

believe that the ultimate cause of the bird's population cycle is to be sought in a regular cyclical change in ocean currents. But catastrophes do not seem to occur with the degree of regularity that would be expected on such a hypothesis.

Mr. Hutchinson's study will be of great interest to students of animal population.

J. A. SCOTT WATSON

THE GORILLA

The Anatomy of the Gorilla

The Studies of Henry Cushier Raven, and Contributions by William B. Atkinson, Herbert Elftman, John Eric Hill, Adolph H. Schultz, William L. Straus, Jr., and S. L. Washburn. Arranged and edited by William King Gregory. (The Henry Cushier Raven Memorial Volume: a Collaborative Work of the American Museum of Natural History and Columbia University.) Pp. viii+259 (116 plates). (New York: Columbia University Press; London: Oxford University Press, 1950.) 97s. 6d. net.

AT the time of his death in 1944, Henry Raven was curator of the Department of Comparative Anatomy of the American Museum of Natural History. He had been a naturalist from boyhood and had visited many parts of the world in search of birds and mammals for the American Museum. In 1929 he returned from an expedition to Africa with a collection of 'pickled' gorillas and also a young live chimpanzee, which soon became a celebrated character in New York. She lived in the Raven house, and took part in a number of Raven's public lectures on anthropoid life. From this time on, his interests became increasingly fixed on the primates, and during the ensuing years he devoted much time to the anatomical study of the gorillas which he had brought back from the jungles of the Belgian Congo and the Cameroons. His death occurred before the completion of his task, and the present volume is a record of his own descriptions of the muscles, blood vessels, peripheral nerves and reproductive organs, supplemented by notes provided by the late J. E. Hill. Raven was primarily interested in regional anatomy, and his descriptions do not attempt to correlate form with function, nor to compare the anatomy of the gorilla with that of man and other primate types. The volume has been rounded-off with short contributions on the thoracic viscera, by S. L. Washburn; on the abdominal viscera and female reproductive system, by H. Elftman and W. B. Atkinson; on the skin, by W. L. Straus; and on the skull, teeth, palatine ridges and growth, by A. H. Schultz.

Raven's detailed descriptions of the musculature of the gorilla are accompanied by a magnificent series of plates and line drawings, many of which were prepared under his personal supervision. Partly, however, because of his premature death, the balance of his section of the volume is uneven. Thus, in contrast to the detail with which he treats the muscles, he devotes only a few pages to the vascular and reproductive systems. The osteology of the gorilla—a subject of great importance in the study of primate fossils—is dealt with scarcely at all. This lack of balance is unfortunately not corrected by the supplementary chapters in the book which, while they also provide excellent and much-needed inform-

ation, again deal only with limited aspects of the subject.

Dr. W. K. Gregory points out in a foreword that Raven began his dissections of the gorilla with the object of providing a "comprehensive anatomy of this great near relative of man". There can be no doubt that, while he was prevented from doing this, he has nevertheless left what the fly-leaf calls a "permanent definitive work in this field". In the chapter which he has provided, Prof. Schultz remarks that "the literature on gorillas contains many premature generalisations supported by far too few observations". In as highly variable an animal as the gorilla, he goes on to say, "large series of specimens must be investigated in order to establish really representative averages and to find the full ranges of individual variations". The anatomy of the great apes has never been studied, as he indicates, on a scale commensurate with the prominent position these animals occupy in discussions on human evolution. The Raven Memorial Volume helps to show how small is the area of anatomical fact on which these evolutionary discussions are based, and how much needs to be done to strengthen the factual foundation on which has been built so large and detailed a superstructure of phylogenetic speculation.

NEO-VITALISM AND FARMING

Food, Farming and the Future

By Friend Sykes. Pp. 294. (London: Faber and Faber, Ltd., 1951.) 21s. net.

OF late years there has been a revival in certain agricultural circles of the old vitalistic ideas formerly widely held until Wöhler's synthesis of urea broke down the distinction between substances which could be prepared in the laboratory and those which could not, but required the intervention of a living organism. Broadly speaking, the position of their successors to-day is that the nutrient salts considered by modern plant physiologists as necessary and sufficient for the full growth of plants are in reality not so, but they need in addition some vital principle which has hitherto eluded chemists and physiologists. In addition to the well-recognized continuity of life through the seed, there is another continuity through the nutrients, and unless these have recently formed part of some living organism the plant, though morphologically complete, lacks some essential quality; in particular, it becomes susceptible to disease, and if fed to animals or human beings induces a like susceptibility in them.

The idea was put forward by the late Sir Albert Howard, and its element of mysticism and supposed naturalness at once made an appeal; it was taken up by a group of able and persuasive advocates of whom Mr. Friend Sykes, the author of the present volume, is one of the best known. He has already written "Humus and the Farmer" and had not intended producing another book on the subject; but his correspondence showed that further clarification was necessary, and this he has set out to effect.

Mr. Sykes's farming system consists in growing a four-year ley which, as in the Clifton Park system, includes some deep-rooting plants, and then ploughing up and growing cereals for four years. The straw is converted into farmyard manure in the old-fashioned way by wintering cattle in stock yards, and the manure thus produced is given to the potatoes,