For instance, Heligoland in the year 800 is shown in Myers' map to be of *great size*; this is in conflict with our curve, as the year 800 being near the high-water period, the island should have been *small* in size. On investigation we find that we have testimony equally strong that the island *was* small at that time. The description of the island by Adam of Bremen shows that it was *not much* larger than now in the time of Charlemagne (768 to 814), ("Principles," 9th ed., p. 329). (For this map of Heligoland in 800, see Von Hoff's "Geschichte," etc., vol. i, p. 56.)

Another item tending to invalidate our curve is the legend as to the submergence of lands now beneath the sea in Cardigan Bay, Wales. Pennant states that these lands—the Cantre'r Gwaelod—were overwhelmed by the sea about the year 500 (Pennant's "Tours in Wales," vol. ii, p. 274). In "The Gossiping Guide to Wales," however, we read, "We are not aware that any date is assigned" to this disaster (p. 37). It seems that what little is known of this inundation is derived from a poem by one Prince Gwyddno, who flourished between the years 460 and 520. There is no evidence that Gwyddno witnessed the event he describes, and it can be readily surmised that he merely reduced to verse the current traditions of an event that may have occurred three or four generations before his time. If this was the case, the Sarn Badrig and its attached legends would be evidence confirmatory of our curve. In any case we are assured that the date fixed by Pennant is uncertain and offers no reliable testimony against us.

(*To be continued in our next Number.*)

NOTICES OF MEMOIRS.

On the Structure and Affinities of Fossil Plants from the Palæozoic Rocks. IV. The Seed-like Fructification of *Lepidocarpon*, a Genus of Lycopodiaceous Cones from the Carboniferous Formation.

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A short account of the new genus *Lepidocarpon* has been given in a note communicated to the Royal Society last August;[1] the present paper contains a full, illustrated description of the fossils in question, together with a discussion of their morphology and affinities.

The strobilus of *Lepidocarpon Lomaxi*, the Coal-measure species, is, in its earlier condition, in all respects that of a *Lepidostrobus*, of the type of *L. Oldhamius*.

In each megasporangium, however, a single megaspore or embryo-sac alone came to perfection, filling almost the whole sporangial cavity, but accompanied by the remains of its abortive sister-cells. An integument ultimately grew up from the sporophyll, completely enclosing the megasporangium, and leaving only a narrow slit-like

[1] "Note on the Occurrence of a Seed-like Fructification in certain Palæozoic Lycopods": Roy. Soc. Proc., vol. lxvii, p. 306.

opening, or micropyle, along the top. As shown in specially favourable specimens, both of *Lepidocarpon Lomaxi* and of *L. Wildianum*, the more ancient Burntisland form, the functional megaspore became filled by a large-celled prothallus, resembling that of the recent *Isoëtes* or *Selaginella*. The whole body, consisting of the sporophyll, bearing the integumented megasporangium and its contents, became detached from the strobilus, and in this isolated condition is identical with the 'seed' described by Williamson under the name of *Cardiocarpon anomalum*, which, however, proves to be totally distinct from the Cordaitean seed so named by Carruthers.

The seed-like organs of *Lepidocarpon* are regarded by the author as presenting close analogies with true seeds, but as differing too widely from the seeds of any known Spermophyta to afford any proof of affinity. The case appears rather to be one of parallel or convergent development, and not to indicate any genetic connection between the Lycopods and the Gymnosperms, or other Phanerogams.

REVIEWS.

E. Weinschenck. Zur Kenntniss der Graphitlagerstätten. III. Die Graphitlagerstätten der Insel Ceylon. Abh. k. bay. akad. Wiss., Cl. II, Bd. xxi, Abth. 11; München, 1900.

PROFESSOR Weinschenck has examined a series of rock and vein specimens from the graphite mines of Ragedara, Ampe, Pushena, and Humbuluwa, in Ceylon, collected by Dr. Grünling. He discusses the nature of the granulitic rocks and the mode of occurrence and origin of the graphite.

A general petrographical description of the granulitic rocks is given, illustrated by three plates of microphotographs. Massive habit, granulitic structure, and variable chemical composition are characteristic. Except in the more basic varieties, intergrowths of two felspars are very noticeable. The granulitic rocks include a continuous series ranging from aplites (weiss-steine) to pyroxene-plagioclase rocks (trapp-granuliten) and even pyroxenites. A rather oily lustre and greenish colour are very characteristic features. The constituent minerals are in a remarkably fresh condition, except in the immediate neighbourhood of the graphite veins. It is interesting to note that Professor Weinschenck does not mention any pleochroic monoclinic pyroxene.

There are certain other rocks in Ceylon which include coarse-grained dolomites and 'cipolins,' containing blue apatite and contact minerals such as forsterite, chondrodite, phlogopite, and spinel, and also the peculiar andalusite, sillimanite, and corundum bearing rocks described by Lacroix.

The granulitic rocks show no trace of the operation of dynamic causes; they are regarded as an eruptive mass which may form a single unit or be compound in character. The occurrence of coarse crystalline dolomites in the midst of the granulitic series seems to show that different eruptive units are separated by contact