The British Journal Photographic Almanac and Photographer's Daily Companion, 1921. Edited by George E. Brown. Pp. 840. (London: Henry Greenwood and Co., Ltd., n.d.) Price 2*s*. net.

THE sixtieth issue of this welcome annual appears only a week or two later than in pre-war time, and the edition is increased from 25,000 to 30,000. This indicates a gradual progress towards normal conditions. On the other hand, the volume is about seventy pages fewer than last year, and the price is increased. The obvious reticence of advertisers with regard to quoting prices, which we remarked on a year ago, still impresses one, though perhaps less strongly. The editor contributes a lengthy article on general photographic procedure which cannot fail to be of assistance to beginners. The usual "Epitome of Progress" is an excellent summary, extending to nearly 100 pages, of the notable events, business items, legal matters, novelties in apparatus and equipment (including raw materials used in photography), and new methods or modifications of them. After the extensive collection of formulæ follows "A History in Brief of Photographic and Photomechanical Processes," giving the year and sometimes the month and day of the chief events, beginning with Thomas Wedgwood's experiments, published by Davy in 1802. Of the other new matter, we are particularly glad to see that the editor has given a table which he calls "Corresponding Focal Powers and Focal Lengths." The focal powers are given in diopters, and the corresponding focal lengths in centimetres and in inches. Many lens problems are so very much more simple when calculated in diopters instead of in focal lengths that we hope this table will be extended in next year's issue, and that there will be added to it a few simple instructions as to its use. C. J.

Physiology and Biochemistry in Modern Medicine. By Prof. J. J. R. MacLeod, assisted by Roy G. Pearce, A. C. Redfield, and N. B. Taylor, and by Others. Third edition. Pp. xxxii+992+9 plates. (London: Henry Kimpton, 1920.) Price 42*s*. net.

A NOTICE of an earlier edition of this work appeared in NATURE of December 18, 1919 (p. 389). That a new edition should be required in a year's time shows that the book has been found to meet the purpose for which it was written. The opportunity has been taken to recast the section on the nervous system, which has been excellently done by Dr. Redfield adding to it an account of the fundamental principles of the physiology of muscle and nerve. These changes will add to the value of the book to those for whom it is primarily intended, particularly to the medical man who wishes to apply advances in physiology to his clinical practice. Recent work on such questions as the effects of deficient oxygen supply, on "vitamins," on the capillary circulation, and on wound shock has been duly incorporated. A good account of the problem of the carriage of oxygen and carbon dioxide in the blood, still a disputed one, will also be found. Although the price of the book seems rather high, it may reasonably be held that good value is obtained. It might be worth consideration, however, whether the omission of some of the coloured plates would not enable a wider circulation to be ensured by a lower price. The further such knowledge as that contained in the book is spread, the better will it be for the advance of medical science and practice. W. M. B.

Letters to the Editor.

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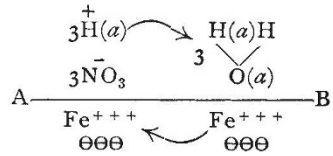
The Passivity of Metals.

CHROMIUM, iron, cobalt, nickel, copper, and bismuth are said to exhibit the phenomenon of passivity. These metals have electrode potentials varying from about Fe = +0·06 to Bi = −0·67 volt—that is, they are not very electro-positive. They also all exhibit dual valencies. This suggests that passivity may be due to an electrical double layer on the surface of the metal, especially when it is remembered that an anode of iron becomes passive in nitric acid of sufficient concentration.

The chief theories of passivity assume that a layer of oxide, nitride (St. Edme, *Comptes rendus*, vol. lii., p. 930, 1861), or gas is formed on the surface. St. Edme's view is founded upon the fact that ammonia is formed when passive iron is heated in dry hydrogen. But Finkelstein (*Zeit. phys. Chem.*, vol. xxxix., p. 91, 1901), from the results of his investigation of the polarisation capacity of passive iron, concludes that there can be no opaque layer on the surface, and he thinks that passive iron is ferric iron, whereas ordinary iron (active) is ferrous iron.

It is here suggested that passivity is produced by a layer of nitric acid or of nitrate ions firmly adhering to the surface of the metal. This view is not incompatible with either St. Edme's or Finkelstein's results. In fact, it seems as if there is considerable similarity between the surface of a passive metal and that of the disperse phase in a metal sol.

A consideration of the chemical forces yields the following model of the polarisation effects at the surface of a metal in an aqueous solution of an electrolyte, say iron in dilute nitric acid:



AB is the cross-section of a surface drawn between the liquid and the metal. Below AB is the Helmholtz electrical double layer, which we may conveniently regard as due to a layer of positive metal ions, and a layer of their valency electrons, two of which ions and their associated electrons are shown in the figure. The ions are represented in the ferric state, but this is not essential to the argument. Above AB, in the liquid phase, is a layer of molecules, which are polarised at a given moment in a regular surface