ANATOMY

The Efficiency of Bones

Quotation from chapter on Anatomy by E. Barclay-Smith, in PROBLEMS OF MODERN SCIENCE. New York: Henry Holt and Co., 1922.

About the middle of the last century the anatomist first recognized that the spongy bone or lattice-work arrangement of bony substance, as seen in the expanded extremities of the thigh-bone, was not an unintelligible or haphazard arrangement. By careful study of the disposition of the minute bars of bony substance constituting the lattice-work, and estimating the chief stresses to which these parts of the bone are subject during life, it was discovered that the arrangement was such as to render the bone wonderfully efficient in resisting the forces to which it is subject, with the most economical use of the bony material imaginable.

The chief stresses to which the expanded ends of a bone such as the thigh-bones are subject are compressing or pushing forces and tension or pulling forces. If the lattice-work at the lower end of the thigh-bone be examined, the mechanical value of the arrangement of the bars of the lattice-work can be readily appreciated. In the standing position the weight of the body presses vertically in the length of the thigh-bone and will tend to compress the lower end. If the lattice work which goes to make up this end of the bone is sliced through, it presents the appearance of such delicate lacework as to suggest frailness. The minute slender bars which constitute the lattice-work have, however, a very definite arrangement. Most of the bars are vertically set—that is, exactly in the direction in which the pressure of the body-weight makes itself felt. Although any individual bar could not by itself bear any considerable pressure force, yet the total complement of the vertical bars endows this end of the bone with a resistance easily sufficient to withstand any compression to which it is subject during life. The vertically set, pressure-resisting bars are connected or tied together by shorter cross-bars. These cross-bars tying the vertical bars together prevent their spreading or buckling, as they are liable to do when being pressed upon from above, and are an essential and important part of the arrangement. In short, the lattice-work occupying the lower end of the thigh-bone is, in builder's parlance, a complicated system of struts and ties.

Science News-Letter, October 23, 1926

ANTHROPOLOGY

All Kinds of Men

THE RACES OF MAN. By A. C. Haddon. New York: Macmillan Co. $2.50.

In the flood of books on race which have appeared in recent years the general reader is apt to be swept away by recurrent waves of mere propaganda or speculation. He should welcome a good strong rock—even though a somewhat dry rock—on which to cling till he can face the sea with more confidence. A. C. Haddon's "The Races of Man" gives latest known conclusions of ethnology, clearly, sanely and as definitely as is possible in the present state of research. The author, an eminent anthropologist of Cambridge University, has no ax to grind and no hobby to exploit, though the compactness of his text makes it rather a manual for reference than a narrative for leisure hours.

Science News-Letter, October 23, 1926

BIOLOGY

Inferior Races?

Quotation from MODERN SCIENCE AND PEOPLE'S HEALTH. Edited by Benjamin C. Gruenberg. New York: W. W. Norton & Co., $2.50.

Take for example the differences in race. Presumably differences of race are just like these individual differences that have been built up as side issues along these ever forward-going streams of germ plasm. We have questions raised from time to time, as to the supposed inferiority of certain races. We always like to think that whatever race we belong to is better than any other race, and so we like to think that the other fellow isn't as good as we are. Naturally, he is inferior. But when we say that, we do not quite bear all of these things in mind. Perhaps the so-called inferior races are closer to the fundamentals than the so-called superior races from this point of view. Perhaps they are in a better position to pick up the modifications of present-day life which are of value and significance.

Science News-Letter, October 23, 1926

GENERAL SCIENCE

Other Worlds Than Ours

You tell us that Democritus says that there are a countless number of worlds, and that there are some which are not only so like one another, but so completely and absolutely equal in every point, that there is no difference whatever between them, and that they are quite innumerable; and so also are men.—Cicero: *Academic Questions.*

Science News-Letter, October 23, 1926

First Glances at New Books

THE PRUNING OF TREES AND SHRUBS. By W. Dallimore. London. Dulau & Co., Ltd. 4s 6d.

Tells the average householder or amateur orchardist how it should be done, and gives photographs of right and wrong ways. An especially valuable feature is an alphabetical list of shrubs with notes on the special treatment required by each.

LABORATORY OUTLINES IN BACTERIOLOGY AND IMMUNOLOGY. By John F. Norton and I. S. Falk. Chicago. The University of Chicago Press. $2.00.

A compact students' manual, beginning with the simplest directions for handling apparatus and media and working through to relatively difficult exercises in the handling of toxins and sera.

ANIMAL CLASSIFICATION AND DISTRIBUTION. By D. M. Reid. Philadelphia. J. B. Lippincott Co.

Admirably summed up by its own sub-title. "A précis reference book." An analytical syllabus of the animal kingdom, carried as far as the orders, with citations of illustrative genera, and a brief summary of zoogeography. The lack of glossary is unfortunate; but even so, every student in Zoology 1 should be required to own such a book as this.

HOW INSECTS LIVE, by Walter Housley Wellhouse, New York. The Macmillan Company. $5.00.

An elementary entomology of unusual merit, with natural history enough to moisten up the dry biscuits of anatomy and taxonomy. But the best and most original thing about it is the series of "family portraits" that illustrates the synoptical key in the back of the book.

A LABORATORY MANUAL FOR ELEMENTARY ZOOLOGY, by Libbie Henrietta Hyman, Chicago. The University of Chicago Press. $3.00.

A revision and enlargement of Dr. Hyman's well-known manual.

THE HYDROSTATIC SYSTEM OF TREES, by D. T. MacDougal, Washington. The Carnegie Institution.

Elaborate instrumental studies on the water-carrying mechanism in woody plants, with *quantitative* results.

Science News-Letter, October 23, 1926