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On the sterile eggs of bees

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Sphenophyllum; thus the close affinity of this genus with *Asterophyllites* appears to be finally established. The *Calamites verticillatus* of authors is probably the arborescent stem of one of these plants.

"On a newly discovered extinct Mammal from Patagonia (*Homalodotherium Cunninghami*). By WILLIAM HENRY FLOWER, F.R.S.

The author describes the complete adult dentition of a new genus of mammal, founded on remains discovered by Dr. Robert O. Cunningham in deposits of uncertain age on the banks of the River Gallegos, South Patagonia. The animal appears to have possessed the complete typical number of teeth, *i. e.* twenty-two above and below, arranged in an unbroken series, and of nearly even height, and presenting a remarkable gradual transition in characters, in both jaws, from the first incisor to the last molar. The molars more nearly resemble those of the genus *Rhinoceros* than of any other known mammal; and, judging only by the general characters of the teeth, the animal would appear to have been a very generalized type of Perissodactyle Ungulate, allied through *Hyracodon* (a North-American Miocene form) to *Rhinoceros*, also more remotely to *Macrauchenia*, and, though still more remotely, to the aberrant *Nesodon* and *Toxodon*. The generic name *Homalodotherium* was suggested for this form by Professor Huxley in his Presidential Address to the Geological Society in 1870.

MISCELLANEOUS.

On the Sterile Eggs of Bees. By C. CLAUS and C. VON SIEBOLD.

THE existence of fecundated queen bees laying sterile eggs was ascertained incontestably some years ago; but no certain explanation had been given of this abnormal fact. M. von Berlepsch indeed had suggested that cases of this kind must be ascribed to some pathological state of the female; but no positive observations had been made on this subject. Some opponents of parthenogenesis, such as still exist in France, thought that the sterile eggs were laid by unfecundated queens. The observations of MM. Claus and von Siebold finally settle the question, and will compel those bee-keepers who will not accept the facts of parthenogenesis to seek other arguments.

The first case observed by M. Claus was that of an Italian queen born in the middle of May and beginning to lay in the middle of June. From this period she continued to deposit eggs until the 5th of October; but none of the eggs gave birth to larvæ. If this queen had been constructed normally but had not been fecundated in May, she ought at least to have produced males by parthenogenesis. Dissection proved that the oviducts and copulatory organs were per-

fectly normal, and that the seminal receptacle swarmed with spermatozoids. On the other hand the ovarian tubes, although scarcely reduced in size and number, showed a degenerescence of their contents. The eggs whose dimensions indicated that they were approaching the moment of deposition were but few; and their vitellus presented here and there the same phenomenon of fatty degeneration that was observed in the rest of the tubes, although the deposition of the membrane of the ovum by the epithelium had not ceased.

The second queen observed by M. Claus had not always produced sterile eggs. Her owner, who had obtained her the preceding summer, had ascertained that she laid fertile eggs. Even in the spring he still obtained results from them, but subsequently he ascertained that her fertility had ceased. M. Claus found the reproductive apparatus normal in all its parts, and the seminal receptacle was full of active spermatozoids. The interior of the ovarian tubes presented the same conditions as in the preceding queen, but in a still more distinct fashion. The ova contained in the lower dilatations of the tubes had the vitellus shrivelled into a solid, caseous mass, although the epithelium seemed to have retained its faculty of secreting the shell.

Lastly, M. von Siebold, having received from a Bohemian bee-keeper a queen which only laid sterile eggs, also ascertained that the organs had their ordinary structure, and that the receptacle swarmed with spermatozoids, but that the contents of the ovarian tubes presented an abnormal appearance. Both in the compartment containing vitellus and in the ova themselves, every thing indicated the existence of substances in decomposition. The eggs already enclosed in their shell and ready to be laid were in a very altered state, denoting a dissociation of the elements.

It is therefore an irregularity in the formation of the ovum, and especially of its vitellus, that causes this sterility. It is simply the result of a pathological state, and has nothing to do with parthenogenetic reproduction.

As regards the cause of this degeneration, M. Claus thinks that we must seek it in the influence of bad weather, and in insufficient nourishment. M. von Siebold admits that these circumstances may have a certain injurious effect; but, according to him, they are not the sole determining causes, since otherwise, as they are of frequent occurrence, queens with sterile eggs would not be so rare as they are in these countries.—*Zeitschr. für wissenschaft. Zoologie*, vol. xxiii., May 1873, pp. 198-210; *Bibl. Univ.* July 15, 1873, *Bull. Sci.* pp. 241-243.

Note on the Habitat of Psetalia globulosa and Labaria hemisphærica, Gray. By Dr. A. B. MEYER.

Dr. J. E. Gray described, in the 'Ann. & Mag. Nat. Hist.' xi. p. 234, 1873, the two new above-named free sponges sent home by me from Singapore. Dr. Gray observes that he believes these sponges were obtained in the neighbourhood of Singapore; and Mr.