

Rodophyllum Phillipsianum, Thomson. sp. nov. Pl. XX. Fig. 4.

Specific characters.—Corallum turbinate, short, and marked with small accretion ridges. Calice circular, moderately deep. Columellarian boss rotund, slightly raised above the inner margin of the primary septa, and crowned by sub-convolute lamellæ. Septa numerous, 60 primary, exhibiting well-marked lamina near their inner margin, where they are fusiform, and curve gently towards the fossula, or from left to right. There is an equal number of secondary septa, which pass inwards from the wall for about two lines. There they bend and become united to the primary septa. Each are laterally united with numerous angular dissepiments, which fill up the interseptal spaces.

Height of corallum 2 in.; diameter of calice 1 in. and 11 lines.

This species differs from *Rod. Craigianum* in its turbinate form, and the smallness of the central boss, and in the number and arrangement of the interseptal dissepiments.

Position.—Found in a thin bed of shale overlying the low post of Limestone in Trearn Quarry, near Beith, Ayrshire.

I dedicate this species to the late Prof. John Phillips, F.R.S., as an expression of my appreciation of his uniform urbanity and kindness, nowhere better exemplified than in Section C. at the Meetings of the British Association.

EXPLANATION OF PLATE XX.

Rodophyllum Craigianum.

FIG. 1. The usual appearance of a longitudinal section.

1a. A transverse section, natural size.

Rodophyllum Simonianum.

2. A transverse section, natural size.

Rodophyllum simplex.

3. Corallum with epitheca and septa eroded away, exposing the columellarian boss.

3a. A transverse section, natural size.

Rodophyllum Phillipsianum.

4. A transverse section, natural size.

NOTICES OF MEMOIRS.

I.—REPORT ON THE PHYSICAL CHARACTER AND RESOURCES OF GIPPSLAND. By A. J. SKENE and R. BROUGH SMYTH. 8vo. pp. 65. (Melbourne, 1874.)

THIS is an Official Report, made by the Surveyor-General and the Secretary for Mines, to the Hon. J. J. Casey, Minister of Lands and Agriculture for the Colony of Victoria.

The writers describe the general physical features of Gippsland, the soils, timber, the rivers and lakes. The lakes "are full of interest. Occupying extensive but shallow depressions in the great tract of level Tertiary country (which has its limits on the north as far as Kangaroo Creek, a tributary of the River Mitchell, on the west in the tributaries of the La Trobe, and on the east at Ram Head), these waters may be regarded as similar to the pools that are left

in the sands when the tide has receded. The laws which govern the flux and re-flux of tides do not, however, govern these. The waters have not diminished nor drawn back. The land has risen. . . . The lakes are being gradually filled with mud and sediment; and every year, with the advance of settlement, the work of filling up will proceed more rapidly."

The principal geological features are described and illustrated by sections. Reference is also made to the mineral wealth of the district. Osmiridium has been collected in small quantities near Stockyard Creek. Gold is being actively worked; while silver, tin, copper, lead, antimony, zinc, bismuth, manganese, molybdenum and iron are met with in places.

II.—A SKETCH OF THE GEOLOGY OF THE ISLE OF MAN. By JOHN HORNE, F.G.S., of the Geological Survey of Scotland. (Trans. Edinburgh Geol. Soc. vol. ii. part 3, 1874.)

THIS is an interesting sketch of the principal features of the geology of the Isle of Man. After indicating the previous literature on the subject, the writer briefly refers to the Silurian rocks, which may be of Lower Llandeilo and Lower Caradoc age. Beds hitherto assigned to the Old Red Sandstone period are included under the heading of the Calciferous Sandstone series, which series, as developed in Scotland, they resemble in lithological characters. The Carboniferous Limestone series, forming three groups, is next described; and then follow descriptions of the igneous rocks. The glacial phenomena of the Isle prove that it has been overflowed by glacier ice. According to Mr. Horne, the Till is in all respects similar to the Scotch Till, and he observes abundant evidence of a strange intermingling of foreign rocks in it, which must have travelled from the coast of Cumberland, the south of Scotland, and the north of Ireland.

III.—LE *PTERODACTYLUS KOCHI* DU MUSÉE TEYLER. Par Dr. T. C. WINKLER. (Haarlem, 1874.)

AMONG the important additions obtained by the Directors of the Teyler Museum, is a tolerably perfect specimen of a Pterodactyle, from the Lithographic Stone of Bavaria, which has been fully described by the indefatigable Curator, Dr. Winkler, in the third volume of the *Archives* of the museum.

The comparatively good state of preservation of the bones of the skeleton has enabled the author to carefully compare them with the bones of those species which have the greatest resemblance to it; these are the *Pt. micronyx*, von Meyer; *Pt. spectabilis*, von Meyer; *Pt. Meyeri*, Müntz.; and the *Pt. Kochi*, Wagner. In *P. micronyx* (described in vol. iii. of the same *Archives*, 1870), the metacarpal equals in length the bones of the fore-arm, the metatarsals are small, the first is longer than the three others, even than the fourth; in this specimen the metacarpal bones are shorter than those of the fore-arm, and the metatarsals are even longer and thicker. This

specimen differs from *P. spectabilis* in the length of the head and of the metacarpal and fore-arm bones, and from *P. Meyeri*, which has a short head, a neck proportionally strong, with the fore-arm and metacarpal of equal length. The *P. Kochi* possesses an orbit proportionally small, with the bony circle composed of smooth plates; the dentition extends far back, the neck is short in proportion to the body, the metacarpal and the fourth phalanx of the long finger are of equal length, and the fore-arm is longer than the tibia. All these characters, and some others, are found in the specimen described by Dr. Winkler; but although all the parts are smaller than the typical form, they are only relatively so, and hence it is considered to be a young individual of the *P. Kochi*, Wagner.

In alluding to the small osseous piece which is seen in this specimen at the carpal end of the bone of the right fore-arm, Dr. Winkler reiterates the opinion which he had previously expressed in his description of *P. micronyx*, in the *Archives*, vol. iii. fasc. i., 1870, that this piece is an ossified tendon, with which Prof. Quenstedt agrees, and not a bone (*Spannknochen*) for extending the membrane, as thought by some of the German palæontologists who have studied the structure of Pterodactyles.

Another point of interest connected with this specimen is the alleged discovery by Dr. Winkler of undoubted traces on the stone of the membranous integument, the expansion of which was supported by the greatly elongated ulnar finger of the fore-limb, indications of which membrane had, however, been observed in a specimen of *P. crassipes*, described by Hermann von Meyer, which also forms a part of the Teyler Museum.

Dr. Winkler further remarks that, from an examination of the cast of a specimen of *Rhamphorhynchus*, from Eichstätt, purchased for Yale College, Massachusetts, the original possessed not only the membranes entire, but also the tail terminated by a kind of membranous expansion.

J. M.

IV.—The Bengera Diamond Field. By A. LIVERSIDGE. 8vo. pp. 11. (Sydney, 1873.)

AN account of the discovery of diamonds in Australia is first given, and the nature of the Mudgee diamond-workings is pointed out. The diamonds occur in outliers of an old river-drift, which occurs at varying distances from the river, and at heights of 40 feet or so above it. These outliers are capped by beds of basalt, hard and compact, and in some cases columnar; the drift is chiefly made up of boulders and pebbles of quartz, jasper, agate, flinty-slate, shale, sandstone, with coarse sand and clay. The minerals associated with the diamond are enumerated. No diamonds have been found in the river-bed except in places where the diggers have discharged the drift into the river when washing for gold.

The Bengera district has many points of resemblance to that at Mudgee, the diamond-bearing deposits are situated in a kind of basin or closed valley, and running into the valley are various spurs of basalt which apparently cover portions of the drift. The relation

of the basalt to the drift has however not yet been proved in the Bengera district, but should the drift pass under it, the known diamond-bearing area will be greatly increased. Up to the present time all the diamonds have been found within a foot or so of the surface, in fact just at the grass roots. In no case have the workings been carried to greater depths than two or three feet; in some parts examined the drift itself is not thicker than that. Mr. Liveridge describes in detail the mineralogical nature of the drift, or "wash-drift," as it is termed by the miners. The list of gems, stones, and other minerals accompanying the diamond includes the following:—Tourmaline, Zircon, Sapphire, Topaz, Garnet, Spinelle, Quartz, Brookite, Titaniferous iron, Magnetic iron-ore, Wood-tin, Gold, and Osmiridium.

H. B. W.

REVIEWS.

I.—GEOLOGICAL SURVEY OF CANADA. PALEOZOIC FOSSILS. Vol. II. Part I. By E. BILLINGS, F.G.S. (Montreal: August, 1874.)

THIS part, consisting of 144 pages of descriptive text, with numerous woodcuts and ten lithographed plates, contains descriptions (1) of fossils from the Silurian and Devonian rocks of Gaspé, (2) of new species from the Primordial rocks of Newfoundland, (3) of the genus and Canadian species of *Stricklandinia*, (4) of fossils from the Upper Silurian rocks of Arisaig, Nova Scotia, and (5) notes on the structure of the Crinoidea, Cystidea, and Blastoidea. The first section is preceded by a short geological notice of the Gaspé series of rocks, which comprise 7000 feet of Gaspé sandstones, with interstratified arenaceous and calcareous shales with plant-remains, underlain by 2000 feet of the Gaspé limestones with intercalated shales, these limestones being classed in descending order as Devonian, Passage-beds, and Upper Silurian. The fossils are chiefly Brachiopods and Lammellibranchs, with some few Gasteropods, mostly all obtained from the Upper or Devonian beds. The Primordial rocks of Newfoundland are estimated to have a thickness of about 6000 feet; the upper 500 feet, constituting Bell Island, hold a peculiar group of fossils, the exact age of which has not been determined; they consist of *Lingula*, *Cruziana*, and *Fucoids*, referred to the genus *Eophyton*, which in Sweden has only been found below the *Paradoxides*-beds. Below the Bell Island beds there are about 2000 feet of unfossiliferous strata, except *Fucoids*. These, with the Bell Island rocks, may represent the Middle and Upper *Lingula*-flags. They are immediately underlain by about 2000 feet of slates, sandstones, and limestones, holding fossils which prove them to be of the age of the Lower *Lingula*-flags or Menevian group of Salter and Hicks (p. 69). Fossils are abundant but imperfect, including *Agraulos*, *Paradoxides*, *Anopolenus*, with other Trilobites, and *Iphidea*, a new genus of Brachiopods.

Under the article on *Stricklandinia* the generic characters are considered and compared with *Pentamerus*, and six species noticed, two of which, *S. Salteri*, *S. melissa*, are new and from the Anticosti or