co., Ltd. Experiments were afterwards continued in conjunction with the U.S. authorities, and further engines and aircraft were built in the United States by the General Electric Co. and the Bell Aircraft Co. respectively. These experiments have produced an aircraft judged to be sufficiently successful to warrant a partial adoption of the type, and production is now in hand of a sufficient quantity for training purposes in both countries.

The principle used in these machines is that air is taken in at the front of the body, compressed and heated, and exhausted at the rear end with increased velocity and temperature. The reaction produced is an axial thrust that replaces the normal propeller thrust. In general its efficiency would be greater, and there are additional practical advantages. The practical limitation in propeller diameter has already been reached, and some other way of turning the engine power into a propulsive thrust is necessary if any further increase in the power of individual engines is envisaged. Driving several airscrews from one engine has many practical limitations, the weight and unreliability of the transmitting mechanism being the principal, but by no means the only, trouble. Gyroscopic effects and the rotation of the slip stream are also eliminated by the absence of the rotating airscrews. Ground or water clearance can now be less if either structural or aerodynamical considerations demand it, as the propeller diameter no longer governs this. The first public claim to have produced a successful jet-propelled aircraft was made in Italy in December 1941, when it was stated that a Caproni-Campini C.C.2 machine flew from Milan to Rome at an average speed of 130 m.p.h. Speeds of this order have no application in modern war aircraft, but there is no reason why larger engines giving greater powers should not be built, when once the success of the principle is established.