

## **On the gustatory organs of Putorius vison / by Frederick Tuckerman.**

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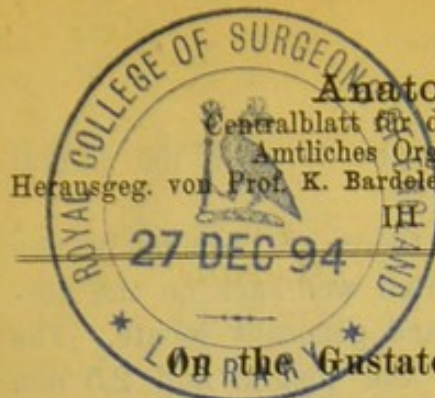
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**On the Gustatory Organs of *Putorius vison*.**

By FREDERICK TUCKERMAN, Amherst, Mass., U. S. A.

It will be of interest first to describe briefly the form and general appearance of the tongue of this little animal.

The organ measures 37 mm in length, 12 mm in breadth, and 8 mm in thickness, and is perfectly free for 13 mm from the fraenum. The upper surface is marked by a longitudinal medial groove or furrow extending from the base to the tip. In the middle third of its course this furrow is quite deep and is clearly defined, but as it nears the base and anterior extremity of the tongue it becomes superficial and finally disappears. The dorsum, anterior to the area of the papillae circumvallatae, is covered with small, glistening, recurved papillae of mechanical function, which are disposed in subparallel rows running somewhat obliquely from the median furrow to the lateral margins. This symmetry of arrangement ceases a short distance from the tip of the organ. These papillae vary a little in form, and those nearest the lateral contours of the tongue are smaller than elsewhere. They measure about 0,30 mm in height and 0,20 to 0,25 mm in breadth, and are about 0,05 mm apart. They are more or less flattened on top, with perpendicular sides, and each one is seated upon one or two papillary upgrowths of the mucosa. These papillae usually have a single, rather coarse, darkly-pigmented, horny spinule projecting from the inner angle of their upper surface, the point of which is directed inwards and backwards.

Fungiform papillae are thinly scattered over the dorsal surface, being most conspicuous in the space bounded by the circumvallate papillae. Taste bulbs are present at the upper part of many of these papillae, particularly those of the middle and posterior regions of the tongue. They are situated partly in the mucosa and partly in the epithelium, their apices failing, in many instances, to perforate the outer layers of the epithelium. They vary greatly in size. One of the largest that I measured was 0,040 mm in length and 0,021 mm in breadth.

The extreme posterior dorsal surface is somewhat wrinkled, and is devoid of papillae. The under surface of the tongue is thrown into



folds, running transversely from a mesial raphe towards the lateral limits of the organ.

The circumvallate papillae, of which there are commonly two pairs, an anterior and a posterior, are situated well-back on the dorsum<sup>1)</sup>. They are large, rather prominent, and generally lobate. The posterior pair are 8 mm from the base of the tongue and 2,5 mm from each other. The anterior pair are 1—2 mm distant from the posterior and are 5 mm apart. At each side of the tongue, immediately in front of the arcus glosso-palatinus, is a papilla foliata. The two papillae are rudimentary in so far as they possess no taste bulbs. They consist of ten or more somewhat irregular folds, which are separated by well-defined and fairly symmetrical furrows. About the base of the folds glands are fairly abundant. It is not unlikely that further search may reveal the presence of bulbs in this region, although I failed to find any trace of them in my specimens. An examination of many sections also failed to show true bulb-like forms in the epiglottis or in any part of the larynx.

The circumvallate papillae which I examined were all more or less constricted at their upper part. Below the constriction they measure from 0,60 to 0,90 mm in diameter. Each papilla is encircled by a narrow trench which is of uniform breadth, save at the point facing the constriction, where it is much wider. Serous glands are very numerous, and their ducts open into the trench at its base and sides. The epithelial covering of these papillae, and of the region round about them, is quite thin, only averaging 0,04 mm in thickness.

The taste bulbs are not very plentiful in *Putorius vison*. They are disposed at the sides of the papilla in a girdle of 8 to 12 tiers. They rarely occur on the outer wall of the trench, and none were detected in the epithelium of the free upper surface. Judging from horizontal sections there appear to be about fifty bulbs in a tier. If we allow for ten tiers, we shall have five hundred bulbs for each papilla. The bulbs do not vary much in size and shape, and are without a well-defined neck. They measure 0,039 mm in length, their greatest transverse diameter being 0,024 mm. Non-medullated nerve-fibres stream into the papilla, and their terminal branches run upwards towards the summit and laterally towards the sides containing the taste bulbs.

1) Occasionally I have found on the tongue of this mammal three pairs of well-developed circumvallate papillae.