

however, deal with respiration alone. Modern methods of blood examination are discussed, including the agglutination of the red cells, blood grouping, transfusion and the fragility of the red cells. The functions of the kidney are investigated, water diuresis is discussed, and methods given for the determination of the sugar and urea in the blood. The recent important work of J. B. S. Haldane on the maximum concentration of chloride and bicarbonate in the urine is very suitable for class work and is included.

Under the heart and circulatory system, blood pressure and the polygraph tracings of the pulse are investigated experimentally, and the electro-cardiograph is shortly referred to. Finally, there is an excellent section on the investigation of the stomach and intestine by X-rays and the stomach tube. Contrary to general impressions, these facts are very suitable for class experiments, and easily rouse interest and give valuable results.

A practical course serves two main purposes—to demonstrate the general truth of the science and to train the student in methods of investigation. For the man who devotes his life to physiology, all methods are almost equally important, and animal experiments here may have advantages over experiments on man, as well as some disadvantages. Most students of physiology intend to practise medicine, and here perforce the subject of experiment is generally human, whether in the great experiment designed by Nature such as disease, or in careful observation of treatment. It is in this way that the present book is particularly valuable.

In one other way the volume is admirable. Many practical books consist of a list of unconnected experiments, and the book is of little use outside the laboratory. This book is eminently readable, and the experiments are put together as a connected whole, although complete details are given for the actual experiments and for the calculation of the results—an important thing in any respiration work.

The only serious drawbacks are the large branches of physiology which are left untouched—the central nervous system and metabolism as studied by changes in the urine with work, rest, and various diets. Perhaps the authors are right in leaving this to be written by some one else, and keeping themselves to the branches in which they have such unrivalled practical experience.

The course is more suitable for small advanced classes. Perhaps in a few years, when other courses similar to this and covering the other branches of physiology have been written, it will be possible to abstract a shorter and simpler practical course of human physiology which should be followed by all students of medicine.

Our Bookshelf.

Birds in their Relations to Man: a Manual of Economic Ornithology for the United States and Canada. By Dr. Clarence M. Weed and Dr. Ned Dearborn. Third edition, revised. Pp. viii+414+18 plates. (Philadelphia and London: J. B. Lippincott Co., 1924.) 15s. net.

As this book deals with North American birds and conditions, its interest to readers in Great Britain is naturally general rather than particular. Nearly half the space is allotted to a detailed consideration of the food habits of the species which are of most importance economically in the United States: in addition, however, there are chapters on methods for studying the food of birds, on the development of economic ornithology in America, on birds' food in general, and on measures for the conservation and encouragement of useful species and for preventing the depredations of those which are injurious.

From among the many examples to be found in the book, the following evidence as to the economic value of birds may be cited. During a plague of canker-worms in Illinois orchards, the stomach contents of 141 birds belonging to 36 species were examined. Canker-worms were found in 60 per cent. of the individuals and 72 per cent. of the species, and formed 35 per cent. of the total food of all the birds examined. It may be noted also that, so long ago as 1885, economic ornithology was taken up by the Federal Government, and the task of investigation and public instruction entrusted to what is now the Bureau of Biological Survey of the U.S. Department of Agriculture.

A summary is given of the State and Federal (but not Canadian) laws for the protection of birds, and the underlying principles of these are of some interest. The State laws, varying in detail from one State to another, are of primary importance and are based on the assumption that all game and wild birds are the property of the State, and may only be killed as the State Government may permit: landowners have no privileged position in this respect. The Federal law before 1913 merely reinforced the local laws in incidental ways, but it was then decreed that birds which do not permanently remain within a given State are the property of the United States Government, and so certain migratory species are now protected by a Federal Act. The authors fail to carry this development a stage further and to mention the Migratory Birds Convention of 1917, which provided for reciprocal legislation in Canada and the United States. One also notes that the bibliography contains no reference of later date than 1915.

Précis de chimie physique. Par H. Vigneron. Pp. xii+408. (Paris: Masson et Cie, 1924.) 30 francs.

M. VIGNERON'S book deals with general theories rather than with details of experimental methods, and he is therefore able to cover a wide range of topics in a somewhat small space. He points out that a large part of the subject can be discussed adequately from the kinetic point of view by means of molecular models; but that after a certain point has been passed, these have to be elaborated more and more, until they become of no real value in the quantitative interpretation