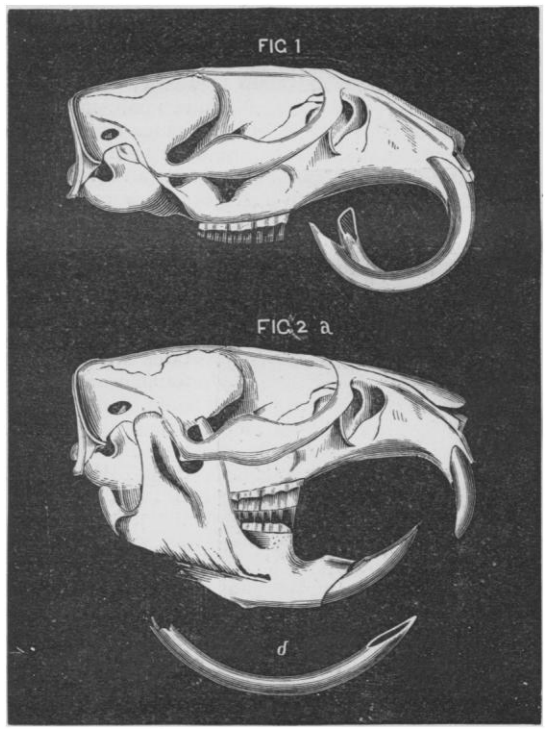
ON THE OVERGROWN TEETH OF FIBER WIBETHICUS.

By Herman L. Fairchild.

No group of animals is more clearly marked by a single feature than the *Rodentia* by their peculiar incisor teeth. Except in the Rabbits which have a supplementary pair in the upper jaw, the number is always four. The enamel is mostly, sometimes wholly, on the anterior surface; where also the dentine is harder. The constant abrasion consequently preserves a keen chisel edge which admirably adapts them for gnawing. This purpose requires them to be of a certain length. To keep that length, the loss from wear is compensated by continual outward growth from the base, the growth being supplied from permanent pulp. The outward growth and the terminal wear are nicely balanced.

It is evident that a loss of one incisor prevents abrasion of the opposing tooth, which, continuing to push outward, may become so long as to interfere with the proper use of the jaws and the remaining teeth. Such cases, while not unknown, are sufficiently rare to be of great interest to the naturalist, and of wonderment to the unscientific.

* Fig. 1, represents a striking example of such malforma-



tion in the case of a muskrat, *Fiber Wibethicus*. The figure is three-fourths the size of the specimen. This skull was found on the bank of Sacandaga River, town of Edinburgh, Saratoga Co., N. Y. Unfortunately no other portion of the skeleton was collected; but the most unobserving could not fail to notice such remarkable teeth. It was naturally supposed that some strange creature had been discovered. Falling into the hands of the writer its character was discovered and a normal specimen was procured for accurate comparison. The latter is shown in figure 2.

When removed from their sockets the overgrown incisors show a growth nearly to a complet circle, although the curvature is somewhat spiral. Their terminations exhibit the normal form produced by abrasion at a time when the teeth were of the proper length, and are naturally discolored with foreign matter on account of long disuse. The yellow color of the front surface of these incisors is fainter towards the ends, but still marked.

As the mandible is missing it is impossible to know what was the difficulty with the lower incisors. They might have been broken by severe usage or carried away by a gun-shot. But that the animal once possessed them is shown by the naturally abraded ends of the remaining ones. The trouble seems to have been of a character which prevented the after growth of the lower incisors. For if they had grown out again after an injury, they would have been forced to take a position in front of the lengthened upper incisors. This would have prevented the forward and backward motion necessary for mastication, and so prominent in Rodents, and moreover would undoubtedly have worn the anterior surfaces of the overgrown upper teeth. But the latter do not show the least unnatural abrasion, while the molars do show that they were used. Probably the breaking of the teeth near the bone would have so exposed the pulp as to destroy it and the implanted part of the injured teeth.

The fairly clean fresh surfaces of all the upper molars would indicate that the lower molars were quite intact and that the greatly lengthened teeth did not interfere with mastication, however much they interfered with prehension. The accumulation of foreign matter upon the sides of the molars is greater than on those of the normal skull. Perhaps this is due to less discrimination in choice of food, and possibly to somewhat greater age.

That the animal lived some considerable time after its misfortune, is proven by the great length of the teeth. The time required for this growth is unknown. It is, however, a very interesting point and should be determined. The rate of growth of the incisors may vary, possibly in the same individual, according to the kind of food and consequent wear; at least it would not be right to assume that the rate of growth is always the same. Observation upon a Rabbit or other rodent would be valuable but not conclusive, as the rabbit is entirely vegetarian in diet while the Muskrat is quite omnivorous. To answer the question before us, the observation should be made upon a Muskrat having the lower incisors removed or rendered useless, in order to repeat as nearly as possible the conditions under which we imagine our specimen existed.

As the ends of the overgrown incisors had long passed the point of greatest interference they did not prevent the taking of food with the mouth; and the creature probably did not die from starvation.

If the readers of "SCIENCE" can give any facts bearing on this matter from their personal knowledge and observation they will confer a favor by sending them to these columns.

In *Forest and Stream* of April 4, 1878, there is a sketch of a Woodchuck's skull showing an abnormal lengthening of both pairs of incisors, which, according to the description, did not prevent the animal from procuring sufficient food to keep it in good condition. And Owen's "Odontography" briefly describes (page 411, old ed.) the abnormal elongation of the incisors of rodents; and notices the skull of a beaver, of which a lower incisor formed a complete circle. Plate 104, Fig. 7, of the above work, also shows the abnormal upper incisors of a rabbit.

* This illustration was used, without comment, in an article by the writer in the *Popular Science Monthly* for June, 1880.

Absorbing Power of the Atmosphere.—M. Laight had long ago shown that the radiating light of the sun is largely absorbed by the layer of atmosphere. But penetrating more deeply into the question, he has successively and separately studied the absorption undergone by each ray of the spectrum. He concludes that these diverse rays are from being equally absorbed, and that the radiation is modified according to the degree of absorption. One of the results of this interesting fact is that the color of the sun is different from that which we attribute to him.