

attack. Mr. Barnes and Mr. Warren I have not the pleasure of knowing. From Mr. Moir I have personally experienced nothing but courtesy, and I have always had a high regard for his enthusiasm and sincerity. I am only sorry that he should descend to a style that will tend to discredit the views he advocates.

S. E. GLENDENNING.

84 ROSARY ROAD, NORWICH.  
22nd November, 1923.

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THE BASE OF THE DEVONIAN.

SIR,—Whilst recognizing the transitional nature of the Downtonian strata, I fear the suggestion made by Dr. Evans in your October issue to regard them as Passage Beds belonging neither to the Silurian nor to the Devonian hardly meets the case. This solution of the problem was, indeed, suggested long ago by Professor Hull (*Q.J.G.S.*, 1882, p. 200), but has met with little favour. It would not obviate the present confusion in such generalized accounts of the Silurian and Devonian faunas as appear in textbooks. It would further necessitate the separation of the equivalent beds in every part of the world.

The other points raised are answered, to some extent at least, in my recently published "Introduction to Stratigraphy", where my views on the relation between the Welsh and Cornubian Devonian are summarized (pp. 115–21). They accord almost exactly with those of Dr. Evans. Geographers do not hesitate to include as lakes such impersistent areas of water as occur in most desert regions—areas which often migrate from year to year—so surely there can be no objection to the use of the word to include "a deep mountain-girt basin into which poured raging torrents from the surrounding mountains" in Devonian times.

L. DUDLEY STAMP.

UNIVERSITY OF RANGOON.  
3rd November, 1923.

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FOSSILS FROM THE MIDLAND COALFIELDS.

SIR,—I have received several inquiries about various fossils in my collection from the Coal Measures of the Midland coalfields and about unpublished maps and sections of boreholes, to which I am unable to give a detailed reply because the collection, etc., has been boxed up and stored away for the past nine years during my absence in the desert. As I am leaving for the Far East within a few days, I request your assistance in making the following details known pending an opportunity either of completing the study begun in 1907 or of depositing the notes and collection in some public museum where they will be available to specialists.

With the exception of a few rare plants in the hands of Dr. R. Kidston, some of which have been described in part ii of memoir "Fossil Plants of the Carboniferous Rocks of Great Britain"; some

fossil footprints from the Keele Beds of Warwickshire lent to Professor H. H. Swinnerton, of Nottingham, and a few fossils that were handed to the late Dr. L. Moysey and are presumably now at Jermyn Street or at the Sedgwick Museum, the collection includes the fossils detailed in the following papers by the writer :—

1909. "Geology of the Lower Coal Measures of Derbyshire and Nottinghamshire": *GEOL. MAG.*, pp. 289-99.  
 1910. "The Fossil Flora and Fauna of the Southern Portion of the Derbyshire and Nottinghamshire Coalfield": *Appendix to Rep. Brit. Assoc.*, 1910, pp. 1-12.  
 1912. "The Geology and Palæontology of the Warwickshire Coalfield": *Quart. Journ. Geol. Soc.*, vol. lxxviii, pp. 587-638.

A number of records from the Notts Coalfield subsequent to 1910 are not included in the above-mentioned papers. In addition there are the following. A Transition flora from the Shrewsbury and Lee Botwood coalfield, including such species as the following :—

<i>Calamites suckowi.</i>	<i>Lepidodendron fusiforme.</i>
<i>Calamites ramosus.</i>	<i>Lepidophyllum triangulare.</i>
<i>Calamites cisti.</i>	<i>Neuropteris rarinervis.</i>
<i>Calamocladus equisetiformis.</i>	<i>Neuropteris scheuchzeri.</i>
<i>Annularia radiata.</i>	<i>Pecopteris miltoni.</i>
<i>Sphenophyllum myriophyllum.</i>	<i>Pecopteris abbreviata.</i>
<i>Sphenophyllum emarginatum.</i>	<i>Sphenopteris neuropteroides.</i>
	<i>Aphlebia crispum.</i>

From the Forest of Wyre the collection includes :—

<i>Alethopteris Davreuxi.</i>	<i>Pecopteris volkmanni.</i>
<i>Lonchopteris rugosa.</i>	<i>Sphenopteris saueri.</i>
<i>Neuropteris tenuifolia.</i>	<i>Sphenopteris artemisiæfolia.</i>
<i>Palæostachya cf. elongata.</i>	

[All determinations checked by Arber and Kidston.]

From Coalbrookdale the marine fauna from the well-known Pennystone Ironstone was collected for comparison with other marine beds, especially as regards the Productids and the small Aviculopectens, e.g. *A. scalaris* and *A. gentilis*, which, according to the late Dr. Wheelton Hind, need re-determination.

As regards the Leicestershire and South Derbyshire coalfield, the collection includes some sixty species of plants and thirty species of mollusca from the new marine beds, also fish, crustacea, arachnids, and *Palæoxyris*. In view of the economic importance of the Pottery clay marine bed in mapping the valuable fireclays and in fixing horizons in the concealed coalfield I keenly regret that I have been unable to complete this paper for publication. The preliminary account was read at the Birmingham meeting of the British Association in 1913, and is noted by Carpentier in the *Revue des Travaux de Paléontologie Végétale*, 1923, but it is not mentioned in the recent English publications, in particular *The Geology of the*

country around Lichfield, published in 1919, accepts the correlation of the Seven Feet coal of the Warwickshire coalfield with the Main coal of the Leicestershire coalfield to which I drew attention in 1913, but adds (p. 59) that "the Main is the only seam with which any considerable number of marine fossils is associated in Leicestershire".

In point of fact, the marine bed over the Main coal is thin and has a poor fauna, but thousands of tons of the thick Pottery clay marine bed have been quarried, and a dozen magnificent exposures with a rich fauna are available to the collector.

Measured sections of the bed are published in two survey memoirs, although its marine character and fossils were not detected, but it is disappointing to find that the most important index bed in the western portion of the coalfield has received no official attention, although one of the senior authors of the Lichfield memoir was present at the reading of my 1913 paper, which was illustrated with map, sections, and fossils. Putting this detail aside I do feel that I owe an apology for still further postponing a paper on the Leicestershire coalfield in view of the cordial assistance the various Firebrick and Pipeclay manufacturers gave during my brief yearly visits from 1907 to 1914.

R. D. VERNON.

CAIRO.

8th November, 1923.

#### LATERITOID IN NORTHERN RHODESIA.

SIR,—Such deposits as that described by Mr. Murray-Hughes in the November GEOLOGICAL MAGAZINE are very numerous in N. Rhodesia and Katanga: they are undoubtedly of lateritic origin.

The name applied to them is of no great importance. Laterite, lateritite, and lateritoid are all genetically similar, differing in the amount of ferric and aluminium hydroxides they contain and in the nature of the rock from which they are derived.

Very little of the ferric hydroxide in any lateritic bed ever comes from the same part of the mother rock. It is not usually residual, but is derived from ground water in which it is ordinarily carried as ferrous bicarbonate and from which it is precipitated on contact with oxygen, carbonic acid being liberated at the same time.

*Evaporation is not the cause of iron-bearing solutions depositing their iron, but oxidation is.* Even a weak solution of ferrous bicarbonate will deposit its iron completely as ferric hydroxide immediately it comes in contact with excess of oxygen.

Laterite does not form below permanent water level, as in perennial swamps, though iron deposits such as bog iron ore collect in such situations. These, however, are not lateritic, the criterion being the presence of free alumina, which is never a component of true sedimentary iron ores.