

crowding, under-employment and poverty of rural populations on several parts of the Loess zone of mid-Europe, a zone occupied from the early third millennium B.C. by peasants and clinging to traditional ways which the original fertility of the soil seemed to permit. In some parts of the Loess zone the yields of crops are very low, the holdings are miserably small, alternatives to farm work are far to seek, birth-rates remain high as usual among populations near the margin of subsistence. These parts would be better if 30-50 per cent of the population could be moved away. Even modernization of methods of cultivation would give only very partial relief.

But we must not ask for too much. Prof. Kirk has given us a mass of valuable data with a notable absence of tendentious arguments. The book should be in all serious libraries. H. J. FLEURE

## ANCIENT EGYPTIAN MATERIALS AND INDUSTRIES

### Ancient Egyptian Materials and Industries

By A. Lucas. Third edition, revised. Pp. xi+570. (London: Edward Arnold and Co., 1948.) 25s. net.

**T**HIS book deals with a branch of prehistoric archaeology in the Nile valley which the late Mr. Lucas made especially his own. So often prehistorians are mainly concerned with early sequence dating and a classification of the ancient objects found. But Mr. Lucas was interested in the details of the manufacture of everyday objects and of how and whence the necessary materials were obtained.

Although primarily dealing with the Nile valley and Egyptology, much of what he wrote can, with modification, be applied to other regions—at least from Neolithic times onwards. A glance at some of the chapter headings shows the kind of problems Mr. Lucas set himself to solve. For example, he asks what adhesives were used? These were required for many purposes such as sticking sickle-blades into their hafts and preparing surfaces for tomb-paintings. In the latter case it had been thought that white of egg (from the eggs of wild-fowl, as barndoor hens were at that time unknown in the area) was used as a ground, but now on further investigation this does not seem so likely. But beeswax, glue, gypsum, resin, solder, etc., have all been identified. The need for beeswax led to the extensive cultivation of bees: some resins occurred locally, but the aromatic varieties used in perfumes, etc., had to be imported from southern Arabia. All primitive peoples manufacture some sort of alcoholic drink. What materials did the ancient Egyptians use for the purpose from predynastic times onwards? It seems evident that both beer and wine were known, though it was impossible to produce any kind of spirit, as the process of distillation was unknown until much later. It appears to have been a new discovery in the time of Aristotle. What kinds of building stone were used, and how was granite cut at a time when steel was unknown? What mortar was used? How were finely made statuettes carved from very hard stones, and how were holes for suspension bored in such things as beads, amulets and the like? "Cosmetics are as old as vanity." Yes, indeed, and perhaps we may be thankful that eyelids are no longer painted green, though blood-red nails are still with us. The

green mineral malachite (a hydrated copper oxide) was used, being ground to powder on hard stones and made into a paste. Woodash fires (the ash containing alkali) over quartz pebbles, which had been so utilized as mortars, may have led to the discovery of the well-known blue glaze. Lead glaze came later. What metals were known at the various periods, and where were they mined? How was mummification accomplished? What was the process employed to obtain flat sheets of writing material from the pith of the plant papyrus? These and many other fascinating questions are posed and answered by Mr. Lucas.

Finally, there is given a brief historical survey, and the above information is fitted, as it were, into the historical sequence.

It is very pleasant to find a chemist, trained in accurate determination, dealing with such prehistoric problems. There are some prehistorians who have reached back to their subject from their later historical studies; they bring with them the historian's outlook. Others again reach up from geological investigation and bring to bear on the problems the geologist's point of view. Here we have the chemist's outlook, and it is both novel and stimulating. Of course, Mr. Lucas was not the first of his kind to envisage such investigations; but he of all others had particularly made it his own. He opened up the new field in his earlier editions, and this revised and more definitive volume will be welcomed by all who are directly or indirectly interested in the way men lived in the Nile valley in the remote past. M. C. BURKITT

## RECENT RESEARCHES IN PHYSIOLOGY

### Annual Review of Physiology

Victor E. Hall, Editor; Jefferson M. Crismon, Associate Editor; and Arthur C. Giese, Associate Editor. Vol. 10. Pp. xi+552. (Stanford, Calif.: Annual Reviews, Inc., 1948.) 6 dollars.

**I**T is rather a sobering thought that within three years of the end of the War a book of more than five hundred pages is required to review the written contributions to one small corner of biological science. With such a literary output some kind of annual survey is clearly necessary, if only as a time-saving measure, to guide the worker or student to those articles relevant to his interests. Reviews, however, are something more than intelligently arranged catalogues, for they can present a periodical appreciation of the state of knowledge in the various fields and in this way help a worker to follow general trends in branches of the science other than his own. A third value to be attached to such surveys is that, by their general dissemination, they can exert a unifying influence which may be considered a direct contribution to a truly international spirit.

Viewed from these three points of view, the tenth volume of "Annual Review of Physiology" has great merit. A wide range of subjects is covered in its twenty-three sections, the only notable deficiency being "Excretion", and this omission is due to circumstances beyond editorial control.

As a guide to publications, each section provides a generous bibliography and there are large author and subject indexes. Certain sections have their