rivers escape from the hill-range facing the Sea of Zanzi. Birds and reptiles, especially snakes, are interesting and numerous.

(Signed) "J. H. S."

A letter was read from E. H. Rodd, Esq., dated Penzance, January 7th, announcing the recent occurrence in Cornwall of a female specimen of *Scolopax sabini* in very perfect plumage.

Professor Owen concluded the reading of his memoir on the Aye-aye (*Chiromys madagascariensis*), which had been adjourned from the last meeting of the Society. The portions of the structure of this animal successively examined were the dentition, the muscles, the brain, the digestive organs, the organs of circulation and respiration, and the renal and genital organs. The author then proceeded to the comparison of its external characters, its osteology, and its internal structure with those of the Lemurs and Rodents, and showed that in a variety of particulars its nearest approach was to members of the lemurine group. In ordinary zoological or external characters its nearest allies were certain Galagos of Africa (*Otolicnus crassicaudatus* and *O. alleni*). In conclusion, he entered into the evidence afforded by the peculiarities of this animal on the question of the origin of species, and, after showing the arguments in favour of the derivative hypothesis and those against its mode of operation, as propounded by Buffon, Lamarck, and Darwin, came to the conclusion that, whilst the general evidence on this subject was in favour of creation by law, he was compelled to acknowledge ignorance as to the mode in which such secondary causes might have operated in the origin of *Chiromys*. At the same time he fully admitted that the attempts to dissipate the mystery which environed the origin of species, whether successful or not, could not but be fraught with great collateral advantages to zoological science*.

The following papers were read:—

1. On the Skull of the Japanese Pig (Sus plicicepps). By Dr. J. E. Gray, F.R.S., &c.

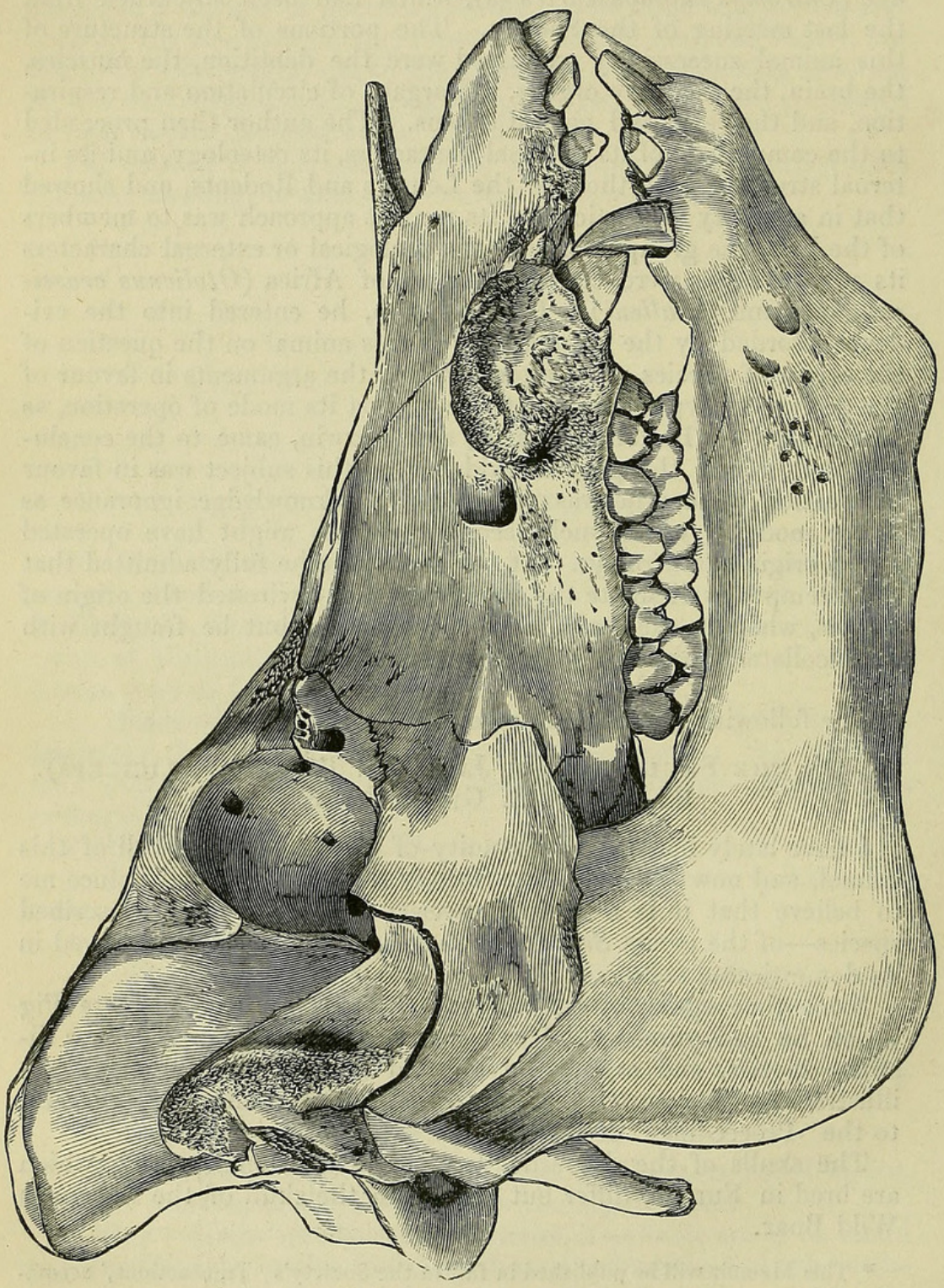
I have lately had the opportunity of examining the skull of this animal, and now lay before the Society the reasons which induce me to believe that it is a distinct species—and a hitherto undescribed species—of the genus *Sus*, which has as yet only been observed in its domesticated state.

Some time ago, when Mr. Bartlett showed me the Japanese Pig which he had purchased, I was convinced of its belonging to a distinct species, and urged him to send an account of the animal, illustrated with a portrait of its very curious and characteristic face, to the 'Proceedings' of the Society.

The skulls of the domestic varieties of the common Pig, which are bred in Europe, differ but little from the skull of the European Wild Boar.

* This Memoir will be published in full in the Society's 'Transactions,' accompanied by appropriate illustrations.

The skulls of the common domestic Pig, which we have in the British Museum, for example, chiefly differ from the skull of a Wild Boar from Germany in the same collection in being smaller and considerably shorter, and in the angle of the forehead being much more acute and sudden, caused by the back of the two skulls being nearly of the same height, while that of the domestic one is generally much the shortest in length. The position and size of the holes for the blood-vessels and nerves are nearly the same in all these skulls. The underside of these two skulls and the forms of the palates are also



Skull of *Sus pliciceps*.

very similar. The lower jaws are equally similar. Cuvier, in his 'Ossements Fossiles' (vol. iii. Cochon, pl. 1. f. 1, 2, figure of the skull), well represents the skull of our domestic Pig. Blainville, in his 'Ostéographie des Mammifères' (Genus *Sus*, pl. 14), figures the skulls of three male Wild Boars, and of a male and female domestic Pig, and on pl. 5. two skulls of *Sus indicus*, one from Malabar and the other from Siam, and one of the *Sus vittatus* from Java. These skulls all have very much the same appearance, and bear no relation to the skull of the Japanese Pig under consideration.

The skull of the Japanese Pig chiefly differs from the skull of the Wild Pigs of Europe, India, and Java, above referred to, and from

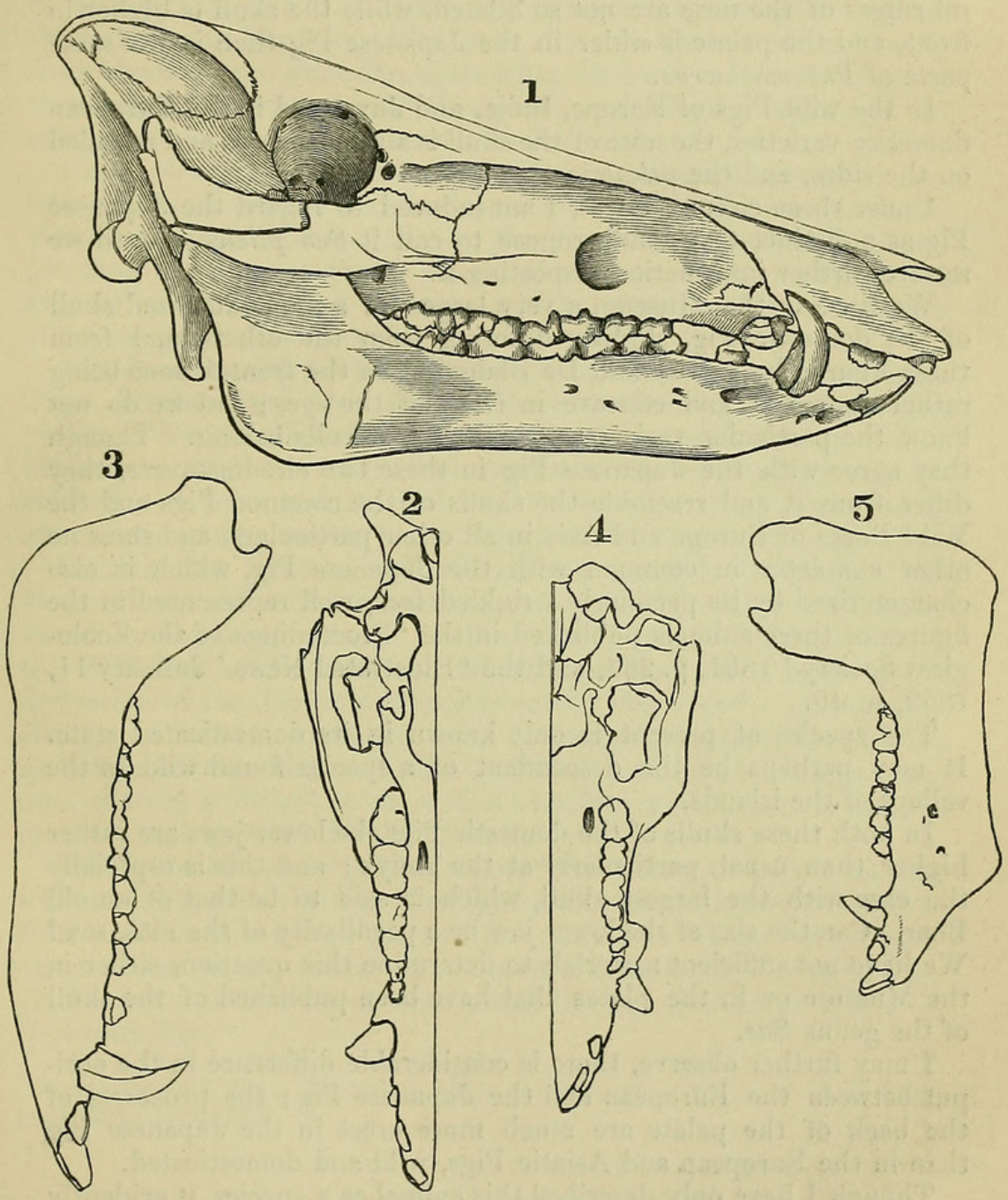


Fig. 1. Skull of *Sus scrofa ferus*.
2. Palate of *Sus scrofa ferus*.
3. Lower jaw of *Sus scrofa ferus*.
Fig. 4. Palate of *Sus pliciceps*.
5. Lower jaw of *Sus pliciceps*.

that of the common domestic Pig, in being shorter, and much higher in front, especially from the greater height of the front of the lower jaw at the gonyx; in the forehead of the skull being rather concave before the orbits, flattened, and furnished with a sharp-keeled edge on each side, producing a deep concavity on each cheek in front of the orbit; in the palate being much broader for its length, and the series of the teeth wider apart and rather arched.

In the height of the front of the skull, in the flatness of the nose in front of the orbit, in the concavity of the cheek, and in the broadness of the palate, the skull of the Japanese Pig bears some relation to the skull of the *Potamochœrus penicillatus*; but the lateral ridges of the nose are not so dilated, while the skull is higher in front, and the palate is wider in the Japanese Pig than in the same parts of *Potamochœrus*.

In the wild Pigs of Europe, India, and Java, and in the European domestic varieties, the nose of the skull is always narrow and rounded on the sides, and the palate is narrow.

Under these circumstances, I am induced to regard the Japanese Pig as a distinct type, and propose to call it *Sus pliciceps* until we receive further information respecting it.

We have in the Museum a very large and a moderate-sized skull of the domestic Pig, slightly differing from the others, and from those figured by Cuvier and De Blainville, in the frontal bone being rather depressed and concave in front of the eyes; but we do not know the particular variety to which these skulls belong. Though they agree with the Japanese Pig in these two circumstances, they differ from it and resemble the skulls of the common Pigs and the Wild Boars of Europe and Asia in all other particulars, and show no other character in common with the Japanese Pig, which is also characterized by its peculiarly wrinkled face, well represented in the figures of these animals published in the 'Proceedings of the Zoological Society' 1861, p. 263, and the 'Illustrated News' January 11, 1862, p. 49.

The species at present is only known in its domesticated state. It may perhaps be the descendant of a species found wild in the valleys of the islands.

In both these skulls of the domestic Pigs the lower jaws are rather higher than usual, particularly at the gonyx; and this is especially the case with the largest skull, which is said to be that of an old Boar. Can the size of the lower jaw be a peculiarity of the male sex? We have not sufficient materials to determine this question, either in the Museum or in the plates that have been published of the skull of the genus *Sus*.

I may further observe, there is considerable difference in the occiput between the European and the Japanese Pig; the processes of the back of the palate are much more erect in the Japanese Pig than in the European and Asiatic Pigs, wild and domesticated.

Though I have only described this animal as a species, it evidently forms a section in the genus by itself. The restricted genus *Sus* may be divided thus:—

1. Face smooth, or nearly so; skull conical; the upper part of the nose rounded; palate narrow. SUS.

Sus scrofa, Sus indicus, Sus vittatus.

2. Face deeply and symmetrically furrowed; the skull flattened on the forehead; the upper part of the nose flattened, keeled on the sides; palate broad. CENTURIOSUS.

Sus pliciceps.

I regard the facts contained in this paper as very interesting—first, as adding a new kind of domestic animal to our list (and I do not think that any has been added since the introduction of the Turkey from Mexico); and secondly, as showing, from a domestic animal, that there must be a wild species which has not yet been brought into our catalogues.

I may observe that, like many other very distinct species of certain genera of domesticated or semi-domesticated Mammalia, as the Horse, Ass, and Zebra, the Ox, the Dog, &c., the fact of interbreeding is no proof that a kind is not a species; for no one would argue that an Ass and a Horse are the same species, or a Zebra and Quagga, or *vice versa*.

The Japanese Pig breeds with facility with the common domestic Pig. We have not had time to observe whether the offspring is prolific. The half-breed of the Japanese Boar with a common Sow retains almost all the external characters of the male parent well developed. I have not yet had the opportunity of observing what effect the crossing has on the osteological characters of the species.

I think that no one who will take the trouble to compare the skulls of the different varieties of domestic Pigs which are usually found in England, with the skull of the European Wild Boars and the Wild Pigs of Asia and the Island, can doubt for a moment the derivation of the domestic breeds from the wild type*. Indeed, the change in form is so slight as to be scarcely perceptible, and the gradation between the most abnormal form to the wild animal so gradual as to be sufficient to show that even the most abnormal state is due only to a gradual change of form.

Mr. Eyton, in a paper printed in the 'Proceedings,' has shown that a Chinese Pig which he examined had a different number of vertebræ from another domestic Pig; but the skull of a Chinese Pig I have examined shows no characters to separate it from the Common Pig. Its head is a little shorter than usual, but not so short as that of a Berkshire Pig.

* See Bartlett, Proc. Zool. Soc. 1861, pp. 263, 264; Ann. and Mag. N. H. 1861, 501; 1862, 162.