berg, proposed drilling and blasting in mines. The next chronological ite mis also to the credit of Germany. In that year German miners introduced blasting to their backward English brothers. Tamping with clay is recorded in 1685. Two years later, German miners are known to have used straws filled with powder for blasting. Within two years, hardwood tubes and pasteboard cartridges supplanted the primeval straw. But the most important event in the evolution of the drill was the introduction of chisel-bit drills in 1749. This also was a Teutonic innovation.

The first recorded British improvement was the invention, in 1813, by a Cornishman named Trevithick, of a rotating boring machine which was used for quarrying limestone. In 1823, the electric spark came first into use, for firing a blast. In 1831, Beckford, of Camborne, invented the safety fuse. Cave, a Frenchman, invented a reciprocating percussion drill in 1851; and, in the same year, an American named Fowle, patented a direct action percussion drill. Shortly after this, compressed air came into general use. After the application of nitroglycerine to rock blasting in 1863, the development of explosives, detonators and drills was rapid.

As probably the evolution of the hammer drill is the most important of modern developments, it is worth while digressing here to notice Mr. Weston's estimate of the comparative merits of the piston and the hammer types. Mr. Weston points out that, unless one keeps in mind the fact that the rock drill is a commercial machine, one might be tempted to believe the modern hammer drill to be by far the superior machine. The weight of the hammer of the largest type of hammer drill is 15 pounds. The weight of piston, steel, etc., of a piston drill ranges from 60 pounds to 125 pounds. Thus, whilst the velocity of the hammer drill should be 16 times that of the piston drill to get equivalent effect, in practice it is only four times as great. In other words, a very high air pressure must be used to permit the hammer drill to compete at all with the piston drill. Mr. Weston expands the subject capably and well.

Most instructive are two chapters entitled "Examples of Rock Drill Practice," and one entitled "Rock Drill Tests and Contests." The former takes up 90 pages. They cover practice in South Africa and in America respectively. Many cost items are given. The chapter on "Rock Drill Tests and Contests" takes up South African tests largely.

Whilst Mr. Weston's book will call for additions and revisions perhaps more rapidly than books on other subjects, yet it is distinctly a book that will help the mining engineer. In its field it is unique.

MODERN ASSAYING—A CONCISE TREATISE DESCRIBING LATEST METHODS AND APPLIANCES—BY J. REGINALD SMITH EDITED BY F. W. BRAUN—80 ILLUSTRATIONS—145 PAGES—PRICE—J. B. LIPPINCOTT COMPANY, PHILADELPHIA AND LONDON. 1910.

"The art of assaying," so goes the introductory definition, "is a branch of analytical chemistry in connection with mining and metallurgy. Its object is to obtain the value of a stated quantity (usually an avoirdupois ton) by determining the value of a small representative sample." The second last word is the keynote of the whole subject.

"Modern Assaying" is what it should be, a compact, simple, well-illustrated book. The instructions are concise and exhaustive. We are glad to notice that the gas furnace is given prominence. This is usually omitted. The free-hand drawings, illustrating the operations: crushing, sampling, grinding, weighing, etc., are a decided improvement on anything we have seen. Gold, silver, gold bullion, lead, antimony, and copper methods lytic method is the only "wot" method given for coplytic method is the only "wat" method given for copper and lead (together), for the reason that it is both rapid and simple. Useful tables are appended. "Modern Assaying," whilst by no means dealing with the whole field of assaying, is sufficiently inclusive to prove a valuable addition to every mining man's library.

PRACTICAL DATA FOR THE CYANIDE PLANT—BY HERBERT A. MEGRAW — 93 PAGES — ILLUSTRATED—SOFT COVER. PRICE $2 NET. MEGRAW-HILL BOOK COMPANY, 239 WEST 39TH STREET, NEW YORK. 1910.

To help the "Man on Shift" this volume was written. Although it is confessedly a compilation, it is not without original matter. The author, Mr. Herbert A. Megraw, while claiming little originality, hopes that the book will accomplish its object in solving the everyday difficulties of the worker in cyanide. We are sure that, in many cases, it will.

The ground surveyed is as follows: crushing and grinding, the cyanide plant, slimes, precipitation, formulæ in mensuration, tables of general weights and measures, general reference tables. The section "Precipitation" is thus divided: solutions, stoichiometry, preliminary experiments on ores, trouble, data. Under these heads, the sequence of steps is well presented. Necessary chemical equations are included and explained. Under the heading "Trouble," a lot of very helpful and practical hints are given.

CORRESPONDENCE.

EMPLOYMENT FOR STUDENTS.

November 17th, 1910.

The Editor, Canadian Mining Journal, Toronto.

Sir,—In connection with your excellent suggestions in a recent editorial on the matter of work for students and young graduates in Mining Engineering, permit me to put before you the following:

A recent regulation in regard to students in the department of Mining Engineering of the University of Toronto reads as follows: "Candidates for the degree in the Department of Mining Engineering will be required to present satisfactory evidence of having had at least six months' practical experience in work connected with mining, metallurgy or geology for which they must have received regular wages. The time may be spent on geological survey, in ore dressing, smelter or lixiviation works, in an assay office in the vicinity of mining or metallurgical works, on any work in or about a mine other than as an office man or clerk, or in prospecting. Not more than three months on geological surveys will be accepted and prospecting will only be counted as two months) and must not be submitted for more than three of the six months."