

pl. viii, fig. 15), must be the genotype. Two considerations have led to this conclusion.

1. Phillips mentions *L. sinuosum* first when enumerating species which he associates with it in the genus, and before he describes his Devonian form which he considers conspecific. When an author does not fix on a genotype it is usual to take as such his first-named species if represented by a sufficiently well preserved specimen, which is the case with this. Phillips' Devonian shell, being quite distinct, has no right to the name *sinuosum*.

2. The first author who clearly declares one of these species to be the genotype should be considered to decide the matter. I have shown that S. P. Woodward and P. Fischer are ambiguous. Lindström by implication selects *L. sinuosum* (Sow.) as genotype, but Professor Koken is the first to do so unequivocally, for in 1889 (Neues Jahrb. f. Miner. B.B., vi, p. 441) he states, "Der Typus ist *L. sinuosum* Sow. aus dem Obersilur." Again, in 1896 (Jahrb. der k.k. geolog. Reichsanstalt, Bd. xlvi, Heft i, p. 117 [81]), after discussing the different forms included by Phillips in the genus, he writes, "*L. sinuosa* Phill. ist also der Typus im wörtlichen Sinne, aber nicht die ganz typische Form, denn Sowerby's *Terebra sinuosa* aus dem Aymestrykalk mit welcher Phillips sie identificirt und welche der ideale Typus der Gattung ist, weicht nicht unbeträchtlich von der *sinuosa* des Clymenienkalkes ab. Wenn man die *echte*, obersilurische *L. sinuosa* Sow. sp. neben eine *Zygopleura* hält sieht man am besten, wie weit sich die letztere schon vom Ausgangspunkte der Gruppe entfernt."

Dr. Perner (Syst. Sil. Centre Bohême, pt. i, vol. iv, Gastéropodes, tome ii, 1907, p. 324) writes after the description of the genus, "Type: *Loxonema sinuosum* Sow." On p. 325 he divides the *Loxonema* into two groups, and on p. 327 calls the first "Groupe de *Loxonema sinuosum* Sow."

M. Cossmann (p. 16) seems to think that Koken considered *Terebra sinuosa*, Sow., a *Zygopleura*, but a reference to the passage quoted above shows the contrary to have been the case. In the preceding paragraph Koken writes, "Die letztere [*L. rugifera*], Phill. ist eine carbonische *Zygopleura*, verwandt mit der devonischen *costata* Sdb., aber sehr verschieden von den Loxonemen der *Sinuosa*-Gruppe, auf welche der Name zu beschränken ist."

Since M. Cossmann (p. 18) has substituted the name *L. Pernerii* for *L. propinquum*, Perner, which was preoccupied, and his work is prior in publication to mine, the species called *L. Pernerii* by me (p. 221, and pl. xi, figs. 1-3) must yield to his, and I would therefore suggest the name *L. Cossmanni* for my species.

J. LONGSTAFF.

HIGHLANDS, PUTNEY HEATH.
June 12, 1909.

ARCHÆAN OR LOWER PALÆOZOIC ROCKS IN THE MALAY PENINSULA.

SIR,—Dr. R. D. M. Verbeek, at the end of his "Rapport sur les Moluques" (edition Française du *Jaarboek van het Mijnwezen in*

Nederlandsch Oost-Indië, xxxvii, 1908, partie scientifique), gives a summary of the geology of the Moluccas and of the whole of the Netherlands Indies. Under the heading "Schistes Anciens" certain passages occur which may be translated as follows (p. 754): "Ancient schists without fossils, of which the age is unknown. Among these there are probably Archæan as well as old Palæozoic rocks. From a petrographic point of view we can distinguish gneiss, mica-schist, amphibole-schist, grauwacke, phyllite, argillaceous schist, etc. The amphibolites, whose silica percentage is generally low, but which contain much plagioclase, may by that be recognized as basic eruptive rocks, most often gabbros, metamorphosed and become schistose owing to orogenic movements. The other rocks are sediments more or less modified . . . (p. 755). The ancient schists are also widespread in the islands of the Celebes, Borneo, Karimown Djawa (Djapara Residency, Java), Billiton, Banka, Sumatra, and in the Peninsula of Malacca (i.e. the Malay Peninsula, I.B.S.). Although a part of these rocks may probably be azoic, among them are certainly others that are younger."

Seeing the recent date of Dr. Verbeek's Report, I think that his remark about ancient schists in the Peninsula calls for some notice.

I well remember, when I first came to the Federated Malay States, a conversation with an official of the Public Works Department, who assured me that a certain limestone in the north of Perak was Laurentian. On gently pressing for evidence, it appeared that the sole reason for this statement was that the Perak Limestone looked like Laurentian Limestone that my informant had seen in Canada some years before.

Had Dr. Verbeek but known that the evidence of the existence of Archæan or Lower Palæozoic rocks outcropping in the Malay Peninsula rested on such slender foundations as are exemplified above, I do not think he would have said that the ancient schists are widespread in this part of the East Indies; and, moreover, had the value of the evidence been better known, statements of a similar nature would not have crept into Professor Suess' *Der Antlitz der Erde* (Miss Sollas' translation, vol. i, pp. 456, 457. Here the term 'Archæan schist' occurs, vol. iii, p. 233. Here the Myophoria beds in Pahang are apparently included in the 'ancient sediments').

But for a small portion of Borneo, the geology of the Malay Archipelago is only known to me by the literature, and the question of the ancient schists in that region is therefore one on which I am not entitled to speak. But after a perusal of the scanty literature concerning the Peninsula, and five years' work in the country, I think I may say that as yet no evidence has come to light of rocks older than the Carboniferous, with the possible exception of inclusions of granite in tuffs and of a quartz-tourmaline rock in conglomerate, both being facts which are now published for the first time.

I trust I may be pardoned if I further trespass on your valuable space by mentioning another point in Dr. Verbeek's Report. On p. 756 Dr. Verbeek goes into some detail concerning the dip of the rocks at Mount Guthrie, Singapore, where I found certain fossils described in the 1906 volume of this Magazine by Mr. R. B. Newton. The dip observed by Dr. Verbeek and Dr. Molengraaf was opposite to that

observed by myself, and such is the stress laid on this that, although Dr. Verbeek kindly suggests a sharp anticline as an explanation, I felt, on reading the passage, misgivings as to the accuracy of my own statement. I have to-day re-examined the hill, and find that the section is more luminous than in 1906. Not only has much of the base been removed, exposing fresh rock, but a deep cutting has been made through the hill, cutting about N.N.W.—S.S.E., that is, parallel to the strike of the beds. The place where I observed the dip in 1906 was recognizable, and my observation was correct. The general dip is to the W.S.W., and this obtains at both ends of the cutting. There is, however, some evidence in the section (about 150 feet long) of apparently local but sharp folding and of faulting, such as is frequently seen in a disturbed area, but not of a distinct anticline affecting any considerable portion of the section. As a result of these folds and faults there are local dips to the E.N.E. in four places, while in four places the beds are vertical. The small quarry mentioned by Dr. Verbeek on the south side of the hill, which, but for the cutting, is now covered with grass, doubtless showed a local variation of dip. The matter seems to me to be of no great importance and not worth a figure of the section, but this explanation is due as much to Dr. Verbeek as to myself.

J. B. SCRIVENOR.

SINGAPORE.

May 8, 1909.

CULM INCLUSION IN COARSE GRANITE.

SIR,—Although sedimentary inclusions in the granites of the Western Counties have often been described, the following occurrence may be worth a note. In the course of a walk from Lustleigh station to Foxworthy Mrs. Hunt called my attention to a fragment of rock protruding from a mass of granite lying by the roadside for road-metal. The roadmen then were clearing rocks in a neighbouring field, distant about two-thirds of a mile from the nearest granite boundary. The enclosing granite was of very coarse matrix with large orthoclases. The inclusion was a rhomboidal fragment of what seemed to have been a culm grit with planes of sedimentation, and with ordinary surfaces of fracture in the usual joint planes; weight about 1½ lb. The points of interest are that, though the fragment is completely crystallized, the boundaries are not dissolved or distorted. Before this very coarse enclosing granite was consolidated the fracture of the culm rocks was much as it is at present. Dr. Flett kindly confirmed my recognition of the fragment as sedimentary. Having seen much granite broken in the neighbourhood during the past twenty-five years for building and road-making, this particular specimen is unique of its kind in my experience. I have since noticed a triangular fragment in the same heap of stones, which I may possibly succeed in getting hold of.

A. R. HUNT.

May 6, 1909.
