

between crossed nicols is a very low grey, and good interference-figures are obtained.

The association of minerals in the schists is the same as that noticed at the margin of the Ben Cruachan 'newer granite' mass, and also at the margin of 'newer granite' at Netherly in Elgin.

Tourmaline, kyanite, and staurolite also occur in the Moine Schists of Mull, but are in no way connected with the granite.

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## CORRESPONDENCE.

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### CAPE COLONY.

SIR,—In the review of the work by Dr. Rogers and Mr. Du Toit (*GEOL. MAG.*, December, 1909, p. 561) attention was called to the absence of references to authorities *in the index*, not in the text.

REVIEWER.

March 17, 1910.

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### THE MEANING OF THE TERM 'LATERITE'.

SIR,—In discussing the meaning of the term 'laterite', I have at least the qualification of an intimate acquaintance with the material to which the name was first given in the area in which it is typically developed.

As I understand Mr. Scrivenor, he contends that whatever may have been its original signification, it has been so widely employed in other senses that it should be dismissed from scientific language, the more so as the word 'bauxite' is available to replace it.

It must be remembered, however, that bauxite is a mineral name indicating a substance containing approximately two molecules of water to one of alumina, whatever may be its true chemical constitution. The bauxite of the type locality, Baux near Arles in the south of France, is believed to have resulted from the action of aluminium sulphate on limestone, but this is only one way in which such a product might have been formed.

Laterite, on the other hand, is a rock name given to a widespread clay-like deposit which plays a conspicuous part in the surface features of Peninsular India. It has recently been recognized with similar characters in other tropical countries, and has been shown by the classical researches of Max Bauer, Warth, and Holland to be formed by the surface decomposition of alumina-bearing crystalline rocks, whereby the alkalies, alkaline earths, and combined silica are to a large extent removed, leaving behind the free silica, the titanium oxide, and the oxides of alumina and iron, which have taken up water to form hydrates.

This well-characterized formation obviously requires a special designation, and what could be more suitable than the name that Buchanan applied to it over a century ago, and which is still employed in the Peninsula in the same sense in scientific, technical,

and popular language. Mr. Scrivenor appeals to the usage of engineers, but to the best of my recollection I never heard the term applied to any other material by a South Indian engineer during my four years' residence in the State of Mysore.

Curiously enough, at the date of the publication of the second edition of the *Manual of the Geology of India* in 1893, no complete analysis of laterite from the Peninsula of India was known, and its characteristic chemical composition was still unrecognized. Since that date numerous analyses of laterites from widely distant tropical localities have been made. The most recent information on the subject may be obtained from a second paper by Max Bauer (*Neues Jahrb. für Min.*, etc., Festband, 1907, pp. 33–90), a report from the Imperial Institute on specimens from the Balaghat District of the Central Provinces of India (*Rec. Geol. Surv. Ind.*, 1908, vol. xxxvii, pp. 213–20; *Bull. Imp. Inst.*, 1909, vol. vii, pp. 278–85), both of which contain full information on previous literature and analyses, and an interesting contribution by J. Chantard & P. Lemoine (*Comptes Rendus Acad. Sci.*, vol. cxlvi, pp. 239–42; *Bull. Soc. de l'Indust. Min. St. Étienne*, 1909, ser. iv, vol. ix, pp. 1–37), in which are traced out the changes that have taken place in the formation of laterite on the assumption that the amount of titanium oxide has remained unaltered.

As a result of the work that has been done it is found that the chemical composition of laterite varies within wide limits according to the nature of the original rock, so that it is not necessarily the same as that of bauxite. One feature, however, remains constant—the small amount of combined silica in proportion to the alumina present, and it is in this respect that laterites differ from clays, which also occur as tropical decomposition products and are sometimes incorrectly described as laterites. If, again, the amount of ferric oxide is large, it is apt to form ferruginous concretions, which are commonly referred to as *lateritic iron ore*; and if, as sometimes happens, the aluminium hydrate is in course of time washed away, an accumulation of scoriaceous iron ore may be left behind which is certainly not laterite, though it may be derived from it. It is probably this which has given rise to the misuse of the term for surface iron ore, which is common in some of our colonies.

It would be difficult to conceive a stronger case for the application of the rule of priority than the present. The term laterite was applied as early as 1807 to a well-marked rock type, and has continued in use ever since with the same signification, which has been adopted by writers on tropical geology in Germany and France, and received the endorsement of authorities like Keyser (*Lehrbuch*, 1909, vol. i, pp. 282–3). At the same time it has met with general acceptance in this country. Yet we are told that it must be abandoned because it has been wrongly employed by Colonial engineers who are unacquainted with the material to which it is properly applied.

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