

## CORRESPONDENCE

FLETCHERINA, A NEW NAME FOR A PALAEOZOIC  
CORAL GENUS

SIR,—Dr. Dorothy Hill has drawn our attention to the fact that the coral generic name *Yabeia* Lang, Smith and Thomas [*Index of Palaeozoic Coral Genera*, Brit. Mus. (Nat. Hist.), 1940, p. 140], proposed for *Cylindrophyllum* Yabe and Hayasaka (*Journ. Geol. Soc. Tokyo*, xxii, 1915, p. 90) non *Cylindrophyllum* Simpson [*Bull. N.Y. St. Mus.*, viii (39), 1900, p. 217], is itself a junior homonym of *Yabeia* Resser and Endo in Kobayashi [*Journ. Fac. Sci. Tokyo* (Geol. 2), iv (2), 1935, p. 90 (footnote)], a name introduced for a trilobite. We, therefore, propose the name *Fletcherina* to replace *Yabeia* Lang, Smith and Thomas and *Cylindrophyllum* Yabe and Hayasaka; the type species is, of course, *C. simplex* Yabe and Hayasaka.

We have chosen the name *Fletcherina* because we consider the genus is at least closely allied to *Fletcheria* Edwards and Haime (*Arch. Mus. Hist. Nat.*, v, 1851, pp. 156, 300). The main differences between the genera appear to lie in the calicular increase and numerous septal striae of the latter, compared with the stated lateral increase and absence of septa and septal spines in *Fletcherina*.

Wang (*Phil. Trans. Roy. Soc. Lond.*, B, ccxxxiv, 1950, p. 206) places *Pycnostylus* Whiteaves, *Placophyllum* Simpson, *Cylindrophyllum* Yabe and Hayasaka (non Simpson) and *Synamplexus* Grabau in the synonymy of *Fletcheria*. We reject *Placophyllum* from this synonymy as that genus is a Spongophyllid (cf. Stumm, *Mem. Geol. Soc. Amer.*, xl, 1949, pp. 28, 30). The others are all ampleximorphs; as with all such genera, their synonymies and relationships are matters of some doubt and difficulty, and must remain so until their type species can be critically re-examined and compared.

Although Edwards and Haime (op. cit.), followed by Nicholson (*On the Structure and Affinities of the "Tabulate Corals" of the Palaeozoic Period*, 1879, pp. 203, 206), referred *Fletcheria* to the Tabulate corals, Wang (op. cit.) placed it in the Rugosa. Not only do we believe him to be right in so doing, but we also place *Fletcherina* in the Rugosa.

W. D. LANG,  
STANLEY SMITH,  
H. DIGHTON THOMAS.

DEPARTMENT OF GEOLOGY,  
BRITISH MUSEUM (NATURAL HISTORY),  
CROMWELL ROAD,  
LONDON, S.W. 7.

## THE UBENDIAN IN WESTERN TANGANYIKA

SIR,—The recently published study of the metamorphic rocks of Karema and Kungwe Bay, Western Tanganyika, by J. Sutton, J. Watson, and T. C. James (1954), is a type of work which is unfortunately all too rare in East Africa; it represents the results of the detailed mapping of two small areas of the Basement Complex followed by exhaustive and up-to-date laboratory investigation. The areas studied lie in the Ufipa and Ubende regions of which I made a reconnaissance study during the years 1943 and 1944, and published a provisional geological map on a scale of 1:300,000 (1950). I do not wish to discuss at present the extremely interesting conclusions regarding the metamorphic complexes arrived at by Drs. Sutton and Watson, but I feel that I must ask them to reconsider the alterations which they propose in my classification of the Basement rocks of Ubende and Ufipa. This country is very difficult of access as, in some 6,000 square miles, there were, at the time of my work, only two motor roads: the geologist has therefore to rely on transport by porters, and since the population has

been partially evacuated owing to sleeping sickness, these are not always easy to obtain. I managed to carry out numerous traverses, but Drs. Sutton and Watson, during the limited time at their disposal, were mainly dependent for their knowledge of the geology of the whole area on specimens collected by others, including myself. During a reconnaissance it is natural to collect the exceptional types of rock, and hence the study of such a collection may tend to overemphasize the deviations from the general rule.

In the paper by McConnell, four major sub-divisions are proposed: the Ubende and the Wakole Series, which are regarded as, respectively, younger and older members of one system; the Mahali Gneisses; and the Ufipa Gneiss Complex. Sutton and Watson regard these four groups as equivalent and propose to regard all the basement rocks in this area as one series, which they call "Ubendian". This is a considerable generalization, and I would like to make a strong plea for caution. The name "Ubende Series" was introduced by McConnell, and applied to a well-defined group of rocks which appears to be the youngest element of the Basement Complex in the area; and the orogeny which closed the cycle was termed the "Ubendian Diastrophism". I would like to see these terms left with their original meaning. If a term to include all the Basement rocks of Ufipa and Ubende is needed, some other local geographical name should be chosen.

The Ubende and Wakole Series were distinguished by McConnell because they differed in lithological constitution and metamorphic grade. The two series outcrop as ribbons running parallel in a N.W.-S.E. direction for eighty miles; they are separated by a fault which is accompanied by transfused mylonites, which are almost certainly of Precambrian age, although the lines of truncated spurs indicate that relative uplift of the Wakole rocks took place in late Tertiary or Recent times. The most widespread rock in the Wakole Series is a biotite-kyanite-schist: garnets are sometimes very numerous and attain  $\frac{1}{4}$ -inch diameter. Amphibolites and hornblende-gneiss contain much garnet as a rule; metaquartzites are also frequent and commonly contain garnet, and some varieties carry hornblende. The Ubende Series is chiefly composed of hornblende-gneiss and amphibolite with little or no garnet, white crystalline quartzites in which no garnet was found, crystalline limestones and metacalcareous rocks without garnet. Charnockitic rocks and pyroxene-bearing intrusives carrying garnet occur locally but are exceptional. Kyanite, which is so frequent in the Wakole Series, is only found in a very few localities in the Ubende rocks. The Mgambo-Katumbe rocks studied by Drs. Sutton and Watson are considered by them to represent intrusions and carry much garnet and a little kyanite. These rocks differ so much from the normal Ubende Series as to suggest that more regional work is required to prove what their relations are with the surrounding rocks.

As a result of their field work and of their study of my collections, Drs. Sutton and Watson conclude that since many types of rock are common to both Ubende and Wakole Series there is no reason for making a distinction. When both formations are regarded as a whole, however, the differences in lithological constitution and metamorphic grade are important, and should be indicated in the nomenclature. I agree that metamorphic grade is not a criterion of age, but when two formations are contiguous for a distance of some eighty miles, and continually show a striking difference in grade of metamorphism, it is difficult to avoid the conclusion that one has had a more complex metamorphic history than the other. A good section across the strike of both series can be examined by following the motor road from Sibwesa to Ikola. From Sibwesa westwards the road traverses the garnet and kyanite-rich rocks of the Wakole Series, and a panning from any stream would yield much garnet and kyanite. The metaquartzites and hornblende-gneisses all carry garnet, and usually in considerable quantity. On passing the faulted boundary at the western limit of the Wakole highlands no more garnet or kyanite is seen. The typical hornblende-gneiss of the Ubende Series appears without any garnet; talc-

schists are also crossed, and a wide belt of crystalline limestone near Ikola is quite free of garnet.

In the paper by Sutton, Watson, and James, a map is given (figure 15, page 60), which is rather misleading. On this map a comparison of kyanite, charnockite, and garnet-augite-granulite localities in the Ubende and Wakole Series is given. In the Ubende Series six "Ks" indicating kyanite localities are given as opposed to five "Ks" (disregarding the problematical enclave in the south of the map) in the Wakole band. Of the five Wakole kyanite localities, two indicate the place where a single band of the characteristic biotite-garnet-kyanite-schist crosses the Sibwesa-Ikola motor road. The geological map accompanying McConnell's paper shows, however, that an outcrop of 70 square miles of biotite-garnet-kyanite-schist was mapped on the various traverses, and if the probable outcrops were joined between the traverses, the area of outcrop would amount to over 200 square miles.

In addition to the Ubende and the Wakole Series, Sutton, Watson, and James wish to include the Mahali Gneisses, and the whole of the Ufipa Gneiss Complex in their Ubendian. The Mahali Gneisses form the Mahali Mountains and outcrop over an area of about 360 square miles. They are very homogeneous in lithology and structure, and the fact that their boundary with the Ubende Series is not a simple one may be due to tectonic complication masked by a later metamorphism. In fact, the boundary is undoubtedly a very important line of faulting which has continued moving at intervals from the date of the Ubendian Diastrophism and down to Recent times. As regards the great Ufipa Gneiss Complex, I should be surprised if it proves to belong to a single series, but much work has been done since my preliminary traverses and the question must be left to the future.

It will be many years before any general agreement can be reached on the subdivision of the Basement Complex into cycles and systems; I would like to suggest, therefore, that terms implying regional correlation should only be introduced when the facts are incontrovertible. In this letter I have tried to indicate as briefly as possible why I think that the Ubende and Wakole Series should be regarded as separate entities, and why the term "Ubendian" should be restricted to the sense in which it was originally used.

R. B. MCCONNELL.

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LOBATSI,  
BECHUANALAND PROTECTORATE.  
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#### REFERENCES

- SUTTON, J., J. WATSON, and T. C. JAMES, 1954. A study of the metamorphic rocks of Karema and Kungwe Bay, Western Tanganyika. *Geol. Surv., Tanganyika, Bull.* xxii.  
MCCONNELL, R. B. 1950. Outline of the Geology of Ufipa and Ubende. *Geol. Surv. Tanganyika, Bull.*, xix.

### REVIEW

PETROLOGY FOR STUDENTS. By A. HARKER. Eighth edition, revised by C. E. TILLEY, S. R. NOCKOLDS, and M. BLACK. pp. viii + 283 with 99 figs. Cambridge University Press, 1954. Price 18s.

The reappearance of this book which has been out of print for some years is very welcome. It is an excellent guide to the study of rocks in thin slices for those who take general courses in geology or specialize in other branches than petrology; and all rocks, igneous, sedimentary, and metamorphic, are covered in one volume at a reasonable price. Some slight revision has been made in the text, and the footnote references, a valuable feature, have been brought up to date.

L. H.