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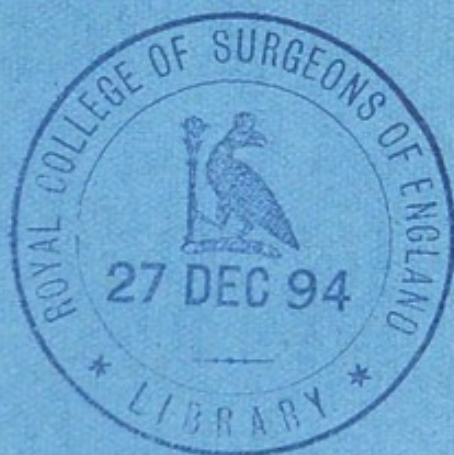
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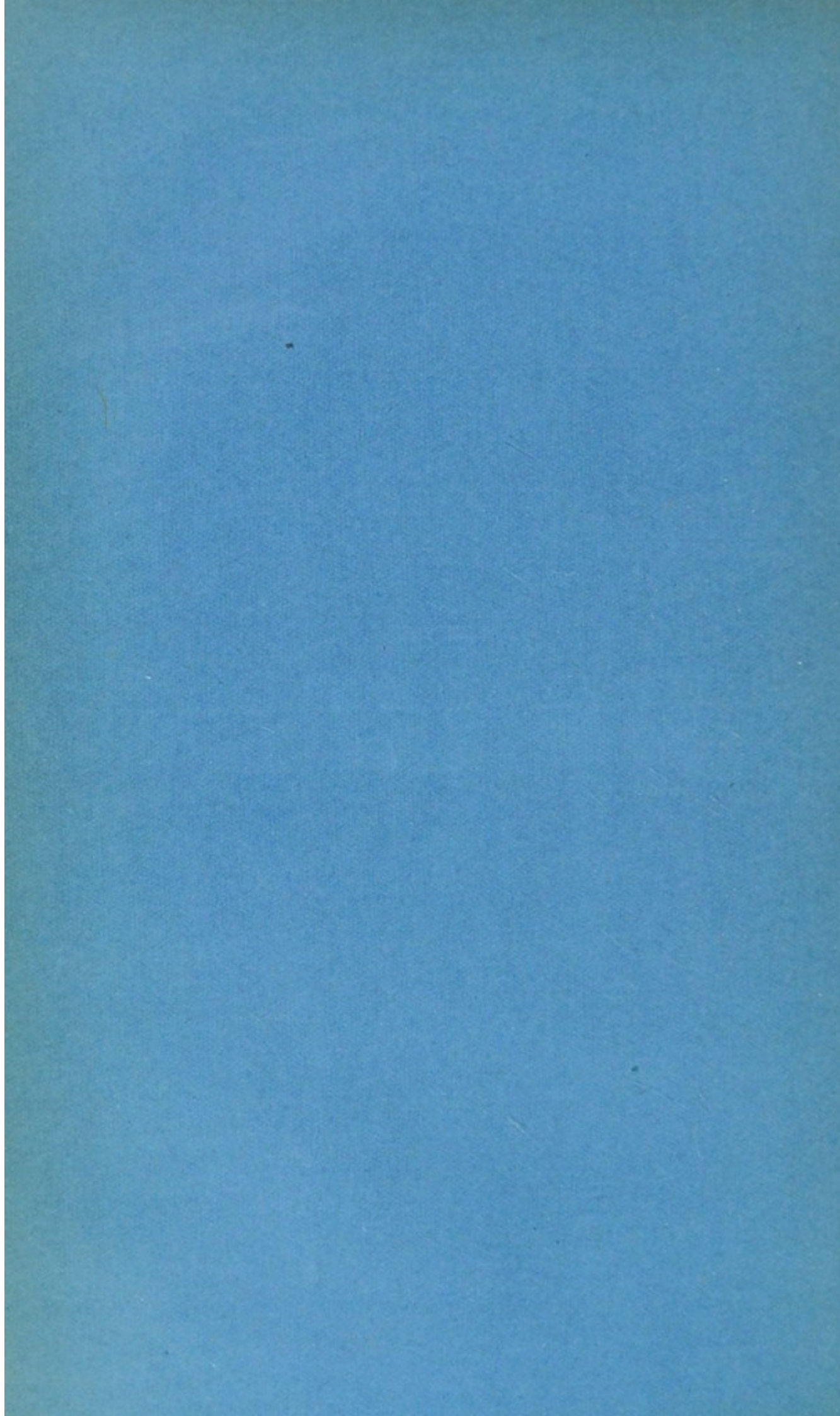
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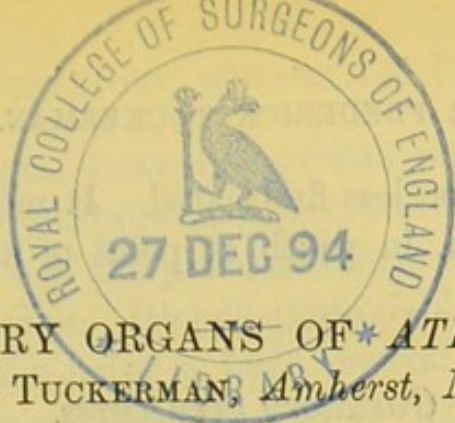
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THE GUSTATORY ORGANS OF **ATELES ATER*. By
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THE tongue of *Ateles* possesses a long flattened process, which is continued forward from the frænum. This lingual character, already noted by Owen in the *Lemuridæ* and *Chiromyidæ*, is called the frænal or sublingual plate. A peculiar interest attaches to the frænal plate in *Ateles*, as it represents a hitherto undescribed bulb-bearing area.

General Description of the Tongue.—The organ measures 54 mm. in length, 20 mm. in breadth, and is free from the frænum for 12 mm. It is quite thick posteriorly, and the general surface is smooth and yielding to the touch. The under surface of the free portion is impressed by a deep wedge-shaped groove extending from the frænum to the tip. The fungiform papillæ are abundant only at the tip; beneath it, they are large and closely packed. As in *Lemur mongoz*, and some species of *Macacus*, the circumvallate papillæ consist of two pairs. The posterior pair are 2.6 mm. apart, and 13 mm. from the base of the tongue. The anterior pair are well forward, being 10 mm. from the posterior pair and 11 mm. apart. The two pairs of papillæ, seen from above with a low power, show a marked difference in external characters. The summits of the posterior pair are smooth and circular. The anterior pair, on the other hand, lie more obliquely, present a less regular contour, and are somewhat depressed at the centre. Within the space bounded by the four gustatory papillæ are three transitional forms, which are obviously modifications of the fungiform type. The dorsum posterior to the gustatory region is wrinkled, but devoid of papillæ. The lateral gustatory organs are placed obliquely at the sides of the base, very much as in *Lepus*. The fringe of the filiform papillæ is wanting. The frænal process or sublingual plate noted by Hunter in *Lemur mongoz*, and subsequently observed by Owen in other *Lemuridæ*, is a lingual character in *Cebus*, *Macacus*, and *Ateles*. In *Ateles* the process is flattened, the tip bifurcate,

and the edge more or less fimbriated. It measures 6.5 mm. in length, and 4.5 mm. in width at point of attachment to the frænum.

Gustatory Structures.

The Circumvallate Papillæ.—Papillæ vary greatly in size, and are occasionally lobate. The summits of the anterior pair do not project from the openings of the trenches, and hence they are more protected than the posterior pair. They measure from 0.70 to 2.30 mm. transversely, and are 0.75 mm. in height. Serous glands are fairly abundant and occur within the papillæ. The ducts open at the usual places. The bulbs are disposed on the lateral area of the papillæ in ten tiers. A few scattered bulbs are also present on the free upper surface, and, more rarely, may be found embedded in the epithelium of the outer wall of the trench. The bulbs are closely set, and, in crowded tiers, number one hundred and forty. The mean is probably one hundred. They measure 0.051 mm. in length and 0.027 mm. in breadth.

The Lateral Gustatory Organs.—The organs are flattened or slightly rounded on top, and measure 8 mm. in length and 4.5 mm. in breadth. The folds are fairly uniform in size, and twelve of the fifteen bear bulbs. The furrows are narrow, and measure 0.65 mm. in depth. Serous glands are fairly plentiful and occur within the folds. The ducts open into the furrows at their deeper part. The bulbs, of which there are some ten tiers, measure 0.051 mm. in length and 0.027 mm. in breadth.

The fungiform papillæ are of normal structure. Those about the tip, more especially its under part, are richly supplied with bulbs. Here they are numerous but small, and in some papillæ form a row of ten or more, which extends across the entire width of the summit.

I failed to detect terminal bulbs in the sublingual plate in *Cebus* or *Macacus*. In *Ateles*, however, they are quite numerous, especially in the fungiform papillæ, where I have counted as many as sixteen bulbs in a single vertical section. They are also embedded in the epithelium of the free margin to some extent. One that I measured was 0.065 mm. in length,

the average length, however, is 0·048 mm., the breadth being 0·030 mm. Non-medullated nerve-fibres enter the axes of the fungiform papillæ of the plate, and form a network beneath the bulb-bearing region. Glands, presumably of the mucous type, are present; there being a main central clump, and, near each lateral border, a smaller one. It is highly probable, I think, that the sensory terminal organs of the sublingual plate are tactile rather than gustatory in function.

