

should be of special interest to scientific workers. Their constructive criticism affords one of the best presentations of the argument for Cabinet reconstruction and the necessity of a Ministry of Economic Planning with its appropriate General Staff that has yet appeared.

Both these books should, in fact, be widely and appreciatively read, and should, as already indicated, assist in that educational work indispensable in our war effort, which the Government itself has largely neglected. It may well be hoped that their constructive criticism and suggestions—Dr. Einzig makes a shrewd comment and suggestion regarding economic propaganda and its use to undermine German economic morale which it is to be hoped will not fall on deaf ears—will be duly

weighed by the Government as well as the general public. At least it is certain that these excellent contributions to the growing mass of useful literature on the economic side of the War will contribute to the rapid formation of a public opinion which will render it impossible for the Government to continue its hand-to-mouth policy and attitude of drift in economic matters. They should force upon it the coherent policy, planning and organization which form the indispensable basis for that drastic limitation of non-essentials, comprehensive mobilization of industrial resources and vigorous prosecution of every aspect of economic warfare which are essential to the success of our war effort.

R. BRIGHTMAN.

THE INDIAN FRAGMENT OF GONDWANALAND

Regionale Geologie der Erde

Herausgegeben von Karl André, H. A. Brouwer und W. H. Bucher. Band I, Abschnitt 6: The Indian Peninsula and Ceylon, by G. de P. Cotter. Pp. 66 + vi. (Leipzig: Akademische Verlagsgesellschaft m.b.H., 1938.)

DR. G. DE P. COTTER, until recently a superintendent of the Geological Survey of India, has utilized the experience of a lifetime spent in the field in India in summarizing the present state of knowledge of the geology of the peninsula. There are no Palæozoic rocks there older than the Talchir Boulder Bed at the base of the Gondwanas, which is regarded, with fair confidence, as Upper Carboniferous. The glaciation was more intense in the south, where ice-scratched rockfloors and boulders occur, whereas in the Himalayas (in Spiti and Kashmir) the representative of the Boulder Bed is a basal conglomerate which may have been deposited by floating bergs. Since India is the only land north of the equator where the Boulder Bed occurs, Cotter is inclined to accept the hypothesis of continental drift and to regard the Indian fragment of Gondwanaland as having drifted northwards from its original home south of the equator, leaving behind it portions of its mass in Madagascar, the Chagos archipelago and the submerged land which forms the platform of the Maldives and Laccadives. Elsewhere the latter is regarded as the extension of the Aravalli Range.

The impact of this great land mass with the "northern continent" occurred, according to Cotter, in the close of the Cretaceous, and is associated with the outpouring of the Deccan Lavas now assigned definitely to the Danian. Inciden-

tally, the evidence is steadily growing that the folding of the Indo-Malayan mountains and the intrusion of the tin-bearing granites of Burma and Malaya are of the same age. Further drifting of the land mass helped in Tertiary times to build the Himalayas and to elevate Eocene marine rocks to heights of more than 20,000 feet.

Cotter accepts the work of Spath on the cephalopods from Upper Gondwana beds of the Madras coast. These beds, once claimed by Waagen as Neocomian but long since regarded on the evidence of plant remains as Middle Jurassic, are now classed as Upper Neocomian, possibly Aptian, so that the Upper Gondwanas range in age from Upper Trias to Aptian, most of Jurassic time being represented by a stratigraphical break.

Most of the book is naturally devoted to the Pre-Cambrian—falling into the two great groups, the Purana or Algonkian and the Archæan. The Purana as a whole are unaltered sediments and in the Peninsula generally horizontal or only slightly disturbed, but in the Aravalli Range there was marked folding in Middle Purana times. The threefold division of the Puranas is into Lower (Cuddapahis and Delhis), Middle (Lower Vindhians) and Upper (Upper Vindhians and Karnuls). Cotter admits the many problems still unsolved in the geology of the Archæans but regards as definite that the Bundelkhand gneisses, Singhbuhm metamorphics and Berach granites (Group I) are the oldest rocks of the country; that the Closepet Granite, Charnockites (Group V) and Peninsular or Foliated Gneisses (Group IV) are newer than the metamorphosed sediments (including the Dharwars and Aravallis, Groups II and III) with which they are associated.

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