

to an account of the oscillations of the margin of the Scandinavian ice, and the formation during a resting epoch of massive terminal moraines. A block of Miocene sediments with undisturbed bedding, including brown coal, and 30 metres thick, has been found at Georgenswalde, as a transported inclusion in the boulder-clay (p. 150). Marine clays with *Yoldia* and many other molluscs are regarded, in opposition to recent views in Sweden, as older than the maximum extension of the ice. These beds seem, indeed (p. 156), to have been deformed by the pressure of the ice. One great forward movement of the glacier-front, and one retreat, broken by pauses and small oscillations, are held (p. 159) to explain the phenomena in Ostpreussen. During a pause, which Prof. Tornquist explains by the sinking of the ice into yielding glacial deposits in a great depression in the south-east of the province (p. 175), the pre-Glacial marine sands and the earlier ground-moraines are said to have been pressed up as a ridge, just as the growth of the dunes along the northern coast has pressed up modern marine beds out of the sea (*cf.* p. 209). The photographs give vitality and interest to a strange monotonous country, which we well remember, as we crossed it under grey September clouds. The view of Neidenburg (p. 167) reminds us of the gravels washed from the retreating ice, and of the last villages of Prussian Poland, joined by tracks of trampled sand. On this broad outwash plain, the white-capped Cossack riders, night and day, keep the boundary between east and west along the fenceless fields.

GRENVILLE A. J. COLE.

OUR BOOK SHELF.

Orchids. By James O'Brien. Pp. xii+114. (London and Edinburgh: T. C. and E. C. Jack, n.d.) Price 1s. 6d. net.

IN the preface to this little book it is observed that householders in suburban districts who have but one conservatory may, if they choose, keep it furnished with orchids at a less expenditure of time and money than is needed for the usual occupants of such structures. Frankly, we doubt it. The same thing has been written many a time before and doubtless many a confiding householder has tried to do it, but so far as we can judge the successes are few and far between. The author of this work has devoted his life mainly to the study and cultivation of orchids, and, like most experts, is apt to take for granted a knowledge of certain fundamental principles which for himself require as little consideration as breathing, but which are nevertheless absolutely essential to success. It is over these that the average suburban householder with no special training comes to grief. No doubt it can be done, especially by persons with abundant time on hand, and plenty of enthusiasm; but not by the ordinary City man who has to leave his orchids—their shading and ventilation—to the tender mercies of the jobbing gardener or the occasional attentions of a distracted housemaid from ten to six, the most important part of the day in orchid culture.

But whilst we cannot support the optimistic views as thus expressed by the author, we can strongly recommend his book. It gives a condensed, but wholly admirable, account of the history of orchid cultivation, of the structure of orchid flowers, of the principles of building orchid houses, and the best short

account we have yet seen of how to cultivate these plants. Many who have themselves spent years amongst orchids will read the book with profit and pleasure. It is well printed, and is illustrated by eight coloured pictures made from plants grown in the famous collection of Sir G. L. Holford, at Westonbirt. They represent the acme of the orchid cultivator's art.

Practical Mathematics and Geometry. By E. L. Bates and F. Charlesworth. Pp. viii+446. (London: B. T. Batsford, 1910.) Price 3s. net.

THIS book has been written with the view of meeting the recent addition to the Board of Education examination syllabus, which unites arithmetic, algebra, and practical drawing under the heading of "Preliminary Practical Mathematics." In deciding the question as to the best teacher for the combined course the following points cannot be ignored. The mathematical teacher as a rule cannot be entrusted to teach draughtsmanship—one of the most important lessons a young technical student has to learn, and one which, if spoiled at the start, is rarely remedied later. On the other hand, the engineering teacher is apt to attempt to specialise in mathematics too early; again, his time is generally fully occupied with his own special work.

The book before us contains 446 pages crowded full of matter presumably considered essential for a first year's evening course. It includes mathematical work up to quadratic and other equations, logarithms and variation, and plane and solid geometry up to the projections of simple solids and their sections. There is little attempt to coordinate the mathematical and drawing work.

Introduction à la Métallographie Microscopique. By Prof. P. Goerens. Edition Française traduite par Prof. A. Corvisy. Pp. 227. (Paris: A. Hermann et Fils, 1911.) Price 10 francs.

THE English translation from the German edition of this work appeared more than two years ago, and was reviewed in NATURE, vol. lxxviii (1908), p. 387. The present book, however, is not identical with any previous issue. It is a careful revision by F. Robin, and is in advance of its predecessors in several respects. The arrangement is somewhat more logical, the description of the measurement of temperature by thermocouples being followed at once by a section devoted to the methods employed in studying the microscopic structure of metals, and the remainder of the book is occupied by an account of the constitution of alloys, illustrated by a very large number of examples. The iron-carbon alloys are dealt with in detail in a separate section. The most important additions of new matter are descriptions of many series of binary alloys, which have been studied during the last three or four years, and a large number of beautiful reproductions of photomicrographs of the structure of metals.

Das Radium und die Farben. By Prof. Dr. C. Doelter. Pp. viii+133. (Dresden: Theodor Steinkopff, 1910.) Price 4 marks.

THIS is a useful summary of the very numerous observations which have been made on the colour phenomena produced in minerals by the neighbourhood of radio-active bodies. Although the facility with which experiments can be made with radium (at least by the fortunate possessor of an adequate specimen of that substance) have given a special prominence to observation made with it, it is well known that analogous colorations are produced by kathode and Röntgen rays, and by ultra-violet light. These subjects are included in the book, which contains a full bibliography.