

together instead of distributed between the stratigraphical chapters.

Among the excellent features of this part is an explanation of the binomial nomenclature, which students are often expected to understand without any such help; but though the first edition of the "Systema Natura" was published in 1735, that is not accepted as the date of the establishment by Linnæus of the binomial system. The relegation of the technical names of the fossils illustrated in the text to an appendix is symptomatic of the present state of palæontological nomenclature; only general names are given in the legends of the figures. The use of popular names has the drawback that they vary so much locally, and English students are not likely to know what are meant by Sowbugs or Pillbugs (p. 605). The author accepts as undoubted the identification of some impressions in pre-Cambrian rocks of Brittany as radiolaria, though this conclusion is rejected by some who have examined the material. There is less evidence for the author's view that Eozoon is a calcareous alga than for its original reference to the Foraminifera, and it seems rather a "bull" to refer to some of these plants as fresh-water seaweeds.

In the historical geology the chief departures from the usual classification are the adoption of two additional systems; of these the Ozarkian System occurs between the Cambrian and the Ordovician, but as the Beekmantown beds are excluded its value appears doubtful. If the Beekmantown and allied faunas be included in the Ozarkian System a much stronger case could be made out for it. The Lower Cretaceous is raised to a system, the Comanchian, which includes from the Wealden to Albian inclusive. Prof. Schuchert's account of the historical geography is illustrated by admirable maps of geographical distribution; it gives a most useful summary of the stratigraphy of North America, and its up-to-date account of the principles of stratigraphy could be read with advantage by all British teachers of geology; but as the historical geology of the British area is incomplete and less accurate, this part of the volume will be of less value to British students than Prof. Pirsson's section.

The most serious drawback to this valuable text-book is the absence of references.

J. W. G.

#### RADIOGRAPHIC METHODS.

*Localization by X-rays and Stereoscopy.* By Sir J. Mackenzie Davidson. Pp. xi+72+xxvi plates. (London: H. K. Lewis and Co., Ltd., 1916.) Price 7s. 6d. net.

**I**N this book the author describes in detail several of the methods which have been devised for the accurate localisation of foreign objects in the human body.

The first two chapters deal with the experimental conditions which should be observed in order that

good radiographs may be obtained, and with some simple yet excellent experiments illustrating the radiographic advantage of a good focus-point on the anti-kathode. The undesirable effects of secondary radiation receive mention; they are responsible for a good many of the defects which occur in radiographs, and constitute a danger (second only to the primary rays) to the operator, which the author does well to insist upon.

The main facts of X-ray stereoscopy are described and illustrated. By transposition of two stereoscopic photographs the point of view of the observer becomes reversed; some explanation of this would be of great assistance to the beginner.

The advantages of stereoscopy to the surgeon who is to remove the foreign object are obvious, and we agree with the author that some successful method of rendering stereoscopic images upon a fluorescent screen would be a great advance on present procedure. There are, however, many experimental difficulties to be overcome before this can be effected.

The author has done much to elaborate a precise means of localising foreign objects in the human body, and all the details of the "cross-thread" method are entered into. In cases where a foreign body is lodged in the eye or the orbit, precise localisation is absolutely essential; the chapter devoted to such cases is perhaps the best in the book.

The author directs attention to the misleading nature of a single X-ray photograph, but describes a method by which the depth of a foreign body below the surface may be obtained by means of a single X-ray exposure; this method entails the use of two sets of cross-wires which are placed at a known vertical distance apart. An oblique ray from the anti-kathode casts a shadow of the foreign body and of the lower set of cross-wires with respect to the other set of cross-wires, which is in contact with the photographic plate; simple measurements from the single photograph give the vertical depth of the foreign body below any point previously selected on the surface.

The book closes with a series of twenty-one stereoscopic illustrations on plates, which will repay careful study; it is worth noting that stereoscopic vision may be very considerably improved by practice.

Much of the wreckage of human life occasioned by the war would be past repair were it not for the extra vision vouchsafed to the surgeon by X-rays; whether in dealing with projectiles which have entered the body or in the damage to the structures, bony and otherwise, methods have been evolved which enable the surgeon to know exactly where to look and almost as surely what to find. The attitude of the author is that too much information cannot be given to the surgeon thus engaged, and it is safe to say that the methods of localisation described, together with a stereoscopic picture of the foreign body giving its relation to the neighbouring anatomical parts, inspire confidence.