

a steady beam of light. When an object is moved under this light, it is seen only at the points where it happens to be when lighted up by the flashes of the arc lamp, and due, again, to the persistency of vision, it seems to remain in each position for a brief interval of time.

NEW BOOKS, ETC.

PRACTICAL COAL MINING. By T. H. Cockin. New York: The Norman W. Henley Publishing Company, 1905. 8vo.; pp. 422. Price, \$2.50.

The author of this work is a member of the Institute of Mining Engineers of England, and has been for a considerable period lecturer on coal mining at Sheffield University College. He has also had a varied practical mining experience. As the result of this, his book, while intended for the use of students preparing for mining examinations, or for qualifications for first or second-class colliery managers' certificates, is thoroughly practical in character, and gives much useful information in condensed form. Besides a map of the British coal fields, the book is illustrated with 200 specially-drawn diagrams. It will be found of great value to any person wishing to learn in a short time as much as possible about practical coal mining.

SMOKE PREVENTION AND FUEL ECONOMY. By William H. Booth, M.Amer.Soc. C.E., and John B. C. Kershaw, F.I.C. New York: Norman W. Henley Publishing Company, 1905. 8vo.; pp. 194; 75 illustrations. Price, \$2.50.

This book is based on the German work of Ernst Schmatolla, to which, however, much has been added. The object of the authors is to show as briefly as possible the principles of fuel combustion, the methods which have been and are at present in use, as well as the proper scientific methods for obtaining all the energy in the coal and burning it without smoke. Considerable space is given to the examination of the waste gases, and several of the representative English and American mechanical stokers and similar appliances are described. The losses carried away in the waste gases are thoroughly analyzed and discussed in the Appendix, and abstracts are also here given of various patents on combustion apparatus. The book is exceedingly complete, and contains much that is valuable to all who have charge of large plants.

ELECTRIC SMELTING AND REFINING. By Dr. W. Borchers and Walter G. McMillan, F.I.C., F.C.S. London: Charles Griffin & Co., Ltd.; Philadelphia: J. B. Lippincott Company, 1904. 8vo.; pp. 562. Price, \$7.

In this, the second English edition of Dr. Borchers's well-known manual (which has been translated from the third German edition of that work), the progress made in electro-technology has been fully chronicled. The great strides made in electro-metallurgical practice in the last few years have made the task of supplying all the latest information a very considerable one; this has been done quite thoroughly by Mr. McMillan, who, in translating, has added many valuable notes of his own. The work treats of all the metals in the extraction and working of which electric current has been found to be applicable, while only those processes which are capable of practical application have, as a rule, been described. A short survey of the purely metallurgical method of treating the metals has been added to each chapter, in order that the reader may compare such methods with electro-metallurgical processes, and see how the two may be used in conjunction. The matter has all been arranged with a view to the industrial aspect of the question, and there are numerous supplementary notes on actual applications of processes not otherwise referred to in the text. The book is very thoroughly illustrated, and forms a complete handbook on the extraction and treatment of metals by means of the electric current.

INFECTION AND IMMUNITY. With Special Reference to the Prevention of Infectious Diseases. By George M. Sternberg, M.D., LL.D. New York: G. P. Putnam's Sons, 1903. 8vo.; pp. 293. Illustrated. Price, \$2.

The author, a retired surgeon-general of the United States army, here states for the benefit of non-medical readers the established facts relating to infectious diseases, and indicates the methods necessary for the prevention of such diseases. He has, so far as possible, let the various theories of immunity alone; his object being the diffusion of such knowledge as "cannot fail to promote the sanitary interests of the people."

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending November 29, 1904

AND EACH BEARING THAT DATE [See note at end of list about copies of these patents.]

Accumulator, H. A. Brooks 776,107 Alarm lock, G. A. Moser 776,341 Alcohol, making sequiterpene, M. Kerschbaum 775,978

Table listing various inventions with their respective patent numbers. Includes items like Ammonia, making, Arch abutment, Arcs, means for counteracting, Automatic lubricator, etc.

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Table listing various inventions with their respective patent numbers. Includes items like Dyeing apparatus, Dyeing machine, J. R. Greenwood, Dyeing machine, J. Hussen, Elbow machine, A. P. Tucker, Electric generators, means for controlling the voltage from, I. Deusch, etc.