ELLIPTICAL ERYTHROCYTES

IN reply to the note of Terry[1] regarding the erythrocytes of the "sloth," the description by Gulliver[2] apparently need not be questioned. Examination of red blood cells in sections of various organs of several species of Edentata (*Cholopus didactylus,* the two-toed sloth, *Bradypus tridactylus,* the three-toed sloth, anteaters and armadillos) and of other types of mammals including four species of Camelidae, as well as many species of birds, shows that the morphology of these cells is sufficiently characteristic to prevent confusion. The erythrocytes of the sloths are, as in mammals generally, circular, bi-concave discs, while those of Camelidae are oval and convex. Incidentally, Gulliver[2] noted that the erythrocytes of llamas have a greater length-width ratio than those of camels, that, in certain Cervidae, these cells often are very irregular in shape, and that, in Edentata, they are among the largest found in mammals. This author also was aware that characteristic shape of red blood cells might be altered by disease. In captivity, the sloth usually is not a hardy animal. Perhaps Schartum-Hansen[3] encountered a description of blood cells from a diseased animal, although he does not give references.

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SCIENTIFIC BOOKS

TEXT-BOOKS IN PHYSICS

Physik. PAUL WESSEL. Pp. xii + 504. Reinhardt, München, 1938. RM 4.90.

College Physics. HENRY A. PERKINS. Pp. ix + 820. Prentice Hall, 1938. $3.75.

The Elements of Physics. ALPHEUS W. SMITH. Pp. xix + 790. McGraw-Hill, 1938. $3.75.

An Outline of Physics. ALBERT E. CASWELL. Pp. ix + 590. Macmillan, 1938. $3.75.

Glossary of Physics. LEROY D. WELD. Pp. vi + 255. McGraw-Hill, 1937. $2.50.

Physics for Technical Students. 2 Vols. W. B. ANDERSON. Pp. vii + 795. McGraw-Hill 1937.

Sound Waves and Acoustics. M. Y. COLBY. Pp. ix + 356. Henry Holt, 1938. $2.80.

Experimental Physics, A Laboratory Manual. S. W. WILLIAMS. Pp. 158. Ginn and Co., 1937. $1.00.

A First Course in Physics for Colleges. MILLIKAN, GALE and EDWARDS. vii + 712 + lxii, 1938. $4.00.

Introduction to College Physics. C. M. KILBY. Pp. x + 398. Van Nostrand. 1938. $3.25.

Elementary Practical Physics. BLACK and DAVIS. Pp. ix + 710. Macmillan, 1938. $2.00.

Physics of To-day. CLARK, GORTON and SEARS. Pp. vi + 633. Houghton, Mifflin, 1938. $1.80.

THE teaching of physics depends on three factors, the teacher, the laboratory equipment, the text-book. The teacher, master of his subject and of the techniques connected with it, given a reasonable appropriation, will see to it that the laboratory equipment is ample. He may find any one of several texts satisfactory; even a condensed syllabus may serve his purpose. Clear in voice, logical in arrangement, with experimental demonstration at his finger tips, masterful in presentation, he should be the inspiring factor. But a good text-book would help.

The text-books listed above are arranged more or less in order of the domain of general physics which they cover, not in order of the number of pages. The German text presents the entire subject, as we understand it in this review, in 354 pages (9 × 16 cm). Then to condense it still further it is gathered into 60 pages in a "kurtzes Repetitorium and Formelsammlung." This is followed by 60 pages of tests "Prufungsfragen und Antworten." It is similar to a catechism. A question is asked, the page on which the answer can be found is given. "Wie lauted das Daltonsche Gesetz? (S55)." "Was verstehl man unter Verdunstungkälte? (S87)." "Welches sind die Grundedanken der Quantheorie? (S348)." There are 1,447 such questions and answers. It is seen that these are non-computational questions. Numerical and algebraical illustrations are given in the body of the text. Finally, there are 40 pages of physical tables making the text a veritable handbook. Every artifice is employed by means of changes of type, capitals, boldfaced type, italics and by graphs of all kinds to emphasize and explain.

The next two texts are of the same order of completeness as the German text, but after the American manner of college texts in general physics. Professor Perkins's text is a first edition. A student will look at its 820 pages (10.5 × 17 cm) with apprehension. Can he master its contents in one college year? Probably not. Yet some teachers will value it for its completeness, others will reject it as a text to be used in their classes for the same reason.

The author maintains a high level throughout the book, and its compilation represents an intensive labor long continued. The last chapters dealing with modern physics are up-to-date and are among the best in the book. At times the reviewer has the feeling that the presentation is didactic rather than being based on experimental evidence. At times an extremely important point receives scant treatment. Take, for example, the treatment of the law of gravitation. It is stated that "the gravitational attraction between two

[1] M. C. Terry, SCIENCE, 88: 475, 1938.
[2] George Gulliver, *Proc. Zool. Soc., London,* p. 474, 1875.
[3] H. Schartum-Hansen, *Acta Medica Scandinavica,* 86: 348, 1935.