

VIII. *On the Male Generative Organs of the Sumatran Rhinoceros* (*Ceratorhinus sumatrensis*). By W. A. FORBES, B.A., F.L.S., Scholar of St. John's College, Cambridge, Prosector to the Society¹.

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[PLATE XX.]

ON two occasions the late Prof. Garrod had opportunities of dissecting the Sumatran two-horned Rhinoceros; and his notes on their anatomy will be found duly recorded in the Society's publications². Both his specimens were females.

On March 20, 1879, the Society received on approval a fully adult male of this animal, being, I believe, the first individual of that sex brought alive to Europe. Unfortunately it died on the 5th of April following, the post-mortem examination showing evidence of dropsy, as well as of tubercle in the lungs and spleen. The skin and skeleton of this specimen are now in the British Museum.

Prof. Owen, in his account of the anatomy of *Rhinoceros indicus* (Trans. Zool. Soc. iv. pp. 31-58), has described and figured the male organs of that species; and the present account will fill up the corresponding blank that has as yet existed as regards these parts in *Ceratorhinus sumatrensis*.

As was to be expected, the two genera closely conform with each other in all main points, with some considerable differences in matters of detail.

As in *R. indicus*, there was no scrotum; each testis measured $4\frac{1}{2}$ inches long by 2 broad at the widest part. The epididymis was of the same length as the testis.

The vasa deferentia were $29\frac{1}{2}$ inches long by $\frac{1}{8}$ inch broad; unlike these ducts in the Indian species, they were not dilated terminally. The vesiculæ seminales resembled in shape those described by Owen: they were $7\frac{1}{2}$ inches long, and 1 inch across at the broadest part. The right vesicula had two, the left four, narrow ducts, $1\frac{1}{2}$ -2 inches long, which joined the vasa deferentia just before these entered the urethra. The verumontanum is short and rounded, $\frac{1}{2}$ inch long and 1 inch broad. The openings of the ejaculatory ducts were very minute; a larger pore, which was the only representative of a vesicula prostatica, lay close above.

¹ Prof. Garrod had the drawings which accompany this paper made by Mr. Smit from the animal whilst still fresh, with the object of laying some notes on the subject before the Society. Unfortunately I have been unable to find any such amongst his numerous MS. papers. He also requested me to make notes and measurements of the male organs for him with the like object; and from these sources I have drawn up the present paper. The glans penis is now preserved in the College of Surgeons.

² Proc. Zool. Soc. 1873, p. 92, and Trans. Zool. Soc. x. p. 411 (1878).



The prostate was of a roughly triangular shape, 2 inches long by 5 inches across, and had the same structure as in *R. indicus*, the glands opening by numerous pores on each side of the verumontanum in a well-marked sinus prostaticus.

Cowper's glands were large ($3\frac{1}{2}$ inches by 2) and oval; their ducts opened by pores $1\frac{1}{2}$ inch in front of those of the ejaculatory ducts.

The urethra measured in all, in the unerected state, about $23\frac{1}{2}$ inches, of which $\frac{1}{2}$ inch was "prostatic," 3 inches "membranous," and the rest "spongy."

The glans penis (Pl. XX. figs. 1, 2) is a long and tapering cylinder, provided at the end with a second, somewhat mushroom- or trumpet-shaped expansion, nearly in the centre of which is the opening of the urethra. It thus conforms closely with the same organ in *R. indicus*. But, as will be seen from the drawings, it is provided, in addition, with two large oblong-oval lobes, of the same colour and substance as the rest of the glans, which are free for the greater part of their length, and only attached to the rest of the glans at their bases. These lobes lie on the sides of the dorsum of the penis, and are closely approximated at their bases, as represented in fig. 2. In fig. 1 they are spread out artificially, so as to show better their extent and attached bases. The total length of the glans, to the reflection of the prepuce, was 7 inches, the trumpet-like terminal part being 1 inch long, and 1 inch transversely. The lobes of the glans measured $2\frac{1}{2}$ inches long by $1\frac{1}{2}$ inch across.

In *R. indicus*, according to Prof. Owen (*l. c.* p. 51), "on each side of the base of the glans, and rather towards its under part, there is a longitudinal thick oblong ridge or lobe, $3\frac{1}{2}$ inches in length, and 8 lines in basal thickness; the thick rounded free border of each lobe inclines downwards." Prof. Owen's figure is reproduced in outline, of the original size, in fig. 3, to show the differences thus indicated. By the kindness of Prof. Flower I have been enabled to examine the penis of an Indian Rhinoceros preserved in the stores of the College of Surgeons, and which is probably the same specimen as that dissected and described by Prof. Owen, with whose description and figures it closely corresponds. The lobes, however, seem to me to be (as also indicated in his figures) rather on the upper than on the under part of the penis, as they lie, in fact, on each side of the dorsum a little removed from the middle line, as also is the case in *Ceratorhinus*. They are about $1\frac{1}{4}$ inch in height at the centre, diminishing towards each end till they become undistinguishable from the rest of the glans. *Ceratorhinus* therefore differs from restricted *Rhinoceros* in the greater size and development of the lobes, which have now ceased to be mere elevations or ridges attached throughout their length to the body of the glans, but have become freely projecting lobes attached only by their bases¹. In *R. indicus*, too, the terminal part of the glans is more slender,

¹ I may mention that Prof. Flower also found for me in the stores of the College of Surgeons a detached glans penis of a Rhinoceros exactly like that now described. Its history is somewhat uncertain; but it was probably sent over, along with other viscera of animals, by Sir Stamford Raffles when Governor of Java. There can be no doubt that it belongs to a species of *Ceratorhinus*.

being longer in proportion to its depth, and its apical expansion narrower across in proportion to its height ($\frac{7}{8}$ inch to $1\frac{1}{2}$), with its margins, moreover, somewhat crinkled.

It is, in conclusion, interesting to observe that the distinctness of the two genera *Rhinoceros* and *Ceratorhinus*, as shown by other characters—external, cranial, and visceral—is confirmed by these differences in the sexual organs.

DESCRIPTION OF THE PLATE.

PLATE XX.

- Fig. 1. Glans penis of *Ceratorhinus sumatrensis*, of about the natural size, viewed from above, with the lobes artificially extended, to show better their form and attachment.
- Fig. 2. The same, viewed from the side.
- Fig. 3. Outline of glans penis of *Rhinoceros indicus*, after Owen (Trans. Zool. Soc. iv. pl. ix. fig. 6).

Prata. Sumat. Sumatrensis.

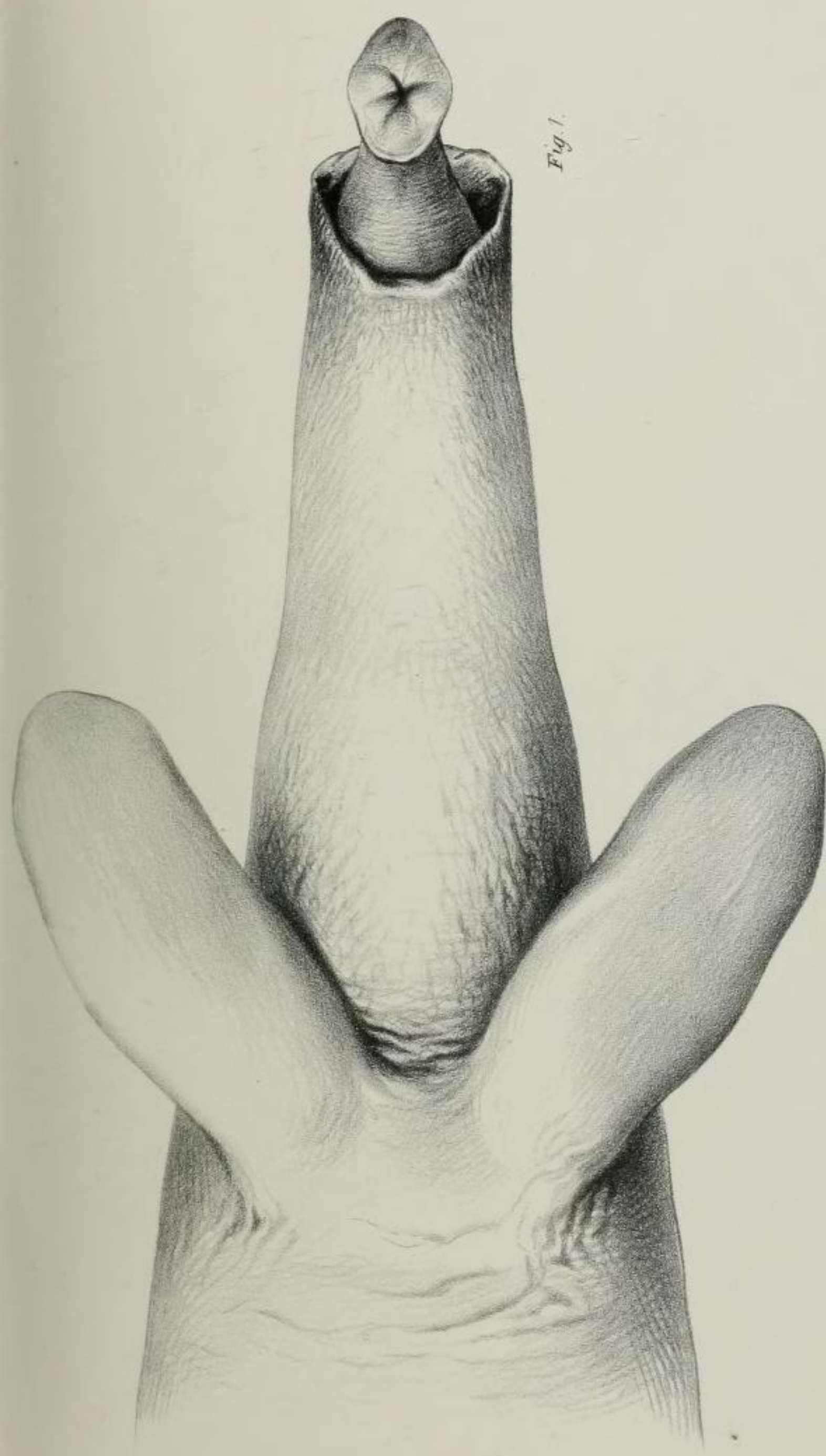


Fig. 1.

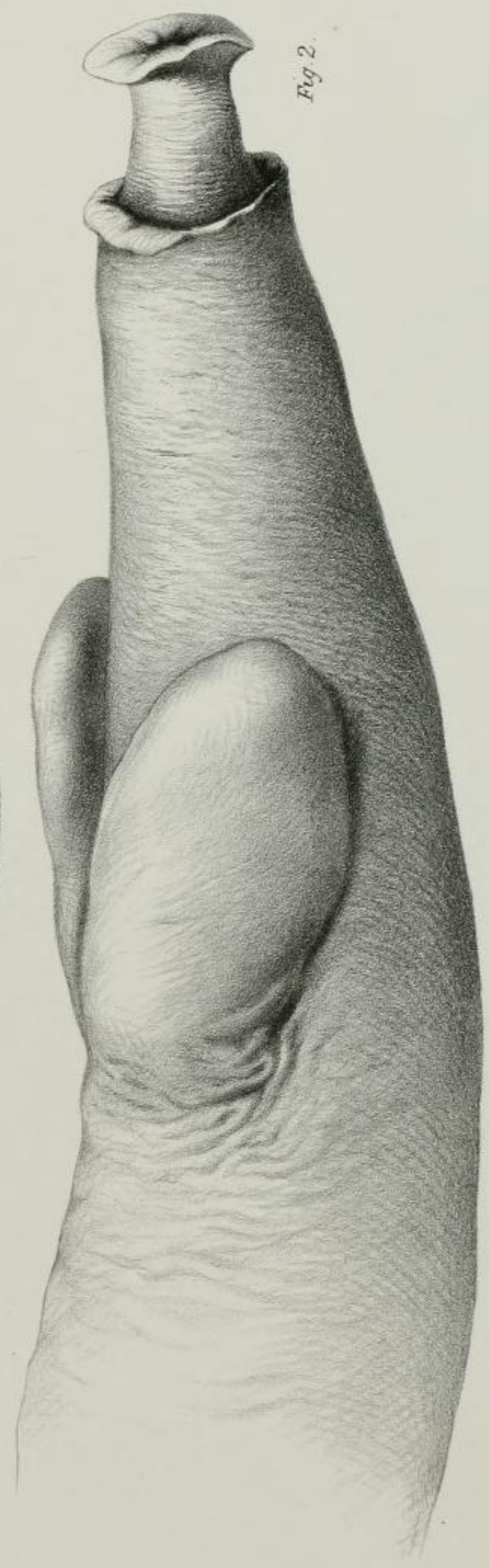


Fig. 2.

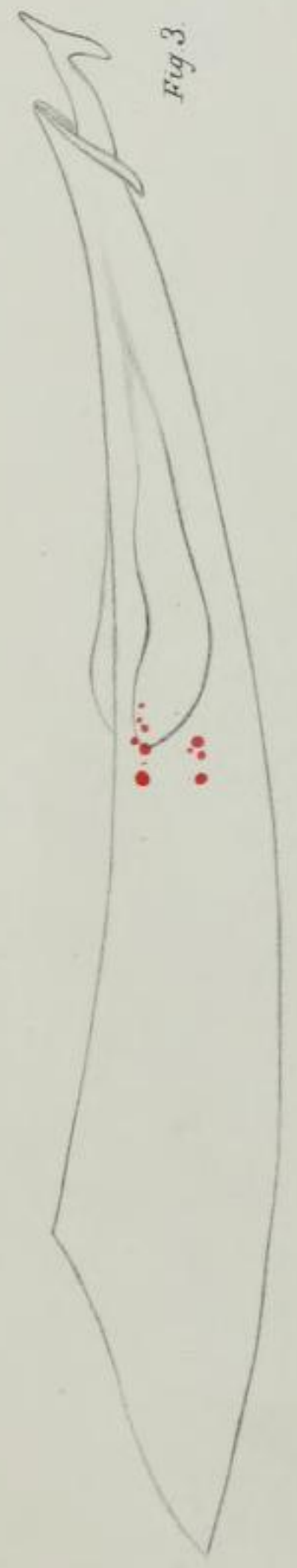


Fig. 3.

J. Smit lith.

Hannart imp.

CERATORHINUS SUMATRENSIS.