book helpful. All descriptions of processes and apparatus are necessarily much condensed, matters of detail being relegated to the larger handbooks and monographs on special subjects, which, in the opinion of the reviewer, is their proper place. But the addition of references to the larger and special works, either as footnotes or otherwise, would have materially increased the value of the book without altering its character as an elementary work.

The present volume consists of two parts, the first being devoted to a general introduction and Part II. to Metallurgy.

The four introductory chapters are each given to a special topic. Chapter I., 'The Chemistry of Materials of Construction,' treats of the properties of stone, brick and concrete, roofing materials, the structural metals, and the strength, permanency and preservation of these substances. Chapter II. deals with 'The Chemistry of the Sources of Energy,' viz.: solid, liquid and gaseous fuels, electrical heating, measurement of temperature, direct conversion of chemical into electrical energy and the natural forms of kinetic energy. 'The Chemistry of Steam Raising' is the title of the third chapter, which has for its subjects, water and the methods of purifying and softening it for use in boilers. 'The Chemistry of Lubricants and Lubrication' is briefly disposed of in some seven pages, forming the fourth chapter.

Part II., comprising about one-half of the book, is a fairly complete though condensed presentation of the subject of Metallurgy in all its branches. The commercially important metals, some nineteen in number, are here included, their chief ores described and the processes of their extraction set forth in a brief and readable manner. Many of the important appliances and parts of smelting and refining plants are illustrated by cuts. Numerous tables of analyses of ores and of finished products are scattered through the text. In these days of popular interest in mining and metallurgical schemes, it would seem that this section should lend the book an attraction to many persons in commercial life, though they may have little or no scientific education. The facts are so clearly and tersely stated and illustrations are so frequent that any one of average intellect, though not a chemist or engineer, should have no difficulty in understanding the work. Technical terms and chemical symbols are frequently used, it is true, but in the case of the latter the common names of the substances are also stated, hence no confusion need result.

But it is to the teacher of chemistry and metallurgy, having to deal with young students, where an elementary treatise, short and compact in its nature is desired, that this book will be most welcome. Here are found the essential facts without those mystifying details which often become magnified to undue proportions in the mind of the student.

A very complete index, free from mistakes or misprints, closes the volume.

If the second volume, covering the field of manufacturing chemistry, be as well done as this, a valuable addition will have been made to the mass of chemical literature.

FRANK H. THORP.

The Chemistry of Pottery. By KARL LANGENBECK. Easton, Pa., Chemical Publishing Co. 1896. 12 mo., pp. 197.

In this little book the author has collected and systematically arranged some of the results of an extended experience in the manufacture of pottery and tiles. The chemical bearing of each subject in its relation to the object desired is made the chief element of the work. Analyses of the materials are taken as the basis on which to calculate rational formulæ for the production of certain results.

The book is divided into fifteen chapters, each treating of a separate subject, a few of which may be mentioned. In Chapter I, Analysis of Materials and Products, and in Chapter II., Physical and Empirical Tests, are explained. The subject of Chapter III. is Pyrometry, a matter of great interest to the pottery maker, since the success of his work depends, in great measure, on the proper heat in his furnace. Estimation of the temperature becomes a matter of experience with the burner, who often acquires much skill in producing some one kind of ware in a given furnace. But if called upon to burn other ware than that to which he is accustomed, or to use different fuel, or a kiln of different construction, failure may be the result. The author

recommends the use of the 'Normal Pyrometric Cones,' invented by Dr. Seger, as affording a safe and simple method of controlling the temperature of the kiln. He considers it quite possible to prepare cones from our domestic materials, fully as reliable as those now made in Germany.

In Chapter V. that subject often so troublesome to pottery makers—Glazes, their requirements and composition—is presented. The various kinds of Ware, Bricks and Terra Cotta comprise the succeeding chapters up to the fourteenth, on Refractory Materials, in which the preparation of fire clays for use in kiln building and for "saggars," is fully explained. Sixteen pages on Burning the Ware, in which the requisites of this important part of pottery making are interestingly detailed, form the final chapter. A convenient index follows.

A few more illustrations or diagrams in the body of the work would have given it added interest for the majority of chemists who have only a superficial knowledge of the processes of pottery making. FRANK H. THORP.

SCIENTIFIC JOURNALS.

JOURNAL OF GEOLOGY, FEBRUARY–MARCH.

Kame Areas in Western New York South of Irondequoit and Sodus Bays: By H. L. FAIRCHILD. The purpose of the paper is to describe certain massive deposits of sand and gravel apparently formed by the glacial drainage. These bays are the extreme points in the great landward curve in the south shore of Lake Ontario, and are thought to have greatly influenced the drainage of the region during the recession of the ice. Four Kame areas are described—Irondequoit, Victor, Mendon and Junius. The author finds these areas alike in the following particulars: (a) they are located in the basin of Lake Warren; (b) they have an overwash or silt plain to the southward; (c) they lie in the midst of drumloid ridges which antedate the kame deposits; (d) only one has any clear connection with an extended frontal moraine. He thinks the causation is complex, including rapid ice retreat, action of lake waters to prevent great local accumulations of morainic till and heavy glacial drainage.

A Pre-Tertiary Nepheline-Bearing Rock: By F. BASCOM. The rock in question is a glacial boulder found in the vicinity of Columbus, Ohio. There was a single specimen about a foot and one-half in diameter, but it is of a type so rare as to justify in the mind of the author a particular mention. She inclines to the opinion that it belongs to the nepheline syenite porphyry group. The source is not known, but is presumed to be the area north of Lake Huron, and if so the boulder is from a Cambrian horizon or lower. In any case it is a pre-Tertiary dike or surface volcanic resembling the modern type.

Remarks on Petalodus Alleghaniensis (Leidy): By CHAS. R. EASTMAN. In a previous issue of the journal Dr. Hay described a specimen of Selachian tooth from the Carboniferous of Illinois. For the form he proposed the name Petalodus Securiger. In the present paper the author dissents from this view and gives reasons why the new name should not be accepted. His opinion is that the form belongs to P. Alleghaniensis.

Patalocrinus Mirabilis (N. sp.) *and a New American Fauna:* By S. WELLER and MRS. A. D. DAVIDSON. The fossils here described were collected by the junior author in Jones county, Iowa. Goniophyllum pyramidale and the species of Crotalocrinus have long been known in the Gothland limestone of Sweden. In this Iowa Silurian fauna, species of Goniophyllum are found indistinguishable from those of Gothland, with a crinoid whose nearest ally is Crotalocrinus. The crinoid, which is a new one, is carefully described and figured by the senior author, who finds an explanation of the similarity between the Gothland and Iowa faunas in a migration along a supposed shore line, joining the east American and British regions during Niagara time.

On the Nature of Igneous Intrusions: By ISRAEL C. RUSSELL. In a previous paper the author described some hills in the Black Hills region, which illustrated a little known phase of igneous intrusion. He now discusses igneous intrusion in the light of his large experience in many localities. Of these he finds several classes—intruded sheets like those of the Newark which, when widely extended are of easily fusible rock and relatively surperficial, lacco-