become clear when presented in this manner. Sometimes book reviews aim to throw additional light on questions considered by their authors by referring to views which would naturally lead to conclusions which do not agree with those expressed by these authors. From the standpoint of scientific progress such efforts do not seem to deserve condemnation.

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DINOSAUR TENDONS

WHILE engaged on an interpretation of certain lesions in the Pleistocene Sabre-tooth,[1] an examination was made of the histological structure of ossified tendons in two genera of dinosaurs. The material thus at hand was deemed worthy of closer description and illustration, and the account was published.[3] An unexpected result developing from such a study was the distinction of histological structure in the two genera: *Trachodon* and *Ankylosaurus*. Although Broili[3] had previously investigated the nature of the tendons in one of these genera and Weidenreich[4] has dealt with genetic and developmental factors, yet it seems not to have been previously noted that there are generic differences in the histological structure of the ossified tendons. In order to test that distinction it will be necessary to study many more tendons of several genera and families of dinosaurs in which such objects are preserved. If generic and family differences can be detected in the ossified tendons it will go far in establishing these groups as of long standing and based on fundamental features.

Dollo[5] and Brown[6] have discussed the occurrence, distribution and function of the ossified tendons among the various genera of dinosaurs in which they occur, but this phase of the subject needs revision.

An early paper by Lieberkühn[7] is of importance as dealing with the histological changes involved in the transformation of tendons into bone.

Seitz[8] has written the most ambitious account of the histology of fossil bone which has yet appeared, having studied sections of bone from the Permian, Triassic, Jurassic and Cretaceous reptiles, as well as three genera of Tertiary reptiles and four Recent genera. Seitz had in mind a contribution to ancient histology and made no attempt to determine generic or family distinctions in the histological features of bone, nor did he study any ossified tendons, so far as I can determine.

Broili[3] made an interesting beginning by comparing the histology of ossified tendons of *Trachodon* with a transverse section of the neural spine of one of the sacral vertebrae of the same species. Other comparisons should be made. I am sure Broili is mistaken in regarding the ossified tendons as "verknöcherte Muskeln," for ossification does not involve the sarcous portion of the muscle, but only its connective tissue sheaths. Similarly, many paleontologists confuse *tendons* and *ligaments*, which anatomically have different origins, different structure and different functions.

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SANTA MONICA, CALIFORNIA,
MAY 28, 1929

LACTATION VS. IMPROVED GROWTH IN STOCK ALBINO RATS[1]

A RECENT report from this laboratory[2] described unusually rapid growth in the stock colony of rats. The animals whose records provided the data for the study were born, for the most part, in the late summer and early fall of 1927. The ration consisted of a mixture of whole ground wheat two thirds, dried whole milk one third, calcium carbonate and sodium chloride each 1 per cent. of the weight of the wheat. Fresh lettuce was given daily and the lactating females received in addition nine grams of tested dried yeast per week. The dry ration is based on the Diet B of Sherman but differs in the smaller amount of sodium chloride and in the addition of calcium carbonate.

Beginning in the early fall of 1928 difficulty of reproduction was encountered in this colony. Litters

[1] "Studies in Paleopathology," XX. "Vertebral Lesions in the Sabre-tooth, Pleistocene of California, Resembling the So-called Myositis ossificans progressiva, Compared with certain Ossifications in the Dinosaurs," *Annals of Medical History*, IX, no. 1, 91–102, 11 figs.

[2] "The Histological Nature of Ossified Tendons Found in Dinosaurs." American Museum Novitates, No. 312, 1928.

[3] F. Broili, 1922, "Ueber den feineren Bau der verknöcherten Sehnen (verknöcherten Muskeln) von Trachodon," *Anat. Anz.*, 55: 465. 5 figs.

[4] Franz Weidenreich, 1926, "Wie kommen funktionelle Anpassungen der Aussenformen des Knochenskeletts zustande?" *Paleontolog. Ztschrft.* 8: 34–44; 1923, "Ueber Sehnenverknöckerungen und Faktoren der Knochenbildung," *Ztschrft. f. Anat. u. Entwicklungs*, 69: 558.

[5] L. Dollo, 1886, "Note sur les ligaments ossifiés des Dinosauriens de Bernissart." *Archives de Biologie*, 7: 249–264, pls. 8–9.

[6] Barnum Brown, 1916, "Corythosaurus casuarius: Skeleton, Musculature and Epidermis." Bull. Amer. Mus. Natl. Hist. 35: 709–716, pls. xiii–xxii; 1917, "A Complete Skeleton of the Horned Dinosaur Monoclonius, and Description of a Second Skeleton Showing Skin Impressions," *ibid.*, 37: 281–306, pls. xi–xix.

[7] N. Lieberkühn, 1860, "Ueber die Ossifikation. 1. Die Ossifikation des Sehnengewebes," *Archiv. f. Anat. u. Physiol.*, 838.

[8] Adolf Leo Ludwig Seitz, 1907, "Vergleichende Studien über den mikroskopischen Knochenbau fossiler und rezenter Reptilien und dessen Bedeutung für Wachstum und Umbildung des Knochengewebes im allgemeinen," Nova Acta Abh. der Kaiserl. Leop.-Carol. Deutschen Akademie der Naturforscher, Bd. LXXXVII, nr. 2, 235–370, with 14 plates (quarto).

[1] From the Laboratory of Physiological Chemistry, Yale University, New Haven, Conn.

[2] A. H. Smith and F. C. Bing: *Jour. Nutrition*, 1, 179, 1928.