

workers, which I am sure will be reciprocated, his initiative would have proved conclusively that, of whatever nature the divergencies of our opinions may be now, we are in perfect unison on this important point, namely that it is of no consequence as to *who* is right as long as it shall be decided *which* is right.

C. G. S. SANDBERG.

THE HAGUE.
June, 1928.

THE SPECIES PROBLEM.

SIR,—In his criticism of my monograph *The Species Problem* (Oliver and Boyd, 1928) your reviewer states that “it is noteworthy that Mr. Robson should have omitted to refer to Gulick’s work published in the Linnean Society’s *Journal* (vols. xx and xxiii) over thirty years ago”. May I point out that Gulick’s work is cited on pp. 117, 118, 119, 132, 133, 135 (and foll.) of my book? The actual papers mentioned by your critic are not cited, but their substance is contained in Gulick’s comprehensive work (*Pubn. Carnegie Inst. Washington*, No. 25, 1905) to which reference is made in my bibliography.

G. C. ROBSON.

BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, S.W. 7.

[By omitting to refer to the important papers published by the Rev. John T. Gulick in the Linnean Society’s *Journal*, Mr. Robson obscures the fact that the idea of isolation as a fundamental factor in the origin of new species had already been developed by that zoologist in the last century and that Romanes had made it the basis of his well-known views formulated in the third volume of *Darwin and after Darwin*. Mr. Robson gives only two references to Gulick in his bibliography, one to “A. Gulick” (1904) and the other to “T. Gulick” (1905).—THE REVIEWER.]

THE GEOLOGY OF NIGERIA: SOME CORRECTIONS AND ADDITIONS.

SIR,—Having now completed a second period of service in Nigeria, I should be glad if you would allow me to record briefly in your pages the following corrections of, and additions to, the account of the geology of the northern provinces contained in my *Geology and Geography of Northern Nigeria* (1911, and subsequent publications).

(1) With reference to the two groups of gneisses (*G. and G.*, p. 119), local opinion is hardening towards the hypothesis of the intrusion of various orthogneisses into an earlier series of paragneisses, as advocated by Dr. Parkinson for the southern provinces (*Q.J.G.S.*, xliii, 1907, p. 308).

(2) About forty outcrops of “alkaline granite of the second type” (*G. and G.*, p. 132) have been mapped in connection with the recent survey of the tinfields and described in Bulletins Nos. 1, 4, 5, 9 and 11 of the Geological Survey of Nigeria. The rhyolites and quartz-porphyrries associated

with the granites are now known to belong for the most part to a somewhat earlier period of intrusion and not to be simply chilled marginal features. The bulk of them preceded the granite, though minor intrusions also followed. The statement of relationship between the granites and the rhyolites of the Buji Hills, given in Bulletin No. 1, p. 18, requires modification in this respect. Also the quartz-porphry mentioned in Bulletin No. 1, p. 15, having originally formed part of the roof of the intrusion-chamber is probably invaded by the granite, not vice versa.

(3) The syenites of Bauchi Town (*G. and G.*, p. 135) have been shown to be connected with the older porphyritic gneissose granite (*G.S.N.Bull.* No. 9, p. 41). True syenitic differentiates of the younger granitic magma have however also been described (*G.S.N.Bull.* No. 4, p. 13).

(4) A Lower Cretaceous fossil, described by Dr. Spath (*G.S.N.Bull.* No. 12, p. 53), indicates the occurrence of rocks of a greater age in the Benue valley than originally anticipated. In the Gongola valley (*G. and G.*, p. 160), Cretaceous shales have been found near Fika and in a borehole farther north at Damagam, 20 miles east of Potiskum.

(5) The discovery of bonebeds in the north-west of the Protectorate (*G.S.N. Occ. Paper* No. 2) has raised the question of the exact age of the Sokoto Series. I fear I was under a misapprehension when I reported the occurrence of Nummulitic limestone in this part of the country (*G. and G.*, p. 167). My own further inquiries have not resulted in any confirmation of the statement.

(6) The material described as "surface ironstone" (*G. and G.*, p. 199) is now commonly, though loosely, spoken of as laterite. Where it forms a crust on rocks decomposed in situ it marks the occurrence of primary lateritic weathering. Elsewhere it is a secondary laterite of varied origin.

(7) The red earthy drift of the Bauchi Plateau (*G. and G.*, p. 203) has been closely investigated and is now generally known as the Fluvio-Volcanic Series. The separation of an earlier from a later volcanic series in *G.S.N. Bull.* No. 1, p. 11) is, however, of doubtful application to the whole area. It is possible that there may have been only one extended period of volcanic activity.

J. D. FALCONER.

LONDON.

June, 1928.

THE MAGMATIC ORIGIN OF ORES.

SIR,—Whilst cordially agreeing for the most part with your interesting paper in the current number of THE GEOLOGICAL MAGAZINE, and especially with your broad interpretation of the term "magmatic", I shall be glad if you will allow me to make a few observations on one point.

The conception of an underlying granite batholith as the source of the large fluorite deposits of Derbyshire is not easy of acceptance.

It is noteworthy that these deposits are concentrated in the regions of extensive vulcanicity during Lower Carboniferous times, on the eastern margin of the limestone massif, and in the inliers of Crich and Ashover. Further, they appear to be restricted to the uppermost 400 or 500 feet of the limestone, *above* the lava-flows.

It seems clear that large amounts of magmatic emanations, carrying silica and other minerals in solution, have arisen from some underground source, and that source appears to be always