

its roots in questionings of the philosophic perspectives of the subject itself and its presentation to the pupil. Mr. Lauwerys attempts to clarify the situation by considering the general problem and its practical issues, and as he is lecturer in the methods of science at the London Institute of Education, is deeply interested and widely read in the philosophic aspects of science, and has come under the humane influence of Sir Percy Nunn, his book is of absorbing interest. His point of view throughout is that biology possesses its own concepts, technique and methods; the biologist must perceive the living organism as a concrete sensual whole with time and space relations; he must interpret his observations and results in biological concepts, and he must formulate a vitalistic philosophy of biology using "dynamic type" as a central concept. For the teaching biologist this would involve not the abandonment of the usual subject matter but a fundamental alteration in the usual mode of presentation.

The author first attempts to sketch out his own vitalistic philosophy of biology, proceeds to a consideration of certain difficult problems which all teachers must face, such as the treatment of sex and the 'doctrine of evolution', and then discusses the subject matter of the syllabus and actual methods of teaching. The last chapter deals with the laboratory and practical part of

the course and contains particular applications of the earlier discussions. Appendixes consist of an interesting plan showing the interrelationships of topics, a number of examples worked out to show the application to particular subjects of the method of approach discussed in the text and, finally, a number of bibliographies containing startling sins of omission and commission.

Biologists will gain if they accord the author a respectful interest, even if this is not always a sympathetic one, for he has something definite to say and says it unusually well. Many biologists, however, may find their patience wearing thin when reading certain portions of chapter iii, especially the discussion on evolution, where the author, both in text and references, seems to know little or nothing of twentieth century work. Further, in many places, he seems to be writing from the point of view of a particular religious denomination, but it is to be hoped that this will not obscure the reader's view since, in the wider reaches of education, religious influences are still of primary magnitude, and in the immediate issue the author's vitalistic approach and philosophic attitude have no necessary connexion with religious tenets. The book is a sincere attempt to deal with a very difficult and urgent problem, and it merits serious consideration by all who are interested in the teaching of biology.

W. B. B.

Short Notices

Gmelins Handbuch der anorganischen Chemie. Achte Auflage. Herausgegeben von der Deutschen Chemischen Gesellschaft. *System-Nummer 59: Eisen*. Teil A, Lieferung 6. Pp. xxi+1167-1420. 41.50 gold marks. Teil A, Lieferung 7. Pp. xxvi+1421-1634. 36 gold marks. (Berlin: Verlag Chemie G.m.b.H., 1934.)

ALTHOUGH the definite compounds which iron forms with other elements comprise the subject-matter of vol. A on iron, many elements play such important parts in the chemistry of steel and cast-iron that it has been found advisable to deal separately with such associations of iron and non-metals as can conveniently be termed alloys. This plan has involved very little overlapping. For example, whereas iron carbonyls are properly included amongst the compounds, iron carbide will be found in the present volume on account of its peculiar significance in relation to cast-iron and steel, and we find the phase-systems iron-sulphur, iron-selenium, iron-tellurium, iron-boron and iron-carbon successively described and illustrated with diagrams. Naturally greatest importance is attached to the last-named system. The iron-carbon diagram is set forth very clearly in the familiar compact form, but it has also been enlarged to cover two full pages in order to show the

varying readings, sometimes amounting to more than 100° C., of numerous investigators. This is followed by several pages of explanatory notes and references to the literature, so that an enormous amount of significant detail upon this very important and complex problem has been assembled in a fashion that should be invaluable to specialists. The properties of iron carbide, which is so conspicuous a component of these mixtures, are then recorded in great detail in order to prepare the ground for the remaining sections, which deal with problems of solidification and crystallisation of molten steels and with special processes such as annealing, decarburisation, rolling, hardening, tempering and case-hardening.

The next part of vol. A is an elaborate compilation of the magnetic and electrical properties of both pure iron and the commercial varieties. Among the topics discussed we find theories of magnetism, magnetic properties of the atom, magnetic intensity, permeability, hysteresis, etc., as well as electrical resistance, thermo-electric effects, dielectric constants and electrophoresis. The literature of this section has been reviewed to June 1934, and a most useful feature in both parts is the incorporation in every section of a bibliography of general literature.