

the Congo into Uganda and having a main axis along the Western Rift. More evidence for these suggestions is desirable. The writer entirely agrees with Mr. Wayland on the importance of the North-West-South-East trend lines north of Lake Victoria (par. 147).

The report includes, amongst other matters, notes on Earthquakes, "Native Metal Lore," a list of "Minerals known to occur in Uganda," with fuller notes on those of economic importance. Mention is also made of the hot springs and water supply. Altogether the officers of the Survey are to be congratulated on this publication, to which obviously much care has been given.

(2) This brief report records the continuation of the recent work of the Rhodesian Survey in the Bubi and Lomagundi districts; the former north of Bulawayo, the latter (Sinoia area) in Northern Mashonaland. The Bubi district is noteworthy as containing some of the oldest rocks in Southern Rhodesia: a basal "greenstone group" of volcanic origin, overlain by a sedimentary group, the Ndutjana Series.

The relation between these and the intrusive granite is such as would result from the downward sagging of the former upon the surface of the latter. This supports the "Theory of the Geological Structure" put forward by Maufe in 1913 (Bulletin No. 2).

Of the Lomagundi District but little additional information is given. The Provisional Geological Map of Southern Rhodesia is now completed.

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THE WEGENER FREQUENCY CURVE.

SIR,—The idea that there is one level of the ocean bottoms and another of the continents is so old that I am sure Wegener himself lays no claim to its discovery. It is diagrammatically displayed in almost every atlas of the world, and its general truth appears highly probable. What is perhaps not so widely known is that the evidence on which the idea is based is not as yet complete enough to enable it to be treated as a rigidly established fact. It was no doubt this deficiency in the evidence that tempted Wegener to treat the question statistically, and so get rid of any possible imputation that the personal factor entered into the interpretation of the evidence. Hence has arisen the "Wegener Frequency Curve", a term to which there can be no objection provided it is understood that it is the curve and not the idea which is Wegener's; and provided also it is remembered that the idea is not yet an established fact, but merely an interpretation of existing evidence, which is receiving confirmation with every line of soundings flung across the ocean depths.

The conception that the crust of the earth approximates to two main levels has thus come to be widely accepted as a sort of working

hypothesis to be confirmed or modified by subsequent observation. Wegener's curve is the statistical expression of the evidence for it. Our expectancy, therefore, was great when it was announced, if I remember rightly, by Mr. Philip Lake that Mr. G. V. and Miss A. V. Douglas were about to produce a demonstration that the curve was capable of quite another interpretation. The demonstration is now before us. It is very ingenious, but entirely fallacious. The authors take a single upland and valley profile and show that a height-frequency curve constructed from it has two maxima, like Wegener's curve. Of course it has—one maximum for the upland summit and one for the valley bottom, where there are larger areas at approximately the same distance from the datum than there are on the slopes. It does not need any mathematical analyses to convince us of this. But let them take a number of profiles, in fact the profiles of all the uplands and valleys which might be supposed to be produced by deformative and denudative processes out of a uniform earth crust, and they will get no such curve, unless, and this is the vital point, they suppose that all their uplands approximate on the one hand to a uniform height above the datum and all the valley bottoms on the other to a uniform depth below it. They will get the double maximum to their curve in this case, and this only; but this is the case of the two levels.

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MANCHESTER.

16th March, 1923.

THE OIL SHALES OF SOUTHERN BURMA.

SIR,—In Professor Gregory's interesting account of the Oil Shales of Southern Burma in the current number of the *GEOLOGICAL MAGAZINE* there are one or two minor points which call for remark. On page 153 occurs the statement that "the Carboniferous or Permian age of some of the ridges which rise above the alluvial plain is suggested by the reported occurrence in them of coal". As I pointed out in my "Outline of the Tertiary Geology of Burma" (*GEOLOGICAL MAGAZINE*, Vol. LIX, 1922, p. 482), the fossil plants associated with the older coals of the Shan States (at Kalaw) indicate a Jurassic (Liassic) age. The presence of coal is more likely, therefore, to indicate the existence of a pinched-in syncline of early Jurassic rocks—a point of considerable importance when one remembers that the search for new coalfields is being actively prosecuted over huge areas of Permo-Carboniferous rocks in Burma. Those interested in the relation between coal- and oil-bearing strata may care to be reminded that the late Tertiary oil-shales described by Professor Gregory occupy a basin—as casually mentioned by me on p. 482 of my paper—which is one of the series including the newer coals of the Shan States (Lashio, Namma, etc.), of which some are still occupied by lakes.

L. DUDLEY STAMP.

10th April, 1923.