of the latter from the former as a group of Gymnosperms, as suggested by M. Brongniart, must be abandoned. The remarkable development of exogenous woody structures in most members of the entire family indicates the necessity of ceasing to apply either to them or to their living representatives the term Acrogenous. Hence the author proposes a division of the vascular Cryptogams into an exogenous group, containing *Lycopodiaceæ*, *Equisetaceæ*, and the fossil *Calamitaceæ*, and an endogenous group, containing the ferns,—the former uniting the Cryptogams with the Exogens through the *Cycadeæ* and other Gymnosperms, and the latter linking them with the Endogens through the *Palmaceæ*.

MISCELLANEOUS.

On the Skulls of Manidæ.

(In a letter to Dr. J. E. Gray.)

Dear Sir,—In the 'Annals and Magazine of Natural History' for last month I observe a note of yours "On the Malar Bone in the Skulls of Manidæ;" and, as bearing on the explanation you offer regarding the absence of a zygomatic arch in most of the skulls you have seen, I beg to say that in the skeleton of a very young *Manis*, from Western Africa, contained in the Haslar Museum, the arch is formed by a thin band of cartilage connecting the zygomatic processes on the maxilla and squamosal.

I am, dear Sir,

Yours truly,

R. N. Hospital, Haslar.
July 3, 1871.

Charles Barron.

On the Development of the Teeth in Phacochœrus æthiopicus.

By Dr. J. E. Gray, F.R.S. &c.

The British Museum has lately received the skulls of two young *Phacochœrus æthiopicus* from Abyssinia. These skulls can scarcely be distinguished from those of the genus *Sus* by their dentition, as the grinders are not worn, and the large permanent grinder is not developed, but are known by the dilatation and the spreading out of the hinder part of the base of the lower jaw. The younger, which is $4\frac{1}{4}$ inches long, has only the second deciduous grinder developed in the upper jaw and the first and second in the lower jaw. The canines are slender and conical, curved downwards and outwards. The pulp of the two upper cutting-teeth is visible; but they are not cut. The canines of the lower jaw are slender; and the outer cutting-teeth are alone visible.

The larger skull, which is $6\frac{1}{4}$ inches long, has the small conical first and the second and third larger deciduous molars well developed, as are also the two upper cutting-teeth; and the canines are, like those of the smaller skull, bent down, but the alveolar part of the

base rather more produced. The lower jaw has the three deciduous grinders and the six cutting-teeth all well developed, the two middle ones being much the longest. The canines are, as in the smaller skull, slender and curved; the lower jaw is much more developed, extended in front, and broader and much more expanded below, approximating it more closely to the shape of the jaw of the adult animal.

I give these particulars, as I think they show the order in which the teeth are developed, more especially as attention has lately been called to this subject.

It appears probable that having cutting-teeth in the upper and lower jaws is the normal condition of the dentition; but, as is well shown in M. de Blainville's plates in his 'Ostéographie,' the upper cutting-teeth vary considerably in form and size, sometimes being broad and transverse, and at others circular, and often falling out entirely; and this is more likely to be the case as the same kind of variation occurs in the cutting-teeth of the lower jaw: sometimes it is the middle tooth, sometimes the intermediate, and at others the outer that is the broadest; and in other specimens all the teeth are either very small or entirely wanting, especially in the animals which have approached the adult state. The series of jaws in the Museum exhibit the same variations in the size and absence of these teeth.

The size, form, and hairiness of the ear, which has been supposed a specific character for the Abyssinian specimens, I have no doubt depends on the age of the animal examined, more especially as Wolf's admirable figures of two specimens, said to have been fifteen months old, living in the Gardens, from Natal, represent them as having small oval hairy ears (see P. Z. S. 1850, p. 78, tab. xvii.).

Development of Spirorbis nautiloides, *Lam.*

By Dr. R. von Willimoes-Suhm.

Spirorbis nautiloides occurs in the Bay of Kiel and in the Sound in very great abundance, especially on *Fucus vesiculosus*, which it frequently covers closely in association with *Membranipora*. Like its allies *S. Pagenstecheri*, Quatref., and *S. spirillum*, Gould, it is an hermaphrodite, the yellowish-red ova lying in the anterior, and the seminal filaments (which are furnished with a knob) in the posterior part of the body. The process of development of the young within the pedicle of the operculum described by Pagenstecher* as occurring in a Mediterranean species, does not take place in *S. spirillum*. In this, according to A. Agassiz, the ova, imbedded in gelatinous cords, are deposited in the shell of the parent, and there undergo their development. This is the case also in *S. nautiloides*, the beautifully coloured ova of which may be found, at the beginning of June, in a biserial gelatinous cord within the calcareous shell with the parent animal.

* Zeitschr. für wiss. Zool. Bd. xii. p. 486, pls. 38 & 39; *l. c.* p. 318, pl. 7.