

I shall note with interest any future germinations as lengthening the possible dormant period of these seed.

On April 19 I observed five more germinations, with the characteristics of those mentioned as growing this year. Up to April 24, three other young plants had started, making thirteen since Christmas; and these are as vigorous as those that started in 1884,—much more so than the growth of the summer of 1885.

GEO. F. WATERS.

8 Beacon Street, Boston, Mass.,
April 24.

Eskimo building-snow.

In *Science* for April 23, 1886 (p. 372), Sergt. T. W. Sherwood has an inquiry about a certain formation of snow. I refer you to a paragraph in *Science* for April 25, 1884, p. 822, concerning 'ice-banners,' from observations of my own.

GILBERT THOMPSON.

U. S. geol. surv., April 23.

Certain homologous muscles.

The writer, having devoted some time of late to a comparative study of the myology of American mammals, has noted several interesting facts, to one of which attention is here asked.

The myology of the shoulder is, perhaps, more interesting than that of any other region, inasmuch as the variations in structure can usually be readily correlated with corresponding variations in habit. This is true in particular when applied to those changes observed in members of the same genus and family. In a forthcoming work I hope to present a mass of details illustrating the nature of these variations.

The muscular system is so plastic, and so immediate an expression of function, that it was hardly expected that many hints bearing on phylogeny could be derived from that source. Osteology, possessing as it does so many advantages in this respect, has been trusted far too exclusively, as I hope to show: at least, a careful study of the anatomy of the soft parts may be expected to furnish much confirmatory evidence. In the case of the shoulder, the omo-hyoid muscle may be said to furnish a valuable criterion by which to determine the primitive character of a species. Its presence in the archaic types, and frequent absence in specialized forms, can hardly be correlated with change in function.

The sciurimorphs are a very compact group, and yet present a great variety of modifications in adaptation to variation in habit. Among the members of the group found in the United States, the woodchuck (*Arctomys monax*) is perhaps entitled to rank as the most primitive form. This conception is suggested by the osseous structure, and finds an interesting support in a number of points in the myology, only two of which are here mentioned. The omo-hyoid passing from the sterno-hyoid to the anterior margin of the clavicle is very well developed. A very important part of the skin-muscle forming the covering of the cheek is derived from a broad, flat band springing from the anterior third of the sternum, the insertion being in the skin of the lips and chin. But most curious of all is the presence of a well-developed skin-muscle springing from the lower posterior free margin of the rhomboideus

dorsalis, which, unlike the cucullarius, has an origin far down the back, overlapping the latissimus. The thin band of which mention is made is entirely distinct from any portion of the panculus until it reaches the region of the cheek, where its fibres appear to lose themselves upon the skin. What gives these points interest is the fact that the only other rodent yet encountered, which has such a muscle, is *Geomys*, the pouched gopher. In *G. bursarius* an exactly similar muscle springs from the latissimus at almost the identical point, and has exactly the same course, its insertion being on the pouch, whence I have elsewhere termed it retractor bursae.

In none of the myomorphs examined has such a muscle been encountered. Without going into further detail, it will be sufficient to point out the fact that there may here be a hint of the antiquity, if not consanguinity, of these types, unless, indeed, it can be shown that an underground habit has developed in one case,—that which has its apparent explanation in the function dependent on the possession of a pouch in the other.

In the chipmunk, which is pouched, though only imperfectly fossorial and more perfectly sciurine, this muscle is absent. The spermophiles, although the nearest living American allies of *Arctomys*, do not possess this muscle. In the flying squirrel there is a thin band of muscle passing from the wrist, having its origin on the carpus opposite the volar spur, and passing to the same point as the muscle here described. The flying-squirrel also has a distinct omo-hyoid.

C. L. HERRICK.

Dennison university, April 12.

A means of distinguishing the Canada lynx from the Bay lynx.

If a dozen zoölogists were asked how many species of lynx exist, the majority would probably decline to commit themselves to any opinion, while among the rest would be found advocates for a varying number of species,—as few as one, perhaps, or as many as eight or nine.

While examining a series of sixty or seventy skulls of American lynxes recently, I hit upon two characters which will, I believe, prove useful in distinguishing between the species more satisfactorily than has been possible hitherto. I found that in all the skulls from far north, indeed in all that were labelled '*L. canadensis*,' the anterior condyloid foramen is large, looks downward, and is *not* confluent with the foramen lacerum posterum; and that the visible portion of the presphenoid is flask-shaped, the convexity being in front. In all the skulls of *L. rufus*, *maculatus*, and *fasciatus*, on the contrary, the two foramina are confluent, as in the cats generally, and the visible portion of the presphenoid is sagittate or linear.

The single skull of *Lynx borealis* in the national collection, and one of *L. cervaria*, exhibit the characteristics of *L. canadensis*.

It would appear that in the case of the American lynxes we are dealing with two distinct species only: 1°, *L. canadensis*; and, 2°, *L. rufus*, with its varieties *fasciatus* and *maculatus*. It is also probable that the confluence of the condyloid and lacerated foramina cannot hereafter be regarded as a distinguishing character of the *Aeluroidea*.

FREDERICK TRUE.

Washington, April 20.