

S. J. Folley, on "Nutrition and Female Fertility", dealt more specifically with the causal mechanisms of nutrition. Since reproductive activity is largely controlled through endocrine mechanisms, it is to be expected that nutritional effects will act through the endocrine glands. Evidence that anterior pituitary activity is affected by nutritional factors is available. For example, rats on a restrictive diet show no oestrous cycles, but respond to injections of gonadotrophic hormones. Atrophied accessory sex organs of rats on a diet deficient in B vitamins may be restored by injection of gonadotrophic hormones. Lowered pituitary function due to inadequate nutrition may be the cause of anoestrus during winter in heifers. A direct effect of nutrition on the ovary is not established, but since the oestrogen-level in the body is due to the balance between production by the ovary and excretion, deficiencies in the excretory mechanism may lead to syndromes similar to those set up by excess oestrogen activity in the ovary. B-deficiency (thiamin and riboflavin) and diets low in lipotropic factors may affect the efficiency of the liver to inactivate oestrogens and lead to syndromes relating to sterility, such as pathological uterine bleeding. Evidence that nutritional factors may affect the responsiveness of the tract to oestrogens is provided by Herz, who found that the oviduct of chicks fed on diets deficient in folic acid did not respond to oestrogens; 20 μ gm. of folic acid daily restored normal responsiveness. Some analogous results have been found in mammals.

Prof. A. St. G. Huggett, on "Nutrition and Viable Young", dealt in detail with a more limited aspect of nutritional deficiency, namely, the placental life of the embryo. Vitamin A deficiency results in a generalized metaplasia of epithelial surfaces. In the rat there is continuous keratinization of the vagina. Usually the foetus goes to term but dies because the birth mechanism is upset. In severe cases, however, placental death and fetal absorption may occur. Vitamin E deficiency has no action on rats before the eighth day from copulation, that is, three days after implantation. There are parallels between the action of E deficiency and experimental embryonic trauma. In both cases changes in the placenta result from destruction of the mesoderm tissues and allantoic blood flow. The foetus is resorbed, but the trophoblastic placenta stays in position and is delivered at term. Apparently vitamin A deficiency kills the foetus as a secondary effect of placental death, whereas vitamin E deficiency acts mainly on foetal haematopoietic organs and leaves the decidua and trophoblast intact. Riboflavin deficiency in rats may result in many congenital deformities, but this effect only occurs during the early stages of pregnancy when apparently riboflavin is essential to early ossification. An interesting parallel occurs with rubella infection, which may result in congenital cataract or heart lesions if the mother is infected in the second month of pregnancy.

Dr. G. I. M. Swyer, who discussed "Nutrition and Human Fertility", was concerned mainly with clinical diagnosis and therapy. Gross under-nourishment results in amenorrhoea and menstrual disorders and a fall in conception-rate. Over-nourishment and obesity are commonly associated with infertility in women. Recent observations by Barton and Wiesner on refractory cervical block, which is common in sterile obese women, show that the condition responds with marked success to a dietary free from sugar. The precise way in which dietary sugar brings about

the syndrome of obesity, genital infection and refractoriness to oestrogens is still obscure. Successful treatment of infertility with vitamin E has been much advertised. For the male the evidence is mostly negative or statistically inconclusive. For women there is evidence that habitual abortion may be successfully treated with vitamin E.

ARTHUR WALTON

OBITUARIES

Dr. A. Cunningham

By the death of Dr. Andrew Cunningham in Edinburgh on March 4, agricultural bacteriology has lost an outstanding figure. The son of a farmer, Cunningham was born near Glenfarg on August 26, 1890. From school at Perth Academy he proceeded in 1908 to the University of Edinburgh, and after graduating in agriculture in 1911 he worked for a year in the chemistry department of the Edinburgh College of Agriculture. Deciding to study bacteriology, he spent the following winter at the Lister Institute and King's College in London, and then proceeded to Leipzig, where he worked for a year under Felix Löhnis. There, his first investigation concerned plate counts of bacteria in soil and milk, and he showed the importance of long incubation at a low temperature if maximum counts are to be obtained. In Leipzig, also, he did some of the pioneer work on the Protozoa of soil and their influence on the soil microflora. Cunningham's future career seems to have been greatly influenced by Löhnis, and it may be more than coincidence that the two men bore a remarkably strong resemblance in temperament and scientific outlook.

After working for short periods at Berne, Shinfield and Rothamsted, Cunningham joined the army in 1915 and saw active service in France. On demobilization in 1919 he was appointed lecturer in bacteriology at the Edinburgh College of Agriculture. With characteristic energy he overcame the many difficulties of building up from virtually nothing an efficient teaching department. Six years later he exchanged the lectureship for the post of adviser in bacteriology, and he at once entered with enthusiasm into the work that continued until his death. In addition to his advisory duties, Cunningham was able for several years to devote much of his time to purely scientific work on the anaerobes of soil and manures. He found that some of the butyric acid bacilli displayed a life-cycle similar to that described in *Azotobacter* by Löhnis and Smith. This work, although its findings are still controversial, ranks as the most important in his career, and it provided material for the thesis accepted by the University of Edinburgh for the degree of D.Sc. in 1931.

Cunningham's published work covers a considerable range of agricultural subjects, including the bacteriology of silage and manures, methods of examining milk, taints in milk, and the inoculation of lucerne. In recent years he had been occupied principally in an investigation of bovine mastitis, where one may easily detect his carefully devised plans, which were carried out with determination and meticulous care. His "Practical Bacteriology for Students of Agriculture", which is now in its third edition, is widely recognized as one of the best books of its kind. Abstract journals appreciated his services

as a writer of concise but informative and critical abstracts.

Cunningham will be remembered as a man with a forceful personality who frequently gave expression to his strongly held opinions and acute judgments. These qualities were combined with an exceptionally wide knowledge of bacteriology. He was invariably interesting and helpful as a contributor to scientific discussions, and he was a most useful member of committees. His health had been progressively deteriorating for some time before his death. He is survived by his wife, whom he married in 1921.

T. GIBSON

WE regret to announce the following deaths :

Dr. Sydney H. Ball, mining consultant to the U.S. War Production Board, known for his work on the geology of the United States and of the Belgian Congo, on April 10, aged seventy-one.

Prof. Jules Drach, member of the Section of Mechanics of the Paris Academy of Sciences, professor of analytical mechanics at the Sorbonne, on March 7, aged seventy-seven.

Dr. A. D. Imms, F.R.S., lately reader in entomology in the University of Cambridge, on April 3, aged sixty-eight.

NEWS and VIEWS

National Chemical Laboratory of India :

Prof. J. W. McBain, F.R.S.

It is announced that Prof. J. W. McBain, who has recently retired from the chair of physical chemistry at Leland Stanford University, California, has been appointed the first director of the National Chemical Laboratory of India. It is difficult to think of a better choice. While his many English friends have not seen so much of him since he left the University of Bristol, yet they have been able to follow his steady development of the concept of the micellar structure of colloidal electrolytes, a chapter in physical chemistry which is particularly his own. The number of papers which have emerged from Bristol and Stanford is indeed prodigious, and the world is richer for the numerous students whom he has trained. Not only are we indebted to McBain for a great extension of our knowledge of the colligative properties of these solutions, as well as conductivity and surface action, but also the behaviour of such colloidal solutions in respect to the interesting properties of emulsions and emulsion polymerization, solubilization and the like, have been fully explored by him. While his main interest has lain in this field, we must recollect that we are also indebted to him for coining the word 'sorption', thus directing attention to the complexity of the interactions between a gas and a solid, and that his treatment of the subject of adhesion in the British Association Reports still remains a classic. His many friends and colleagues will wish him well in this new and important venture.

Royal Geographical Society : Awards for 1949

HIS MAJESTY THE KING has approved the award of the Royal Medals of the Royal Geographical Society as follows : *Founder's Medal* : Prof. L. Dudley Stamp, professor of geography, London School of Economics, for his work in organising and directing the Land Utilization Survey of Great Britain and his application of geography to national planning ; *Patron's Medal* : Prof. Hans Pettersson, professor of oceanography at Göteborg Hogskola, Sweden, for his leadership of the recent oceanographical cruise in the *Albatross*, in the course of which much new evidence has been obtained as to the geology of the ocean floor. The Council of the Society has made the following awards : *Murchison Grant* : Lieut.-Colonel E. H. Thompson, for original researches in the techniques of air survey, and for the development of stereoplottling machines ; *Back Grant* : Dr. Brian Roberts, research fellow of the

Scott Polar Research Institute, for his contributions to polar history and to the technique of polar travel ; *Cuthbert Peek Grant* : Mr. A. B. Crawford, for surveys and meteorological work carried out by him at Tristan da Cunha and Marion Island ; *Gill Memorial* : Dr. O. H. K. Spate, reader in geography at the London School of Economics, for his work on the geography of India and Burma.

Scientific Liaison Officer in France :

Mr. A. H. Waterfield

IN agreement with the Foreign Office, the Department of Scientific and Industrial Research has appointed Mr. A. H. Waterfield, a principal scientific officer, formerly of the Ministry of Supply, for scientific liaison duties in France, with the rank of attaché at the British Embassy in Paris. Mr. Waterfield, who is a metallurgist with special experience in the light-alloy field, was formerly on the headquarters staff of the Ministry of Aircraft Production, later the Ministry of Supply, and during the past year has been secretary of the Inter-Service Metallurgical Research Council. During 1946-47 he was attached to the United Kingdom Scientific Mission in Washington for metallurgical liaison duties.

Royal Observatory, Greenwich : Transfer to Hurstmonceux

IN the House of Commons on March 25, Mr. Hollis raised certain important points about the conditions prevailing at Hurstmonceux and also regarding the delay in assembling the instruments and in providing adequate accommodation for the staff. Mr. Hollis dealt with a number of matters that have already been emphasized by the Astronomer Royal in the Report for 1948 to the Board of Visitors and repeated by the Chief Assistant elsewhere. Mr. Hollis urged that the work at Hurstmonceux should be given an extremely high priority and pushed forward with all dispatch. The cost of the building necessary to put the new Observatory into full commission amounts to about half a million pounds, and, while admitting that such an amount cannot be treated lightly, it was pointed out that the prestige of Great Britain has been highly valued on account of the position of the meridian of Greenwich, and that there are "few matters on which such a sum could be better spent". In addition to scientific issues, Mr. Hollis raised another point—the artistic problem of Hurstmonceux. The south side of the castle presents an unsightly spectacle with a number of temporary huts of brick