of concentric lines of the surface of the scale there is a region of peculiar appearance, which M. Agassiz designates the "centre of growth," and Mandl the "focus," by which he understands "focus of nutrition." M. Agassiz regards this region as the oldest portion of the scale, the layers of which have been worn away. As regards the first point, that of age, he is undoubtedly right; as regards the second, this is not the case. If the asperities are less prominent in this part of the scale, it is because they date from a period when the fish was smaller.—*Archiv für Anat. Phys. und wiss. Medizin*, 1868, p. 729; *Bibl. Univ.* November 15, 1869: *Bull. Sci.* pp. 276–278.

On the Anatomy of the Alcyonaria.

By MM. G. POUCHET and A. MYÈVRE.

The anatomical systems of most of the inferior animals have not even yet been clearly determined. The existence of distinct muscular elements in particular, long admitted upon the testimony of the movements which one sees executed by the animals, has only been demonstrated quite recently in the *Actinæ* by M. Schwalbe. As to the Alcyonaria, M. C. Genth has indeed described the muscles of *Solenogorgia tubulosa*; but his description is very incomplete, and even it does not stand in any relation to what we have been able to make out of the muscles of two other Alcyonaria, *Alcyonium digitatum* and *A. palmatum*.

The muscular elements are pale fibres, soft during life, about 0.002 millim. in diameter when they are at the maximum of contraction, but usually much more slender. They are finely granular, without nuclei, and have distinct outlines. They may easily be isolated, at least in part of their length, which is variable. These muscular fibres are, by their appearance and size, very like those of the Nemertea. These fibres, in the Alcyonaria, are arranged sometimes in sheets, and sometimes in thicker or thinner bundles, which form true muscles, having sometimes very definite insertions, and needing to be described and named as so many primary organs.

1st. *Longitudinal Muscles*.—They are eight in number, and correspond to each of the mesenteroid laminæ, which they themselves assist to form. They extend from the peristome far into the cœnenchyma (*sarcosome* of M. Lacaze-Duthiers), which we find still very distinct upon the walls of the wide canal, which forms a continuation of the bodies of the polypes (*grossere Saft-Kanäle* of Kölliker).

2nd. This canal presents throughout, beneath the epithelium which lines it, a layer of circular or transverse fibres, covering and crossing at right angles the fibres of the longitudinal muscles lying against the substance of the cœnenchyma. These fibres, retaining their direction, give form to the mesenteroid laminæ; and they are to be found still, under the same conditions, even on the wall of the perigastric cavities.

3rd. *Sphincter*.—This muscle occupies the peristome. It is formed

of eight portions, each nearly of a square form and corresponding to the base of a tentacle; the eight parts are separated by raphes, which are only the lines of insertion of the mesenteroid laminae upon the peristome.

4th. *Tentacular muscles*.—Each partition separating the perigastric cavities gives origin above to two distinct muscles, which rise to the right and left into the two tentacles bordering upon the partition. Each tentacle thus receives two tentacular muscles, coming from the two septa bounding the perigastric cavity to which the tentacle corresponds. They ascend to the summit of the organ, approaching each other at a very acute angle.

5th. *Intertentacular muscle*.—In the angle formed by two neighbouring tentacles, we may clearly distinguish a muscular bundle which marks that angle and ascends on each side upon the borders of the two tentacles for nearly half their length.

These numerous muscles are inserted everywhere upon the fundamental substance of the animal, and in most cases are applied against it. This substance limits externally the body of each polype. It emits thin expansions, which serve above as a solid framework to the mesenteroid laminae, bound the perigastric cavities, and are connected internally with another equally delicate lamina supporting the walls of the stomachal cavity. Externally this substance, whether upon the body of the polypes or between them, is nowhere covered with epithelium. It therefore remains in contact with the surrounding medium (like the bony tissue of the dermal plates of certain fishes). It follows from this, at least in this state of development of the Alcyonarian, that the fundamental substance does not correspond to the definition recently given of the so-called *conjunctive tissues*, which have been said to be "every tissue, with the exception of nerves or muscles, occurring between the external epithelial layer and the internal epithelial layer." This fundamental substance, both in the walls of the body of the polype and in the mass of the cœnenchyma, is everywhere identical.

It is fibrous in some places, and excavated by cavities of several kinds; and it is always in the midst of it, in places where it is perfectly homogeneous, that the spicules appear and become developed. Each polype is therefore in intimate relation of structure with the cœnenchyma by its constituent tissues. But the identity does not stop there, and we find it even in the tissues belonging to the group of products.

Throughout their length the wide canals are lined with the same vibratile epithelium, which is continued into the perigastric cavities, the tentacles, and the pinnules (*A. digitatum*). It is formed of spherical or slightly polyhedral cells of small dimensions. Those of the surface bear extremely delicate vibratile cilia, which appear to be but few upon each cell, and exhibit imperfectly rhythmical movements. The body of the cells appears to be formed of granulations enclosed in a hyaline substance. No nucleus is to be distinguished.

On the other hand, the epithelium which clothes the surface of

the tentacles turned towards the mouth is not vibratile. It presents from place to place little projecting organs, about 0.025 millim. in length, sharp-pointed, slightly recurved, and endowed with no movement. Besides, this epithelium contains *nematocysts*, whilst there are none in the epithelium of the wide canals. But, on the other hand, their presence approximates the epithelium of the tentacles to the tissue which fills (but does not line, as has been stated) the small nutritive canals (*kleine Saft-Kanäle* of Kölliker). These canals are entirely filled up by a granular substance individualized here and there into cells. These cells are irregular, polyhedral by reciprocal pressure, accumulated in the canals. They are more finely granular and more transparent than those of the vibratile epithelium, and have a small nucleus of a rose-colour, with ill-defined although very distinct contours. We find among these cells (and consequently in the heart of the *cœnenchyma*) *nematocysts* exactly like those of the epithelium of the tentacles.

This peculiarity, in conjunction with the extension of the fundamental substance of the *cœnenchyma* into the polypes, and the extension of the muscles of the polypes into the heart of the *cœnenchyma*, establishes between them such an analogy of structure that it is not possible, in general anatomy, to distinguish them, or to find other than morphological differences between these parts.—*Comptes Rendus*, Nov. 22, 1869, tome lxi. pp. 1097–1099.

Observations on the Nasal Glands of Birds. By M. JOBERT.

The secretory apparatus which occupies the greater part of the frontal region in birds, and which opens into the nasal fossæ, is more complex than has been supposed. It consists of two pairs of glands, closely applied to each other, but organically very distinct, and each having a distinct secretory duct: these two ducts run at first side by side; but in the nasal fossæ their course becomes very different, and their orifices are very wide apart. The author describes the structure of these glands and their anatomical relations.—*Comptes Rendus*, November 15, 1869, tome lxi. p. 1016.

On Remains of the Beaver in New Jersey.

By MASON C. WELD.

I take the occasion of the recent discovery of a very interesting and novel fact to me to communicate with you. It is the finding of a genuine beaver-meadow on the very top and near the brink of the Palisades. The edge of the meadow is about 175 paces from the "steep rocks," which are, I suppose, about 500 feet above the tide-water in the Hudson river, and which rises so abruptly that a stone may in some places be thrown from the top into the water.

Stumps gnawed off by beavers were found by workmen getting out swamp-muck on the land of Mr. Charles Nordhoff, and in the rear of his residence. The trench in which they were found (6 or 7 feet below the surface) is about 10 feet deep; and though it was