the same muscle to a descending current of the same character, the intensity of which, like the first, shall be the least perceptible. If the intensity of this latter current proves to be inferior to that of the former, the inference is that the muscular mass experimented upon is enervated. The greater the difference between the two degrees of intensity, the more serious will be the state of muscular enervation.

The great question for physiologists to answer now is: By what means are we to realize the full measure of muscular capacity in man and beast? The problem is in their hands, and the merit of MM. Mosso and Wedensky is that they have succeeded in studying experimentally some of the questions so deeply interesting to those engaged in this work.

CHARLES HENRY.

PARIS.

List of Mammals collected in the Black Hills Region of South Dakota and in Western Kansas by W. W. Granger, with field notes by the collector. By J. A. ALLEN. Bull. American Museum Nat. Hist., Vol. VII., pp. 259–274, Aug. 21, 1895.

The Black Hills region is one of more than ordinary interest to the naturalist, and it has received its full share of attention. Perhaps no area of equal size in the United States has been more closely studied by geologists and paleontologists, and it has been visited more than once by zoölogists and botanists.

The special interest attaching to the Black Hills, from the standpoint of the living fauna and flora, centers in the fact that it is the easternmost of the outlying boreal islands belonging in a general way to the Rocky Mountain region. This was clearly indicated by the first report on its mammals and birds, published by Geo. Bird Grinnell in 1875. Since then it has been visited three times by the experienced mammal collector, Mr. Vernon Bailey, but the results of his labors have not yet been published. The present paper by Dr. Allen, based on a collection made by Walter W. Granger in 1894, is therefore the first enumeration of the mammals of the region since modern methods of trapping came into vogue.

Three life zones—*Boreal*, *Transition* and *Upper Sonoran*—are embraced in the area covered by the report, though this important fact is not recognized by the author. The higher parts of the Black Hills are *Boreal;* the lower slopes, embracing most of the pine forest, are *Transition;* the adjacent 'bad lands' south of the Cheyenne River are *Upper Sonoran.* The Boreal element is completely isolated, being separated by a wide interval from the nearest land of sufficient elevation to support a similar fauna and flora. The following Boreal species occur in the Black Hills: *Microtus longicaudus*, *Evotomys g. brevicaudus*, *Peromyscus l. arcticus*, *Neotoma cinerea* [='*grangeri*']. *Sciurus h. dakotensis*, *Arctomys dakota*, *Sorex personatus* [recorded as *forsteri*], *Tamias 4-vit. borealis* and *Zapus.* The Transition element covers the greater part of the hills, and stretches uninterruptedly northward east of the Little Missouri River. It is inhabited by *Lepus campestris*, *Onychomys leucogaster*, *Neotoma rupicola*, *Peromyscus nebrascensis* and *Microtus austerus haydeni.* The Upper Sonoran element finds its northern limit near the Cheyenne River, on the east side of the Hills, but pushes farther north on the west side. It introduces several species (*Geomys lutescens*, *Perognathus paradoxus*, *Perodipus richardsoni*, *Corynorhinus 'townsendi'* and a few others) not occurring elsewhere in the region.

Dr. Allen describes a new cottontail (*Lepus sylvaticus grangeri*) from the higher parts of the Black Hills, and in a previous paper named as new several other mammals collected by Mr. Granger. It is stated that the Gray Pocket Gopher (*Thomomys talpoides*) "is found not only in the prairie country at the base of the Black Hills, but in the small parks in the Black Hills, at an altitude of 5500 ft." Specimens collected in the higher parts of the Black Hills by Mr. Bailey are not the same as those from the surrounding low country.

In all, 53 species are enumerated, with more or less full annotations. The specific name of the Black-tail deer is carried back from *macrotis* Say (1823) to *hemionus* Rafinesque (1817).

The list as a whole is a welcome addition to our local knowledge of the mammals of a small but interesting area.

C. H. M.