senility. Senility is that cessation of activities that comes when external conditions are favorable.

Then, the fact that washing away the accumulated waste products at intervals leads to the reviving of the cell activities is considered to be a case of rejuvenescence and the conclusion drawn that since cell proliferation is more active at the end of eighty days than at the beginning, a method of obtaining immortality of the tissues has been discovered. Of course the normal length of life of the tissues used is several years, and indications of actual senility could not be expected before that time. The fact that the cells continue actively to proliferate has no significance as regards rejuvenescence, any more than the healing of a wound in the skin of an aged man by the normal processes of cell proliferation would indicate that his body was becoming juvenile. Cell proliferation in detached pieces of tissue is an expression of their inherent power of responding to form-regulation stimuli, which in living bodies governs the size and shape of the developing individual and even after maturity exhibits itself in regeneration of lost parts, production of new organs and in the processes of healing. The conditions in this respect of the cells of the detached piece, are evidently such as to call for the highest possible manifestation of cell proliferation, and this needs no other explanation.

The accumulation of waste products may be one of the results of the primary causes of senility, but even this much is not proved by these experiments.

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SCIENTIFIC BOOKS

Die Muskeln des Stammes. By Paul Eisler. Jena, Gustav Fischer. 1912. Pp. 715, 106 figures, chiefly in colors.

This volume on the muscles of the head, neck, and trunk by Professor Paul Eisler, of Halle, constitutes a part of the extensive handbook of human anatomy now being edited by von Bardeleben with the cooperation of the leading anatomists of Germany. It is one of the most satisfactory of the series and illustrates how possible it is to make a real contribution in a field of work which for over three centuries has been as carefully cultivated as has gross human anatomy. The subject is considered from the purely morphological aspect, the mechanics of muscle action being left for treatment in other volumes of the series by Rudolph Fick. The only references to the physiological aspects of the subject relate to the theoretical developmental mechanics of the fascia, the tendons, and to a slight degree, of the muscles themselves. In the treatment of the various muscles of the head, neck and trunk admirable brief reviews are given of the various groups of muscles in each region. Then there follows an accurate description of each muscle of the group. The drawings to illustrate the various muscles are all from original sketches by the author, are all excellent, and in many cases are the best which have yet been made of the muscles treated. The topographical relations of the muscle are next considered and then the innervation. Eisler has made numerous personal contributions to this latter subject and gives a much fuller description of the innervation of the muscles treated than has hitherto been attempted. A brief description of the blood supply is next given and this is followed by an admirable summary of variations in structure, based not only on an extensive review of the literature, but also upon Eisler's own long experience in the dissecting room. Sometimes after the consideration of an individual muscle and always after the treatment of a group of muscles, the author gives an excellent summary of the comparative anatomy and the ontogenetic development of the muscle or muscle group. From "practical" considerations the author has, in the main, grouped the muscles according to the topographical relations in the adult, although he treats of the platysma with the superficial muscles of the head instead of with the muscles of the neck. This topographical grouping

sometimes makes the treatment of the innervation, the comparative anatomy and the development of the muscles less satisfactory than if the grouping in all cases were along morphological lines. In an extensive, scientific reference handbook, it would seem to the reviewer better, for instance, to group the sterno-cleido-mastoid and the trapezius together, rather than to class the former with the "muscles of the neck" and the latter with the superficial muscles of the back. Some repetition would thus be avoided and the morphological relations of the muscles would be emphasized. In spite, however, of the traditional general classification of the muscles according to adult topographical relations, the author gives an exceptionally clear account of the morphological relations of the muscles and some excellent illustrations based on this point of view. The topographical treatment is an aid in the discussion of the fasciæ. After treating of the muscles of each part, as, for instance, of the head, the author gives an extensive description of the muscle fasciæ, the most extensive and satisfactory which has yet appeared. The fasciæ he justly considers not as independent organs, but rather as local thickenings or strengthenings of the general connective tissue framework, the thickness, structure and extent of which depends upon the mechanical stresses to which the part is subjected.

The author's style throughout is so clear, his summary of the literature is so satisfactory, his own contributions are so welcome and his point of view of the theoretical aspects of the subject is so suggestive even when one does not accept all the conclusions reached, that one can not but regret that the mechanics of muscle action have not to some extent been considered along with the morphological aspects of the subject. While this would have necessitated some repetition of the extensive field covered by Fick in the volume on special joint and muscle mechanics in the same "Handbook" it would, none the less, add not a little to the interest of the study of the detailed anatomy.

Not the least satisfactory part of the volume under review is the section devoted to the general aspects of myology. Here an admirable review is given of the more recent literature on the histology of striated muscle fibers, their physical and chemical characteristics and their development, and of the general structure of the voluntary muscles. In general opposing views of disputed points are fairly presented. The discussion of the connective tissue in relation to the muscles is especially good. Eisler, however, accepts O. Schultze's apparent demonstration of the continuity of the myofibrils with the connective tissue fibrils attached to the sarcolemma with less reserve than would seem to the reviewer justified. The general, like the special, treatment of the muscle fascia is a contribution of importance.

Taking the volume as a whole, it should prove of much value not only to those interested in scientific human anatomy, but also to the zoologist interested in comparative anatomy.

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The Physiology of Protein Metabolism. By E. P. CATHCART, Ph.D., D.Sc. Monographs on Biochemistry. Longmans, Green and Co. 1912. Pp. viii + 142. Price $1.25.

Like the other monographs of this series, this book is from the pen of an ardent investigator in the field of which he writes. To those who derive their knowledge of the subject of nutrition from text-books, the present volume will offer numerous surprises. In many places the treatment consists in the exposition of the various points of view of specific problems relating to protein metabolism, which rest upon experimental data, and does not therefore furnish a complete and harmonious story. This style of treatment is most commendable, for with no other attitude could the author give an adequate picture of the state of our knowledge of this complex subject.

The book surveys the literature up to the end of the year 1910, and appeared at a rather unfortunate time, for never in the history of