substituted and all of them are now very much more effectively reproduced. The revision of the text has been confined to bringing the work up to date, simplifying certain sections that were found to present difficulty, and omitting technicalities that are believed to be "beyond the comprehension of elementary students".

In some respects the result is probably too simple for a first-year university course. It is claimed that igneous rocks can be determined by means of a cross classification based on (a) colour and mineral composition—light and dark in each case, against (b) structure—grained, dense, glassy and fragmental. Fig. 9 brings together all the common modes of occurrence of igneous rocks in a most unnatural and misleading association. Sedimentary and metamorphic rocks are dealt with more adequately and, allowing for the limited scope of the book, the general treatment of the physical agents is good.

The historical chapters, based on the stratigraphy of North America and including sections on the development of life and also on the chief economic products of each system, are necessarily sketchy; nevertheless a broad picture of essentials is gradually built up. The book is not well adapted to the needs of British students, but teachers will find the method of presenting the subject to be of considerable interest.

For a quarter of a century Lahee's "Field Geology" has been a widely appreciated standard manual for field geologists and engineers. The first part of the book is concerned with the recognition and interpretation of geological structures and topographic forms. A particularly valuable feature is the careful discrimination (often well summarized in tables of criteria) between superficially similar phenomena which may be of diverse origins. The second part deals with such topics as methods of surveying, construction and interpretation of maps, geological computations and preparation of illustrations and reports. There are many tables of practical value and the bibliography and index are both excellent.

In the new edition, the fourth, much new material has been incorporated by revision and expansion, notably on the structures of igneous and metamorphic rocks, the analysis and classification of folds and faults, and sub-surface and aerial methods of surveying. The chapters on aeroplane mapping and geophysical surveying have been rewritten and enlarged to embody the chief advances made during the last decade. There is no systematic treatment of groundwater or water-supply problems, but the volume is already so long and so packed with useful information that it will probably seem ungracious to ask for more. The new edition may be cordially recommended to all practical geologists and mining engineers, and it should certainly be acquired for the shelves of every geological library.

PLASTICS AND THEIR USE

Plastics in Industry

By "Plastes". Second edition, revised. Pp. xiii + 248 + 45 plates. (London: Chapman and Hall, Ltd., 1942.) 15s. net.

SOON after the close of the War of 1914-18 there began to be talk of the plastics industry. Few knew what this indicated, excepting that it was possible to take certain condensation products made from simple substances and mould them into per-

manent objects with the aid of heat. The progress made in the last twenty years has been amazing; a yard-stick for its measurement was afforded by successive British Industries Fairs. On the purely chemical side there have been developments of two types: the discovery and manufacture of simple substances to use as condensing agents, and the understanding of the theory and practice of condensing to form large molecules of the desired size. There is now an abundant literature on this subject.

The plastics industry is developing on the lines that one firm makes the condensation products and perhaps their raw materials, while another undertakes the moulding. It is this section which is becoming so widespread as the use of plastic materials increases. The book before us is devoted to the moulding industry and is written to give industrialists in general a picture of what plastics are and what can be done with them. The claim is that they are easily moulded into complicated shapes and can be given properties of outstanding advantage. The synthetic chemist has enriched the world with dyes, drugs, solvents and many organic substances in daily use. In plastics he has made a further step forward in providing materials of construction which compete with wood and metals.

There are two types of plastic based on different raw materials, namely, those which can be re-softened by heat and re-moulded, generally called thermoplastics, and those which remain rigid and hard when once moulded, known as thermosetting. The technique of their fabrication, a purely engineering industry, is becoming complicated. It includes blowing or shaping, extrusion through nozzles or dies, compression moulding and injection moulding.

The book describes the technique in sufficient detail and goes on to deal with the applications of the articles made in the engineering, chemical and electrical industries.

In these days when so much depends on aircraft, there is no need to emphasize the importance of lightweight materials, and plastics have become available for many unstressed and lightly stressed parts at one time made of light alloys. Plastics in aircraft construction have become a science and industry on their own.

What the modern motor-car owes to plastics is well known; more recent is the relation to the textile industry. We have at last, in 'Nylon', a wholly synthetic fibre made from highly complicated condensation products of a nature such that the final substance does have an affinity with protein. The 'Nylon' fibre owes much to the fact that at one stage of its manufacture it is cold drawn—yet another example of the co-operation between engineer and chemist.

The possibilities of plastics in the building and furniture industry are obvious: they will figure largely in the house of the future, provided the masses learn to take more care of what does not immediately belong to them.

The book goes into many other applications with just sufficient detail to illustrate the potentialities and whet the appetite of the reader.

Plastics have one great advantage, their raw materials are largely indigenous, so that the establishment of a virile industry in Great Britain depends on the chemists and the enterprise of the industrialists. It should develop to a very large and remunerative industry giving employment to a skilled person.

E. F. ARMSTRONG.