

Physics

For Students of Science and Engineering. By Asst. Prof. William H. Michener. Pp. x+646. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1947.) 25s. 6d. net.

THIS is a text-book, of about intermediate standard, in which physical principles are illustrated more fully than usual by examples from everyday life. The author claims that he has tried to encourage the student to think for himself, and to this end has used the device of mentioning phenomena without explaining them. It is doubtful whether this device is successful. For example, the problem of a ping-pong ball supported on a jet of air (p. 135) is not one that the student should be expected to work out for himself; nor is that of the concentration of the scattering by a diffraction grating into one particular order (p. 353). Topics such as these are best omitted completely in an intermediate text-book.

Some of the diagrams are rather poorly drawn. On p. 343, for example, a lens system is shown with all the deviations produced at a single surface of each lens. On p. 364 a ray of light is shown being dispersed into three representative rays at one surface of a prism, these three then emerging from the other surface *parallel to each other*. Further, these parallel rays are caused to diverge by a converging lens! Such diagrams place the serious student at a disadvantage with respect to the casual reader.

In short, this text-book has some serious faults and does not appear to have any particular points to commend it in competition with the many others that exist.

Soilless Growth of Plants

By Carleton Ellis and M. W. Swaney. Second edition, revised and enlarged by Tom Eastwood. Pp. x+277. (New York: Reinhold Publishing Corporation; London: Chapman and Hall, Ltd., 1947.) 28s. 6d. net.

HYDROPONICS, or soil-less culture, has made considerable progress during the last ten years, especially in America and in areas where heat and drought make it difficult to produce vegetables under ordinary conditions of soil cultivation. While the first edition of Ellis and Swaney's book catered mainly for the amateur or general reader, Eastwood's revision deals largely with the commercial side. This revision has been so drastic that little of the original text remains; but there is no indication of this in the foreword or elsewhere, thus failing to give due credit to the original authors.

Many types of equipment have been developed for sub-irrigation and gravel culture methods, and in describing these, Eastwood indicates the weak, as well as the strong, points of the outfits, with the probable causes of failure where initial success has not been followed up in later work. Specially valuable are the practical working details for procuring the necessary chemicals, making up and analysing the nutrient solutions and the care of the apparatus needed. Plants grown in soil-less culture are not immune to many of the common pests and diseases, as is too often believed, and precautionary methods against them are suggested.

With the growing interest in soil-less cultures, this revision should be of much value to scientific workers, commercial growers and amateurs alike, as its in-

sistence on practical details should help to overcome many of the difficulties inherent in the method. As a work of reference it should also play its part in the considerable advances that may be expected in hydroponics in the course of time. W. E. B.

The Ventilation of Bee-Hives

By E. B. Wedmore. Pp. 116. (Petts Wood: Bee Craft, Bracken Dene, Manor Way, 1947.) 7s. net.

MR. WEDMORE has done a further service to beekeepers by bringing together, discussing and criticizing in his latest book the available data on the subject of hive ventilation. This is a subject to which Mr. Wedmore has devoted considerable time and on which he speaks with authority. It is, of course, of the very greatest importance to a proper understanding of those conditions which are necessary to ensure satisfactory living conditions for colonies of hive-bees both in winter and summer.

The reader will be left in no doubt that the conclusions reached from analysis of the data on hive ventilation, which have so far been obtained, clearly support the application of the relatively spartan methods of wintering bees which are to-day advocated almost unanimously by the leading authorities both in Europe and in North America. It is of interest to students of beekeeping practice to note that these methods, which are still regarded with suspicion by some beekeepers, were employed and recommended by leading beekeepers so long as fifty years ago.

Besides discussing such matters as the form of the winter cluster, air currents within the hive, the disposal of water and carbon dioxide, and temperature control, the author also discusses such a practical matter as hive design.

This is a most stimulating book not only on account of the interesting analysis of the data presented but perhaps even more because of the gaps in our knowledge which such analysis discloses.

C. G. BUTLER

Genetics

By Dr. H. Kalmus, in collaboration with Lettice M. Crump. (Pelican Books, A.179.) Pp. 171. (Harmondsworth: Penguin Books, Ltd., 1948.) 1s. 6d.

GENETICS is one of the youngest, yet also one of the most actively developing, branches of biology. At present neither its own theoretical structure and internal consistency nor its importance for general biology and human affairs is widely appreciated outside the immediate circle of geneticists themselves. This is in a great measure due to the lack of books giving simple accounts of the subject, particularly in its broader connexions.

Dr. Kalmus' 'Pelican' should therefore command a wide audience. It is a formidable task to compress even an outline of genetics into 171 pages, and there are inevitably omissions and over-simplifications. The author is, however, to be congratulated on his attempt to include consideration of the wider implications as well as the narrower basis, even though in places his discussion may not commend itself to all his fellow geneticists. Care is taken to explain the genetical terms used, and a short glossary is given as well as suggestions for further reading. It has, however, proved impossible to explain all the more general biological terms which are used. The book, therefore, may well prove to be of greatest value to those who already have some biological background.