

## **On the gustatory organs of *Arctomys monax* / by Frederick Tuckerman.**

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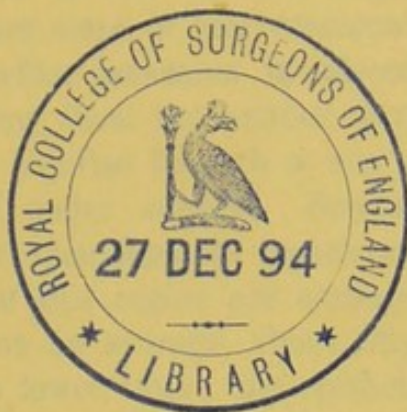
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## On the Gustatory Organs of *Arctomys monax*.

By FREDERICK TUCKERMAN, Amherst, Mass.

The tongue of *Arctomys monax* possesses several quite distinctive characters. It measures 60 mm in length, 20 mm in breadth, and 16 mm in thickness, and is free from the floor of the mouth for 18 mm. The upper surface is soft and velvety to the touch and, at its posterior part, slightly elevated. The anterior third of the dorsum is deeply grooved, and the apex is bifid, as in *Fiber zibethicus* and the Phocidae. The fungiform papillae resemble minute white beads, and are distributed quite uniformly over the dorsal surface and lateral margins of the tongue from the base to the tip. At the posterior part of the dorsum, well back towards the base, are three to five circumvallate papillae. They are arranged in a triangle, the apex of the triangle being towards the epiglottis. The papillae foliatae are about 8 mm long, and are marked at their upper inner border by a fringe of conical papillae, the points of which turn inwards and backwards. This fringe is continued for some distance on to the inner side of the arcus glosso-palatinus.



## Gustatory Structures.

The Circumvallate Papillae. These papillae measure about 0,80 mm in breadth and 0,45 mm in height, and are slightly depressed below the level of the adjacent lingual area. They vary in size and shape, and are more or less verrucose. The epithelium covering their upper surface measures in places 0,3 mm in thickness. The trenches encircling them are neither very wide nor very deep, but pass beneath the papillae in such a way as to give them a considerable expanse of under surface. Serous glands are not very plentiful. Their ducts open into the trench at its base and sides.

The taste-bulbs of this region are arranged in four or five tiers, each tier containing, on an average, about fifty bulbs. The bulbs are most numerous in the lower tiers, the epithelium lining the expanse of under surface of the papilla being quite filled with them. They are fairly uniform in size and measure 0,06 mm in length and 0,032 mm in breadth. The diameter of the gustatory pore is about 0,0033 mm. Non-medullated nerve-fibres run to the bases of the bulbs, and can also be followed, for a short distance, into the epithelium between them. In many bulbs, the sensory cells may be seen protruding through the taste-pore.

The Papillae foliatae. Most of the folds composing these papillae are marked by a central cleft of some depth. On each side of the main cleft are several smaller ones, the number depending upon the number of secondary papillae borne by the fold. The furrows have a fairly uniform breadth, but their depth varies, averaging about 0,55 mm. Serous glands are relatively more abundant here than in the circumvallate area, and their ducts open at the usual places. Close by the foliate organs the ducts of the mucous glands open directly on the free lingual surface. Each papilla foliata possesses eight bulb-bearing folds. Three or four smaller folds are usually present, but they are destitute of bulbs and are unsupplied with serous glands or ducts. The bulbs are disposed irregularly at the sides of the folds, there being from five to nine tiers of them. They vary greatly in width, some having a transverse diameter of 0,045 mm. The mean breadth, however, is 0,035 mm, and the length 0,057 mm. The tiers are rather short, not usually containing above eleven bulbs in their entire length. Taste-bulbs occur but sparingly in the fungiform papillae.

## Gustatory Structures

The *Circumvallate Papillae*. These papillae measure about 0.80 mm in breadth and 0.45 mm in height and are slightly increased below the level of the adjacent lingual area. They vary in size and shape and are more or less verrucous. The epithelium covering their upper surface measures in places 0.3 mm in thickness. The trenches enclosing them are neither very wide nor very deep. The pass beneath the papillae in such a way as to give them a considerable expanse of under surface. Serous glands are not very plentiful. Their ducts open into the trench at its base and sides.

The taste-bulbs of this region are arranged in four or five tiers, each tier containing, on an average, about fifty bulbs. The bulbs are most numerous in the lower tiers, the epithelium lining the expanse of under surface of the papilla being quite filled with them. They are fairly uniform in size and measure 0.08 mm in length and 0.032 mm in breadth. The diameter of the gustatory pore is about 0.018 mm. Non-medullated nerve-fibres run to the bases of the bulbs, and can also be followed, for a short distance, into the epithelium between them. In many bulbs, the sensory cells may be seen protruding through the taste-pore.

The *Foliate Papillae*. Most of the folds composing these papillae are marked by a central cleft of some depth. On each side of the main cleft are several smaller ones, the number depending upon the number of secondary papillae borne by the fold. The furrows have a fairly uniform breadth, but their depth varies, averaging about 0.50 mm. Serous glands are relatively more abundant here than in the circumvallate area, and their ducts open at the basal places. Lined by the foliate organs, the ducts of the mucous glands open directly on the free lingual surface. Each papilla foliate possesses eight bulb-bearing folds. Three or four smaller folds are usually present, but they are destitute of bulbs and are supplied with serous glands or ducts. The bulbs are disposed irregularly at the sides of the folds, there being from five to nine tiers of them. They vary greatly in width, some having a transverse diameter of 0.045 mm. The mean breadth, however, is 0.035 mm, and the length 0.057 mm. The tiers are rather short, not usually containing above eleven bulbs in their entire length. Taste-bulbs occur but sparingly in the longitudinal papillae.