TN 14 H3

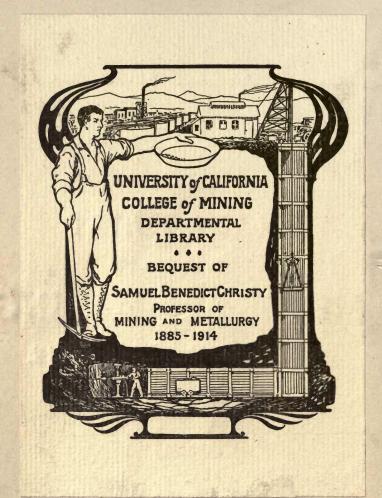


HANDY LIST

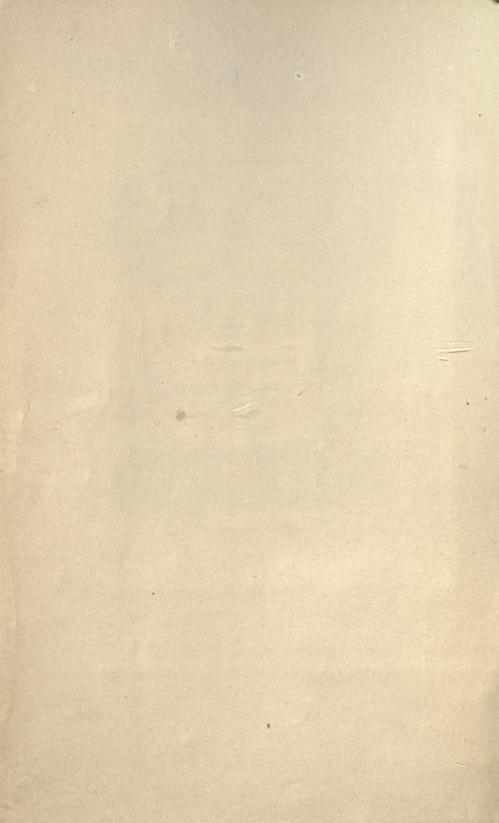
of Books on

MINES AND MINING.

A REFERENCE-CATALOGUE.



S. B. CHRISTY!



HILARBIEL LADIABLE.

PETELL ENVANCE

good a start of the by time when

ALTERIAL TOWN

MINES AND MINERO

The second second contract of the second sec

ones (A. 7 A. 6) es observations (A. 6) AND STREET

HANDY LISTS

OF

TECHNICAL LITERATURE

Reference Catalogue of Books printed in English from 1880 to 1888
inclusive; to which is added a select list of books printed
lefore 1880 and still kept on Publishers'
and Jobbers' lists.

COMPILED BY H. E. HAFERKORN.

PART IV.

MINES AND MINING,

Assaying, Metallury, Analytical Chemistry, Minerals and Mineralogy, Geology, Palæontology, etc.

Including issues up to May 1891, and a number of earlier Books frequently met with in Catalogues. Together with a list of Periodicals and Annuals in these Branches.

MILWAUKEE, WIS.

H. E. HAFEIRKOIRN,

PUBLISHER.

LONDON:

GAY & BIRD,

PUBLISHERS * AND * IMPORTERS,

15 King William Street, West Strand.

1891.

MANDY LIST

OF

BOOKS ON MINES AND MINING,

Assaying, Metallurgy, Analytical Chemistry, Minerals and

Mineralogy, Geology, Palæontology.

AN ALPHABETICAL

Reference Catalogue, arranged under Authors and Subjects, and including analytical References to the Contents of important Works.

COMPILED BY H. E. HAFERKORN.

Including Issues from 1880 to May 1891, and a number of Books published before

1880, frequently met with in Catalogues; together with a List of

Periodicals and Annuals in these Branches.

And a short List of important Works in the German Language.

MILWAUKEE, WIS.

H. E. HAFERKORN,
PUBLISHER.

LONDON:

GAY & BIRD,
Publishers and Importers,
15 King William St., West Strand.

1891.

TN14 H3

COPYRIGHT, 1891, BY HENRY E. HAFERKORN.

PRESS OF
NATIONAL PRINTING CO.,
MILWAUKEE, WIS.

INTRODUCTION.

Part IV. of Mr. H. E. Haferkorn's "Handy Lists" treats of topics of exceptional importance and value to different parts of our country, and will no doubt be received with the same interest as the preceding parts. Not only, as far as I have been able to discover in examining it, is it fully up to the high Standard of its predecessors, but the changes introduced in the arrangement and fully explained in the preface are genuine improvements, and will be specially appreciated by those who have found it somewhat irksome, in searching for the literature of a particular subject, to look up successively the books under a long series of numbers, when frequently, the author's name or the title of the work, if given as it is now, is sufficient guide for eliminating works that are not wanted. No librarian, bookseller or technical worker can do without the Handy Lists, if he has occasion to look for the information they contain and wants to find easily what a long and weary search would otherwise frequently fail to reveal.

K. A: LINDERFELT.

Milwaukee Public Library, July 20, 1891.

INTRODUCTION

The stage of the s

THE PERSON NAMED IN THE

A finisher was not been found

PREFACE.

Practical experience in using the parts of the "Handy Lists" already published, has suggested various improvements in their arrangement, which have been introduced in the present issue, in order to enable those who consult them to find what they want easily and with as little waste of time as possible. Thus, the method of entering subject references has been changed so as to give under each subject head-ING AN AUTHOR AND SHORT-TITLE LIST OF ALL INDEPENDENT WORKS ON THIS TOPIC, INSTEAD of merely giving the numbers assigned to the books in the Handy Lists.

If the FULL title of such a work is desired, it will be found under its number as

Analytical subject references to parts of books, such as cyclopedias, technical periodical publications, etc., on the other hand, are still referred to under each sub-

In compliance with the expressed wishes of a number of users of the former HANDY LISTS, all the books included in the present part, whether strictly belonging to the period 1880—1891, or printed before 1880, have been entered in a single alphabetical series. Suggestions for other improvements in the make-up are earnestly desired and will receive attention in future issues if their introduction appears to be advantageous.

For the purpose of defining the scope and nature of important works, particularly where it is not sufficiently expressed in the title, special editorial notes and tables of contents have been added in many cases; but, in order to prevent this feature to be looked upon in the nature of an advertisement, it seems desirable to state emphatically that in no instance has a charge of any kind been made for pointing out the special value

of such works.

A short list of German works by distinguished authors in the field covered in this part of the Handy Lists, has been added for the benefit of the numerous workers in this country familiar with the German language, and the usual list of periodical publications, is continued.

It would undoubtedly have been desirable to include a much fuller list of Gor-

Considering the fact that the compilation of the "Handy Lists" is an undertaking which requires an enormous amount of labor in order to make the entries more reliable than in other catalogues, Users and Subscribers should try to reward the compiler by recommending this work to parties interested in technical literature and mention the "Handy Lists" as the source of information in placing orders for

technical books.
in the key has been extended in this part to the abbreviations in the main entry, so that the heavy letters indicate the 'publisher or sole agent, while those in ordinary light-faced type designate the jobber, to whom the bookseller may apply for copies

in case the publisher should be out of the work.

The various editions of a book with their prices have been specified, including American reprints of English works, the price mentioned being that of the original

If a second value is added, in a different monetary standard, it indicates the price at which the book is sold by the jobber or agent stated in connection with each

entry.

If a book has been advertised in a catalogue of second-hand books, or in the catalogue of retail booksellers dealing largely in technical books, the price is en-

closed in parenthesis, indicating that this is not the publisher's price.

The exact year of publication has been added in all cases where it could be ascertained, and enclosed in brackets whenever it does not appear on the title page. When two or more editions have been issued at the same price the dates of all but the last have been enclosed in paretheses.

The subject headings are entered in the same alphabetical series as the authors,

but are distinguished by being printed in *italics*.

When a "see," or "see also" precedes a number, it signifies that the subject is incidentally treated in the work referred to; but when placed before a name, the "see also" indicates other related subjects, which must also be looked up in order to ob-

tain the whole literature on any given subject.

Works occurring in a preceding part of the Handy Lists, are referred to under the number attached to each one in part I, or part II, etc., as the case may be, and

are not repeated in the present part.

INTRODUCTION

Charley of Mr. II. M. Haterhouse of vedentimed Computages and velocial will an doubt po. ac-

and mage oil tell too

e in smallentill and and published

the state of the state of the contract of the state of th

是。在广东的对方的原则的证明。

general market ensurable

PREFACE.

Practical experience in using the parts of the "Handy Lists" already published, has suggested various improvements in their arrangement, which have been introduced in the present issue, in order to enable those who consult them to find what they want easily and with as little waste of time as possible. Thus, the method of entering subject references has been changed so as to give under each subject head-ING AN AUTHOR AND SHORT-TITLE LIST OF ALL INDEPENDENT WORKS ON THIS TOPIC, INSTEAD of merely giving the numbers assigned to the books in the Handy Lists.

If the FULL title of such a work is desired, it will be found under its number as

Analytical subject references to parts of books, such as cyclopedias, technical periodical publications, etc., on the other hand, are still referred to under each sub-

In compliance with the expressed wishes of a number of users of the former HANDY LISTS, all the books included in the present part, whether strictly belonging to the period 1880—1891, or printed before 1880, have been entered in a single alphabetical series. Suggestions for other improvements in the make-up are earnestly desired and will receive attention in future issues if their introduction appears to be advantageous.

For the purpose of defining the scope and nature of important works, particularly where it is not sufficiently expressed in the title, special editorial notes and tables of contents have been added in many cases; but, in order to prevent this feature to be looked upon in the nature of an advertisement, it seems desirable to state emphatically that in no instance has a charge of any kind been made for pointing out the special value

of such works.

A short list of German works by distinguished authors in the field covered in this part of the Handy Lists, has been added for the benefit of the numerous workers in this country familiar with the German language, and the usual list of

periodical publications, is continued.

It would undoubtedly have been desirable to include a much fuller list of Government publications, as well as works on Chemistry, Geology and Paleontology, but it was considered necessary to merely make a selection of the most important of these, so as not to swell unduly the size of this HANDY LIST, or delay its publication

by the inherent difficulty of obtaining the necessary information.

The main entry of each work will be found under the author's name, containing full title, year of issue, publisher's or agent's name, editions and price. The publisher or distributing agent of each book is indicated by a system of abbreviations, at the end of the entry, which are explained in the accompanying Key, containing a list of all publishers and agents represented in this part. For the convenience of booksellers, and especially in order to facilitate procuring books in a hurry, the method of distinguishing the publisher in each work heretofore employed in the key has been extended in this part to the abbreviations in the main entry, so that the heavy letters indicate the publisher or sole agent, while those in ordinary light-faced type designate the jobber, to whom the bookseller may apply for copies in case the publisher should be out of the work.

The various editions of a book with their prices have been specified, including American reprints of English works, the price mentioned being that of the *original*

If a second value is added, in a different monetary standard, it indicates the price at which the book is sold by the jobber or agent stated in connection with each

If a book has been advertised in a catalogue of second-hand books, or in the catalogue of retail booksellers dealing largely in technical books, the price is en-

closed in parenthesis, indicating that this is not the publisher's price.

The exact year of publication has been added in all cases where it could be ascertained, and enclosed in brackets whenever it does not appear on the title page. When two or more editions have been issued at the same price the dates of all but the last have been enclosed in paretheses.

The subject headings are entered in the same alphabetical series as the authors,

but are distinguished by being printed in *italics*.

When a "see," or "see also" precedes a number, it signifies that the subject is incidentally treated in the work referred to; but when placed before a name, the "see also" indicates other related subjects, which must also be looked up in order to obtain the whole literature on any given subject.

Works occurring in a preceding part of the Handy Lists, are referred to under the number attached to each one in part I, or part II, etc., as the case may be, and

are not repeated in the present part.

ABBREVIATIONS.

addit. additional, Diag. diagrams. Long. T. B. S. Long-ser. man's Text Book Ser. } Series. Adv. Sci. Ser. Ad- Dec. December. Series. shp. sheep (binding) vanced Science Ser-ea. each. La. \ large. S. K. M. S. A. H. South Kensington Ed. edition, edila. Anon. Anonymous. ed. I ted, editor. Lib. Library. Museum Science Balt. Baltimore. lithog. lithographed and Art Hand-Elem. Ser. Elemenbds. boards (bound Lond. London. books. tary Series. in board cover). Manch. Manchester. Sm. enl. enlarged. small. Bevan's B. M. I. flex. flexible. Mass. Massachusetts sm. Bevan's British Med. Svo. Medium Soc. Eng. Trans. So-Fold.) folded, fol-Manufacturing In-Octavo. ciety Engineer's fold. ding. Transactions. dustries. mor. morocco. F. cap. 8vo. Fools-Murby's Sci. and Art Spec. Ser. Special-Bohn's Sci. Lib. cap octavo. Bohn's Scientific ist's Series. Ser. Murby's Ga. Georgia. Library. Science and Art Sq. Square. half mor. half mo-Bohn's Illus. Lib. Series. Stand. standard. rocco (binding). Subs. \ subscription subs. \ (sold by sub-Bohn's Illustrated n. d. no date. half rus. half russia Library. No. number. Bost. Boston. Camb. Math. (binding). scription. n. p. no price. Ser. hist. ser. historical suppl. supplement. Textb. of Sci., Text-books of S. Texto. o. p. and o. p. out of print. N. S. new style. series. Cambridge Mathe-Ill. Illinois. matical Series. Illus. Illustrated. Pennsylbooks of Science. Camb. Sch. and Coll. Pa. Imp. Svo. Imperial T. B. Cambridge Penna. vania. thous. thousand. trans. translated. U.S. United States. octavo. School and College Pap.) paper (in pa-Improv. Improved. pap. f per binding). Text Books. in. inches. Phila. Philadelphia. V. N.S.S. Van Nos-Cass. Tech. Man. Cassel's Technical incl. including. Pl. } plates. trand's Science Ser-Inst. Institute. ies. Manuals. Internat. Educ. Ser. Chic. Chicago. P. Svo. Post Octavo. vol. volume. International Educlo. cloth (binding). portr. V. portraits. cational Series. color. colored. port. vols. volumes. Intern. Sci. Ser. Inred. reduced. W. pl. with plates. Wash. Washington. Coll. S. T. B. Collin's Science Text ternational Science rev. revised. Series.
Introd. Introduc- Sci. Ser. Science Series. Weale's Ser. Weale's Series. Books. tion. Series. Comp. compiler, compiled. jr. junior. L. Ele. Sc. Man. or \ Sci. f. S. T. Ser. Scicont. contained. ence for School and L. Elem. Sci. Man. Family Series. corr. corrected. Cr. Crown. Longman's Ele-Scient. Manuals. mentary Manuals. | Scientific Manuals.

\$ Dollar; c. Cents; £ Pound of Sterling; s. Shilling, d. Pence.

All other abbreviations are self-explanatory.

AMERICAN BOOKSIZES: Folio over 12 inches (30 cm.) high; 4to. Quarto under 12 inches (30 cm.); 8vo. Octavo 10 inches (25 cm.); 12mo. Twelvemo (Duodecimo) 8 inches, (20 cm.); 16mo. Sixteenmo (Sedecimo) 7 inches, (17½ cm.); 18mo, Eighteenmo (Octodecimo) 4½x7¼ inches (11x18 cm.); 24mo. Twenty-fourmo (Vicesimo Quarto) 6 inches (15 cm.); 32mo. Thirtytwomo (Trigesimo Secundo) 5 inches, (12½ cm.); 48mo. Fortyeightmo Quadrigesimo Octavo) 4 inches, 10 cm.).

Reference is made to the papers of the Journal of the Iron and Steel Institute, as for instance:

in 1875, I No. 434, this signifying the first volume for 1875 of 434 which is the *Journal of the Iron and* Steel Institute.

TOO LATE FOR INSERTION.

Gold, Copper, Lead.
King, W., and Pope, T. A. Gold, copper and lead in Chota Nagpore and the adjacent country. With map showing the geology of the gold-fields. (Calcutta.) Lond. 1891. Cr. 8vo. 10s, \$4.00.

ERRATA: No. 17 and 18 Andre should be, each \$18.00; No. 19 Andre, Rock Blasting should be \$3.00.

PART IV.

Mines and Mining,

Assaying, Metallurgy, Analytical Chemistry. Minerals and Mineralogy, Geology, Palaeontology, etc.

N. B.—If a dagger † appears before the title it denotes that the DATE of publication could not be traced, but that the book is inserted in "Whitaker's Reference Catalogue," 1889.

If the YEAR appears in brackets [] it designates that the book was copyrighted in that year, but the year does not appear on the title-page.

The year of the FIRST or a FORMER edition is given in parenthesis ().

In cases where an English book is handled by an American importer and vice versa, the size mentioned in the importer's catalogue appears in parenthesis ().

Aaron, C. H. Assaying I: gold and silver ores. 2d ed. San Francisco, Cal. (1884) 12mo. \$1.00. B-Ck-Dc.

(1884) 12mo. \$1.00.

This work is written by an experienced metallurgist who has devoted many years to assaying and working precious ores on the Pacific side of the American continent. He writes whereof he knows from personal practice, and in such plain and comprehensive terms that neither the scientist nor the practical miner can mistake his meaning. It will be very desirable in the hands of many.—Mining and Scient. Press.

Contains: Implements, Assay balance; Materials; The assay office; Preparation of the ore; Weighing the charge; Mixing and charging; Assay litharge; systems of the crucible assay; Preliminary assay; Dressing the crucible assay; Examples of dressing; The melting in crucibles; Scorification; Cupellation; Weighing the bead; Parting; Calculating the assay; Assay of ore containing coarse metal; Assay of roasted ore for solubility; To assay a cupel; Assay by amalgamation; To find the value of a specimen; Tests for ores; A few special minerals; Solubility of metals; Substitutes and expedients; Assay tables.

aron. C. H. Assaving Parts II and III: gold and silver bullion, lead, copper,

Aaron, C. H. Assaying Parts II and III: gold and silver bullion, lead, copper, tin, mercury, zinc, nickel and Cobalt. Illus. San Francisco, Cal. 1885. 12mo.

N. B.—This book is entitled "Assaying—Parts II and III", and is separate from PartsI.

Contents: Gold and silver bullion; Apparatus; Melting bullion; Assaying bullion; Humid assay of silver; Manipulation, etc.; Lead ores; Copper ores; Volumetric assays; Parkes' process; Amalgamation; New process; Preparation of pottassium zanthate; Electrolytic determination of copper in ores, etc.; Assaying of tin, mercury, zinc ores, New method; New assay of nickel and cobalt; Assay of chromium, bismuth, arsenic, antimony, sulphur, salt; Appendix to part II; Notes on crucible assays; Weighing by oscillations; Appendix to part III; The assay of lead and copper.

Aaron, C. H. Leaching gold and silver ores. The Plattner and Kiss processes. A practical treatise. Illus. San Francisco, Cal., 1881. 8vo, \$3.00.

Aaron, C. H. Practical treatise on testing and working silver ores. San Francisco 1876. 12mo, \$2.00. B-Ck-Dc.

N. B.—It is written for the miner, with no chemical symbols or metallurgical technicalities to confuse those who are not chemists or metallurgists.

He describes an improvised retort, roasting furnace, furnace tools and furnace building. Among the miscellaneous mention may be found Aaron's leaching apparatus, with two or three different arrangements, a small mill, sampling tailings, and settling tanks, dichloride of copper, etc. Mr. Aaron is a practical miner, of long working experience on this coast.—Mining and Scient. Press.

Not. A. W. (Typerities on fuel. (V. N. S. S.) N. V. 1891, 13mp 50c.

Abbot, A. V. Treatise on fuel. (V. N. S. S) N. Y. 1891. 18mo, 50c.

Abel, Sir F. A., jr. Mining accidents and their prevention; also the United States, British and Prussian laws, regulating the working of coal mines. N. Y. 1889. 12mo, \$4.00. Cn—Sb—Sp—Wn. Probably no work yet done by Sir Frederick Abel in his many public-spirited researches has such a direct bearing upon the safety and welfare of so large a class of persons, to say nothing of the merely economic side of the question; and it may be safely assumed that none of his many achievements will more redound to his future fame as a scientist and a public benefactor. His work in the present case is a classic of its kind keen, far-sighted, judicial and sound.—Engineering and Mining Journal.

Abstract and other official forms, and notices under the coal mines regulation

act, 1887. Lond. 1888. Fcap. 4d. Broadside Abstract of the coal mines regulation act, 1887. Lond. 1888. E. form, 3d.

Abyssinia, geology of. Blanford, W. T. 21s. 89.

Accidents in mines. See also Explosions—Underground fire.

Abel F. A. Mining accid. 1889. \$4.00. 6. Bagot, A. Accidents in mines. 1878. 6s. 42. Creswick. Explosions and accidents. 1874. \$ 1874. \$1.00. 174.

Sawyer, A. R. Accid. in mines. 1889. 25s. 729; see Hyslop 406, Mather 524.

13

Geological sketches; first and second series. New. ed. Agassiz, L. 2 vols Bost. 1886. 12mo, each vol. \$1.50. Hp-V. Air as a fuel. Ross, O. C. D. 1875, 3s 6d. 710.

Air-compressing machinery, see Percy, v. 2. 634.

Alford, C. J. Geological features of the Transvaal, South Africa. W. maps and illus. Lond. 1891. 8vo, 5s.

Sr.

Alford, C. J. Mineralogy of the island of Sardinia, in vol. 1879, 11

Soc. Eng. Trans. Allen, A. Commercial organic analysis: treatise on the modes of assaying 12 the various organic chemicals and products employed in the arts, manufactures, etc., with concise methods for the detection of impurities, etc. 2d ed., rev., enl., and re-arranged. 3 vols. Lond. 1885, 86, 89. 8vo. Vol. I: Alcohols, ethers, vegetable acids and fibres, starch and its isomers, etc. Lond. 1885. 8vo. 14s, \$4.50 o. o. p. Vol. II: Fixed oils, and fats, hydrocarbons and mineral oils, phenols and their derivatives, coloring matter, etc. Lond. 1886. 8vo. 17s 6d. \$5.00 o. o. p. Vol. III, part I: Acid derivatives. tives of phenols, aromatic acids, tannins, dyes, and coloring matters. Lond. 1889. Svo. 14s, \$4.50. Vol. III, part II: In press. Bs--Cg-Ck-V.

Alleyne, Sir J. Estimation of small quantities of phosphorus by spectrum

analysis, in 1875, I. No. 434.

Alloys. See also Copper-tin Alloys—Metallurgy. Brannt, W. T. Metallic a. 1889. \$2.50. 110. Hadfield, R. H. Alloys of iron and silicon. 345. Hiorns, A. H. Metallic a. 1891. 6s. 372.

Rammelsberg, C. F. Analysis of alloys. 1872. \$2.25. 664. Scoffern, etc. Useful metals and their a. 1869. 7s 6d. 733. Thurston. Materials of engineering III. 1884. \$2.50. 823; see Brannt-Wahl 111, Byrne 129, Krupp & W. 463, Lock 495ā, Overman

610, Richards 682, Spon's Dictionary, part 2, 774.

Almanac for colliers.

Colliery Guard almanack. 2d and 1s. 155a.

Abuminium. See also Metallurgy.

Keep, W. J. Aluminum in carbonized iron. 441. Richards, J. W. Aluminium 1889. \$5.00. 682. Thurston, R. H. Materials of engineering III. 1884. \$2.50. 823; see Davies 208, Lock 495a, Phillips 643, Spon's Dictionary, part 2, 774.

Amalgams, see Aaron 4, Brannt 110, Krupp & W. 463, Lock 4951; see also Alloys-Quicksilver.

Analytical Chemistry. See also Blowpipe—Chemical reactions—Chemistry— Electrolysis-Volumetric analysis.

Allen, A. Commercial organic analysis. 3v. 1885—89. 12. Bolley. Manual of technical analysis. 5s. 95.

Bolton, H. C. Quantitative analysis. 1885. \$1.50. 96.

Douglas and Prescott. Qualitative chem. analysis. 1890. \$3.00 o. p. 221.

Eliot and Storer. Manual of qualit. analysis. 1883. \$1.50. 240. Manual of qualitative analysis. 1876. 128 6d. 276. Fresenius, C.

Fresenius, C. Manual of qualitative analysis. 1870. 128 od. 276.

Fresenius, C. The same. 1888. \$4.00. 277.

Fresenius, C. Manual of quantitative a. 2 v. 1876—86. 208. 278.

Fresenius, C. The same. 1888. \$6.00. 279.

Johnson, A. E. Analyst's laboratory companion. 1888. 5s. 427.

Mills and Barker. Handbook of quant. analysis. 1889. 3s 6d. 544.

Normandy, A. Commercial handbook of chem. anal. 1875. 12s 6d. 586.

Plattner, T. H. Manual of qualit. and quant. anal. 1888. \$5.00. 651.

Rammelsberg, C. F. Guide to quantit. chem. anal. 1872. \$2.25. 664.

Snively, J. H. Elements of systematic qualit. chem. anal. 1883. \$2.00. 768.

Snively, J. H. Elements of systematic qualit. chem. anal. 1883. \$2.00 Snively, J. H. Tables for syst. qualit. chem. anal. 1879. \$1.00. 769. Thorpe, T. E. Quant. chem. anal. 1885. 48 6d. 821. Thorpe and Muir. Qualit. chem. anal. 1883. 38 6d. 822. Trimble, H. Practical and anal. chemistry. 1889. \$1.50. 832. Tuttle, H. A. Pocket analysis book. \$2.00. 839. Valentin, W. G. Qualit. chem. anal. 1888. 88 6d. 851. Will, H. Tables of qualit. chem. anal. 1881. \$1.50. 893; see Bowman 106. Lego 413. Mott 569. see Bowman 106, Jago 413, Mott 562.

Analysis, see Analytical Chemistry—Mineral Analysis.

14 Anderson, A. D. Silver country; or, the great South-West: review of the mineral and other wealth of the former kingdom of New Spain. W. map. N. Y. 1877. 12mo, \$1.75. Pz.

Anderson, J. W. The prospector's handbook: a guide for the prospector and traveler in search of metal-bearing and other valuable minerals. 5th rev. and enl. ed. Illus. Lond. (1888, 1889) 1891. Cr. Svo. (12mo.) 3s 6d. \$1.50.

B—Ck—Lg—Sp—Wn—Wu.

B-Ck-Cn-Sp.

Andre, G. G. Application of electricity to the ignition of blasting charges, 16 in vol. 1878, Soc. Eng. Trans.

17 Andre, G. G. Mining machinery, a descriptive treatise on the machinery, tools and other appliances used in mining. W. 182 pl. drawn to scale, with descriptive text. 2 vols. Lond. 1877-79. Roy. 4to. £3 12s. \$28.00. B-Ck-Sp-V.

Contents: Machinery for prospecting, excavating, hauling and hoisting.—Ventilation.—Pumping.—Treatment of mineral products, including gold and silver, copper, tin and lead,

coal, iron, sulphur, china clay, brick earth, etc.

Andre, G. G. Practical treatise on coal mining. 2 vols. W. 82 pl. 18 Ck-Cn-Sp-V. Roy. 4to. £3 12s. \$28.00. Contents: Practical geology; coal, its mode of occurrence, composition and varieties; searching for coal; shaft-sinking; driving of levels, or narrow work; systems of working; getting the coal; haulage; winding; drainage; ventilation; incidental operations; surface work; management and accounts; characteristics of the coal fields of Great Britain and America.

Rock blasting: a practical treatise on the means employed in blasting rocks for industrial purposes. W. Illus. and pl. Lond. 1878. 8vo.

10s 6d, \$4.25.

Andrews, E. B. Elementary geology. N. Y. (1878) 12mo. \$1.00 net. The ventilation of coal mines, in vol. 1874, Soc. Eng. Trans. 20 21

Angular surveying, see Lintern, 488.

Annual statistical reports of the secretary to the members of the Iron and Steel Association, on the home and foreign iron and steel industries. Annually. 8vo, pap., ea. \$2.00.

Annual) the same, for 1891. Phila. 1891. 8vo, pap. \$3.00. Ae—Sp—St. Annual) the same, for 1891. Phila. 1891. 8vo, pap. \$3.00. Ae—Sp—St. M. B.—This report gives complete statistics of the production and prices of all the principal iron and steel products of the U. S. in 1890 and previous years; also the progress made by the United States in inangurating the manufacture of tinplates; statistics of production of iron ore and coal in the U. S. in 1890 and previous years; statistics of production of rail-roads and from and steel ships in the U. S. in 1890 and previous years; complete statistics for 1890 and previous years of U. S. imports and exports of iron and steel and imports of iron ore; statistics for recent years of the iron and steel and coal-mining Industries of Great Britain, France, Germany, Belgium, Spain, Italy, Austria and Hungary, Sweden, Canada and other foreign countries. With a careful review of the present condition of the iron and steel industries of the U. S. and other countries. (Annual) the same, for 1891. 23

24 †Ansted, D. Th. Applications of geology to the arts and manufactures. Illus. Lond. (p. d.) Fep. 8vo. 4s.

Earth's history; or, first lessons in geology. For schools 25 †Ansted, D. Th. and students. 3d thous. Lond. (n. d.) Fcp. 8vo. 2s.

26 †Ansted, D. Th. Elementary course of geology, mineralogy and physical geography. 2d enl. ed. Re-issue. Illus. Lond. (1869.) P. 8vo. \$4.80.

27 †Ansted, D. Th. Geologist's text-book. Chiefly intended as a book of reference for the geological student. Lond. (n. d.) Fcap. 8vo, 3s 6d.

28 †Ansted, D. Th. Gold-seeker's manual. Lond. (n. d.) Fcap. 8vo, 3s 6d. 29 †Ansted, D. Th. Scenery, science, and art; being extracts from the note-book of a geologist and mining-engineer. Illus. Lond. (n. d.) 8vo, 10s 6d.

Anstie, J. Coalfields of Gloucestershire and Somersetshire, and their resources. Lond. 1873. Roy. 8vo, 6s. Sr.

Anthracite coal. See also Coal—Coke.

Hackney, W. Manufacture of anthracite coke Sword, J. F. Coal points. 1891. \$2.00. 799. Manufacture of anthracite coke. 344.

see Swank 794, Rogers 699.

Anthracite furnaces, see Overman, 612.

Antimony, see Aaron 2, Davies 208, Kerl I, 445, Lock 495a, Osborn 605, Phillips 643, Spon's Dict'y. Part 4, 774, Thurston III, 823; see also Minerals—Ores.

Anti-rust coatings, see Howe, 385, 386. Appliances used in mining, see Andre, 17.

Aqueducts, see Spon's Dict'y. Part 4. 774; Views 854.

31 †Argyll, Duke of. Continuity and catastrophes in geology. An address to the Edinburgh Geolog. Soc. on its 50th anniversary, 1883. Edinburgh (n. d.) Demy 8vo. 1s.

32 Armour, J. Iron and heat. Beams, pillars, and iron smelting. 2d ed. Illus. (Weale's Ser.) Lond. 1874. 12mo. (16mo.) 3s 6d and 2s 6d, \$1.20 Ck—Lg. Arsenic, see Aaron 2, Charleston 140, Davies 208, Kerl I, 445, Kerl 446, Percy VII, 632, Phillips 643; see also Metals—Metallurgy.

Artificial fuels, value of, see Siemens 746.

Asbestos, see also Minerals—Ores.

Jones, R. H. Asbestos. 1888. 1s. 429. Jones. The same. 1890. 12s 6d. 430. See Brannt-Wahl 111, Davies 208.

Ashburner, Chas. A. The geological distribution of natural gas in the United States, with an appendix relating to the composition and fuel value of natural gas, and the extent of the natural gas business in the vicinity of Pittsburg. 5 maps and geological sections. (Pittsburg, n. d.) 8vo. Pap. 40c.

N. B.—This is a most complete statement relative to the geologic distribution of natural gas in the United States, prepared by one of our leading geologists, whose position as geologist in charge Pennsylvania Survey has given him unusual facilities for obtaining information relative to this subject. Mr. Ashburner has supplemented his paper by an article on the "composition and fuel value of natural gas," by J. P. Lesley, and a second one on "Pittsburg's natural gas wells and supply companies," reprinted from the American Manufacturer. Some exceedingly valuable maps and sections and a chart showing the divisions and thicknesses of the rocks of the palæozic system in New York, Pennsylvania and Ohio accompany the paper.—Am. Manuf.

Ashburner, Chas. A. The geology of natural gas in Pennsylvania and New York. (Pittsburg, p. d.) Syo. Pap. 15c.

York. (Pittsburg, n. d.) 8vo. Pap. 15c.

N. B.—This is a paper read by Mr. Ashburner before the American Institute of Mining Engineers at the Halifax meeting, in September 1885. It attracted no little attention at the time of its publication, and is still of great value to all interested in the occurrence of natural gas .- Am. Manuf.

Ashburner, Chas. A. Petroleum and natural gas in New York state. paper read before the American Institute of Mining Engineers. Revised to June, 1888. W. 3 maps and section. (Pittsburg, n. d.) 8vo. Pap. 50c. Wc.

Ashbury, T. The metallurgical and mechanical exhibits at the Manchester 36 Royal Jubilee Exhibition, in 1887, II No. 434.

Asphalt and asphalt mines. See also Mines and Mining-Minerals.

California State Min. Bureau. 7th report 129 a.

The same. 10th report. 129 d.

See Davies 208, Hunt 397 Assay furnaces, see Kerl 446.

Assayers' calculator. Patent calculator for engineers 1891. 75c. 622.

Assayer's tools and implements, see Kerl 446, Ricketts 689.

see also Analytical Chemistry-Blowpipe-Crucible Assays-Assaging, Metallurgy.

Aaron, C. H. Assaying I: gold and silver ores 1884. \$1.00. 1.

Aaron. The same. II, III: gold and silver bullion, lead, etc. 1885. \$1.75.2.

Allen, A. Commercial organic analysis. 12.

Bayley, Th. Assay and analysis of iron and steel. 1890. 3s 6d. 60.

Beringer. Textbook of assaying. 1889. 10s 6d. 78.

Bodeman and Kerl. Treatise on assaying. 1883. \$1.50. 94.

Brown, W. L. Manual of assaying. 1889. \$2.50. 117; 1890. 7s 6d. Hiorns, A. H. Practical metallurgy and assaying 1888. 6s. 373.

Kerl, B. Assayer's manual, 1889. \$3.00. 446.

Koninck and Dietz. Pract. manual of chem. analysis and assaying. 6s. 461.

The same. 1873. \$2.50. 462.

Lieber, O. M. Assayer's guide 1888. \$1.25. 484.

Mitchell, J. Manual of assaying. 1888. 31s 6d. 553.

North, O. Practical assayer. 1874. 7s 6d. 587.

Overman, F. Practical mineralogy, assaying, etc. 1882. \$1.00. 611.

Phillips, J. S. Explorer's and assayer's companion. 1879. \$6.00. 645.

Ricketts, P. Notes on assaying. 1890. \$3.00. 689.

Peland A. Assay of gold and silver wares. 1852. 6s. 725.

Triplett, F. How to assay. \$1.00. 833; see Bayley 59, Cornwall 170, Mott 562, Nystrom 594, Phillips 643, Spon's

Dictionary, part 6, 774.

Assaying of antimony: Aaron 2, Davies 208, Kerl I, 445, Lock 495a, Osborn 605, Phillips 643, Spon, part 4, 774, Thurston III, 823. Arsenic: Aaron 2, Charleston 140, Davies 208, Kerl I, 445, Kerl 446, Percy VII, 632, Phillips 643. Bismuth: Kerl 446, Cadmium: Kerl 446. Chronium: Kerl 446. Parcers 117, 118 484. Cobalt: Kerl 446. Copper: Bodeman and Kerl 94, Brown 117, 118, Budge 123. Fuels: Brown 118, Kerl 446. Gold: Bodeman and Kerl 94, Brown 117, 118, Eissler 236, Kerl 446, Lieber 484. Iron: Bauerman 58, Bayley 60, Koninck and D. 461, 462. Lead: Bodeman and Kerl 94, Brown ATK-BAR

5

117 and 118, Budge 123. Manganese: Kerl 446. Mercury: Bodeman and Kerl 94, Kerl 446. Nickel: Kerl 446. Platinum: Kerl 446. Petroleum: Calif. State Min. 7th report 129 a. Silver: Bodeman and Kerl 94, Brown 117, 118, Budge 123, Eissler 237, Lieber 484, Ryland 725. Steel: Bayley 60, Blair 84, Koninck and D. 461, 462. Sulphur: Kerl 446. Tin: Aaron 2, Budge 123, Kerl 446. Tungsten: Kerl 446. Uranium: Kerl 446. Zinc: Kerl 446; see also Metallurgy.

Atkinson, J. J. Friction of air in mines (V. N. S. S.) N. Y. 1875. 24mo. 37

37a Atkinson, J. J. Practical treatise on the gases met with in coal mines, and the general principles of ventilation. Lond. (n. d.) Cr. 8vo. 2s. Cp. 38 Atkinson, J. J. Practical treatise on the gases met with in coal mines.

Ck-Cn-V.

New ed. (V. N. S. S.) N. Y. (1875) 1886. 24mo. 50c.

Atkinson, W. N., and J. B. Explosions in coal mines. Illus.

Lond. 1886. 7s 6d, \$3.00. 39 (Newcastle) Cn-Cp-Lm.

N. B.—The writers consider the subject of explosions in coal mines from the basis of experience gained by direct investigation. The following six explosions are particularly described, while reterence is made to others: Seaham, Trimdon Grange, Tudhoe, West Stanley, Whitehaven and Usworth; and the work closes with a resume of the respective influences of coal-dust and fire-damp in mine-explosions.

Atmosphere of mines, purifying of. Ramsay, J. A. Laying of coal dust 6d. 667. The same. 1888. 25c. 668.

40 Attwood, G. Practical blow-pipe assaying. Illus. N. Y. 1881. 12mo, (8vo.) \$5.00, 12s 6d. Ck-Lo.

Auriferous beach sands, see California 10th report. 129d. Auriferous gravels of California, see California 9th report.

Automatic expansion in winding engines, see Percy II, 634.

Baare, F. B. The coal washing machinery used by the Bochumer Verein, in vol. 1883, I No. 434. 41

Bagot, A. Accidents in mines (especially coal mines): their cause and prevention. Illus. Lond. 1878. Cr. 8vo, (12mo.) 6s. \$2.40. Ck-Cn-Pi-V.

Bagot, A. The principles of colliery ventilation. 2d greatly enl. ed. Lond. 43 1882. P. 8vo. (12mo.) 5s, \$2.00. Ck—Co—Pi—V. 43a Bainbridge's Colliery manager's calculating scale. Lond. (n. d.) 12s 6d.

N. B.—This calculator has been designed with a view of facilitating the working out of the "costs per ton" which are now almost invariably calculated, weekly or fortnightly at collieries and mines.

43b Bainbridge's Handy surveyor's scale. Comprising various useful tables. Lond. (n. d.) in case, 2s. Cp.

44 †Bakewell, F. C. Illustrated geology. Lond. (n. d.) 8vo, 2s. Jd. Bala volcanic series of Caernarvonshire. Harker, A. 1889. 78 6d. 350.

45 Balch, W. R., comp. The mines, miners, and mining interests of the U.S. in 1882. Illus. and maps. Phila. 1882. 4to. \$5.00. B-Ck-Fa.

46 Ball, E. J. On the changes in iron produced by thermal treatment. In vol. 1890, I, No. 434. all, V. The diamonds, coal, and gold of India: occurrence and distribu-

47 tion. Lond. 1881. 12mo, 5s.

48 Bannister, L. Something about natural gas. Its origin, extent and development, the piping systems, safety appliances and devices for its safe and economic utilization, gas the fuel of the future. (Pittsburgh, n. d.) Sm. 4to. Pap. 25c.

N. B.—The character of this little work is best shown by the following table of contents:

Natural gas and its development—probable extent and permanency of supply—Ashburner's,
Orton's, McMillin's, Lesley's and Carll's opinion as to origin and exhaustibility—problem
which natural gas presented—piping system—testing pipes and joints in the trench—
safety appliances—detecting and locating leaks—automatic pressure regulator—automatic
shut-off valve—automatic temperature regulator—solution of the problem complete—duty
of municipal corporations—analysis of natural gas—illuminating gas—consumption.

Barbee, Wm. J. First principles of geology. New rev. ed. Illus. Louisville, Ky., (1867.) 12mo. \$1.25.

Mk. Barnes, C. L. Rock history: a concise note book of geology, having special

50 reference to the English and Welsh formations. Illus. and col. map. Lond. 1884. Cr. 8vo. (12mo.) 6s, \$2.50.

- 51 Barr, W. M. Practical treatise on the combustion of coal; including descriptions of various mechanical devices for the economic generation of heat by the combustion of fuel, whether solid, liquid or gaseous. Illus. Indianapolis, Ind., 1879. Svo, \$2.50. B—Bu—Ck—V—Y. Barrels, see Aaron, 4.
- Barry, H. Russian metallurgical works, iron, copper, and gold concisely described. Lond. 1870. 16mo. (\$2.00.)
- Barry, W. Venezuela: gold mines of Guyana and River Orinoco during 1886. Lond. 1886. P. 8vo. 68.
- Sulphurets. With chapter on the blow-pipe assaying of Barstow, W. 54 minerals. San Francisco, 1867. 12mo. \$1.00. Ck-Ru.
- Bartlett, F. L. Minerals of New England: who Portland, Me., 1877. 16mo. bds. 50c; pap. 25c. Minerals of New England: where and how to find them. Ck-Di-M*. Baryta, see Davies 208.

Bassic Bessemer process. Wedding, H. 1891. \$3.50. 878.

Basic lining, see Wedding 878.

Bass Rock, geology of the, see Miller 536.

- Bauerman, H. Textbook of descriptive mineralogy. Illus. (Long. T. B. S.) Lond. 1884. 12mo. (16mo.) 6s., \$2.25. Am-B-Ck-Lm-V
- Bauerman, H. Textbook of systematic mineralogy. Illus. (Long. T. B. S.) 57 Lond. 1881. Fcap. Svo. (12mo.) 6s., \$2.50. Am-B-Ck-Lm-V.
- Bauerman, H. Treatise on the metallurgy of iron. Containing history of iron manufacture, methods of assay, and analyses of iron ores, processes of manufature of iron and Steel, &c. 6th rev. and enl. ed. Illus. (Weale's Ser.) Lond. (1882) 1889. 12mo. 5s., and 5s 6d., \$2.00.

B-Ck-Fa-Lg-V-Wn.

- Bayley, Th. Pocket book for chemists, chemical manufacturers, metallurgists, dyers, distillers, etc. (Collection of factors, atomic weights, and all other useful data.) 4th ed. Lond. (1881) 1886; the same, 5th ed. Lond. 1890, each Obl. 32mo. leather 5s., \$2.00.

 B—Ck—Sp—V.
 - N. B.—Synopsis of contents: Atomic weights and factors—useful data—chemical calculations—rules for indirect analysis—weights and measures—thermometers and barometers—chemical physics—boiling points, etc.—solubility of substances—methods of obtaining specific gravity—conversion of hydrometers—strength of solutions by specific gravity—analysis—gas analysis—water analysis—qualitative analysis and reactions—volumetric analysis—manipulation—mineralogy—assaying—alcohol—beer—sugar—miscellaneous technological matter relating to potash, soda, sulphuric acid, chlorine, tar products, petroleum, milk, tallow, photography, prices, etc.
- Bayley, Th. The assay and analysis of iron and steel, iron ores and fuel. Illus. Lond. (1884) 1890. P. Svo. (12mo.) 3s 6d., \$1.40. Ck—Sp.
- Becker, G. F. Geology of the Comstock lode and Washoe district. Illus. and atlas. (U. S. Geog. Survey, monog.) Wash., D. C., 1883. 4to., atlas folio, \$11.00.

Beetons' Dictionary of industries and commerce; including building, banking, mining, mechanism, and many other practical and useful subjects. Illus. Svo, 7s 6d, \$3.00.

Bell, I. L. Chemical phenomena of iron smelting. An experimental and practical examination of the circumstances which determine the capacity of the blast furnace, the temperature of the air, and the proper condition of the materials to be operated upon. Lond. 1872. 8vo, 15s. Ck—Rw—Sp. Bell, I. L. Gaseous fuel, in vol. 1889, II No. 434.

64

- Bell, I. L. Notes of a visit to the coal and iron mines and ironworks in the U.S., in vol. 1875, I No. 434. 65
- 66 Notes of a visit to coal and iron mines and work in the U.S. Bell, I. L. Lond. 1875. 2s.
- Bell, I. L. Occlusion or absorption of gaseous matter by fused silicates, and 67 its possible connection with volcanic agency, in vol. 1881, II No. 434.
- Bell, I. L. On the separation of carbon; silicon, sulphur, and phosphorus in the refining and puddling furnace, in vols. 1877, I, II No. 434.

Bell, I. L. On separation of phosphorus from pig iron, in vol. 1878, I No. 434.

70 Bell, I. L. Principles of the manufacture of iron and steel. With some notes on the economic conditions of their productions. Illus. Lond. and N. Y. 1884. Svo. £1 1s. \$8.00. Ck-Rw-Sp-V-Wn.

- Contains:—Direct processes for making malleable iron; preliminary treatment of material for the blast furnace; the blast furnace; on the use and theory of the hot blast; on the quality of the fuel required in the blast furnace using air of different temperatures; on the solid products of blast furnace; chemical changes as they take place in the blast furnace; on the equivalents of heat evolved by the fuel in the blast furnace: on hydrogen and compounds in the blast furnaces; on the production of malleable iron from pig iron in low hearths; on the refining and puddling furnace; methods of separating; statistical; British labor compared with that of the Continent and Europe; on labor in the United States; chief iron producing countries compared producing countries compared.
- 71 Sum of heat utilized in smelting Cleveland ironstone, in vol. Bell, I. L. 1875, I No. 434.
- 72 Bell, I. L. The reduction of ores of iron in the blast furnace, in vol. 1887, II No. 434.
- 73 Bell, I. L. The use of raw coal in the blast furnace, in vol. 1884, I No. 434.
- 74 Bell, I. L. The value of successive additions to the temperature of the air used in smelting iron, in vol. 1883, I No. 434.
- Bell metal, see Krupp and W. 463.
- 75 Belt, Th. The naturalist in Nicaragua: a narrative of a residence at the gold mines of Chontales. 2d rev. and corr. ed. Lond 1888. P. 8vo. 7s 6d. Bw.
- Benedict, H. H. Coal dealers' ready reckoner. N. Y. 1890. \$2.00, Berge's complete natural history of the animal, mineral and vegetable kingdoms. Ed. by R. F. Crawford. Illus. and col. pl. Lond. 1890. 8vo. 5s. Da.
- Beringer, C. and J. J. Textbook of assaying for those connected with mines. 78 Illus. and diag. Lond. 1889. P. 8vo. (12mo.) 10s 6d. \$4.25.
 - Gb—Ld—Sp—V—Wn. N. B.—The author has endeavored to give rather what will be of use to the assayer, than to cover the ground within the limits of a faulty definition. Under the more important methods, he has given the results of a series of experiments showing the effect of varying conditions on the accuracy of the process.—From Prospectus.
- 78a Bernays, J. New pits and hauling machinery for the San Domingo mines, in vol. 1879, Soc. Eng. Trans.
 79 Berthelot, M. P. E. Explosive materials; a series of lectures delivered before the College de France, trans. by M. Benjamin, to which is added a short historical sketch of gunpowder, trans. from the German of K. Braun, by Lieut. J. P. Wisser, U. S. A.; and a bibliography of works on explosives. (V. N. S. S.) N. Y. 1883. 18mo, bds. 50c. Cn—Sp—V. Bessemer process. See also Steel—Iron. Wedding, H. Bassic Bessemer process. 1891. \$3.50. 878; see Directory 218, Dunlap 228, Gruner 337, Howe 385, 386, Landrin 471, Sne-law 767.
- lus 767. 80 †Bevan, G. Phil. The industrial classes and industrial statistics. 2 vols. W. maps Lond. (n. d.) P. 8vo, each 3s. 6d, in 1 vol. 3s 6d, \$1.50. B—Ck—Sp—Sr. Contents:—Mining industries, metal manufacturers, finished metal trades, chemical works, etc.
- 81 †Bevan, G. Phil., ed. British manufacturing industries: a series of 14 vols., each containing 3 or more subjects by eminent writers. Lond. (n. d.) P. 8vo, (12mo) each vol, 3s 6d. \$1.50. B-Ck-Sp-Sr.
 - Contents of the 14 vols.—Iron and steel, by W. M. Williams; copper, by J. Λ . Phillips; brass, tin and zinc, by W. Graham.—Metallic mining, by W. W. Smith; coal, by Λ . A. Galletly; collieries, by W. W. Smyth; building stones, by *Prof.* Hull; explosive compounds, by W. M. Williams.—Guns, nails, locks, wood screws, railway bolts and spikes, buttons, pins, needles, saddlery, electroplate, by W. C. Aitken; pens and papier-mache, ammunition, percussion troplate, by W. C. Aitken; pens and papier-mache, ammunition, percussion caps and cartridges, anchors and chain cables, by G. Lindsey; acids and alkalis, by Prof. Church; oils and candles, by W. M. Williams; gas and lighting, by R. H. Patterson.—Hosiery and lace, by W. Felkin; carpets, by Christ Dresser; dyeing and bleaching, by T. Sims.—Wood, by Prof. Archer; flax and linen, by Sir Wm. Charley; cotton, by I. Watts; silk, by B. F. Cobb.—Pottery, by L. Arnoux; glass and silicates, by Prof. Barff; furniture and woodwork, by J. W. Pollen.—Paper, by Prof. Archer; printing, by J. Hatton; bookbinding by H. T. Wood; engraving, by S. Davenport; photography, by A. Le Neve Foster; toys, by G. C. Bartley.—Tobacco, by J. Dunning; hides and leather, gutta-percha and india-rubber, by J. Colline; fibres and cordage, by P. L. Simmonds. Ship-building, by Capt. Bedford; telegraphs, by Robert Sabine; agricultural machinery, by Prof. Wrightson; railways and tramways, by D. K. Clark.—Jewelery, by G. Wallis; gold-working, by Rev. Chas. Boutell; watches and clocks, by F. Britton; musical instruments, by E. F. Rimbault; cutlery, by F. Callis.—Salt, preserved provisions, bread, biscuits, by J. J. Manley; sugar refining, by C. H. Gill; butter and cheese, by M. Evans; brewing and distilling, by T. Pooley. M. Evans; brewing and distilling, by T. Pooley.

Bird, C. Elementary manual of geology. Illus. and geological map of the British Isles. (Longm.'s elem. sci. man.) Lond. 1890. P. 8vo. 2s 6d, 80c. net.

83 †Bischof, G. Elements of chemical and physical geology. Ed. and in part trans. by B. H. Paul and I. Drummond. 3 vols. Lond. 1854. Demy Svo. (Svo.) £1 11s 6d. \$20.00.

Bismuth, see Aaron 2, Charleston 140, Kerl I, 445, Krupp and W. 463, Osborn 605, Percy VII, 632, Phillips 643, Spon's Dict'y., part 11, 774, Thurston III, 823; see also Metallurgy.

Bituminous coal, see Davies 208, Sword 799; see also Coal.

Blair, A. A. The chemical analysis of iron: a complete account of all the 84 best-known methods for the analysis of iron, steel, pig iron, iron ore, limestone, slag, clay, sand, coal, coke and furnace and producer gases. Phila. 1888. 8vo. \$4.00. N. B.-A new ed. in preparation.

Blake, W. P. Notices of mining machinery and various mechanical appliances. New Haven 1870. 8vo. \$2.00.

Blake, W. P. Report of a geological reconnaissance in California, made in connection with the expedition to survey routes in California, to connect with the surveys of routes for a railroad from the Mississippi river to the Pacific ocean. N. Y. 1858. 4to. \$6.00. 86

Blake, W. P. Report upon the precious metals. Being statistical notices of the principal gold and silver producing regions of the world, represented at

the Paris Universal Exposition. Wash. 1869. 8vo. \$2.00. Ck—Ga—V. Blanchard, G. A., and Weeks, E. P. Law of mines, minerals and mining

rights. San Francisco 1877. 8vo. shp. \$7.50.

Bd—Wh. S9 †Blanford, W. T. Geology and Zoology of Abyssinia. W. col. illus. and geol. map. Lond. (n. d.) 8vo. £1 1s. Ma.

Blast furnace. See also Smelting.

Gruner, M. L. Studies of blast furnace phenomena. 1874. 78 6d. 338. Schlinz, C. Researches on action of blast furnaces. 1870. 88 6d. 732.

Use of lignite or brown coal in blast furnace, 836,

see Bell 70, Directory 218, Dunlap 228, Meade 529, Mills 545, Spon parts 11, 774. 12.

Blast furnace slag.

Uses of blast furnace slag. 593. Nursey, P. F.

Blasting.—See also Explosives—Rockblasting—Tunneling.
Burgoyne, J. Blasting stone. 1862. 1s 6d. 125.
Drinker, H. S. Explosive compounds. 1883. \$5.00. 225.
Drinker, H. S. Tunneling. 1888. \$25.00. 226.
Foster, J. G. Submarine blasting. 1869. \$3.00. 264;
see Andre 16, Bowie 105, Spon parts 16 to 19. 774. Spon part 3. 775.

Blasting gravel blanks, see Bowie 105. Blast-machines, see Overman 612. Bloomaries, see Directory 218.

Blowpipe analysis. See also Analytical Chemistry—Assaying—Chemistry— Metallurgy-Mineralogy.

Attwood, G. Blowpipe assaying. 1881. \$5.00. 40. Cornwall, H. B. Blowpipe analysis. 1882. \$2.50. 170. Elderhorst, W. Manual of. 1881. \$2.50. 239. Fuchs, C. W. C. Determination of Minerals by blowpipe. 1875. 58 280. Landauer J. Blowpipe analysis. 1879. 48 6d. 470.

Plattner, T. H. Manual of. 1888. \$5.00. 651.
Plympton, G. W. The Blowpipe. 1881. \$1.50. 652.
Ross, W. A. Manual of. 1880. 5s. 711.
Ross, W. A. Blowpipe in chemistry. 1888. 5s. 712.
Scheerer, T. Introduction to the use of mouth blowpipe. 1875. 4s. 730;

see Barstow 54, Brush 120, Mott 562, Triplett 833. Blowpipe-flame furnace. Engert, A. C. 242.

90 Bloxam, C. L. Chemistry: inorganic and organic; with experiments. 6th rev. and enlarged ed. Illus. London. 1888. 8vo. 18s. \$4.50; the same, 7th rev. and enl. ed. Illus. Lond. 1890. 8vo. 18s. \$4.50; sheep \$5.50. B-Bs-Cg-Wn.

N. B.—This the 7th edition of "Bloxam's Chemistry" has been very thoroughly revised and as far as possible brought up to date. Many changes have been made, though the general arrangement remains the same. The chemistry of vegetation has been mostly rewritten, and the sections on explosives to which the work owes considerable reputation, have been carefully gone over.

- Bloxam, C. L. Laboratory teachings; or progressive exercises in practical chemistry. 4th ed. Illus. Lond. 1879. Cr. Svo. (12mo) 5s 6d. \$1.75.
- Bloxam, C. L. Metals, their properties and treatment. Partially rewritten and augmented by A. K. Huntington. New ed. Illus. Lond. (1870) 1882. Fcap. 8vo. (12mo) 5s. \$2.00. B—Ck—Lm—V.

Boiling point tables. Carnelly, Th. 1885. 2v., each 42s. 137.

- Boddy, E. M. The history of salt; with observations on its geographical 93 distribution, geological formation and medicinal and dietetic properties. Lond. 1881. 8vo. 2s 6d, \$1.25.
- Bodeman, T., and Kerl B. Treatise on the assaying of lead, silver, copper, gold and mercury. Trans. from the German by W. A. Goodyear. New ed. Illus. N. Y. (1880) 1883. 12mo. \$2.50, red. to \$1.50. B—Ck—Fa—Wm.
- 95 †Bolley, Dr. Manual of technical analysis; a guide for the testing and valuation of the various natural and artificial substances employed in the arts and domestic economy, ed. by Dr. Paul. Illus. Lond. (Bohn's Scient. Lib.) Lond. (n. d.) 12mo. 5s.
- 96 Bolton, H. C. Quantitative analysis. The student's guide in quantitative analysis. Designed as an aid to Fresenius' large work, with many original methods by the author. Illus. N. Y. 1885. 8vo. \$1.50. B—Ck—Wm. Bone, J. H. A. Petroleum and petroleum wells. 2d rev. and enl. ed. Phila. (1865). 18mo. 75c. o. p. Ck—Ld.
- Bonney, G. E. The electroplater's handbook: a practical manual for ama-98 teurs and young students in electro-metallurgy. Illus. Lond. 1891. P. 8vo. (12mo) 3s, \$1.20. Bi-V-Wi.
 - N. B.—Those for whom the work is designed, are supposed to have an elementary knowledge of electrical science. Practical advice is given as to the selection of tools, metals and chemicals to be employed in obtaining good results in electro-plating. The history and origin of the dynamo is given, with the mechanical construction of numerous dynamic machines, which will be of service to workers in this scientific industry. Much is said about the process which the various metals undergo—in short, everything that is helpful or relative to the subject is considered.—Pub. Weekly.
 - 99 Bonney, T. G. Cambridgeshire geology. A sketch for the use of students. Lond. (n. d.) Demy 8vo. Bi.
- 100 †Bonney, T. G. Elementary manual of geology. Lond. (n. d.) 1s. 101 Bonney, T. G. Rock specimens from Socotra. Lond. 1883. 4to. 4to. 3s. Te.
- 102 Booth, J. C., and Morfit, C. Encyclopaedia of chemistry. Practical and theoretical, empracing its application to the arts, METALLURGY, MINERALogy, geology, etc. 8th ed. illus. Phila. 1883. 8vo. \$5.00. Borax, see Davies 208.
- Bourn, H. H. Earth's diamonds; or, coal, its formation and value. Lond. 1882. 12mo. 2s 6 d, red. to 2s.

 Pe. Bowen, E. Coal, coal oil, and other minerals in the earth. Phila. 1865. 103
- 104 1 mo. \$1.75.
- 105 Bowie, A. J. jr. Practical treatise on hydraulic mining in California, with description of the use and construction of ditches, flumes, wrought-iron pipes and dams, flow of water on heavy grades, and its applicability under high pressure to mining. Illus. N. Y. 1885. 8vo. (Roy. 8vo.) \$5.00. £1 1s. B-Dc-Sp-V.
 - Contents:-The records of gold washing; history and development of placer mining in Caliontents:—The records of gold washing; history and development of placer mining in California; general topography and geology of California; the distribution of gold and deposits; and the value of different strata; amount of workable gravel remaining in California; the different methods of mining gold placers; preliminary investigations; reservoirs and dams, measurement of flowing water; ditches and flumes; pipes and nozzles; various mechanical appliances; blasting gravel banks; tunnels and sluices; tailings and dump; washing or hydranlicking; distribution of gold in sluices; loss of gold and quicksilver; duty of the miner's inch; statistics of the costs of working, and the yield of gravel.
- 106 Bowman, J. E. Practical chemistry, including analysis. 8th ed., rev. by C. L. Bloxam. Illus. Lond. 1885. 12mo. 5s 6d, \$2.00. Bs-Cg.
- 107 Boyd, R. N. Coal mines inspection: its history and results. Lond. 1879. Demy 8vo. (8vo) 14s, \$5.00. Aa—Ck.
- 108 Boyd, C. R. Resources of Southwest Virginia; showing the mineral deposits of iron, coal, zinc, copper and lead; also the staples of the various counties, methods of transportation, access, etc. 3d ed. W. maps and pl. N. Y. 1881. 8vo. \$2.50 and \$3,00. Ck-Wm.

Brakes for winding and hauling, see Percy 633.

109 Brannt, Wm. T., ed. The metal-worker's handybook of receipts and processes; being a collection of chemical formulas and practical manipulations for the working of all metals and alloys. Illus. Phila. 1890. 12mo. \$2.50.

B—Me—Sp. Brannt, Wm. T., ed. The metallic alloys: a practical guide for the manu-110 facture of all kinds of alloys, amalgams and solders used by metal workers; together with their chemical and physical properties and their application in the arts and industries; with an appendix on the coloring of alloys. Trans. and ed. chiefly from the German of A. Krupp and A. Wild-B-Ck-Sp-Wn. Phil. 1889. 12mo. \$2.50.

N. B.—It is believed that there is no other recent work in the English language on metallic alloys which combines with practical usefulness a sufficiently popular character, for those readers who have not made metallurgy and its kindred arts objects of special study. The book treats on all matters relating to the subject, and will explain to the mechanic and artist the properties of the metallic alloys and amalgams as far as they find application in any branch of technology and the industries.—Williams.

Brannt, Wm. T., and Wahl, Wm. H. The techno-chemical receipt book;

111 containing several thousand receipts of the latest discoveries in chemical technology, and their application in arts and industries. Illus. Phila. B-Ck-V.

1886. 12mo, \$2.00.
Brass, see also Metallic Alloys.

Graham, W. Brass founders' manual. 1887. 2s. 316.
Graham, W. Brass, etc., in Bevan's Brit. Man. Indus.
Larkin, J. Brass and iron founders' guide. 1881. \$2.25. 473;
see Krupp and W. 463, Percy II, 632; Thurston III, 823.
Price, S. W. Coalfield of North Somersetshire. Lond. 1867, 8vo, 2s.

112 Brickwork of tunnels, see Simms 749.

Brine Springs, see Davies 208.

113 Bristow, H. W. A glossary of mineralogy. Illus. Lond. (1867) 1881. P. 8vo. 12mo, red. to 6s, \$3.00. B-Ck-Lm-V. Britannia metal, see Krupp and W. 463.

Bronze and bronze alloys, see Krupp and W. 463, Nursey 590, Thurston III,

823; see also Metallic Alloys.

Brough, B. H. Treatise on mine surveying for the use of managers of mines and collieries and students at the Royal School of mines, City and Guilds of London Institute, etc. Illus. London. 1888. Cr. 8vo, 12mo. 7s 6d, B-Cn-Gb-Ld-V-Wn.

Contents:-General explanations; the measurement of distances; the miner's dial, the va-Contents:—General explanations; the measurement of distances; the miner's dial, the variation of the magnetic needle; surveying with the magnetic needle in the presence of iron; surveying with the fixed needle; the German dial; the theodolite; traversing underground; surface surveys with the theodolite; plotting the survey; calculation of areas; leveling; correction of the underground and surface surveys; measuring distances by telescope; setting out; mine surveying problems; mine plans; application of the magnetic needle in mining.

N. B.—The present work is intended primarily for students; and at the same time it will also, it is hoped, be found useful as a companion to the standard works of reference on land surveying.—From the publisher's circular.

rough, B. H. Use of the magnetic needle in exploring for iron ore, in 1887 I No. 424

Brough, B. H. 1887, I, No. 434.

115a Brown, M. W. Experiments with explosives used in mines. A paper read before the North of England Institute of Mining and Mechanical Engineers, Oct. 11, 1889. Lond. 1890. (Price not known.) Sp.

Brown, Rich. The coalfields and the coal trade of the island of Cape Bre-116 ton. With maps and illus. Lond. 1871. 8vo. 7s 6d, \$3.00.

Brown, W. L. Manual of assaying gold, silver, copper and lead ores. 3d rev. and corr. ed. Illus. and col. pl. Chic. (1883, \$1.75; 1886, \$1.50) 1889. 12mo. (Cr. 8vo.) \$2.50, 12s.6d. B—Ck—Fa—M—Sa—Sp—V. 117 12mo. (Cr. 8vo.) \$2.50, 12s.6d.

N. B.—A new ed. in preparation.

This manual is devoted to the assaying of theores of the four metals mentioned, but principally to those of gold and silver. Every step is clearly defined from the crushing of the rough ore to the weighing of the final particle of gold obtained.—Williams.

"The most essential point that struck me was the plain, common-sense manner in which you handle the subject. If more of our scientists would follow where you have dared to lead, and would free their subjects from useless technicalities and abstruse phrases, there would be less stumbling and misunderstanding among their students and readers, and more confidence given to them by those who have need of their services."—H. D. Whittemore, C. E. and M. E.

rown, W. L. The same. Rev., corr. and considerably enl., and with a character on the assaying of fuels by A. B. Griffiths. Lond. 1890. 12mo.

118 chapter on the assaying of fuels by A. B. Griffiths. Lond. 1890. 7s 6d.

119 Brown, J. Ross. Mineral resources of the states and territories West of the Rocky mountains, Wash., D. C. 1868. 8vo, \$3.00.

BRU—CAL

B-Ck.

120 Brush, Geo. J. Manual of determinative mineralogy, with an introduction on blowpipe analysis. 12th rev. and corr. ed. Illus. N. Y. (1888) 1890. 8vo. \$3.50 net. B-Ck-Wm.

N. B.—This constitutes the determinative part of Dana's mineralogy.

121 †Buckland, F. T. Geology and mineralogy. With addit. by Prof. Owen,
Prof. Phillipps and R. Brown. With index and memoir of Buckland. 2
vols. W. portr. (Bohn's Sci. Lib.) Vol. I, text; vol. II, 90 large oblong
plates with explanatory letter press. Lond. (1837), 12mo. Each vol. 58. Bi-Le-V **\$**3.00.

Bucknill, J. T. Submarine mines and torpedoes as applied to harbor de-122 Illus. N. Y. 1889. 8vo. \$4.00.

Budge, J. The practical miner's guide. Comprising a set of tables adapted 123 to all purposes of drilling; also a treatise on assaying silver, copper, lead and tin. Lond. 1845. 8vo. 12s, \$5.00.

Buhr stones, see Osborne 605.

Building stones, see also Stone. Building stones. Bevan's Brit. Man. Indus. Each 38 6d.

To builders and quarrymen, 1880. 827a;

see Brannt-Wahl 111, California 7th and 8th reports, 129a, 129b, Davies 208, United States 841, Winchell 933 and 935.

124 Bull, M. Experiments to determine the comparative value of the principal varieties of fuel used in the U.S. and also in Europe, etc. Illus. 1827. 8vo. (\$1.50.)

Burgoyne, Sir J. The blasting and quarrying of stone for building and other purposes. With remarks on the blowing up of bridges. Illus. (Weale's Ser.) Lond. 1862. 12mo. 1s 6d.

Burnham, S. M. History and uses of limestone and marbles. With 48 125

126 chromo-lithographic illustrations of antique and modern marbles. Bost.

1883. 8vo. (6.00). Ce—Ck. Burnham, S. M. Precious stones in nature, art and literature. Illus. Bost. 127 1886. 8vo. \$3.50.

Butlin, W. H. The Northampton iron ore district, in 1883, I, No. 434. Byrne, O. The practical metal worker's assistant: comprising metallurgic 128 129 chemistry; the acts of working all metals and alloys; forging of iron and steel; hardening and tempering; melting and mixing; casting and founding; work in sheet metal; the processes depending on the ductility of the metals; soldering and the most improved processes and tools used by metal workers. With the application of the art of electro-metallurgy to manufacturing processes; collected from original scources, and from the works of Holzapfel, Bergeron, Leupold, Plumier, Napier, Scoffern, Clay, Fairbairn and others. New rev. and improv. ed. With appendix, containing the manufacture of Russian sheet iron, by J. Percy; the manufacture of malleable iron castings and improvements in Bessemer steel, by A. A. Fesquet. Illus. Phila. 1882. 8vo. \$7.00.

Cadmium, see Kerl, vol. I, 445; Krupp and W. 463; see also Metallurgy. Cages and conductors, see Percy I, 633; see also Mining machinery, etc.— Winding.

129a California State Mining Bureau. Wm. Irelan, jr., State Mineralogist. 7th annual report of the State Mineralogist for the year ending Oct. 1st, 1887. Illus. Sacramento, Cal., 1888. Svo, pap. n. p.

Contents: prospecting for oil, petroleum in Venezuela, Argentine Republic, and Russia; Petroleum as a fuel; refining of petroleum; chemistry of petroleum; assays of petroleum in California; drilling; petroleum produced in and exported from the U. S.; locating claims under U. S. laws; asphaltum and its uses; laying of asphaltum on public throughfares in San Francisco; analyses of asphaltum in California; locating claims under U. S. laws; natural gas in the Eastern states; coal land laws, and regulatious; petroleum, asphalt, and natural gas in California; annual review of coal trade; coal in California; natural gas and coal in California; petroleum and asphalt in portions of Northern California; building stones; production of precious metals.

alifornia State Mining Bureau. 8th annual report of the same for 1888.

129b California State Mining Bureau. 8th annual report of the same, for 1888.

With plates, maps, and illus. Sacramento, Cal., 1888. 8vo, pap. n. p. I.

Contents:—Aaron, C. H. Notes on hydro metallurgy of gold and silver; Attwood, M.

Lithology of wall rocks; Jackson, A. W. Building stones: Dunn, R. L. Drift mining in

California; Milling of gold ores; Import of minerals and mineral products; mineral

resources of the state; Mining Bureau; Notes on Western lead smelting.

129c California State Mining Bureau. 9th annual report of the same, for 1889.

129c California State Mining Bureau. 9th annual report of Richly illus. Sacramento, Cal., 1889. 8vo, pap. n. p.

Contents:—Hammond, J. H. Auriferous gravels of California; Johnston, W. D. Clays; Coal product of California; Cooper, J. G. Value of fossils as indications of important mineral products; Dunn, R. L. River mining; Willey, H. I. Geological survey of Cal., Gumbinner, S. Refining and coining of precious metals; Slate quarrying in Cal. Mineral products of the U. S.

129d California State Mining Bureau. 10th annual report of the same, for 1890. Illus., plates, tables, and maps. Sacramento, Cal., 1890. 8vo, pap. n. p. I.

Contains;—Hilgard, E. W. Asphalt mine of Ventura Asphalt Company; Wheelan, F. H. Gas well at Sommerland; Fairbanks, H. W. Geology of the mother lode; Johnston, W. D. Gold extraction by pottassium cyamide; Petersdorff, F. C., von. Lead smelting; Hammond, R. P., jr. Location of mines; Mineral lands within the railroad grant; Randol, J. B. Mines and mining, quick-silver; Hammond, J. H. Mining of gold ores in Cal.; DeGroot, H. San Francisco ocean placer, auriferons beach sands.

130 Callon, J. Lectures on mining, delivered at the School of Mines, Paris. Trans. by C. Le Neve Foster, and W. Galloway. 3 vols. Lond. 1876—86. v. I., Roy. 8vo., text, with 4to. atlas, £1. 6s., \$10.50; v. II., w. atlas, £1. 16s., \$14.50; v. III., w. atlas, 18s. Ck—Cn—Du—V.

- N. B.—"The large number of students. who derived advantage from the admirable lectures of Prof. Callon during his long occupancy of a professorial chair at the Ecole des Mines, caused his name to be known wherever French engineers are employed in mining undertakings, and the fact that his biographers are able to write that 'method and order were the guiding principles of Callon's professional career, and in him these qualities were combined with unflagging attention to duty and to work,' will suffice to satisfy the mining students of his country that his mining lectures are well worth reading. The circulation of the work among Cornishmen is calculated to produce a highly beneficial result."—Mining Journal.
- 131 Calvert, J. Vazeeri Rupi, the silver country of the Vazeers, in Kulu: its beauties, antiquities, and silver mines, including a trip over the lower Himalayah range and glaciers. Illus. Lond. 1873. 8vo. 16s, \$6.00. Sp. Cambridgeshire geology. Bonney, T. G. 3s. 99.
- 132 †Campbell, J. F. My circular notes. Extracts from journals; letters sent home; geological and other notes, written while travelling westwards round the world, from July 6th, 1874, to July 6th, 1875. Cheap ed. Lond. (n. d.) Cr. Svo. 6s.
- 133 Campbell, J. L. Geology and mineral resources of the James River Valley, Virginia. With map and geolog. sections, N. Y., 1884. Svo. \$1.00.
- 134 Campin, F. Practical treatise on mechanical engineering: comprising metallurgy, moulding, casting, forging, tools, workshop machinery, mechanical manipulation, manufacture of steam engines, etc. With an appendix on the analysis of iron and iron ores, by Francis Campin, to which are added: observations on the construction of steam boilers, and remarks upon furnaces used for smoke prevention; with a chapter on explosions, by R. Armstrong and John Bourne. Rules for calculating the change wheels for screws an the turning lathe, and for a wheel-cutting machine, by J. La Nicca. Management of steel, including forging, hardening, tempering, annealing, shrinking and expansion and the case-hardening of iron, by G. Ede. Illus. and pl. Phila. (1863 \$6.00); 1877, 8vo, \$5.00.

135 Campin, F. Mechanical engineering. Comprising metallurgy, moulding, casting, forging, tools, workshop, machinery, mechanical manipulation, manufacture of the steam engine, etc. Illus. (Weale's Ser.) Lond. 1881, 12mo. 2s 6d and 3s., \$1.00.

Carbide of iron.

Rollet, A. Rollet process for producing a pure carbide of iron. 703.

Carbonate camps.

Sweet, W. Carbonate camps of Colorado, 1879. 25c. 797.

Carburisation of iron.

Roberts-Austen. On carburis, of iron by the diamond. 692

Carey, A. Autobiographies of coal, salt, water, etc. Lond. 1870. 12mo.
 2s 6d.
 Carnelley, Thom. Smelting and boiling point tables. 2 vols. Lond. 1885.

Roy. 4to., each vol. £2, 2s.

He.

138 Carter, J. H. Roller mining machinery, in vol. 1883, Soc. Eng. Trans. Caverns, see Shaler 737.

139 Centennial Exhibition. Official reports of the judges, group I: minerals, mining and metallurgy. Illus. Phila. 1878. 8vo. pap. \$2.00. Ld. Centrifugal ventilating machines, see Murgue 566; see also Ventilation. Certificated managers of coal mines, see Roy 718.

Chalk. See also Lias-Limestone. Galloway, W. B. Chalk. 2s 6d.

Charcoal. See also Coke—Coal—Fuel.

Svedelin's, G. Handbook for charcoal burners. 1874. \$1.50. 792.

Charcoal furnace, see Overman 612.

Charcoal-hearth processes, see Howe, 385, 386.

Charleton, A. G. Tin: describing the chief methods of mining, dressing 140 and smelting it abroad, with notes, upon arsenic, bismuth and wolfram. With drawings carefully laid down to scale, chiefly from original sketches. Lond. 1884. 8vo. 12s 6d. \$5.00.

Chemical problems. Foye, J. C. 1885. 50c. 269. Chemical reactions. Drechsel, E. 1880. \$1.25. 224.

Chemical technology. See also Analytical Chemistry-Chemistry.

Groves and Thorpe. 1889. 336.

Wagner, R. Handbook of. 1887. \$5.00. 859.

hemistry. See also Analytical Chemistry—Chemical Technology—Blow-pipe—Electroysis—Volumetric Analysis.

Bloxam, C. L. Inorganic and organic. 1890. 18s. 90. Booth and Morfit. Encyclopædia of chem. 1883. \$5.00. 102. Bowman, J. E. Pract. chem. 1885. 5s 6d. 106.

Galloway, R. Fundamental principles of chemistry. 1888. 6s 6d. 285. Hunt, J. S. New basis for chemistry. 1891. \$2.00. -396. Hunt, J. S. Chemical and geol. essays. 1890. \$2.50. 397. Jago, W. Inorganic chemistry. 1889. 2s 6d. 413. Kolbe, H. Taythook of inorganic absorbing the chemistry. 1889. 40 dec. 40.

Kolbe, H. Textbook of inorganic chemistry. 1884. \$2.50. 460. Leffman H. Compound of inorganic and organic chem. 1890. \$1.00. 481.

Leffman H. Compound of inorganic and organic chem. 1890. \$1.00. 49 Mott, H. A. Chemist's annual 1883. \$4.00. 562.

Muir, M. M. P. Treatment on principles of chem. 1891. \$4.50. 563.

Muter, J. Pract. and analyt. chem. 1887. 68 6d. 570.

Payen, B. H. Industrial chemistry. 1878. 428. 626.

Richter, V. Textbook of inorganic chem. 1890. \$2.00. 687.

Richter, V. Chemistry of carbon compounds. 1891. \$3.00. 686.

Ricketts and Russell. Skeleton notes on chemistry. 1889. \$2.00. 690.

Roscoe, H. E. Lessons in elementary chem. 1888. \$1.50. 704.

Roscoe and Schorlemmer. Treat. on chemistry. 3 vols. 1388. 705.

Roscoe and S. The same. 3 vols. 1888—90. \$30.00. 706.

Thorpe, J. E. Dictionary of applied chem. 3 v. 4891. Each 428 820.

Trimble, H. Pract. and analytical chem. 1889. \$1.50. 832.

Watts, H. Dictionary of chem. 5 v. 1868. 1438. 873; supplem. 4 v. 8

Watts, H. Dictionary of chem. 5 v. 1868. 143s. 873; supplem. 4 v. 874. Watts. The same. Rev. by Morley and Muir. 4 v. 1889-90, each 42s.

Watts (Fowne). Manual of chem. 1886. 10s. 876. Wood, T. Chemical notes. 1868. 3s 6d. 943. Wood, T. Notes on the metals. 1868. 5s. 944;

see Bloxam 91, Nystrom 594.

Chemistry of petroleum, see California 7th report. 129a.

Chester, A. H. Catalogue of minerals alphabetically arranged. With their 141 chemical composition and synonyms. N. Y. 1886. 8vo. \$1.25.

Chilian process of leaching, see Aaron 4.

China clays, see Davies 208; see also Minerals.

Chisholm, J. C. Manual of the coal mines regulation act, 1887. Rev. by 142 Counsel in England and Scotland. Lond. 1888. 8vo. 7s 6d.

143 Chism, Rich. E. The mining code of the republic of Mexico. Translated from the official editions in the original Spanish, with the regulations for the organization of the mining deputations and the schedule for the levying of fees and dues with all the latest official circular, and decisions of the mining section of the Ministry of Public Works, and with the laws of June 6, 1887, and upon the taxation of mines and their products, the concession of a mining territory and the purchase of a process for the treatment of ores. N. Y. 1889. \$1 00.

Chlorination process, see Kustel, 466.

Chlorine, see Davies 208.

Chontales gold mines. Belt, T. 1888. 7s 6d. 75. Chronium, see Aaron 2, Howe 385, 386, Osborn 605; See also Metallurgy.

144 Church, A. H. Precious stones: considered in their scientific and artistic relations, with a catalogue of the Townsend collection of gems in S. Kensington museum. W. col. pl. and illus. (S. K. M. S. A. H.) Lond. 1883, cr. 8vo. (12mo) 2s 6d. \$1.25.

145 Church, John A. Comstock Lode; its formation and history. W. 6 pl. and 13 figures. N. Y. 1879, 410, \$5.00. B-Ck-Fa-Wm.

- N. B.—The Comstock mines. The Comstock lode. The loderocks. The diorite. The propylite. The clays. Evidence of tree growths in the propylite. The andesite. The trachyte. The metamorphic rocks. History of the lode rocks from the beginning to the formation of the quartz bodies. Formation of the ore quartz. Position of the bonanzas. Description of the mines. Position of the ore. Considerations which affect the Comstock. The search for bonanzas. The depth of the lode. The parallel quartz Bodies. Future yield. The zonal arrangement. Ore channels. The divide. The east clay. Position of the ore bodies. Crushing. Stratification of the cruptive rocks. Character of the siliceous period. The Justice Lode. Heat phenomena.
- Notes of a metallurgical journey in Europe. Illus. N.Y. 145a Church, John A. 1873. 8vo. \$2.00. B-Ck-V.

Clapp. H. L. 146 Observation lessons on common minerals. Bost. 1889. Pap. Hh.

Clapp, H. L. Notebook to accompany observation lessons. Bost. 1889. 147 Hh. 15c., net.

Clark, D. K. Fuel. Its combustion and economy, consisting of abridge-148 ments of treatise on the combustion of coal and the prevention of smoke, by C. W. Williams; and the economy of fuel, by T. S. Pridieux. With extensive additions in recent practice in the combustion and economy of fuel, coal, coke, wood, peat, petroleum, etc. Illus. (Weale's Ser.) Lond. 1879. 12mo. 4s 6d. \$1.50. 1879. 12mo. 4s 6d. \$1.50. B—Ck—Lg—V. 148a Clarke, W. J. Principles of colliery ventilation. Madely, Salop. 1891. 1s.

Cn-Cs-Rd.

- Classen, A. Quantitative chemical analysis by electrolysis, according to 149 original methods. Author, trans, from the 1d rev. and enl. German ed. by Wm. H. Herrick. Illus. N. Y. 1887, 8vo. \$2.50. B-Wm-Wn. Clay, see Blair 84, California 9th report 129c, Davies 208, To builders, 827a, Winchell 935; see also Minerals. Claypits, see Rein, 677.
- Claypole, E. W. The Lake Age in Ohio; or, some episodes during the re-150 treat of the North American ice sheet. Cincinnati, O., 1888. 8vo, pap. 75c.

Cleveland, P. Elementary treatise on mineralogy and geology. 2 vols. 151 With 6 plates. Bost. 1882. 8vo. (\$3.00). Ck.

152 †Clement, E. Tabular view of geological systems. Lond. (n. d.) Cr. Svo, 1s.

153 Coal-dealers' blue book. N. Y. 1891.

The blue book contains a complete list of all coal dealers, miners and shippers in the United States and Canada. Also manufacturers and car-lot consumers with capital and pay-ratings. All new dealers in the trade reported by supplement and weekly sheets, as well as all changes, failures, and reports of siow-paying customers. Book will be sent to any shipper of coal free of expence for examination for five days.

153a Coal Mines (The) regulation act, 1887, with notes and explanations showing the changes in the law respecting coal mines, etc. Lond. (n. d.) 2s. Cp.

Coal mines and mining. See also Anthracite—Bituminous—Charcoal -Coke-Collieries-Cretaceous-Fuel-Gas-Ventilation-Working.

Andre, G. G. Practical treat. on coalmining. 2v. 1878. \$28.00. 18. Bourn, H. H. Earth's diamonds. 1882. 2s. 103.

Bowen, E. Coal. 1865. \$1.75. 104. Carey, A. Autobiographies of coal, etc. 1870. 2s 6d. 136.

Collins, J. H. Coal mining. 1876. 1s. 162. Daddow and Bannan. Coal. 1866. \$7.50. 181. Fordyce, W. History of coal. 1860. 52s 6d. 20

Fordyce, W. History of coat. 1000. Care Service Servic

Gresley, W. S. Glossary of terms used in coal mining, 1883. Hale, P. M. Coal and iron counties in N. Carol. 1883. \$1.50.

Harper, J. P. Examples of coal mining. 1881, 52s 6d and 45s. 351. Harper the same II. 25s. 352. Hartley, F. W. Commercial value and purety of coal. Hopton, W. Conversation on mines. 1887. 3s 6d. 3 Hopton. The same. 1890. \$1.25. 383. Hunt, T. S. Coal and iron in southern Ohio. 1881. 1881. \$1.50. 398. Jevons, W. S. Coal: its importance. 1d. 425.

Jevons, W. S. Coal: its importance. 1d. 425.

Jevons, W. S. Coal question. 1866. 10s 6d. 424.

Lesley, J. P. Manual of coal. 1856. \$1.00

Liefchild, J. R. Coal at home and abroad. 1873. 4s 6d. 485.

Macfarlane, J. Coal regions of America. 1875—79. \$5.00. 506.

Mathor, J. Coal minutes and abroad. 1870. \$5.00. 506. Mather, J. Coal mines: dangers and means of safety. 1868. 21s. Meade, R. Coal and iron industries of the United Kingdom. 1881, 28s. 529. Meldola, R. Coal and what we get from it. 1891. 286d. 529a. Mosley, P. New method of mining coal. 561. Munroe, J. E. C. Sliding scale in coal industry. 1886. 18. 56-1886. 18. 564. Natorp, G. Coal industry of lower Rhine. 573. Pamely, C. Colliery manager's hand book. 189 Pamely, C. Colliery manager's hand book. 1891. 258. 628.
Pechar J. Paris Exhibition: coal and iron 1878. 5s. 628.
Pott's mining register 1890. 10s. 654.
Rogers, H. D. Geology of Penna. (Coal formations) 1858. \$15.00. 700.
Rowell, R. Coal freight tables 1869. 7s 6d. 716.
Rowan, T. Explosion of gas in coal mines. 1883. 1d. 715. Roy, A. Coal mines. 1876. \$2.75. 717. Roy A. Miner's companion. 1885. \$1.25. 718. Roy A. Miner's companion. 1885. \$1.25. 718. Smith, W. Recovery of bye-products from coal. 761. Smyth, W. W. Rudimentary treat. on coal. 1885. 3s 6d. 764. Sweet, S. H. Special report on coal. 1866. \$3.00. 796. Table of Cubic area of coal 1891. \$1.00 803.
Taylor, H. C. Statistics of coal. 1855. Scarce. 811.
Thomas, J. W. Treat. on coal. 1878. 10s 6d. 815.
Thomas, T. F. Notes on coal mining. 1880. 2s 6d. 816.
Thorpe, T. E. Coal: hist. and uses. 1878. 12s 6d. 819. 816. Tunner. Use of brown coal in plast Advances. Walton, T. H. Coal mining. 1885. \$5.00. 865. Use of brown coal in blast furnace. 836. Wardle. Reference book on coal mining 1886, 1889, 1891, each 15s. 868-870. Wiltshire, T. History of coal. 1878. 1s. 908; see Annual 22, 23, Barr 51, Bevan 81, Blair 84, Boyd 108, Clark 148, Cornwall 170, Fairley 252, Hunt 397, Kingsley 454—56, Mills 545, Pepper 631, Percy I, 632, Smith 759, Spon, parts 6, 7. 775. Coal cleansing and washing, see Spon, part 6. 775. Coal cutting, see Hyslop 406. Coal dealer's ready reckoner. Ber Coal dealer's reference book. 153. Benedict, H. H. 1890. \$2.00. 76. Coal deposits, conditions of, see Saward. 728. Coal-dust furnaces, see Mills. 545 Coal economy. Danvers, F. C. 1872. 10s 6d. 198. Coal exhaustion of coal mines, see Jevons. 424. Coalfields. See also Anthracite coalfields. Anstie, J. Coalfields of Gloucestershire and Somersetshire. 1873. 68. 31. Brice, S. W.—of North Somersetshire. 1867. 2s.
Brown, R.—of Cape Breton. 1871. 7s 6d. 116.
Dawkins, W. B. Our coalfields. 1d. 212.
Fordyce, W. Hist. of coal, etc. 1860. 52s 6d. 261
Green A. H. Notes on Yorkshire coalfield. 321. 261. Green and Russell. Geology of Yorkshire coalfield. 1879. 428. 322. Greenwell, G. C. Great Northern coalfield. 325.

Homer, C. J. North Staffordshire coalfield. 379.

Hull, E. Coalfields of Gt. Britain. 1880. 16s. 389.

Map of British coalfields. 1861. 28 6d. 517.

Meade, R. Coal industries. 1881. 28s: 529.

Sheafer, P. W. Anthracite coalfields of Penn'a. 1881. 742; see Andre 18, Saward 728. Coalfields, characteristics of, see Andre 18. Coal heading, see Percy I, 633.

Coal in California, see California 7th report, 129a.

Coal lining. Wanklyn, J. A. Cooper's coal-lining process. 866.

Coal miners' pocket book. Colliery engineers' pocket book. 1889. \$2.00. 155.

Coal mines, accidents in, see Accidents.

Coal mines, explosions in, see Accidents-Explosions-Gases.

Coal mines inspection. Boyd, R. N. 1879. 14s 107.

Coal mines, law relating to.

Abstract and forms under coal mines' act 1887. 4d. 7.

Abstract of coal mines' act 1887. 3d. 8.

California 7th report. 129a.

Chisholm, J. C. Manual of coal mine's act 1887. 7s 6d. 142. Coal mines act 1887. 2s. 153a.

Macswinney and B. Coal mine's act. 1888. 3s 6d. 509. See Abel 6, United States, 845.

Coal Mines of the U. S.

Bell, J. L. Notes on a visit to. 65. 66. Coal of India.
Ball, V. Diamonds, coal, etc., of India. 1881. 5s. 47.

Bowen, E. 1865. \$1.75. 104.

Coal-pits, see Fuel 281.

Coal points. Swords, J. F. 1891. \$2.00. 799.

Coal production, see Annual 22, 23; Roy 717, Saward 728. Coal reckoner. Winnall. 1873. 1s 6d. 940.

Coal regions, see Roy 717.

Coal shipping, see Spon, parts 68, 69. 774; Swords 799. Coal slag. Ward, G. W. Utilization of, 867.

Coal trade.

Brown, R. Coalfields, etc., of Cape Breton. 1871. 7s 6d. 116. California 7th report, 129a.
Greenwell, G. C. Glossary of terms used in. 1889. 5s. 326.
Saward, F. E. Coal trade. \$1.00. 728.
Sorley, W. R. Mining royalties, their effect on coal trade. 1889. 1s 6d.

Stubbs, T. Coal and iron trades. 1s 6d. 787.

Coal used in blast furnace, see Bell 73.

Coal, varieties of, see Wardle 868-70.

Coal washing and washing machinery, see Baare 41, Mills 545, Percy I, 633; Spon, part 31, 774. Cobalt, see Aaron 2, Davies 208, Osborn 605, Phillips 643; see also Minerals.

Coke. See also Charcoal—Coal—Fuel.

Dixon R. Cost and results of manufacture of coke. 219.

Fordyce W. History of coal, etc. 1860. 52s 6d. 261.

Luebbers, H. L. Manufacture of coke from Illinois coal. 25c. 500.

Simon H. Utilization of bye-products in manufacture of coke. 751. Steavenson, A. L. Coke manufacture of South Durham.

Weeks, J. D. Manufacture of Coke. 40c. 880. Weeks. The same. \$2.00. 883, see Blair, 84, Clark, 148, Mills 545, Percy I, 632, Smith 761, United States 841.

Coke furnaces, see Overman.

Coke ovens, see Spons, part 7. 775.

154 Cole, G. A. J. Aids in practical geology. Illus. Lond. 1891. Cr. 8vo. (12mo) 7s 6s. \$3.00. Gb-Ld-V.

N. B.—This work is a companion to any ordinary text book of geology, and is of special service to those students who have made excursions into the field, and who wish to determine their specimens for themselves.—From publishers' circular.

Colliers, see Fuel 281.

Colliers, law relating to.

Fowler, J. C. Collieries and colliers. 1872. 78 6d. 268. Collier's ready reckoner. Ireland, J. 1s 6d. 408.

Collieries, see also Coal—Working.

Fairley, W. Colliery managers' catechism. 1888. 3s 6d. 252.

Fordyce, W. History of coal, etc. 1860. 52s 6d. 261.

Fossil Fuel. 1841. \$4.00. 263.

Fowler, J. C. Collieries and Colliers. Handb. of laws. 1872. 7s 6d. 268.

Kelly's Directory of collieries, etc. 1890. 30s. 443.

Pamely, C. Colliery managers' handbook. 1891. 25s. 621.

Percy, C.M. Mechanical engineering of collieries, vol. I. 1882. 15s. 633.

Percy. The same. Vol. II. 1885. 25s. 634.

COL-COP

17

[Smyth, W. W. Collieries in Bevan's Brit. Man. Indus. 3s 6d. 76 Swinney, A. J. G. Collieries, etc. of New South Wales. 3s. 798. Thomas, G. Underground fire at Wynnstay colliery. 818.

Colliery drums, see Percy I, 633.

155 Colliery (The) engineer pocket book: over 400 pages of valuable tables, rules and formula for mine officials, mining engineers and mining students; simple and thorough. With a glossary of mining terms. Scranton, Pa. 1889. Cloth, \$2.00, flex. lea. \$2.50; with flap \$2.75.

155a Colliery Guardian almanack, containing useful statistical information in addition to the intelligence usually found in almanacks. Annually. Lond. 1891. 2d, on rollers, mounted and varnished 1s.

Colliery management.

Bainbridge. Coll. managers' calculating scale. 12s 6d. 43a. Bainbridge. Surveyors' scale. 2s. 43b. Colliery Engineer's pocket book, 1889. \$2.00. 155. Colliery Guardian almanack. 1891. 2d and 1s. 155a.
Fairley, W. Coll. managers' catechism. 1888. 3s 6d. o. p. 252.
Fairley, W. Coll. managers' calculator. 3s 6d. o. p. 253.
Hyslop, J. Colliery management. 1876. 25s. 406.
Pamely, C. Colliery managers' handbook. 1891. 25s. 621.
Ramsay, J. A. Ventilation and working of collieries. 1882. 5s. 669.

Twinney, A. J. G. Handbook of examinations for coll. managers. 1878. \$2.00. 840.

Collieries, opening of, see Mauchline, 527.

Colliery ropes, see Percy I, 633.

156 Collins, J. H. First book of mining and quarrying. With the sciences connected therewith, for use in primary schools and self-instruction. 2d. rev. and enl. ed. Illus. (Weale's Ser.) Lond. (1872) 1888. B-Ck-Lg. (12mo) 1s. 6d, 60c.

157 †Collins, J. H. Lond. Mineralogy. Illus. (Coll. S. T. B., elem. Ser.) (1874.) Fcap. 8vo. 1s. Ck-Ct.

158

Collins, J. H. The same. N. Y. (n. d.) 12mo. 75c. Collins, J. H. Mineralogy, 2 vols., illus. (Coll. S. T. B., adv. Ser.) I: 159 General principles, 3s; II: Systematic and descriptive mineralogy. 3s. Lond. 1884. P. Svo. 6s.

160 Collins, J. H. The same. N. Y. (n. d.) 12mo. \$2.50, net.
 Pz.
 161 †Collins, J. H. The mineralogy of Devon and Cornwall. Handbook w. instructions and copious tables of localities. Lond. (n. d.) Demy 8vo. 4s 6d.

162 Collins, J. H. Principles of coal mining. Illus. (Coll. S. T. B., elem. Ser.) Lond. 1876. Fcap. 8vo. (12mo) 1s, 50c. Ck—Cn—Ct—V.

163 Collins, J. H. Principles of metal mining. Illus. (Coll. S. T. B. elem. Ser.) Lond. 1875. Fcap. 8vo. (12mo) 1s, 50c.

Colorado. Biennial report of the State School of Mines at Golden, Colo., 1886. 164 (The present mining-law chaos, with suggestions.) With map and pl. Denver 1887. Svo. Leather, 50c. Cd-Na.

Combustion.

Rowan, T. Spontaneous combustion of coal. 1882. 5s. 714. Siemens, F. Combustion. 747. Combustible gases, see Percy I, 632.

Comstock mines and mining. See also Mines.

Becker, G. F. Geology of Comstock Lode and Washoe District. 1883. \$11.00 61.

Church, J. A. Comstock Lode. 1879. \$5.00. 145.

Lord, E. Comstock mining and mines. 1883. \$1.50. 498. see Davies 209.

Concentration of gold and silver ores, see McDermott 504.

Cones, A., and Johns, W. R. Petrolia. The Pennsylvania petroleum region; its development, growth, etc. N. Y. 1870. 12mo. \$3.00. 165

Conversation on mines. Hopton, W. 1887. 3s 6d. 382; 1890. \$1.25. 383.

Copp, H. N. American mining code: embracing the U. S., state, and territorial mining laws, the Land Office regulations, and a digest of 166 federal and state court and Land Department decissions, Wash. (1882) Cv-V. 1886. 8vo. Pap. 50c, cloth \$1.25.

Copp, H. N. United States mineral lands, laws, forms, instructions and 167 decisions. Wash. 1881. 8vo. shp. \$4.50, half shp. \$3.00

See also Metals-Metallurgy-Mines.

Boyd, C. R. Resources of South West Virginia. 1881. \$2.50. Toster and W. Report: Lake Superior iron and copper regions. 1881. \$2.50. 108.

Searce. 265.

Irving, R. D. Copper bearing rocks. 1883. \$1.85. 412.

Lamborn, R. H. Metallurgy of copper. 1879. 2s 6d. 468. Phillips, J. A. Copper in Beyan's Brit. Manuf. Indus. 3s 6d. 642. Piggot, A. S. Chemistry and metallurgy of copper. 1858. \$1.00. 649; see Aaron 2, 4; Davies 209, Howe 385, 386; Kerl 446, Lock 495a, Osborn 605, Pepper 631, Percy II, 632; Phillips 643, Pryce 661, Rein 677, Spon, part 7. 775, Thurston III, 823.

Copper alloys, see Krupp and W. 463. Copper-tin alloys, see Thurston 824.

Copper-zinc alloys, tests and properties, see Report 679.
Copper-smelling. See also Smelling.
Grant-Francis, G. History of, in Swansea District. 1881. 10s 6d. 318. Peters, E. D. American method of. 1890. \$5.00. 635. Vivian, H. H. Copp. smelting, hist. and process. 1881. o. p. 856. see Kerl II, 445, Piggot 649, Phillips 643.

Corals and coral islands. Dana, J. D. 1890. \$5.00 189.

Coral reefs.

Darwin, C. Structure and distribution. 1890. 2s and 5s. 205. Darwin. The same. 1891. 1s. 206;

see Kingsley 456.

- ornes, C. Mining machinery. Containing illustrations, descriptions and current prices of the various kinds of machinery used for mining pur-168 Cornes, C. poses, including stamp batteries, prospecting stamps, crushing mills, rock drills, air compressors, ore breakers, screens, jiggers, amalgamating pans and settlers, percussion tables, vanners, ore feeders, chlorination plant, aerial ropeways, winding engines, steam engines and boilers, turbines, water wheels, pumping engines, diamond boring machines for deep boreholes, boring tools, mine stores, etc., the whole being codified for telegraph purposes and forming the best guide to intending purchasers of mining machinery. Lond. 1889 Cr. 8 vo. (12 mo.) 2s 6d, \$1.00
- 169 †Cornes, C., and Calvert, T., comp. Price-book of machinery and iron work constructed by Stothert & Pitt, lim., of Bath. Comprising modern examples of harbour and breakwater plant, concrete mixing machinery, steam and hand cranes and hoisting machinery of all kinds, engine and carriage traversers and turn tables, water cranes; hand, steam, and centrifugal pumping engines; hydraulic, steam, and hand-power lifts; steam engines and boilers, turbines, yachts and yacht engines, steam and hand pile-drivers, mining plant; oil, flour, sugar and artificial manure machinery; hydraulic presses, fittings for gas and water works, brass fittings; engineers', platelayers', miners', and quarry tools, etc., together with prices, weights, and duties, the whole forming a most useful book of reference, for civil and railway engineers, contractors, architects, merchants, colonists, etc. Lond. (n. d.) 4to, 10s 6d. \$4.25.
- Corundum, see Osborn 605; see also Crystalline Rocks-Minerals-Emery. Cornwall, H. B. Manual of blowpipe analysis; with a system of determinative minerology. Illus. and pl. N. Y. 1882. 8vo. \$2,50. Contents.—Directions for self-instruction—List of substanses for practice—Special list of apparatus. Apparatus, reagents and operations. General operations and examinations in qualitative analysis. Special tests for the elements of their compounds. Systematic blowpipe analysis. Analysis with the aid of the wet way. Spectrum analysis. Quantitative analysis (assaying) Description of important ores and coals. Determinative
- Cotta, B., von. Rocks classified and described: a treatise on lithology. 171 Trans. by Phil. H. Lawrence, with English, German, and French synonyms. Rev. by author. Lond. 1878. P. 8vo (12mo.) 14s.

B-Ck-Lm-V. Cotta, B., von. Treatise on ore deposits. Trans. from the German, by F. Prime, and revised by the author. N. Y. 1870. 8vo. (publ. at \$4.00) 172 o. p. and scarce.

COX-DAN

19

173

Cox, T. H. Recent improvements in tin-dressing machinery, in vol. 1874. Soc. Eng. Trans.

Creswick, W., Galloway, W. and Hopton, W. Hermon prize essay on the 174 prevention of explosions and accidents in coal mines. Lond. 1874. 8vo. (\$1.00.)

Cretaceous coals, see United States 842.

175 Crew, B. J. Practical treatise on petroleum: comprising its origin, geology, geographical distribution, history, chemistry, mining, technology, uses and transportation; together with a description of gas wells, the application of gas as fuel, etc. With an appendix on the product, and exhaustion of the oil regions and the geology of natural gas in Pennsylvania and New York, by C. A. Ashburner. Illus. and pl. Phila. 1887. 8vo. \$5.00. £1.1s. B—Ck—Lo—Sp. Crocker's trip hammer battery, see Aaron 4.

176 Crosby, W. O. Common minerals and rocks. Bost. (1881) 24mo. 35c net.

177 Crosby, W. O. Tables for the determination of common minerals chiefly by their physical properties; with confirmatory chemical tests. 2d ed. Bost. (n. d.) \$1.25.

Crucible assays, see Aaron 2, Percy I, 632; see also Assaying.

Crucible steel process, see Howe, 385, 386.

Crystalline rocks, see Winchell, 923, 925, 927, 929, 931; see also Corundum— Minerals.

Crystallography. See also Precious Stones—Gems—Petrology. Gorham, J. System for construction of crystal models.

Griffin, J. J. System of crystallography. 1841. 9s. 334. Gurney, H. P. Elementary manual of crystallography. 1878. 1s. 342. Jordan, J. B. Crystallography. 1s 6d. 433.

System for construction of crystal models. 1888. 5s. 802.

Williams, G. H. Elements of crystallography. 1890. \$1.25 net. 898; see Dana 147.

178 Cundill, J. P. Dictionary of explosives. Lond. 1889. 8vo. 4s, \$1.60. Hb-Sp.

Cupellation, see Percy IV, 632; see also Refining. Cupola furnaces, see Mills 545; see also Furnace.

Cupriferous deposits in Minnesota, see Winchell 922, 924; see also Copper. Curtis, J. S. Silber lead deposits of Eureka, Nevada. Illus. (U. S. Geog. 179

Survey, monog.) Wash. D.C., 1884. 4to. n. p.

180 Cyclopaedia of the arts and sciences. Botony, zoology, MINERALOGY, GEOL-OGY, astronomy, geometry, mathematics, mechanics, electricity, chemistry. Illus. N. Y. (n. d.) 4to. \$6.00, \$7.50. \$10.00.

Daddow, S. H., and Bannan, B. Coal, iron and oil; or the practical miner. 181 A plain and popular work on our mines and mineral resources, and a textbook or guide to their economical development. Illus. and maps. Potts-

ville, Pa., 1866. 8vo. \$7.50.

Dahlgren, Chas. B. Historic mines of Mexico. Tables showing the char-182 acter of ores, production, locality and present condition of the principal mines of Mexico. A review of the mines of that republic for the past three centuries. Compiled from the works of you Humboldt, Burkart, Egloffstein. Reports of the United Mexican Mining Association, the files of the "Minero Mexicano" and Geographical Society of Mexico, and reports of various engineers of mines and mining companies. Illus. and maps. Lond, 1883. Roy. 8vo. (4to) £2 12s 6d, \$25.00 B—Ck—Sp.

183 Dale, T. N., jr. Study of the Rhaetic strata of the Val di Lerdo in the Southern Tyrol. Illus., maps and pl. N. Y. 1876. 8vo. \$1.75. Wf. 184 †Damon, Robt. Geology of Weymouth, Portland and coast of Doretshire, from Swanage to Bridport-on-the-Sea. With natural history and archaeological notes. New and enl. Illus. and a specially prepared geologically col. map and section of the district. Lond. (n. d.) Cr. 8vo. 7s 6d, with uncol. map 5s.

Dana, E. S. An account of the progress in mineralogy in the year 1885; from the Smithsonian report for 1885. (Smithsonian Miscel. Coll. No. 639.) Wash. 1886. 8vo, pap., n. p. 185

Dana, E. S. An account of the progress in mineralogy in the year 1886; from the Smithsonian report for 1886—87. (Smithsonian Miscel. 186

Coll. No. 703.) Wash. 1889. 8vo. pap., n. p. Sk. Dana, E. S. and J. D. Textbook of mineralogy, based upon the system of 187 mineralogy of J. D. Dana. Embracing an extended treatise on crystallography and physical mineralogy. By Edw. S. Dana. 15th rev. and enl. ed. Illus. and col. pl. N. Y. (1888) 1889. 8vo. \$3.50.

B-Ck-Fa-V-Wm. 188 Dana, J. D. Characteristics of volcanoes, with contributions of facts and principles from the Hawaiian Islands, including an historical review of the Hawaiian volcanic action for the past 67 years; a discussion of the relation of volcanic islands to deep sea topography, and a chapter on volcanic island denudation. Illus. by maps of the islands; a bathymetric map of the Atlantic and Pacific oceans; views of cones, craters, etc. N. Y. 1890. 8vo. (Roy. 8vo.) \$3.50, 18s. De-Lo-V.

Dana, J. D. Corals and coral islands. 3d ed. Illus., col. pl. and maps. N. Y. 189 (1872, \$3.75) 1890. 8vo. \$5.00. De-V.

Dana, J. D. Manual of geology, treating of the principles of the science, 190 with special reference to American geological history. 3d ed. Illus. and map. N. Y. 1880. 8vo. \$4.50, net; £1 5s. Ac—B—Fa—Sp—V.

Dana, J. D. Manual of mineralogy and lithology. 191 Containing the elements of the science of minerals and rocks, for the use of the practical mineralogist and geologist, and for instruction in schools and colleges. 4th rev. ed. Illus. N. Y. (1878) 1887. 12mo, \$2.00. Ck—Fa—V—Wm.

Dana, J. D. Manual of mineralogy and petrography. Containing the ele-192 ments of the science of minerals and rocks, for the use of the practical mineralogist and geologist, and for instruction in schools and colleges. 8th rev. and enl. ed. Illus. N. Y. (1887) 1889. 12mo. (P. 8vo.) \$2.00; \$s 6d. B—Te—V—Wm.

193 Dana, J. D. Textbook of geology. 4th ed. Illus. N. Y. 1883. 12mo. \$2.50. Ac-B-V.

An introduction to geol-The geological story briefly told. 194 Dana, J. D. ogy for the general reader and for beginners in the science. Illus. N. Y. 1880. 12mo. \$1.50. **A**c-B-V.

Dana, J. D., and Brush, G. J. System of mineralogy. Descriptive mineralogy, comprising the most recent discoveries. 9th ed., rewritten and enl. 195 Illus. (11th sub-ed., with 3 appendices and corrections) N. Y. 1889. Svo. B-Ck-Fa-V-Wm. \$10.00.

Dana, E. S. Appendices to descriptive mineralogy. First, second and 196 third, completing the former edition to 1882. N. Y. 1882. 8vo. (the 3 in 1 \$2.00. Ck-Wm. vol.)

Dana, E. S. Third appendix to the 5th ed. of Dana's descriptive mineral-197 ogy, completing the work to 1882. N. Y. 1882. 8vo. \$1.50. Ck—Wm. Danvers, F. C. Coal economy; or, coal, with reference to its screening,

198 transport, etc. Illus. and pl. Lond. 1872. 8vo. 10s 6d, \$2.50.

Darton, N. H. An account of the progress in North American geology in the year 1886. From the Smithsonian report for 1886—87. (Miscel. Coll. 199 No. 697.) Wash. 1889. 8vo. Pap., n. p.

Darwin, Chas. A naturalist's voyage: journal of researches into the natural 200 history and geology of the countries visited during the voyage of H. M. S. Beagle round the world. New ed. Lond. 1889. P. 8vo. 3s 6d.

201 Darwin, Chas. Journal of researches into natural history and geology of the countries visited during the voyage round the world of H. M. S. Beagle. New. ed., with illus., by R. T. Pritchett, of places visited and objects described. Lond. 1890. 8vo. £1 1s; the same, N. Y. 1890. 8vo. \$5.00. Am-Mu-V.

Darwin, Chas. The same. New illus. ed. Lond. 1890. 8vo. (12mo) 202 \$1.50.

Darwin, Chas. Geological observations on the volcanic islands and parts of 203 South America, visited during the voyage of H. M. S. Beagle. 3d ed., with maps and illus. Lond. 1891. P. 8vo. 12s 6d.

Darwin, Chas. The same, 3d ed. W. maps and illus. N. Y. 1891. Si.

204 12mo. Am.

\$2.50.

DAR-DOD

Darwin, Chas. On the structure and distribution of coral reefs, volcanic 205 islands and South American geology. With critical and historical introductions, by J. W. Judd (Minerva Lib.) Lond. 1890. Cr. 8vo. 2s and 5s.

206 Darwin, Chas. On the structure and distribution of coral reefs. Ed. with introd. by Jos. W. Williams. (Camelot Ser.) Lond. 1891. 18mo. 1s.

Davies, D. C. Slate and slate quarrying, scientific, practical, and commer-207 cial. 3d. ed. Illus. (Weale's Ser.) Lond. (1880) 1887. 3s., 3s 6d. \$1.20 B-Ck-Lg-V.

208 Davies, D. C. A treatise on earthy and other minerals, and mining. Uniform with, and forming a companion volume to the same author's "metalliferous minerals and mining." 2d ed. Illus. Lond. (1884) 1888. B-Ck-Lg-V. Cr. 8vo. 12s 6d. \$5.00.

209 Davies, D. C. Treatise on metalliferous minerals and mining. 4th rev. ed. Illus. Lond. (1880, 81, 86.) 1888. Cr. 8vo. (12mo.) 12s &d. \$5.00.

B-Ck-Lg-V. Geology. Illus. (Coll. S. T. B., elem. Ser.) Lond. (n. d.) 210 †Davis, W. S. Ct.

Feap. 8vo. 1s. Davis, W. S. The same. N. Y. (n. d.) 12mo. 75c. net. 211 Pz.

212 †Dawkins, W. B. Our coalfields. (Manch. Sci. Lect.) Manch. (n. d.) Cr. Hm. 8vo. 1d.

213 Dawson, Sir, J. W. Acadian geology, the geological structure of organic remains and mineral resources of Nova Scotia, New Brunswick and Prince Edward Island. 3d ed., w. supplem. Geolog. Map and illus. Lond. 1878. 8vo. £1. 1s. \$6.50.

Dawson, Sir, J. W. The geological history of plants. Illus. (Intern. Scient. Ser.) N. Y 1888. 12mo. \$1.75. 214

Decorative stones. See also Stones—Gems.

King, C. W. Natural history of gems and decor. stones. 1870. 6s. 451.

215 †Del Mar, A. A history of the precious metals, from the earliest times to the present. Lond. (n, d.) Demy 8vo. 10s 6d.
216 Dieulafait, L. Diamonds and precious stones. A popular account of gems. Trans. by F. Sanford. Illus. Lond. 1875. Cr. 8vo. (12mo.) 3s. Bn-Ck-Sd. \$1.50.

Dephosphorization, see Justice 440; Wedding 878; see also Iron—Puddling.

Desilverization, see Percy IV, 632; see also Metallurgy. Desulphurization of pig iron, see Wedding 878.

Diamonds. See also Gems—Precious Stones.

Ball, V. Diamonds, coal and gold of India. 1881. 5s. 47.

Dieulafait, L. Diamonds and precious stones. 1875. 3s. 216.

Emanuel, H. Diamonds and precious stones. 1887. 6s. 241.

Ingram, J. F. Land of gold, diamonds, etc. 1889. 2s 6d. 407.

Mitchell, H. Diamonds and gold of South Africa. 1888. 5s. 552. see Davies 208, Osborn 605.

217 Dircks, H. Contribution towards a history of electro-metallurgy, establishing the origin of the art. Lond. 1863. P. 8vo. (12 mo.) 4s. \$1.50, Ck-Sp.

Directory to the iron and steel works of the United States for 1890. Con-218 taining a complete list of blast furnaces, rolling mills, plate and sheet mills, cut-nail mills, open-hearth steel works, crucible steel works, Bessemer steel works, Clapp-Griffith steel works, Robert-Bessemer works, iron ore forges, bloomaries, wire rod and wire mills, wire nail works, caraxle works, car-wheel works, carbuilders, wrought-iron pipe works, castiron pipe works, and locomotive works; also description of new works completed or started up to December 25, 1889, and the most recent changes in size, ownership, etc. Phila. 1890. \$3.00.

B.—This is an invaluable book of reference for all business men who wish to correspond with iron and steel manufacturers, being in every respect a complete guide to the iron and steel works of the country. It is admirably arranged for ready reference to any establishment, as it contains an index to the names of firms and companies and also to the names of works.

219 Dixon, R. Cost and the results of the manufacture of coke on the Simon-Carve's system, in 1883, II, No. 434.

220 Dodd, G. Dictionary of manufacturers, mining machinery, and industrial arts. N. Y. 1869. 12 mo. (P. 8vo.) \$1.50. 5s. Ck-Ia-Rw-V. N. B.—Treats, in alphabetical arrangement, of those matters which come generally within the range of manufacturers and the productive arts; the raw materials, animal, vegetable, and mineral, etc.

Douglas, S. H., and Prescott, A. B. Qualitative chemical analysis: a guide 221 in the practical study of chemistry and in the work of analysis. 8th rev. ed. with a study of oxidation and reduction by O. C. Johnson. N. Y. Ck-V. (1881) 1890. 8vo. \$3.50. o.p.

Contents.—The metals—classification, etc. The alkali metals. The alkaline earth metals. The metals of the earth, and the more electro-positive of the heavy metals. Metals whose sulphides are insoluble in dilute acids. The non-metals and their acids. Systematic examinations. Oxidation.

222

Dove, G., jr. The Frodlingham ironfield, in 1876, II, No. 434. Doyle, P. Tin mining in Larut. Illus. and maps. Lond. 18 223 Lond. 1879. Cr. 8vo. (12 mo) 3s. 6d. \$1.50. B-Ck-Sp. Drainage of mines, see Andre 18, Davies 209; see also Mine Engineering.

Drawing for mechanics and engineers. A list on this subject will be found in Handy Lists part 3.

224 **Drechsel, E.** Chemical reactions, being a thorough discussion of chemical reactions, which occur in the ordinary course of qualitative analysis and general elementary chemistry. Trans. and special adapted for the use of American students and teachers, by N. F. Merrill. N. Y. 1880. 12mo. B-Wm.

Dressing of ores, see Ores.

Dressing of tin, see Charleston 140.

Drift mining, see California, 8th report 129b; see also Mines.

Drilling, see Budge 123; see also Mines—Tunneling. Drilling petroleum, see California, 7th report 129a.

225 Drinker, H. S. Treatise on explosive compounds and rock drills. Giving properties of modern explosives, principles of blasting, and descriptions and uses of the various rock drills and compressors, and forming a supplementary volume to the first edition of Drinker's tunneling. N. Y. 1883. 4to, B-Ch-Cn-Sp-Wm. \$5.00. £1.5s.

226 **Drinker**, **H. S.** Tunneling, explosive compounds, and rock drills. Giving the details of practical tunnel work, properties of modern explosives, principles of blasting and descriptions and uses of the various rock drills and compressors, together with American and foreign systems of timbering and arching, shaft sinking, and tables showing costs and dimensions of over 2,000 tunnels from every part of the world. Profiles, maps and illus. 3d ed. N. Y. (1878, 1882) 1888. 4to. half mor., net \$25.00

B—Ck—Sp—Wm. 227 Dron, Robt. W. Mining formulae. Containing chapters on ventilation, chemistry, pumping, haulage, strength of materials, engines and boilers, surveys, etc. Also a section of the workable minerals of Scotland. Glasgow 1890. Cr. 8vo. 1s 9d. \$1.00. Dm—Mi—V.

228 Wiley's American iron trade manual of the leading iron industries of the United States; with a description of the blast furnaces, rolling mills, Bessemer steel works, locomotive works, steam engine works, iron bridge works, etc., giving their location and capacity of product; with some account of *iron ores*. N. Y. (n. d.) 4to, \$4.00. Ck—Wm.

229 Dutton, C. E. Geology of the high plateaus of Utah. With an atlas. Wash., D. C. 1880. 4to., atlas in folio, n. p. Dynamite, see Eissler 238; see also Explosives. A larger list on this subject will be found in Handy lists, part I.

Earth's crust. Page, D. 1868, Earth's history. Ansted D. T. 1s 6d. 620. 2s. 25.

Earth's surface, see Shaler 737.

Earthwork, setting out slopes of, see Light, 486.

230 East India. Hyderabad Decan Mining Company. Reports of committee,

with evidence. Lond. 1888. 4s. Pc. 230a Edison. General Electric Co. Descriptive circular, I. D. No. 5: Electric coal cutters. N. Y. 1891. 24mo., pap. gratis. E*.

Egan, F. W., Kilroe, J. R., Mitchell, W. F. Explanatory memoir to accompany sheet 24 of the maps of the geological survey of Ireland; com-231 prising portions of the counties Donegal and Tyrone. With paleontological notes by W. H. Baily. Lond. 1888. 2s.

Egleston, J. Catalogue of minerals and synonyms alphabetically ar-232 ranged for the use of museums. Wash., D. C. 1889. 8vo. pap., n. p.

Ga-

233 Egleston, T. Lectures on mineralogy. School of Mines. W. pl. N. Y. 1872. 8vo. \$4.50. Ck--V.

234 Egleston, T. Metallurgy of silver, gold, and mercury in the U.S. Showing the latest practice pursued in American metallurgical establishments, 2 vols., illus., pl. and tables. Vol. I: Silver. N. Y. 1887. 8vo. \$7.50. Vol. II: Gold and mercury. N. Y. 1890. 8vo. \$7.50. B—Ck—Sp—Wm.

Egloffstein, F. W., von. Contributions to the geology and the physical geography of Mexico. N. Y. (n. d.) 8vo. \$4.00 o. p. Am. 235

Eissler, M. The metallurgy of gold. A practical treatise on the mechani-236 cal preparation, amalgamation, concentration and chlorination of goldbearing ores. With notes on the melting, refining and assaying of gold. Illus. Lond. 1888. Cr. 8vo. 7s 6d; the same, 2d ed. Illus. Lond. 1889. Cr. 8vo. (12mo.) 9s. \$3.50; the same, 3d rev. and enl. ed. Illus. Lond. 1891. Cr. 8vo. (12mo) 12s6d. \$5.00 B—Ck—Lg—Sp—Wm.

237 Eissler, M. The metallurgy of silver: a practical treatise on the amalgamation, roasting and lixiviation of silver ores; including the assaying, melting and refining of silver bullion. Illus. Lond. 1889. P. 8vo. (12mo.) B-Lg-Wn. 10s 6d. \$4.25.

238 Eissler, M. The modern high explosives, nitro-glycerine and dynamite, their manufacture, their use, and their application to mining and military engineering; proxyline or gun cotton, the fulminates, picrates and chlorates; also the chemistry and analysis of the elementary bodies which enter into the manufacture of principal nitro-compounds. 3d ed. W. B-Cn-Wm. pl. N. Y. 1886. 8vo. \$4.00

Elderhorst, W. Manual of qualitative blow-pipe analysis and determinative mineralogy. New rev. ed., re-written by H. B. Nason. Illus. Phila. 1881. 12mo. \$2.50. Ck-Ps-V.

Electrical coal cutters. Edison. 1891, gratis 230a. Electrical mining apparatus, see Trevert 830a.

Electricity applied to coal mining, see Colliery 155.

Electricity applied to the ignition of blasting charges, see Andre 16.

Electrolysis.—Electro-deposition.

Classen, A. Analysis by electrolysis. 1887. \$2.50. 149.

Fontaine, H. Electrolysis. 1885. 9s. 260. Mc Millan, W. G. Electro metallurgy. 1890. 10s 6d. 507. Smith, E. F. Electro chemical analysis. 1890. \$1.00 756.

Watt, A. Electro-deposition. 9s. 871. Watt, W.H. Glavanoplastic manipulations. 1883. \$7.50.

Bonney, G. E. Electroplater's handbook 1891. 3s. 98. Dircks, H. History of electro-metall. 1863. 4s. 217. Gore, G. Electro-metallurgy. 1884. 6s. 311. Gore. The same 1877. \$2.50. 312.

McMillan, W. G. Treatise on electro-metallurgy. 1890. 10s 6d. 507. Napier, J. Manual of electro-metallurgy. 1876. 7s 6d. 571.

Napier. The same. 1876. \$1.50. 572. Shaw, G. Electro-metall. 1844. 7s 6d. 741.

Smee, A. Elements of electro-metallurgy. 1852. Scarce. 755. Watt, A. Electro-metallurgy pract. treated. 1889. 3s 6d. 872; see Byrne 129, Makins 511, Spon, parts 43, 44. 744; Watt 871.

Eliot, Chas. W., and Storer, F. H. Compendious manual of qualitative chemical analysis. 8th ed. rev. with co-operation of the authors, by Wm. R. Nichols. Illus. N. Y. 1883. 12mo. \$1.50. 240

241 Emanuel, H. On diamonds and precious stones: their history, value and properties; with simple tests for ascertaining their reality. Illus. Lond. 1887. Cr. śvo. 6s. \$2.75.

Emery, see Osborne 605; see also Corundum—Minerals.

242 Engert, A. C. The blowpipe-flame furnace, in vol. 1884, Soc. Eng. Trans. Engineering.—A large list of books on this subject will be found in Handy

Lists part 3.

243 Erni, H. Mineralogy simplified. Easy methods of identifying minerals, including ores, by means of the blowpipe, by flame reactions, by the spectroscope, and by humid chemical analysis, based on Prof. von Kobell's tables for the determination of minerals, with an introduction to modern chemistry. 2d rev. and enl. ed. Illus. Phila. 1885. 12mo. (Cr. 8vo.) \$3.00. B-Ck-Sp. 12s 6d.

Contents:—Chemical philosophy, auxiliary apparatus and manipulations in the laboratory, preparations of re-agents, blowpipe analysis and apparatus, re-action of oxides with general re-agents, colored flames, flame re-actions and spectrum analysis, special methods for detecting certain elements, determinative mineralogy, characteristic behavior of the most important ores before the blowpipe and with solvents.

Estimation of small quantities of phosphorus by spectrum analysis, see

Alleyne 13.

244 †Ethreidge, R. Stratigraphical geology and palaeontology, on the basis of Phillips. W. map, tables and pl. Lond. (n. d.) Demy 8vo. £1 14s.

245 †Etheridge, R. jr., and Jack, R. L. Catalogue of works, papers, pamphlets, official reports and maps relating to Australian and Tasmanian geology, mineralogy, palaeontology, mining and metallurgy, etc. Lond. (n. d.) Demy 8vo. 10s.

Eureka, Nevada. Silver lead deposits. Curtis, J. S. 1884. 179.

Examinations for colliery manager's certificate.

Twinney, A. J. G. Handbook of. 1878. (\$2.00) 840.

Excavating for flint.
Skertchly, S. B. J. Gun flints. 1879, 178 6d. 753.

Excavating, machinery for, see Andre 17.

Exhaust injector, see Percy II, 634.

Exhaustion of our coal mines, see Jevons, 424.

Experiments with explosives used in mines. Brown, M. W. 1890. n. p. 115a.

Explanatory memoir to accompany sheets 148, 149 of the maps of the geol-246 ogical survey of Ireland. Lond. 1888. E. Exploring minerals. See also Prospecting.

Phillips, J. S. Explorer's and assay. companion 1879. \$6.00. 645.

Explosion at St. Helen's colliery. Report and plan. Lond. 1888. 1s 1d. 247 Pc.

Explosion at Morningside colliery, Lanarkshire. Report and plan. Lond. 248 Pc. 1888. 7d. Explosions in mines. See also Accidents-Friction-Gases-Underground

Atkinson, W. N. Explosions in coal mines. 1886. 78 6d. 39.

Creswick, etc. Herman essay 1874. \$1.00. 174. Explosion at St. Helen's colliery. 1888. 1s 1d. 247. Explosion at Morningside colliery. 1888. 7d. 248. Higson, J. Explosions in coal mines. 1878. 7s 6d.

Plan to Report of explosion at Udston colliery. 1888. 6d. Purdy, W. Essay on colliery explosions. 1880. 50c. 663.

Report of explosion at Udston colliery. 1888. 11d. 678; see Campin, 134.

Explosives. See also Blasting—Dynamite.

Berthelot, M. P. E. 1883. 50c. 79.
Cundill, J. P. Dictionary of explos. 1889. 4s. 178.
Drinker, H. S. Explosive compounds. 1883. \$5.00. 225.
Drinker, H. S. Tunneling. 1888. \$25.00. 226.
Eissler, M. Modern high explosives. 1886. \$4.00. 238.
Foster, W. C. Explosives. 1888. 20c. 266.
Nursey, P. F. Explosive compounds. 588.
Nursey, Recent development in high explos. 591.

Nursey. Recent development in high explos. 591.

Nursey. Recent improvements in explosive compounds.

Report (50th annual) of explosives. 1891. 678a.

Williams, W. M. Explosive compounds. 901; see Bevans 81, Bloxam 90, Brannt-Wahl 111, Davies 209, Spon, part 10, 775.

Explosives, Bibliography of works on, see Bertholet 79. Explosive gases, see Hopton 382, 383; see also Gases.

Explosives used in mines. Brown, M. W. 1890, n. p. 115a.

249 Eyerman, J. Course in determinative mineralogy. Easton, Pa. 1890. 4to. pap. \$1.15. Eb—Sp—V.

- 250 †Fairbairn, Sir W. Iron, its history, properties and processes of manufacture. 3d rev. and enl. ed. Edinburgh 1869. Demy 8vo. (8vo) 10s 6d. \$4.50.
- 251 Fairchild, G. M., jr., ed. Canadian leaves; history, art, science, literature, commerce; a series of new papers read before the Canadian Club of New York. Illus. by T. Willing. Illus. and port. N. Y. 1887. 8vo. pap. \$1.00.

Contains also: McDougall, J. Mineral resources of Canada.

Fairley, W. Colliery managers' catechism. Contains more than 600 questions and answers. 2d ed. Lond. 1888. 3s 6d. \$1.40. o. p. Cn—Hw.

- Contains upward of 600 questions and answers under the following heads: Geology, ventilation, gases, varieties of coal and other fuel, steam boilers and engines, practical mining, mathematics, land and mine surveying, applied mechanics, statistics, miscellaneous subjects.
- 253 Fairley, W. The colliery manager's calculator, containing practical rules and tables. 4th ed. Lond. (n. d.) Cr. 8vo. (12mo) 3s 6d. \$1.40.0. p. Ck—Hw—V.
- 254 Fairley, W. The theory and practice of ventilating coal mines. Lond. (n. d.) 12mo, \$1.20.
- 255 Fairley, W. The ventilation of coal mines. (V. N. S. S.) N. Y. 1882. 24mo, bds., 50c. Ck—Cn—V.
 - Contents:—The movement of air; the resistance of air in moving along underground passages; the effect of splitting the air; how to find the pressure or power required to circulate a given quantity that will result from the application of a given pressure of power in a mine having unequal splits; ascensional ventilation; velocity of air; note on the coefficient of friction; miscellaneous exercises.
- 256 Fenwick, Th., and Baker, Th. Subterraneous surveying, elementary and practical treatise on; with and without the magnetic needle, and other modern improvements. Illus. (Weale's Ser.) Lond. 1888. 12mo. 2s 6d, 3s. \$1.00.
 Fiery mines. Mitton, A. D. 1890. 1s. 554.

Fire bricks, see Percy I, 632.

252

- 257 Fisher, O. Physics and the earth's crust. 2d ed., altered and enlarged. Lond. 1889. 8vo. 12s. Ma.
- Fleischer, E. A system of volumetric analysis. Trans. with notes and additions from the 2d German edition by M. M. P. Muir. Illus. Lond. 1877. Cr. 8vo. (12mo) 7s 6d. \$2.00.
 Flint formation. Galloway, W. B. 2s 6d. 288.
 Flints, see Gun Flints.
- 259 Flower, P. W. History of the trade in tin, a short description of tin mining and metallurgy. Illus. Lond. 1879. 8vo. 10s 6d, \$4.25. B—Bi—Ck. Flues.

Trewman, A. H. C. Flues and ventilation. 831. Fluor spar, see Davies 208.

- 260 Fontaine, H. Electrolysis. A practical treatise on nickeling, coppering, gilding, silvering, the refining of metals and treatment of ores by means of electricity. Trans. by J. A. Berly. Illus. Lond. 1885. 8vo. 9s. \$3.50.
 - gilding, silvering, the refining of metals and treatment of ores by means of electricity. Trans. by J. A. Berly. Illus. Lond. 1885. 8vo. 9s, \$3.50.

 B—Ck—Fa—Sp.

Footprints of the creator. Miller, H. 1889. 5s. 537.

- 261 Fordyce, W. History of coal, coke, coal fields, progress of coal mining, the winning and working of collieries, etc.; also iron, its ores and processes of manufacture. Illus. Lond. 1860. 4to. £2 12s 6d. \$15.00. Ck—Lo. Forge-hammers, see Overman 612.
- 262 Fossett, F. Colorado. A historical description and statistical work on the Rocky Mountains gold and silver mining region. Illus. and maps. N. Y. 1880. 12mo. \$2.50.
 Ck—Fo—V.
- 263 Fossil Fuel. The history and description of fossil fuel; the collieries and coal trade of Great Britain. Illus. Lond. 1841. 8vo. (\$4.00.)
- 264 Foster, J. G. Submarine blasting in Boston harbor, Mass., removal of Tower and Corwin rocks. W. pl. N. Y. 1869. 4to. \$3.50.

265 Foster, J. W., and Whitney, J. D. Report of the geology of the Lake Superior Land District. The iron and copper regions. 2 vols. Maps. Wash. D. C., 1850—51. 8vo, scarce. Ck-Ga-V.

Foster, W. C. Explosives and their composition. N. Y. 1888. 266 20c.

Cn-Ea.

Foundry practice. Hooper, H. R. Practice of Foundry work. 381. Kirk, E. Founding of metals. 1885. \$2.50. 457. Overman, F. Moulders' and founders' guide. 1882. see Spon, parts 48—50. 774. Spon parts 10, 11. 775. \$2.00. 610: N. B.-A larger list on this subject will be found in Handy Lists III.

267 Fowler, Geo. L. Fuels: Evaporation and combustion. Trans. from the French of J. Burchetti, and reduced to American standards. N. Y. 1887. 16mo, 50c.

Fowler, J. C. Collieries and colliers. A handbook of the law and leading 268 cases relating thereto. 3d ed. Lond. 1872. 12mo (16mo) 7s 6d, \$3.00. Ck-Lm.

269 Foye, J. C. Chemical problems, with brief statements of the principles involved. 2d enl. and rev. ed. (V. N. S. S.) N. Y. 1885. 18mo. 50c.

oye, J. C. Handbook of mineralogy, determination, description and classification of minerals found in the United States. (V. N. S. S.) N. Y. 270 1886. 24mo, bds. 50c. B-Ck-V.

Foye, J. C. Tables for the determination, description and classification of minerals. 2d rev. ed. Illus. Chic. 1882. 12mo. \$1.00. Ck—M. 271

Frazer, P., jr. Tables of minerals. Tables for the determination of min-272 erals by their physical characteristics. Trans. from the German of Albin Weisbach. Lond. 1875. Cr. 8vo, 10s, \$4.00; the same, new rev. ed.

Phila. 1877. 8vo, \$2.00. Ck—Ld—Te.

Frazer, P., jr. The same, by physical properties ascertainable with the aid of a few field instruments. Based on the system of Prof. Weisbach. 3d entirely rewritten ed. Phila. 1891. 12mo, roan \$2.00. Ld—V.

Fream, W. Soils and their properties. Illus. (Bell's Agric. Ser.) Lond. 1890. 274 Cr. 8vo, 2s 6d.

Freiberg barrel, see Aaron, 4. French, B. F. History of the rise and progress of the iron trade in the United States from 1621 to 1857. With many statistical tables relating to 275 the manufacture, importation, exportation and prices of iron for more than a century. N. Y. (n. d.) 8vo. \$2.00 Ck—V—Wm. Fresenius, C. A manual of qualitative chemical analysis. 9th ed. Lond.

276 1876. 8vo. 12s 6d. \$5.00. Bs-Cg-Fa-V.

Fresenius, C. R. A manual of qualitative chemical analysis. Trans. into the new system and newly edited by Sam. W. Johnson. New rev. and 277 the new system and newly edited by Sam. W. Johnson.

enl. ed. N. Y. 1888. 8vo. \$4.00. Ck—Wm. Fresenius, C. Manual of quantitative chemical analysis. 7th ed. Lond. 1876. 8vo. vol. I 15s. \$6.00; vol. 2. Parts 1, 2. Lond 1885, '86. Each 2s 6d. \$1.00.

Fresenius, C. R. A system of instruction in quantitative chemical analy-279 sis. From the latest English and German editions. Ed. by O. D. Allen and S. W. Johnson. New ed. with the new notation and nomenclature. Illus. N. Y. 1888. 8vo. \$6.00 B-Ck-Wm.

Friction of air. See also Explosions—Gases—Ventilation. Atkinson, J. J. Friction of air in mines. 1875. 50c. 37. see James 414, Wilson 907.

Frodlingham iron field, see Dove, G. 222.

Fuchs, C. W. C. Practical guide to the determination of minerals by the blow-pipe. Trans. and ed. by T. W. Danby. Interleaved. Lond. 1875. 280 8vo. 5s. \$2.00.

Fuel for our fires; or coal-pits, colliers, and their dangers. Lond. 1871. Sq. 281 16mo. 1s 6d. Fuel. See also Artificial F.—Air as F.—Coke—Coal—Charcoal—Gaseous F. Liquid F.—Natural Gas—Oil—Peat—Petroleum.

Abbot, A. V. Treatise on fuel. 1891. 50c. 5. Bayley, T. Assay and analysis of iron, fuel, etc. 1890. 3s 6d.

Bull, M. Experiments to determine value of fuel 1827. \$1.25. 124.

Clark, D. K. Fuel. 1879. 4s 6d. 148. Fossil fuel. 1841. \$4.00. 263.

Fowler, G. L. Fuels. 1887.

Fuel for our fires. 1871. 1s 6d. 281. Galloway, R. Treatise on fuel. 1880. 6s.

Mills, Rowan, etc. Fuel and its application. 1889. \$7.50. 545. Phillips, H. J. Fuels, solid, liquid, and gaseous. 1890. 3s 6d. Siemens, C. W. Fuel. 1873 50c. 746.

Thurston, R. H. Materials of engineering. 1, 1883. \$3.00. 823. Williams, C. W. Fuel. 1886. 3s 6d. 895; see Barr 51, Brannt-Wahl, 111, Brown 118, Fairley 252, Kerl III, 445, Percy I, 632, Phillips 643, Spon, part 50, 774.

Fuel, consumption of, in iron and steel manuf. see Jeans 418.

Fuels, valuation of, see Phillips 636.

Fuel value of natural gas, see Ashburner 33.

Furnace, see Mills 545, Percy I, 632, Peters 635, Spon parts 50, 51. 774; see also Blast Furnace—Puddling.

Furnace products, see Rammelsberg 664.

Galbraith, W. Certain chemical phenomena in the manufacture of steel. In 1890, I, No. 434. 282

Galbraith, W. Estimation of phosphorus in the Basic Siemens steel bath. 283 In 1890, I, No. 434.

284 Galletly, A. Coal, in Bevan's B. M. I., No. 81.

285 Galloway, R. Fundamental principles of chemistry practically taught by a new method. Illus. and numerous exercises and answers. Lond. 1888. Cr. 8vo. (12mo) 6s 6d, \$1.75. B—Lm—Wn.

Galloway, R. History of coal mining in Great Britain. Lond. 1882. P. 8vo. 286

(12mo) 7s 6d, \$2.00.

(12mo) 7s 6d, \$2.00.

Ck—Ma.

alloway, R. Treatise on fuel, scientific and practical. Illus. Lond. 1880. 287 Galloway, R. 8vo, 6s, \$2.40.

288 †Galloway, W. B. Chalk and flint formation. Illus. by facts and specimens. Lond. (n. d.) 8vo. 2s 6d.
289 Galloway, W. B. Science and geology in relation to the universal deluge. Lond. 1888. Demy 8vo. 8s 6s.
Lo. Gas Coals.

Graham, D. A. Comparative value of gas coals and cannels. 1883. 78 6d.

Gas furnaces, see Mills 545.

290

Gas wells, see Natural gas. Gaseous fuel. See also Fuel.

Bell, I. L. Gaseous fuel. 64.

Sutherland, W. L. Production and utilization of gaseous fuel. 788. Sutherland, W. L. Most recent results in application of gaseous fue Thwaite, B. H. Gaseous fuel. 1889. 18 6d. 825. Most recent results in application of gaseous fuel. 789.

Gases in mines. See also Friction—Ventilation—Explosions.

Atkinson, J. J. Pract. treat. on gases met in coal mines. 2s. 37a; 1886. 50c. 38.

Coal mine gases. 1878. 10s. 6d. 541.

Thomas, J. W. Treat. on coal mine gases, etc. 1878. 10s 6d. 815, see Mauchline 527.

Gautier, F. A neutral lining for metallurgical furnaces, in 1886, I. No. 434.

291 Geikie, A. Classbook of geology. Illus. Lond. 1886. Cr. 8vo. (12mo) 10s 6d, \$2.60, net; the same, 2d ed. Illus. Lond. 1890. P. 8vo. 4s 6d, \$2.86, net.

292 †Geikie, A. Elementary lessons in physical geography. Illus. Lond. (n. d.) Fcap 8vo. 4s 6d. Questions on the same, 1s 6d.

293 Geikie, A. Geological sketches at home and abroad. Illus. Lond. 1882. 8vo, 10s 6d.

Contents:—My first geological excursion; "the old man of Hoy;" the baron's stone of Killochan; the colliers of Carrick; among the volcanoes of Central France; the old glaciers of Norway and Scotland; rock-weathering measured by decay of tombstones; fragment of primeval Europe; in Wyoming; geysers of the Yellowstone; the lava fields of northwestern Europe; the Scottish school of geology; geographical evolution; the geological influences which have effected the course of British history.

Geikie, A. Geological sketches at home and abroad. 2 parts. (Humboldt Lib.) N. Y. 1882. 8vo, pap. 30c.

Geikie, A. Geology. New ed. Illus. Lond. (n. d.) 18mo. 1s.

Ma. 294

295 †Geikie, A.

Outlines of field geology. 3d ed. Illus. Lond. 1882. Cr. 8vo. 296 Geikie, A. 12mo. 3s 6d, \$1.00, net. B-Cn-Ma-V.

297 †Geikie, A. Primer of geology. (Science Primers) Lond. (n. d.) 18mo. 1s;
the same, N. Y. 1889 18mo. 35c., net.
298 Geikie, A. The scenery of Scotland. Viewed in connection with its phys-

ical geology. 2d ed. Lond. 1887. P. 8vo. 12s 6d. 299

Geikie, A. Textbook of geology. 2d ed. Illus. Lond. (1882) 1886. Med. 8vo. (8vo) £1 8s, \$8.25, net. B-Ma-V.

Geikie, J. Outlines of geology: an introduction to the science for junior 300 students and general readers. 2d rev. ed. Illus. Lond. 1888. La. P. 8vo. 128.

Geikie, J. Pre-historic Europe. A geological sketch. W. map and illus. 301 Lond. 1881. Med. 8vo. (8vo) £1. 5s. \$7.50. Ld-Sr.

Gems. See also Pearls—Precious Stones—Diamonds.

King, C. W. Handbook of engraved gems. 1885. 16s. King, C. W. Natural history of gems. 1870. 6s. 451.

Kunz, G. F. Gems and precious stones of North America. 1890. \$10.00.

Sommerville, M. Engraved gems. 1877. \$1.25. 770. Streeter, E. W. Precious stones and gems. 1881. 15s. 783.

Westropp, H. M. Manual of precious stones and antique gems. 1874. 68.

Geological maps, see Bird 82, Gwinnell 343, Mantell 516, Prestwich 658, 660; Rogers 699, Sweet 796.

Geologicals observation relating to brickmacking in Western India. Walsh, M. 1869. 1s. No. 864.

Geological phenomena, see Shaler 737.

Geological Record for 1880-84. Edit. by Wm. Topley and C. D. Sherborn. 302 Vol. 1: stratigraphical and descriptive geology. Lond. 1888. 8vo. 16s.; the same, vol. II: Physical and applied geology, petrology, meteorites, mineralogy, mineral waters, palaeontology. W. maps and sections. Lond. 1889. 8vo. 16s.

Geological societies of Great Britain, see Official year book 596, 597.

Geological Survey. England and Wales. The geology of the Chevoit Hills (English side.) Explanation of quarter-sheet 108 N. E. New series, sheet 5; by C. T. Clough. Lond. 1889. 1s. 6d.

304 Geological Survey. England and Wales. The Geology of the country around East Dereham. Explanation of quarter sheet 66 N. W. By J. H. Blake. Parts by H. B. Woodward and F. J. Bennett. Lond. 1889. 1s 6d.

Geology, applications of, to arts, etc. Ansted, D. Th. 4s. 24.

Geology. Chemical, physical, stratigraphical.

Bischof, G. Elements of chem. and physical geol. 1854. 31s. 83.

Etheridge, R. Stratigraphical geol. 34s. 244.

Phillips, J. Manual I: physical geol. 1885. 18s. 639. Phillips, J. Manual II: stratig. geol. 1885. 34s. 640.

Prestwich, J. Geology I: chemical 1886. 25s. 658.

Prestwich, J. Geology II: physical and stratig. 1888. 36s. 658. Seeley, H. G. Physical geol. 18s. 736. Sharp, S. Rudim. of geol.: phys. and stratig. 4s. 740. Tate, R. Physical geol. 1879. 2s. 867. Test. Phys. and Stratig. 4s. 67. 1889.

Tate. Phys. and historical geol. 4s 6d. 808.

Elementary treatises.

Andrews, E. B. Elementary geology. \$1.00 net 21. Ansted, D. T. Earth's history. 2s. 25. Ansted, D. T. Elementary course of geology. 12s. 26.

Bird, C. Elementary Manual of geology. 1890. 2s 6d. 82.
Bonney, T. G. Elementary manual of geology. 1s. 100.
Cleaveland, P. Elem. treat. on mineralogy and geology. 1822. \$3.00. 151.
Davis, W. S. Geology. 1s. 210.
Davis. The same 75c. 211.

Geikie, A. Elementary lessons in physical geography. 48 6d. 492.

Geikie, A. Primer of geology. 1889. 1s. Hall, S. R. Alphabet of geology. 1889. 18. 297.
Hall, S. R. Alphabet of geology. 64c net. 348.
Hogan, K. E. Elem. mineral. and geology. 1889. 50c. 377.
Hooker, W. Mineralogy and geology. 90c net 380.
Hutton, F. W. Class-book of geology. 1s 6d. 404.
Loomis, J. R. Elements of geology. 94c net. 497.
St. John, S. Elements of geology. \$1.50 o. p. 727.
Scholar, First book in geology. 1884. \$1.00. 738. Shaler. First-book in geology. 1884. \$1.00. 738. Sharp, S. Rudiments of geology. 4s. 740. Skertchley. Geology. 1s. 752. Southwick, A. P. Questionbook of geology. 1883. 10c 773. General and popular treatises. See also Petrology—Rocks—Palaeontology-Silurian system-Town Geology. Agassiz, L. Geological sketches. 2v. 1886. each \$1.50. 9. Alford, C. J. Geological features of the Transvaal. 1891. 5s. 10. Anstedt, D. T. Scenery, science, and art. 10s 6d. 29. Argyll, Duke. Continuity and catastrophes in geology. 1s. 31. Buckland, F. T. Geology and mineral. 2v. each 5s. 121. Campbell, J. F. My circular notes. 6s. 132. Campbell, J. F. My circular notes. bs. 152.
Clement, E. Tabular view of geological systems. 1s. 152.
Cole, G. A. J. Aids in practical geology. 1891. 7s 6d. 154.
Cyclopaedia of arts and sciences. \$6.00. 180.
Darton, N. H. Progress in North American geology. 1886, 199.
Darwin, C. Naturalist's voyage. 1889. 3s 6d. 200.
Darwin. Journal of researches. 1890. 21s and \$5.00. 201.
Darwin. The same. 1890. 4s. 202.
Darwin. Geological observations. 12s 6d. 203.
Darwin. The same. 1891. \$2.50. 204. Darwin. Geological observations. 12s 6d. 203.
Darwin. The same. 1891. \$2.50. 204.
Dawson, J. W. Geological history of plants. 1888. \$1.75. 214. Etheridge, and J. Catalogue of works, etc. 10s. 243.
Fischer, O. Physics of earth's crust. 1889. 12s. 257.
Galloway, W. B. Science and geology rel. to the universal deluge. 1888. 8s 6d. 289. Geikie, A. Geological sketches. 1882. 10s 6d. 293; 30c. 294. Geikie, A. Scenery of Scotland, viewed in connection with physical geolgy. 1887. 12s 6d. 298. Geikie J. Outlines of geology. 1888. 12s. 300. Geikie, J. Prehistoric Europe. 1881. 25s. 301. Geological record 1880—84. 1888, 89. Each 16s. 302. Gelkie, J. Prehistoric Europe. 1881. 25s. 301.
Geological record 1880—84. 1888, 89. Each 16s. 302.
Geological survey, 1889. 1s 6d. 303.
The same. 1889. 1s 6d. 304.
Geology of Southwold and Suffolk coast. 1888. 2s 6d. 305.
Geology of carboniferous limestone. 1888. 5s 6d, 306.
Gilbert, G. K. Geology of Henry Mountains. 1881. 307.
Green, A. H. Geology I. 1882. 21s. 319.
Gwinnell, W. F. Geology in system. Notes and tables. 1889. 4s. 343.
Hull, E. Geological history. 1887. 3s 6d. 391.
Hunt, T. S./ Progress of geology in 1883. 395. Hunt, T. S. Progress of geology in 1883. 395. Hunt, T. S. Chemical and geolog, essays. 1890. \$2.50. 397. Hunt, T. S. Mineral physiology. 1886. 1890. Each \$5.00. 399. 400. Hutchinson, R. N. Autobiography of the earth 1891. \$1.50. 403. Irving, A. Chemical and physical studies in metamorphism of rocks. 1889. 58. 411. Jukes-Browne, A. J. Building of the British Isles. 78 6d. 436. King, and R. Old chapter of geological record. 108 6d. 452. Lardner, D. Popular geology. 28 6d. 472. Lardner, D. Popular geology. 2s 6d. 472.
Lee, J. E. Notebook of an amateur geologist. 1881. 21s. 479.
Lobley, J. L. Geology for all. 1888. 2s 6d. 491.
Mantell, G. A. Medals of creation. 15s. 515.
Mantell. Wonders of geology. 2 v., each 7s 6d. 516.
Marvels of geology. 1888. 1s. 521.
Miller, H. Cruise of "Betsey." 1889. 3s 6d. 535.
Miller, H. Cruise of "Betsey." 1889. 3s 6d. 535. Edinburgh and its neighborhood. 5s. 536 Footprints of the Creator. 1889. 5s. 537. Miller. Miller. Sketchbook of popular geology. 1889. 5s. Old red sandstone. 1889. 5s. 539. Testimony of the rocks. 1889. 5s. 540. Miller. Miller.

Morris, and J. First series: heads of lectures on geology. 28 6d. 557.

GEO-GEO New measure for old time. 1889. 2d. 574. Nicols, A. Geological history. 1880. \$1.25. 584. Page, D. Earth's crust. 1868. 186d. 620. Page. Geology for general readers. 1866, 6s. 617. Page. Handbook of geological terms and geology. 1865. 7s 6d. 618. Phillips, J. Guide to geology. 1864. 4s. 638. Phillips. Manual of geology. 1885. 18s. 639. Phillips. The same, II. 1885. 34s. 640. Prestwich, J. Geological inquiry respecting water-bearing strata. 88 6d. Prestwich. Geology. 2 v. 1886-88. 61s. 658. Reason why. 3s 6d. 675. Roscoe. What the earth is composed of. 6d. 707.
Shaler, N. S. Aspects of the earth. 1889. \$4.00. 737.
Smith, E. H. Pocket geologist. 1890. \$1.00. 758.
Smith, P. Geology and scripture. 1852. 5s. 760.
Sopwith, J. Treat. on isometrical drawing applied to geological plans. \$5.00. o. p. 771. Taylor, J. E. Geological stories. 2s 6d. 810. Timbs, J. Yearbook of facts in science. 1862-73. \$10.00. 827. Verifier. Scepticism in geology. 6s. 853.
Williams, S. G. Applied geology. 1886. \$1.20, net. 899. Winchell, A. Geological excursions. 1889. \$1.25. 909. Geolog. studies. 1889. \$3.00. 910. Shall we teach geology. 1889. \$1.00. 911. Sparks from a geologist's hammer. 1887. \$2.00. 912. Winchell, A. Winchell, A. Winchell, A. Walks and talks in the geolog. field. 1886. \$1.00. 913. Winchell, A. World life. 1889. \$2.50. 914. Our world. 2s. 948; Winchell, A. Wright, Mrs. see Booth and M. 102. Textbooks. eology, Textoooks.

Ansted. D. T. Geologist's textbook. 3s 6d. 27.

Bakewell, F. C. Illustrated geol. 2s. 44.

Barbee, W. J. First principles of geol. \$1.25. 49.

Dana, J. D. Geological story. 1880, \$1.50. 194.

Dana. Manual of geol. 1880, \$4.50. 190.

Dana. Textbook of geol. 1883, \$2.50. 193. Etheridge, R. Stratigraphical geol. 34s. 244. Geikie, A. Classbook of geol. 1890. 4s 6d. 291. Geikie. Geology. 1s. 295.

Geikie. Outlines of field geol. 1882. 386d. 296.. Geikie. Textbook of geol. 1886. 28s. 299. Haughton, S. Manual of geol. 1876. 786d. 362. Haughton, S. Manual of geol. 1876. 78 6d. 362.

Jukes-Browne, A. J. School manual of geol. 1890. 48 6d. 437.

Jukes-Browne. Student's historical geol. 1886. 6s. 438.

Jukes-Browne. Student's physical geol. 1884. 6s. 439.

Le Conte, J. Compend of geol. \$1.20, net. 476.

Le Conte. Elements of geol. 1886. \$4.00. 477; 1891. \$4.00. 478.

London geological field class 1888. 1s. 496.

Lyell, C. Principles of geol. 1867. 32s. 501.

Lyell. The same. 2 v. 1872. \$8.00. 502.

Lyell. Student's elem. of geol. 9s. 503.

Nicholson, H. A. Textbook of geol. \$1.05 pet. 579 Nicholson, H. A. Textbook of geol. \$1.05, net. 579. Oldham, T. Geol. glossary for students. 2s. 601. Page, D. Advanced textbook of geol. 1876. 786d. 616. Page. Introductory textbook of geol. 1888. 38 6d. 619. Steele, J. D. Fourteen weeks in geol. \$1.00. 779. Tate, R. Historical geol. 1872. 2s 6d. 806. Tate. Physical geol. 1879. 2s. 807. Tate. Histor, and physical geol. combined. 4s 6d. 808. Tenney, S. Geology. \$1.25, net. 813.

Geology. Special localities.

Abyssinia, see Blanford 89. America, see Marcou 520.

Arkansas, see Owen 615, California, see Blake 86; California 9th rep. 129c. Comstock Lode, see Becker 61. Dakota, see Newton 575. Henry Mountains, see Gilbert 307. Illinois, see Worthen 946. Indiana, see Owen 613. Iowa, see Owen 614. Mexico, see Egloffstein 235. Minnesota, see Owen

614, Winchell 915—34; 936. Mississippi expedition 551. Nebraska, see Owen 614. North America, see Miller 542. Ohio, see Clappole 150, Economic 600, Orton 603, Report 598, Roy 718, Shaler 739. Pennsylvania, see Rogers 700. South Carolina, see Tuomey 837. Tennessee, see Safford 726. United States,846, 847. Utah, see Dutton 229. Virginia, see Boyd 108, Campbell 133, Rogers 702, Virginia 855. Washoe District, see Becker 61. Wisconsin, see Owen 614.

Great Britain Ireland and colonies.

Cambridgeshire, see Bonney 99. Cheshire, see Strahan 782. Clapham, see Prestwich 659. Cornwall, see 800. Devon, see Symonds 800. Dorset coast, see Mantell 513. England, see Geol. survey 304; Geology 305, 306; Memoirs 530, 531; Ramsay, 666; Woodward 945. Ireland, see Egan 231, Explanatory 246, Hull, 390. Isle of Wight, see Mantell 513. Liverpool, see Morton 560. London, see Prestwich, 659. New Brunswick, see Dawson 213. Newfoundland, see 568. North Derbyshire, see 306, Nova Scotia, see Dawson 213. Oxford, see Phillips 637. Prince Edward Island, see Dawson 213. Portland see Damon 184. Salomon Islands, see Guppy 341. Shropshire, see La Touche 474. Southwold, see Geology 305. Suffolk coast, see Geology 305. Thames Valley, see Phillips 637. Wales, see Symonds 800. Weymouth, see Damon 184. Yorkshire, see Green 322.

Tyrol, see Dale 183.

307

308

305 Geology of Southwold, and of Suffolk coast, from Dunwich to Covehithe-Lond. 1888. 2s 6d.
E.

Geology of the carboniferous limestones, Yordale rocks, and millstone grit of North Derbyshire. 2d ed. with addit. Lond. 1888. 5s 6d.
 German silver, see Krupp and W. 463.

Gilbert, G. K. Geology of the Henry Mountains. 2d ed. Illus. Wash., D. C. 1881.

Gill, Wm. Iron ore district of Bilbao, in 1882, I, No.434.

309 Glanville, E. The South African Goldfields. Lond. 1888. Cr. 8vo. pap. 1s. Sn.

Gloucestershire, coalfields of Anstie, J. 31. Gold, alloys, see Krupp and W. 463. Gold, amalgamation of, see Eissler 236, McDermott 504. Gold, chlorination of, see Eissler 236. Gold, concentration of, see Eissler 236. Gold extraction by potassium cyanide, see California 129d. Goldfields.

Glanville, E. South African goldfields, 1888. 1s. 309. Jennings, S. Visit to goldfields in S. E. Wynaad. 1881. 5s. 423. Mathers, E. P. Golden South Africa. 1888. 2s 6d. 523. Mitchell, H. Diamonds and gold of S. Africa. 1888. 5s. 552; see Lock 493.

Gold, metallurgy of, see Kerl I, 445; Percy V, VI, 632; Phillips 643.

Gold mines and mining. See also Auriferous—Hydraulic Mining—Quartz. Barry, W. Venezuela: Guyanna gold mines. 1886. 6s. 53. Belt, T. Gold mines of Chontales. 1888. 7s 6d. 75. Blake, W. P. Report on precious metals. 1869. 2.00. 87. Fossett, F. Colorado: Rocky Mountain region. 1888. \$2.50. 262. Guillaume, H. Amazon provinces: gold mines. 1888. 3s 6d. 340. Ingram, J. F. Land of gold, etc. 1889. 2s 6d. 407. Kirkpatrick, T. S. G. Hydraulic gold miner's manual. 1890. 6s. 459. Lock, A. G. Gold: occurence and extraction. 1882. 52s 6d. 493. Lock, C. G. W. Pract. treat. on gold mining. 1889. 42s. 494; see Davies 209, Eissler 236, Lock 495a, Osborn 605, Spon, parts 53, 54. 774; Smith 759; Swinney 798.

Gold mining in India. Ryan J. 1881. 6d. 724. Gold of India. Ball, V. 1881. 5s. 47.

Gold ores. See also Milling of gold ores.

O'Driscoll, F. Treatment of gold ores. 1889. \$2.00. 595.

Gold ores, assaying of, see Aaron 1.
Gold ores, leaching of, see Aaron 3.
Gold ores, mechanical preparation of, see Eissler 236.
Gold seekers' manual. Ansted, D. T. 3s 6d. 28.
Gold washing, see Hydraulic mining.

Gold, working of, see Bevan's 81.

310 Goodyear, W. A. The coal mines of the western coast of the United States.

San Francisco, Cal., 1877. 12mo, \$2.50.

Bc.—Ck—Cn—Wm.

Gore, G. The art of electro-metallargy, including all known processes of 311 electro-deposition. Illus. (Textb. of Sci.) Lond. 1884. Fcap. 8vo. (12mo) 6s. \$2.25.

Gore, G. The same. Illus. N. Y. 1877. 12mo. \$2.50. B-Fa-Lm.

Am-Ck.

Gorham, J. A system for the construction of crystal models on the type of an ordinary plait, exemplified by the forms belonging to the six axial systems of crystallography. W. 55 pl. Lond. 1888. Cr. 8vo. (12mo) 6s. \$2.00.

314 Gower, A. R. Elementary textbook of practical metallurgy. Lond. 1888. P. 8vo. (12mo.) 3s. \$1.20.

315 Graham, D. A. A treatise on the comparative commercial values of gas coals and cannels. W. pl. Lond. 1883. 8vo. 7s 6d. \$3.00. Ck-Cn-Sp.

316 Graham, W. The brass founders' manual: instructions for modelling, pattern making, moulding, turning, etc. 2d. rev. ed. (Weale's Ser.) Lond. (1883) 1887. 12mo. 2s, 80c. and 2s 6d, \$1.00. Ck—Lg—V. Graham, W. Brass, tin and zinc, in Bevan's B. M. I., see No. 81.

317 Grange mine explosions, see Atkinson 39. Granite and granite industries. See also Stone. Harris, G. F. Granite, etc. 1888. 2s 6d. 353; see Davies 208, Hunt 397, Winchell 926.

Granitic veinstones, see Hunt 397.

- 318 Grant-Francis, G. History of copper smelting in the Swansea district of South Wales from the time of Queen Elizabeth to the present day. With engrav. and photos. 2d ed. Lond. (1867) 1881. 8vo, 10s 6d, \$5.50; the same, large paper, Lond. 1881. Cr. 4to. Roseburghe, with Malachite lin-
 - N. B.—A new and improved edition, enlarged by additional information, further illustrations and explanatory notes. It includes a mass of evidences of the time of Queen Elizabeth (from the Public Record Office), from which he has given verbatim transcripts of details of the most interesting and valuable nature in a social and mercantile sense; with much that is extremely curious in reference to the manipulation of mines, furnaces, and the chemistry in practice during her reign.

Graphite, see Davies 208; see also Minerals.

319 Green, A. H. Geology. Part I: Physical geology. Illus. Lond. 1882. 8vo. £1 1s. \$8.40. Lm-Rn-V

- 320 †Green, A. H. More about coal. How coal and the strata in which it is found were formed. Illus. (Mauch. Sci. Lect.) Manch. (n. d.) Cr. Svo. 1d.
- 321 Green, A. H. Notes on the Yorkshire coalfields, in 1876, II, No. 434.

Green, A. H., and Russell, R. Geology of the Yorkshire coalfield. 322 Lond. 1879. Roy, 8vo. £2 2s.

- Green, Miall, Thorpe, Ruecker, and Marshall. Coal: its history and its uses. 323 Lond. 1878. 8vo. 12s 6d. \$3.00 net. Ma.
- Greene, Homer. Coal and the coal mines. Illus. from drawings by the author. (Riverside Lib. for Young People.) Bost. 1889. 16mo. 75c. Hp. 324
- Greenwell, G. C. Geological features of the Great Northern coalfield, in 1877, II, No. 434 325
- Greenwell, G. C. Glossary of terms used in the coal trade of Northumber-326 land and Durham. 3d ed. Illus. Lond. 1889. 8vo. Pap. 5s.
- Greenwell, G. C. Practical treatise on mine engineering. 2d ed. re-written 327 and enl. Illus. (Newcastle) Lond. 1870. 4to. half mor. £ 2. 12s 6d, o. p. and scarce.
- Greenwell, G. C. Practical treatise on mine engineering. 3d ed. re-328 printed from the 2d ed. W. 64 col. pl. Lond. 1889. Roy. 4to. 158,\$ 6.00.
- 329 Greenwell, G. C. The same. 3d ed. N. Y. 1889. 16mo, bds. 80c.
- Greenwood, Wm. H. Steel and iron; comprising practice and theory of the 330 several methods pursued in their treatment in the rolling mills, the forge and the foundry. Illus. Lond. (1884) 1887. Cr. 8vo. (12mo.) 5s, \$2.00. B-Cb-Ck-V-Wn.
- 331 †Greenwood, W. H. Manual of metallurgy. 2 vols. Illus. (Coll. S. T. B., adv. Ser.) Lond. P. 8vo., vol. I, 3s 6d.; II, 3s.

332 †Greg, Robt. Ph., and Lettsom, Wm. G. Manual of the mineralogy of Great Britain and Ireland. Illus. Lond. (n. d.) 8vo. 15s.

Gresley, W. S. Glossary of terms used in coal-mining. Lond. 1883. P. 8vo.(12 mo) 5s. \$2.00. 333 Illus. and diag. Ck-Cn-Sp-V.

334 Griffin, J. J. System of Crystallography, with its application to mineralogy. Glasgow 1841. 8vo. 98. \$4.50. Grinding ores, see Aaron 4. Grindstones, see Osborn 605, Spon, part 54, 774.

335 Gripper, Chas. F. Railway tunneling in heavy ground. W. pl. Lond. 1879. Roy. 8vo, (4to) 7s 6d. \$3.00. B—Ck—Sp—V. Ground beneath us. Prestwich, J. 3s 6d. 659.

336 Groves, Chas. Edw., and Thorpe, Wm., eds. Chemical technology; or chemistry in its application to arts and manufactures vol. I, see No. 545.

Bs-Cg-Ck-Sp. Gruner, M. L. The manufacture of steel. Trans. from the French by L. 337 Smith; with an appendix on the Bessemer process in the United States, by the translator. Illus. and pl. N. Y. 1872. 8vo. \$3.50. Ck—Sp—V—Wn.

Gruner, M. L. Studies of blast furnace phenomena. Trans. with the author's sanction, with an appendix by L. D. B. Gordon. Illus. Lond. 338 1873. 8vo. 7s 6d. \$3.00. B-Ck-Pi.

Guettier, A. Practical guide for the manufacture of metallic alloys, comprising their chemical and physical properties, with their preparation, 339 composition and uses. Trans. by A. A. Fesquet. Phila. 1872. 12mo. \$3.00, 12s 6d. B-Ck-Sp.

The Amazon provinces of Peru as a field for European 340 Guillaume, H. emigration, statistical and geograph. review of the country and its resources, includ, the gold and silver mines; together with valuable information. W. map and illus. Lond. 1888. P. 8vo. 3s 6d. Ww. Gun flints.

Skertchly, S. B./J. Manuf. of gun flints 1879. 178 6d. 753.

Gun metal, see Krupp and W. 463, Spon, part 54. 774; see also Metallic Alloys.

Guppy, H. B. The Salomon Islands, geology, and general features, etc. 341 Lond. 1887. Roy. 8vo. 10s 6d.

Gurney, H. P. Elementary manual of crystallography. Lond. 1878. 18mo. 342 1s, 40c. Sm-V. Guyana gold mines, Venezuela. Barry, W. 1886. 6s. 53.

Gwinnell, W. F. Geology in systematic notes and tables. 343 2d ed. Illus. and geolog. map of Gt. Britain. Lond. 1889. 8vo. 4s. Ab.

Gypsum, see Davies 208, Hunt 397; see also Minerals.

344 Wales, in 1875, II, No. 434. Note on the manufacture of anthracite coke, in South

Hadfield, R. H. Alloys of iron and silicon, in 1889, II, No. 434. 345

Hale, P. M. In the coal and iron counties of North Carolina. 346 W. map. N. Y. 18\$3. 12 mo. \$1.50. Ck—Ha—Ne.

Hall, C. E. The conversion of peat into fuel and charcoal, in vol. 1876, 347 Soc. Eng. Trans.

348 Hall, S. It. Alphabet of geology, or first lessons in geology and mineralogy, with suggestions on the relation of rocks to soil. Illus. N. Y. (1868) 12mo. 64c net

Haloid minerals, see Davies 208; see also Minerals. Hamilton, L. Mexican law. A compilation of Mexican legislation, with 349 Mexican mining law (and decisions.) San Francisco, 1882. 8vo. shp. \$6.00 net. Ck-Hc.

Harker, A. The Bala volcanic series of Caernarvonshire and associated 350 rocks: being the Sedgwick price essay for 1888. Oxford 1889. 8vo. 7s 6d.

351 Harper, J. Povey. Examples of coal mining: a series of working drawings of coal mining plant consisting of 37 large plates, 2ft. by 1ft. 8in., accurately drawn to scale, and sufficiently large for working drawings, including designs for workmen's houses. Lond. 1881. £2. 12s 6d. \$21.00; without designs for workmen's houses. Lond. 1881. £2. 5s. \$18.00.

Ck-Cn-Sp-V.

Harper, J. Povey. Second series of examples of coal mining plant. Uni-352 form in size with No. 351. Large plates. Lond. (n. d.) £ 1. 5s. \$10.00. Cn-Sp.

353 Harris, G. F. Granites and our granite industries. Illus. Lond. 1888. P. 8vo. 2s 6d.

Hartley, F. W. The commercial value and purity of coal, in vol. 1869, 354 Soc. Eng. Trans.

355 Hartwig, G. Marvels under our feet. From the "Subterranean World". Illus. Lond. 1888. P. 8vo. 2s. Lm.

Hartwig, G. The subterranean world. Illus. and 3 maps. Lond. 1881. 356 8vo. 10s 6d. Lm.

357 Hartwig, G. Volcanoes and earthquakes. Illus. Lond. 1887. Cr. 8vo. 2s 6d. \$1.00. Lm.

Hartwig, G. Workers under the ground; or mines and mining. 358 From the "Subterranean World". Illus. Lond. 1883. P. 8vo. 2s.

Haskoll, W. D. Engineer's mining surveyor's, and contractor's field-book. 359 Consisting of a series of tables, with rules, explanations of systems, and use of theodolite for traverse surveying and plotting the work with minute accuracy by means of straight edge and set square only; levelling with the theodolite, casting-out and reducing levels to datum, and plotting sections in the ordinary manner; setting-out curves with the theodolite by tangential angles and multiples with right and left-hand readings of the instrument; setting-out curves without theodolite on the system of tangential angles by sets of tangents and offsets; and earthwork tables to 80 feed deep, calculated for every 6 inches in depth. 4th enl. ed. Illus. Lond. (1866) 1880. Cr. 8vo, (12mo), 12s, \$4.80. Ck-Lg-Sp-V.

Hatch, F. H. An introduction to the study of petrology: the igneous rocks. 360

I.lus. Lond. 1891. P. 8vo, 3s 6d.

Hatch, F. H. The same. 2d ed. Illus. N. Y. 1891. 16mo. 90c net. Ma.

Haughton, S. Manual of geology. 4th ed. Illus. Lond. 1876. P. 8vo. (12mo), 7s 6d, \$3.00.

Haulage, Hauling machinery, etc., see Andre 17, 18, Bernays 781, Percy II, 361 362 634, Spon, parts 58, 59, 774.

Havrez, J. On recent improvements in winding machinery. Trans. by 363 R. F. Martin. W. fold. pl. Lond. 1875. 8vo. \$2.50.

Head, J., and Pouff, P. Abstract of paper on a new form of Siemens 364 furnace arranged to recover waste gases, as well as waste heat. In vol. 1890, I. No. 434. Headgears and pulleys, see Percy I, 633.

Heading-driving, see Simms 749.

Heading, W. H. Practical notes on hydrographic and mining surveys.

Illus. and plans. Milwaukee 1872. 8vo. \$1.75.

Hg. 365 N. B .- Only 70 copies left.

Hearth furnaces, see Hodgetts 376.

Heilprin, A. Town geology; the lesson of the Phila. rocks: studies of na-366 ture along the highways and among the byeways of a nietropolitan town. Illus. Phila. 1885. 8vo. \$2.25.

Henry, J. T. The early and later history of petroleum. With authentic 367 facts in regard to its development in Western Pennsylvania. Illus. Phila. 1876. 8vo. \$4.50.

Hewitt, A. S. The production of iron and steel in its economic and social arrangements. Wash., D. C., 1868. 8vo. pap. \$1.00. Ck—V. 368

369 †Higgin, Geo. Commercial and industrial Spain. Containing general trade statistics, railways, roads, telegraphs, MINES, etc. Lond. (n. d.) 2s. Wu. Higson, J. Explosions in coal mines. W. pl. Manch. 1878. Svo. 786d.

\$3.00. Ck-Hm. Hiorns, A. H. Iron and steel manufacture: a textbook for beginners. 371 Illus. Lond. 1889. Fcap. 8vo. 3s 6d, \$1.00 net. B-Ma-Wn.

Hiorns, A. H. Mixed metals or metallic alloys. Lond. 1891. Fcap. 8vo. 372 (12mo) 6s. \$1.50.

373 Hiorns, A. H. Practical metallurgy and assaying: a textbook for teachers, students and assayers. Illus. Lond. 1888. 16mo. 6s, \$1.50, net. B-Ck-Ma.

Hiorns, A. H. A textbook of elementary metallurgy, for the use of students. To which is added an appendix of examination questions, embracing the whole of the questions set in the three stages of the subject by the Science and Art Department for the past 20 years. Illus. Lond. 1888. P. 8vo. (12mo) 4s, \$1.00, net. B-Ck-Ma-Wn.

Hoare, Chas. "Iron and steel," a work for the forge, foundry, factory, and 375 Containing ready, useful and trustworthy information for ironmasters and their stock takers; managers of bar, rail, plate and sheet rolling mills; iron and metal founders; iron ship and bridge builders; mechanical. MINING and consulting engineers; architects, contractors, builders and professional draughtsmen. 8th. rev. and enl. ed. Lond. 1876. Obl. 32mo, mor. 6s, \$2.40. Hocking Valley mineral resources. Hunt, T. S. 1881. \$1.50. 398.

Hodgetts, E. A. B., comp. Liquid fuel for mechanical and industrial pur-376 poses. Lond. 1889. 8vo. 7s 6d. \$2.50. Sp.

Contents:—Hearth furnaces, gas furnaces, slit-sprinklers, pipe sprinklers, nozzle sprinklers, experiments of D'Allest, methods of working sprinklers, storage on board ship, liquid fuel, for locomotives, some industrial applications of liquid fuel.

Hogan, K. E. An elementary mineralogy and geology; prepared from the latest and best authorities in Europe and America. Illus. N. Y. (1887) 377 12mo. 50c.

Hoisting, machinery for, see Andre 17; see also Cages—Winding.

Holmes, F. S. Phosphate rocks of South Carolina: their history and development. Illus. Charleston, S. C. 1870. Pap. 8vo. (\$1.25) o. p. V.

Homer, Chas. J. The North Stationary coalified, with the ironstones contained therein, in 1875, II, No.434.

Hooker, W. Minerglogy and geology. Illust. (Sci. 5, C. D.) 378

379

Hooker, W. Mineralogy and geology. Illus. (Sci. f. S. F. Ser.) N. Y. 380 12mo, half lea. 90c, net.

Hooper, H. R. Practice of foundry work, in vol. 1888, Scc. Eng. Trans. 381 Hopton, Wm. A conversation on mines, etc., between father and son. (coal mines.) 7th ed. Illus. Minch. 1883. P. 8vo. (12mo) 3s, \$1.20; 382 the same, 8th ed. Illus. Manch. 887. P. 8vo. (12mo) 3s 6d, \$1.40.

Ck-Hl-Sf-V.383 Hopton, Wm. Conversation on mines, etc., between a father and son; to which are added questions and answers to assist candidates to obtain certificates for the management of ollieries; a lecture on the atmosphere and explosive gases, tables of caculation, rules of measurements, etc. Reprinted from the 8th English d. Intended for the better information of miners, over-men, under lookes, de outies and firemen, and those of them who intend to become managers of collieries. Illus. Phila. 1890. 12mo. Cn-Ld-Wn.

Contents:—How mines generate gases; way the discharge is greater in one mine than in another, and how others discharge a nigture of gases; how the weather on the furnace of the earth affects the workings of a mue; the power of explosions, and how to diminish it: several ways of ventilating mines, and how currents of air are propelled around the workings, etc

Hoskold, H. D. Practical treatis, on mining, land, and railway surveying. Illus. Lond. 1860. 8vo, \$8.00. 384 Hot-blast, see Overman 612

How to assay. Triplett, F. \$1.00 833.

Howe, H. M. The metallurgy of steel. Illus. and pl. N. Y. 1890. Roy. 385 4to. \$10.00. Sb—Sp—Wn.

Ato. \$10.00.

An eminent metallurgist writes to Industries, London: "I cannot refrain from expressing my admiration of Mr. Howe's inequalled work. The whole metallurgical world has been ransacked, and we have laif before us all that has been done since the publication of Percy's well-known works. Not content with merely summarizing the results of others, Mr. Howe has in a most painstaking and able manner, fearlessly commented thereon for which he justly merits the thanks of all concerned. In doing this he has of course exposed himself to theattacks of many, for in such a wide field as the complete metallurgy of steel difference of opinion must of necessity occur; but like all pioneers and leaders, he has the questionable satisfaction of knowing that by his aid others may sometimes see even further than himself."

Contents:—Classification and constitution of steel. Carbon and iron hardening, tempering, and annealing. Iron and silicon. Iron and manganese. Iron and sulphur. Iron and phosphorus. Chromiuns, tungsten, copper. The metals occuring but sparingly in iron. Iron and oxygen. Nitogen, hydrogen, carbonic oxide. The absorption and escape of gas from iron. The pevention and blowholes of pipes. Structure and related subjects. Cold working, hot waking, welding. Direct processes. Charcoal-hearth processes. The crucible steel process. Apparatus for the Bessemer process. Special steels. Anti-rust coatings. Lead quenching.

Owe, H. M. The same. 2d ed. rev. and enl. Illus. N. Y. 1891. 4to. \$10.00.

386 \$10.00.

387 Hower, F. M. Lightning slate reckoner. Cherryville, Pa., 1888. 12mo., pocketbook firm. \$1.50. Hs-Wn. N. B.—This book is the production of a practical quarryman, and contains tables relating to 33 practical sizes of roofing slate arranged in convenient form. The tables are calculated for 3 inch lap. In the first column the number of slate is given, and in the second the number of square feet of roof which will be covered. The square feet are arranged in numerical order from 1 to 1000, or 10 squares. One of the most important in the book is a table of ratios giving the variation in the lap and the amount of nails required to lay a square of each of some 33 sizes of slate when used 2-inch lap, 3-inch lap and 4-inch lap.—Williams.

Howson, R. On mechanial puddling, in 1877, II, No. 434.

389 Hull, E. The coal fields of Great Bitain: their history, structure, and re-4th ed. W. map and filus. Lond. (1872) 1880. Svo. 16s.

390 †Hull, E. The physical geology and geography of Ireland. With maps and

illus. Lond. (n. d.) P. 8vo. 7s. Hull, E. Geological history; being the natural history of the earth and of 391 its prehuman inhabitants; with illustrative diagrams drawn by the author.

392

Lond. 1887. Cr. 8vo. (12mo) 3s 6d, \$1.25.

Hull, Prof. Building stones, in Beyan's B. M. I., see No. 81.

Hunt, R. British mining: a treatise on the history, discovery, practical development, and future prospedts of metalliferous mines in the United Kingdom. Illus. Lond. 1884. Roy. 8vo. £3 3s, \$20.00; the same, 2d rev. ed. Illus. Lond. 1887. Roy. 8vo. £2. 2s.

B—Ck—Lg—V. Hunt R. Mineral statistics of the United Kingdom of Great Britain and

unt, R. Mineral statistics of the United Kingdom of Great Britain and Ireland for 1879. Lond. 1880. Roy. 8vo. pap. 2s, 80c. Ck—Lm. Hunt, R. 394

Hunt, T. S. An account of the progress in geology in 1883. From the Smithsonian report for 1883. Wash., D. C. 1884. 8vo. pap. n. p. Ga.

Hunt, T. S. A new basis for chemistry; a chemical philosophy. 3d ed. 396 rev. and augmented, with a new preface. N. Y. 1891. 12mo. \$2,00. Contents:—Nature of the chemical process; genesis of the chemical elements; gases, liquids and solids; law of numbers; equivalent weights; hardness and chemical indifference; atomic Hypothesis; law of volumes; metamorphosis in chemistry; law of deusities; historical retrespect.

397

historical retrespect.

Hunt, T. S. Chemical and geological essays. 3d rev. ed.; with a new preface. N. Y. 1890. 8vo. \$2.50.

Contents:—Theory of igneous rocks and volcanoes: some points in chemical geology; chemistry of metamorphic rocks; chemistry of the primeval earth; origin of mountains; probable seat of volcante action; on some points in dynamical geology; on limestone, dolomites and gypsums; chemistry of natural waters; petroleum, asphalt, pyroschists and coal; granites and graultic veinstones; origin of metalliferous deposits; geognosy of the Appalachians and the origin of crystalline rocks; geology of the Alps; history of the names Cambrian and Silurian in geology; theory of chemical changes and equivalent volumes; constitution and equivalent volume of mineral species; thoughts on solution and the chemical process; on the objects and method of mineralogy; theory of types in chemistry.

Dr. Hunt is equally eminent as a geologist and chemist, and his volumes have the breadth which comes of the complete mastery of the two most important provinces of science. His style has the clearness which can only be won with a teacher in love with his subject.—Publisher's Weekly.

T. S. Coal and iron in Southern Ohio: mineral resources of the 398

Hocking Valley. W. map. Bost. 1881. 8vo. \$1.50; pap. 75c. Cc—Ck. Hunt, T. S. Mineral physiology and physiography, or, geological and mineralogical studies. A second series of chemical and geological essays. 399 With a general introduction. Bost. 1886. 8vo. \$5.00. Cc—Ck—V—Wn. Contents:—Nature in thought and language; order of the natural sciences; chemical and geological relations of the atmosphere; celestial chemistry from the time of Newton; origin of crystalline rocks; genetic history of crystalline rocks; decay of crystalline rocks; natural system in mineralogy, with a classification of silicates; bistory of precambrian rocks; geological history of serpentine, with studies of pre-cambrian rocks; tacomic question in geology.

400 Hunt, T. S. The same. 2d rev. ed.; with new preface. N. Y. 1890. 8vo. \$5.00.

Hunt, T. S. S. N. Y. in press. Systematic mineralogy based on a natural classification. 401 The historical relations of the new system here adopted alike to the chemical and the natural history methods are set forth in the essay on mineralogical classification in the author's mineral physiography pp. (279-402) with some modifications indicated in the preface to the second edition of that volume.

Hussak, E. Instructions for the determination of rock-forming minerals. 402 Trans. from the German by E. G. Smith, W. pl. N. Y. 1885. 8vo. \$2.00. B-Ck-Wm.

The autobiography of the earth: a popular account of 403 Hutchinson, R. N. Authorized ed. Illus. N. Y. 1891. 12mo, \$1.50. Am. geological history. N. B.—Gives in simple language and attractive style a sketch of the former history of the earth from a nebulous beginning down through all the changing geological periods, to man and explains briefly the methods by which geologists have arrived at their conclusions—Path Weekler sions .- Pub. Weekly.

Hh.

404 †Hutton, F. W. Class-book of elementary geology. Lond. (n. d.) Extra fcap. 8vo. 1s 6d. 54c net. Hyatt, A. About pebbles. Bost. (n.d.) Pap. 10c. Bt-Pn.

405 Hydraulic mining. See also Gold mines. Bowie, A. J. Hydraul. mining. 1885, \$5.00, 105, Kirkpatrick, T. S. G. Hydraulic gold mining, 1890, 6s. 459, Randall, P. M. Practical hydraulics, 1886, \$2.00, 670, Van Wagenen, T. E. Manual of hydraulic min. 1880, \$1.00, 852.

see Colliery 155, Davies 209, Lock 493, Spon, parts 59-63. 774.

Hydro-metallurgy, see California 8th report 129b.

Hyslop, J. Colliery management. Surveying of mines. Systems of work-406 ing. Ventilation. 2d ed. W. atlas of 17 pl. Lond. 1876. 8vo. £1. 5s. \$7.20. Cn-Hw-V.

Identifying minerals, see Mineralogy.

Igneous rocks, see Hatch 360, 361; Hunt 397, Teall 812; see also Volcanoes.

Indicator for colliery engineering, see Percy I, 633.

Ingram, J. F. The land of gold, diamonds and ivory; being a comprehensive 407 handbook and guide to the colonies, states and republics of South and East Africa, Lond. 1889. 8vo. 2s 6d.

Ireland, J. The colliery ready reckoner and wages calculator.

408 Lond. (n. d.) 1s 6d. Cp.

Iridium, see Osborn 605; see also Metallurgv.

409 Iron analysis record. Arranged by J. M. Sherrard, chemist. A blankbook for the preservation of analyses of pig iron and ironores. (Cincinnati) 1883. 16mo. leather, \$1.25 net.

410 Iron, steel and allied trades in 1881. Annual report to the members of the British Iron Trade Association, issued March 22nd, 1882. Lond. 1882. 8vo. pap. (\$2.00)

Iron. Analysis of iron and iron ores, see Bauerman 58, Bayley 60, Blair 84,

Campin 134, Iron 409; see also Assaying.

History and manufacture. See also Steel—Basic Bess. proc.—Bessemer proc.—Bloomaries—Puddling—Roll-turning.

Annual statist. report. \$2.00 22, 1891. \$3.00 23. Bell, I. L. Principles of man. of iron. 1884. 21s. 70.

Bell, I. L. Frincipies of man. of fron. 1884. 218. 70. Directory of iron, etc., works. 1890. \$3.00. 218. Fairbairn, W. Iron. 1869. 108 6d. 250. Fordyce, W. Hist. of coal, etc. 1860. 528 6d. 261. French, B. F. Hist. of iron trade. \$2.00. 275. Greenwood, W. H. Steel and iron. 1887. 5s. 330. Hewitt, A. S. Production of iron. 1868. \$1.00. 368. Hiorns, A. H. Manufacture of iron. 1889. 3s 6d. 371.

Hoare, C. Iron and steel. 1876. 6s. 375. Iron and steel trades. 1882. (\$2.00.) 410.

Journal of iron and steel institute. 434. Kelly's Directory. 1890. 30s. 443.

Larkin, J. Brass and iron founder's g. 1881. \$2.25. Meade, R. Coal and iron industries. 1881. 28s. 529. Mushet, D. Iron and steel. 1840. (\$20.00.) 569.

Osborne, H. S. Metall. of iron. 1869. \$25,00. 606. Overman, F. Manuf. of iron. 1854. Scarce 608. Pechar, J. Paris Exhibition. 1878. 5s. 628. Stubbs, T. Coal and iron trades. 1s 6d. 787.

Swank, J. M. Hist. of manuf. of iron. 1884. \$5.00. 793.

Swank, J. M. 1181, of manuf. of fron. 1884, \$5.00, 793.

Swank, Statist, abstract, 1888, \$1.00, 794.

Troilus, M. Chemistry of iron. 1886, \$2.00, 834.

Wilkie, G. Manuf. of iron. 1857, \$4.00, 892.

Williams, W. M. Chemistry of iron. 1890, 9s, 900, see Bevan 81, Lock 495a, Osborn 605, Osmond 607, Pendred 630, Roberts-A. 692, Snelus 767, Spon parts 64—67, 774; Spon part 13, 775. Thurston 11, 823; United States 842.

Iron mines and mining. See also Mines—Ores.

Bell, I. L. Iron mines of the U. S. 65, 66. Butlin, W. H. Iron ore dist. of Northampton. 128. Daddow and B. Coal, iron. 1866. \$7.50. 181.

Dove, G. Frodlingham iron field. 222.

Fordyce, W. History of coal, etc. 1860. 52s 6d.

Gill, W. Iron ore dist. Bilbao. 308. Hale, P. M. Iron countries in N. Carolina. 1883. \$1.50. Hunt, T. S. Coal and iron in S. Ohio. 1881. \$1.50. 398;

see Boyd 108, Davies 209, Dunlap 228, Foster 265, Nordenfelt 585, Pott's 654, Sorley, 772, Swinney 798, Winchell 925, 930, 931, 937.

Iron smelling. See also Smelting.

Armour, J. Iron and heat. 1874. see Ball 46, Bell 63, 72, Directory 218. Iron and heat. 1874. 3s 6d. 32;

411 Irving, A. Chemical and physical studies in the metamorphism of rocks Based on a thesis (with appendices) written for the doctorate of science in the University of London. Lond. 1889. 8vo. 5s. \$1.75.

Irving, R. D. Copper bearing rocks of the Lake Superior. Illus. 412 (U.S. Geog. Survey, monog.) Wash., D. C., 1883. 4to. \$1.85.

413 Jago, W. Inorganic chemistry, theoretical and practical, with an introduction to the principles of chemical analysis, inorganic and organic. ed. Illus. Lond. 1889. Cr. 8vo. (12mo.) 2s 6d. 80c. B-Lm-Wn.

James, J. St. Colliery ventilation, Lond. (n. d.) Cr. 8vo. 2s. Cp. Contents:—The gases met with in mines, explosions of firedamp, principles of mine ventilation, friction of air in mines, flow of air through the mine, splitting the air, relation between the amount of air and number of splits, examples, value of the co-efficient of friction.

N.B.—The chief object of this small treatise is to afford some assistance to candidates for colliery managers' certificates of competency, both first and second class. The principles involved have been first worked out in a general form, and afterwards numerical examples have been taken, the calculations of which have been fully worked out so as to make them intelligible to those who may not possess much knowledge of algebra.

415 The Jameson process of manufacturing coke, in 1883, II, No.

Jameson process of manufacturing coke, see Jameson 415.

416 Jameson, Robt. System of mineralogy. 3 vols. Edinburgh 1820. Half calf. (\$5.00.)

417 Jannettez, E. A guide to the determination of rocks: being an introduction to lithology. Trans. from the French by Geo. W. Plympton. 2d rev. on to lithology. Irans, from the French by Geo. W. Flympton. 2d rev. d. Illus. N. Y. (1877) 1883. 12mo. \$150. B—Ck—Fa—V. Intents:—A description of the more important minerals from a lithological point of view, feldspathic, pyroxenic and hypersthenic rocks, amphibolic rocks, epidote, garnet, disthene, etc. Micaceous rocks, chloritic rocks, peridote, talc and other magnesian silicates, argillaceons schists and slates, siliceous rocks, alkaline rocks, rocks of the alkaline earths, aluminous rock with silica, metallic rocks, combustible rocks, method to be followed in practically determining rocks, dichotomic tables for determining rock species.

418 Consumption and economy of fuel in the iron and steel manu-

facture, in 1882, I, No. 434.

419 Jeans, J. S. Steel: its history, manufacture, properties, and uses. Illus. and fold. pl. Lond. 1880. 8vo. £1. 16s. \$14.50. Scarce. Ck—Sp—V. cans, W. T. Creators of the age of steel. Memoirs of Sir W. Siemens, Sir

420 †Jeans, W. T. Creators of the age of steel. H. Bessemer, Sir J. Whitworth, Sir J. Brown, and other inventors. 2d ed. Lond. (n. d.) Cr. 8vo, 7s 6d.

Jeans, W. T. Creators of the age of steel. N. Y. 1884. 12mo. Ce.

421 \$1.50.

422 Jenney, W. P. Mineral wealth, climate and rainfall and natural resources of the Black Hills of Dakota. Wash., D. C. 1876. 8vo. pap. 50c.

Ga-V. Jennings, S. My visit to the gold fields in the South East Wynaad. 423 Lond. 1881. 8vo. 58.

Jet, see Davies 208; see also Minerals.

424 Jevons, W. S. The coal question. An inquiry concerning progress of the nation and probable exhaustion of our coal mines, 2d ed. Lond. 1866. 8vo. 10s 6d. \$4.20.

425 †Jevons, W. S. Coal: its importance in manufacture and trade. (Manch. Sci. Lect.) Manch. (n. d.) Cr. 8vo. 1d.

426 †Jewesbury, F. N. Mineralogical tables. Describing the physical and chemical properties of all the important minerals. (Murby's Sci. and Art Ser.) Lond. (n. d.) 1s 6d.

Johnson, A. E. The analyst's laboratory companion. Lond. 1888. P. Svo. 427 (12mo) 5s. \$2.00.

Jones, L. A. A. The miner's manual. A legal handy book for employer and 428 employed. Lond. 1882. P. Svo. (12mo) 2s 6d. \$1.00.

JON-KIN

39

429 Jones, Robt. H. Asbestos: its production and use. With some account of the asbestos mines of Canada. Lond. 1888. Cr. 8vo. (12mo). Pap. 1s, Lg-Sp-V-Wn. 40c.

430 Jones, Robt. H. Asbestos: its properties, occurrence, and uses, with some account of the mines of Italy and Canada. With 8 collotype plates and other illus. Lond. 1890. P. 8vo, 12s 6d.

Jones, T. M. R. Tunneling in Japan, in vol. 1882, Soc. Eng. Trans.

Jones, Wm. History and mystery of precious stones. Lond. 1880. Cr. 8vo.

431

432 (12mo). 7s 6d, \$3.75.

B—B1—Ck.
433 †Jordan, J. B. Crystallography. With color. diagrams, from which hand-

some models of the principal crystals may be readily constructed. (Murby's Sci. and Art Ser.) Lond. (n. d.) 1s 6d.

Mn.

Journal of the Iron and Steel Institute, ed. by J. S. Jeans, (Half-yearly.) Lond. 8vo, 1875—1881, 1882, I, each 10s 6d, \$4.50; 1882, II; 1883—1891 434 each half yearly vol. 16s, \$6.00. Ck-Sp-V-Wn.

Judd, J. W. Vulcanoes: what they are and what they teach. 4th ed. illus. (Intern. Sci. Ser.) Lond. 1881. Cr. 8vo. (12mo.) 5s, \$2.00. Am—Pi. 435

436 †Jukes-Browne, A. J. The building of the British Isles. A study in geological evolution. W. maps and illus. (Bohn's Sci. Lib.) N. S. Lond. (n. d.) 12mo. 7s 6d.

Jukes-Browne, A. J., ed. The school manual of geology. Illus. Edinburgh 437 (1881) 1890. Fcap. Svo. (12mo.) 4s 6d. \$2.00.

438 †Jukes-Browne, A. J. The students' handbook of historical geology. diag. and illus. (Bohn's Sci. Lib.) N. S. Lond. 1886. Cr. 8vo. (12mo.) 6s, \$2.40.

Jukes-Browne, A. J. The students handbook of physical geology. 439 diag. and illus. (Bohn's Sci. Lib.) N. S. Lond. 1884. Cr. 8vo. (12mo) 6s, \$2.50. B--Bi-Le-Sd.

Justice, Ph. S. The dephosphorization of iron in the puddling furnace, in 440 vol. 1885, Soc. Eng. Trans.

441

Keep, W. J. Aluminum in carbonized iron. In 1890, I, No. 434.
Keeping, W. The fossils and palaeontological affinities of the Neocomian deposits of Upware and Brickhill, (Sedgwick prize essay of 1879.) Illus. 442 Cambridge 1883. Demy 8vo. 10s 6s, \$2.75 net. Ca-Ma.

443 Kelly's directory of the engineers and IRON and metal trades and COLLIERY proprietors: comprising every trade and profession in any way connected with the above trades throughout England, Scotland and Wales, and the principal towns in Ireland, 6th ed. Lond. 1890. Roy. 8vo. £1 10s.

Kensington, E. T. Chemical composition of foods, waters, soils, minerals, manures, and miscellaneous substances. Lond. 1876. Cr. 8vo. (12mo.) 5s. \$2.00.

Kerl, B. A practical treatise on metallurgy. Adapted from the last German ed. of Prof. Kerl's metallurgy. By Wm. Crookes and Ernst Roehrig. 445 3 vols. Lond. 1868—70. 8vo £4. 19s. \$30,00, o. p., sold separately, viz: Ck—Lm—V—Wm.

Vol.1: lead, silver, zinc, cadmium, tin, mercury, bismuth, antimony, nickel, arsenic, gold, platinum and sulphur. £1. 13s. \$10.00. Vol. 2: copper and iron. £1. 13s, \$10.00.

Vol. 3: steel, fuel and supplement. £1. 13s, \$10.00.

446 Kerl, B. The assayers manual. An abridged treatise on the docimastic examination of ores and furnace and other artificial products. Trans. from the German by W. T. Brannt. 2d American ed. edited with extensive additions by F. L. Garrison, Illus. Phila. (1883) 1889. 8vo. \$3.00, B-Ck-Sp-V-Wn.

N. B.—Treats on the assaying of all metals, excepting iron.

Kinahan, G. H. A handy book of rock names. Lond. 1873. Fcap. 8vo. 447 (12mo.) 4s. \$2.00. Aa-B.

Kinahan, G. H. Valleys, and their relation to faults. Lond. 1875. Cr. 8vo. (12mo.) 7s 6d. \$3.00 Valleys, and their relation to fissures, fractures and 448 Aa—B.

449 King, C. W. Handbook of engraved gems. Illus. 2d ed. Lond. 1885. Roy. 80. 16s. Bi. 450 King, C. W. Natural history of precious stones, and of the precious metals. With index and illus. (Bohn's Illus. Lib.) Lond. 1883. Cr. 8vo. (12mo.) 6s. \$2.50. B-Bi-Ck.

451 King, C. W. Natural history of gems or decorative stones. With index and illus. (Bohn's Illus. Lib.) Lond. 1870. Cr. 8vo. (12mo.) 6s, \$2.00 net.

452 †King, W., and Rowney, T. H. An old chapter of the geological record with a new interpretation; or rock-metamorphism and its resultant imitations of organisms. With 9 col. pl. Lond. (n. d.) 8vo. 10s 6d.

Kingsley, C. Scientific lectures and essays, including town geology. Lond. 453 (n. d.) Cr. 8vo. (12mo.) 6s, \$1.25.

454 Kingsley, C. Town geology. Lond. 1885. Cr. 8vo. (12mo.) 6s. \$1.75.

B-Ma. 455 Town geology. N. Y. 1890, 12mo. \$1.50. Kingsley, C. Am.

Kingsley, C. The same, with appendix by Huxley on coral and coral reefs. 456 (Humb. Lib.) N. Y. 1880. 4to. Pap. 15c.

Contents.—The soil of the field; the pebbles in the street; the stones in the wall; the coal in the fire: the lime in the mortar; the slates on the roof.

457 Kirk, E. The founding of metals: practical treatise on the mining of iron with a description of the founding of alloys; also of the metals and mineral substances used in the art of founding. Collected from original sources. 5th ed. Illus. N. Y. (1881) 1885. 8vo. \$2.50. B-Ck-Wn.

458

Kirk, H. On puddling, in 1876, II, No. 434. Kirkpatrick, T. S. G. The hydraulic gold miner's manual: intended to 459 serve as a practical handbook of reference for the hydraulic miner. pl. and illus. Lond. 1890. Cr. 8vo, (12mo.) 6s. \$2.25. N.B.—Sufficient data, in a compact form being given to enable any one who has a competent knowledge of pick-and-shovel work, and of the use of carpenter's tools, to construct the necessary plant for successful "hydraulic mining." The ditches and sluices are laid out on a scale sufficient to move from 2000 to 5000 tons of "pay dirt" in the 24 hours, and are the result of experience gained in the management of very successful undertakings.— Williams.

Kiss process, see Aaron 3.

Koepe system of winding, see Percy 633.

460 Kolbe, H. Text-book of inorganic chemistry. A short text-book of inorganic chemistry. Trans. and ed. by T. S. Humpidge. With a col. spectra and illus. N. Y. 1884. 12mo. \$2.50,

461 †Koninck, L. L., de, and Dietz, E. Practical manual of chemical assaying as applied to the manufacture of iron. Ed. w. notes by Rob. Mallet. Lond. (n. d.) P. 8vo. 6s.

Koninck, L. L., de, and Dietz, E. A practical manual of chemical analy-462 sis and assaying, as applied to the manufacture of iron from its ores, and to cast iron, wrought iron and steel, as found in commerce. Ed. with with notes by R. Mallet. American edition, ed. with notes and an appendix on iron ores, by A. A. Fesquet. Phila. 1873. 12mo. \$2.50.

B-Ck-Fa.

Kroehnke's process of leaching, see Aaron 4.

Krupp, A., and Wildberger, A. Metallic alloys. A practical guide for the 463 manufacture of all kinds of alloys, amalgams, and solders used by metal workers, together with their chemical and physical properties and their application in the arts and industries, with an appendix of the coloring of alloys. Trans. and rev. with extensive additions by W. T. Brannt. Illus. Phila. 1889. 12mo. \$2.50.

Kunhardt, W. B. The practice of ore dressing in Europe, a description of 464 foreign methods for the mechanical concentration of ores, rev. and corrected from a series of articles in the School of Mines Quarterly of Columbia B-Ck-Sp-Wm. College. Illus. N. Y. 1884. 8vo. \$1.50. 6s.

Kunz, G. F. Gems and precious stones of North America. A popular de-465 description of their occurrence, value, history and archaeology, and of the collection, in which they exist, with a chapter on pearls and on remarkable foreign gems owned in the U.S. A work of interest to jewelers, prospectors, mineralogists, geologists, mining engineers and collectors of precious stones and minerals. Illus. and col. pl. N. Y. 1890. La. 4to. \$10.00. Sb-Sp-Wn.

N. B.—This superb work is worthy of a high place in the literature of the subject.—Scientific

We believe this book is the first important work devoted wholly to the subject.—N. Y. Tribune.

KUS-LEC

Kustel, G. Concentration of all kinds of ores, including the chlorination process. W. pl. San Francisco, Cal. 1868. 8vo. \$7.50. B—Ck—La. 466

Kustel, G. Roasting of gold and silver ores and the extraction of their respective metals without quicksilver. New ed. Illus. San Francisco, Cal., 1880, 8vo. \$3.50. B-Ck-Dc-Fa-La. This rare book on the treatment of gold and silver ore without quicksilver is liberally illustrated and crammed full of facts. It gives short and concise descriptions of various processes and apparatus employed in this country and in Europe, and the why and wherefore. It contains illustrations of furnaces, supplements and working apparatus.

Laboratory practice.

467

Bloxam, C. L. Laboratory teachings. 1879. 58 6d. 91.

Thorpe and Muir. Qualitative chem. anal. and lab. pract. 1883. 3s 6d.

Lake age in Ohio. Claypole, E. W. 1888. 75c. 150.

468 Lamborn, R. H. The metallurgy of copper, being an introduction to the methods of seeking, mining and assaying copper and manufacturing its alloys, 6th ed. Illus. (Weale's Ser.) Lond. 1879. 12mo. 2s 6d, 3s, \$1.00, B-Ck-Lg-V. \$1.20.

469 Lamborn, R. H. Metallurgy of silver and lead. (Weale's Ser.) Lond. 1878. 12mo. 2s 6d, \$1.00. o. p. N. B.—A new edition in preparation. Ck-Lg-V.

Land of gold, etc. Ingram, J. F. 1889. 2s 6d. 407.

Landauer, J. Blowpipe analysis. Author. Eng. ed. by J. Taylor and Wm. 470 E. Kay. Illus. Lond. 1879. Extra Fcap. 8vo. 4s 6d, \$1.50.

Landrin, M. H. C. Treatise on steel: Comprising its theory, metallurgy, 471 properties, practical working, and use. Trans. from the French, with notes by A. A. Fesquet. With an appendix on the Bessemer and Martin processes for manufacturing steel, from the report of A. S. Hewitt, U. S. Commissioner to the Universal Exposition, Paris, 1867. Phila, 1868, 12mo. B-Ck-V. \$3.00.

472 †Lardner, D. Popular geology. Containing earthquakes and volcanoes, the crust of the earth, etc. Illus. Lond. (n. d.) 2s 6d. Lg.

Larkin, J. Practical brass and iron founder's guide. A concise treatise on the art of brass founding, moulding, etc., with numerous practical rules, tables and receipts for gold, silver, tin, and copper founding, plumbers, bronze and bell founders, jewelers, etc. - 5th rev. and enl. ed. Phila. 1881. B-Ck-Wn. 12mo. \$2.25.

A handbook of the geology of Shropshire. W. pl. and 474 †La Touche, J. D. Illus. Lond. (n. d.) Cr. 4to. 15s.

Law relating to coal mines, see Coal Mines—Mines, law rel. to. Laying of coal dust. Ramsay, J. A. 6d. 667; 1888. 25c.

Laying out surface plans at collieries, see Percy I, 633.

Leaching. See also Mexican Process—Kitt Process—Plattner Process. Aaron, C. H. Leaching gold and silver ores. 1881. \$3.00. 3.

Leaching apparatus, see Aaron, No. 4.

Leaching processes, see Chilean process—Kroehnke's—Mexican process.

Lead alloys, see Krupp and W.

Lead, assaying of, see Aaron 2, Kerl 446.

Lead, mining and metallurgy.

Lamborn, R. H. Metallurgy of silver and lead. 1878. 2s 6d. 469. Pulsifer, W. H. Notes for a history of lead. 1888. \$4.00. 662. Wallace, J. Laws which regulate depositions of lead. 1861. 25s. 80 see Boyd 108, Davies 209, Kerl 445, Lock 495a, Osborn 605, Pepper 631, Percy IV, 632, Phillips 643, Pryce 661, Spon's, part 70. 774. Swinney 798, Thurston III, 823.

Lead oxides, see Pulsifer 662.

Lead quenching, see Howe 385, 386.

Lead smelting, see California 8th and 10th reports, 129b, 129d; Percy IV, 632

- 475 Leavitt, T. H. Facts about peat as an article of fuel. Boston 1867. 12mo. \$2.00.
- 476 Le Conte, Jos. A compend of geology. Illus. N. Y. 1884. 12mo. \$1.20 net.
- Le Conte, Jos. Elements of geology; a textbook for colleges and for the general reader. Illus. N. Y. 1886. 8vo. \$4.00. 18s. Am—B—Sp—V. 477

Le Conte, Jos. The same. New rev. ed. With new pl. and new illus. N. Y. 478 1891. 8vo. \$4.00, 18s. Am-Sp-V.

Lee, J. E. Notebook of an amateur geologist. Lond. 1881. 8vo. £1. 1s. 479

480 Leet, A. N. Petroleum distillation and modes of testing hydro-carbons, being an exhaustive treatise concerning old and new processes of separating and refining mineral oils, etc. N. Y. (n. d.) 8vo. \$2.00. B-P-Sp-Wn.

Leffmann, H. Compend of chemistry, inorganic and organic. 3d rev. ed. Phila. 1890. 12mo. \$1.00; interleaved \$1.25. 481

482 Lesley, J. P. Manual of coal and its topography. Illus. by original drawings, chiefly of facts in geology of the Appalachian regions of the U.S. Phila. 1856. 12mo, published at \$1.00; o. p. and very scarce.

Levels, driving of, see Andre 18. Lewis, H. The chemistry of puddling, in 1879, I, No. 434. 483

Lias. See also Chalk-Limestone.

Tate and Blake. Yorkshire lias. 28s. 809.
Thompson, B. Middle lias of Northamptonshire. 1889. 3s 6d. 817.
Lieber, O. M. The assayer's guide; or, practical directions to assayers, 484 miners and smelters, for the tests and assays, by heat and by wet processes, for the ores of all the principal metals, of gold and silver coins and alloys,

and of coal, etc. Phila. (1884) 1888. 12mo. \$1.25.

Liefchild, J. R. On coal at home and abroad, with relation to consumption, cost, demand and supply. Lond. 1873. P. 8vo. (12mo) 4s 6d. \$2.25. 485 Ck-Lm.

486 Light, Chas. J. A new method of setting out the slopes of earthworks, in

vol. 1873, Soc. Eng. Trans.

487 Light locomotives built by H. K. Porter & Co., Pittsburgh, Pa. 6th ed. Illus. Pittsburgh, 1889. 18mo, gratis. N. B.—This catalogue contains tables, illustrations and particulars of light locomotives for mining industries.

Limestone. See also Chalk-Lias.

Burnham, S. M. History and uses of. 1883. \$6.00. 126;

see Blair 84, Davies 208, Hunt 397.

488 Lintern, Wm. The mineral surveyor and valuer's complete guide. Comprising a treatise on improved mining surveying and valuation of mining properties, with new traverse tables. With an appendix on magnetic and angular surveying, with records of the peculiarities of needle disturbances. 3d ed. W. pl., plans, etc. (Weale's Ser.) Lond. (1887) 1889. P. 8vo. (12mo) 3s 6d, 4s, \$1.40, \$1.60. B-Ck-Lg-Sp-V.

Liquid fuel. See also Fuel.

Hodgetts, E. A. B. Liquid fuel. 1889. 7s 6d. 376.

Tarbutt, P. F. Liquid fuel. 805.

Thwaite, B. H. L. f., its advantages firing steam generators. 1887. 18. 826, see Mills 545.

Lithology. See also Rocks—Petrology—Petrography—Petrifactions.

Cotta, B. Rocks classified, etc. 1878. 14s. 171. Dana, J. D. Manual of mineralogy and lithology. 1887. \$2.00. 191. Jannettez, E. Guide to determination of rocks. 1883. \$1.50. 417. Jannettez, E. Guide to determination of rocks. 1883. \$1.50. Wadsworth, M. E. Lithological studies. 1884. \$3.00 net. 858. Williams, E. H. Manual of lithology. 1886. \$1.25. 896; see California 8th report 129b.

Little, G. H. The marine transport of petroleum; a book for the use of ship-owners, ship-builders, underwriters, merchants, captains and officers of petroleum carrying vessels. Illus. Lond. 1890. P. 8vo. (12mo) 10s 6d. Sp-V. \$3.50.

Liversidge, 'A. The minerals of New South Wales, etc. With map. Lond. 490 1888. Roy. 8vo. 18s. Lixiviation of silver ores. Stetefeldt, C. A. 1888, \$5.00 780.

Lobley, J. L. Geology for all: a general conspectus of the subject. Adapted 491 for all intelligent readers. Lond. 1888. P. 8vo. 2s 6d.

Lobley, J. L. Mount Vesuvius, its history and neighborhood. 2d ed., en-492 tirely rewritten and enl. W. pl. Lond. 1889. Roy. 8vo. 12s 6d.

Lock, A. G. Gold, its occurrence and extraction, embracing the geograph-493 ical and geological distribution and the mineralogical characters of goldbearing rocks; the peculiar features and modes of working shallow placers, rivers and deep leads; hydraulicing; the reduction and separation of auriLOC-MAG

ferous quartz; the treatment of complex auriferous ores containing other metals; a bibliography of the subject and a glossary of technical and for-W. maps and illus. Lond. 1882. Super-roy. eign terms. £2.12s 6d. \$20.00. Ck-Fa-Sp-V.

494 Lock, C. G. W. Practical gold mining: comprehensive treatise on the origin and occurrence of gold-bearing gravels, rocks, and ores, and the methods by which the gold is extracted. W. 8 pl. and illus. Lond. 1889. Roy. 8vo. (Švo) £2 2s. \$15.00. Principal contents.—Geological occurrence of gold deposits and mineralogical associations of the gold, prospecting for gold-bearing gravels and rocks, and assaying auriferous minerals, working shallow gravel deposits and the beds of running rivers, working deeplying gravel deposits and the accumulations left by rivers long since extinct, hydraulicing or the use of water under great pressure for removing and washing gravels, mining gold-bearing veinstuff and extracting the free gold from the stone, treating rebellious auriferous ores for the recovery of their gold and other valuable contents, treating repetitions arrier-ous ores for the recovery of their gold and other valuable contents, treating amalgam and refining bullion, arrangement of complete mills and reduction works, illustrating various methods of treatment, bibliography, glossary and useful tables, Jordan's process. "It is a volume of practical utility as a record of facts and of the results of experience col-lected from various sources.—Industries.

495 Lock, C. J. W. Mining and ore dressing machinery: a comprehensive treatise dealing with the modern practice of mining, both metalliferous and non-metalliferous minerals, including all the operations incidental thereto, and preparing the product for the market. Illus. Lond. 1890. 4to. £2 12s 6d. \$21.00. 495a Lock, C. G. W. Works Sp-V.

Workshop receipts. 3d series, devoted mainly to electrical and metallurgical subjects. Illus. Lond. 1884. Cr. 8vo. (12mo) 5s, \$2.00.

B-Ck-Sp-Wn.

London geological field class: reports of excursions during the summer of 1887, under the direction of Prof. H. G. Seeley, F. R. S. With lithog. sec-496 tions. Lond. 1888. Demy 8vo. Pap. 1s.

Loomis, J. R. The elements of geology, adapted to the use of schools and colleges. Illus. N. Y. (1852) 12mo. 94c. net. 497

colleges. Illus. N. Y. (1852) 12mo. 54c. nec. ord, E. Comstock mining and mines. Illus. (U. S. Geog. Survey, monog.) Ga. 498 Wash., D. C. 1883. 4to, \$1.50.

Luard, C. E. Stone: how to get it and how to use it. An introductory 499 treatise for students in architecture, engineering, surveying, estate agency. Lond. 1890. 8vo. 2s, 80c. Sp-V-Wn.

Luebbers, H. L. Manufacture of coke from Illinois coal. N. Y. (n. d.) 25c. 500

501 Lyell, Sir Chas. Principles of geology; or the modern changes of the earth

and its inhabitants, considered as illustrative of geology. 10th entirely rev. ed. 2 vols. Lond. 1867, 8vo, £1. 12s, \$12.00.

B—Mu—V.
yell, Sir Chas. The same. American rev. ed. Illus., pl. and maps. 2 vols. 502 Lyell, Sir Chas.

N. Y. 1872. Svo, \$8.00. Am-Cn-V,

Student's elements of geology. New ed., entirely rev. by 503 †Lyell, Sir Chas. P. M. Duncan, Illus. Lond. (n. d.) P. 8vo. (12mo) 9s. \$3.50.

Mu-V.

504 McDermott, W. and Duffield, P. W. Losses in gold amalgamation; with notes on the concentration of gold and silver ores. W. 6 pl. Lond. 1890. Sp-V-Wn. 8vo. 5s. \$1.75.

McDougall, J. Mineral resources of Canada, in Fairchild's Canadian leaves, 505

Macfarlane, J. The coal regions of America: their topography, geology and 506 development. Illus. N. Y. 1875-79. 8vo, \$5.00; shp. \$6.00; ½ mor. \$7.50. Am-Ck-Te. Machinery. An extensive list of books on this subject will be found in Handy Lists, part 3.

McMillan, W. G. Treatise on electro-metallurgy, embracing the application of electrolysis to the plating, depositing, smelting, and refining of var-507 ious metals, and to the reproduction of printing surfaces, art work, etc. Illus. Lond. 1890. P. 8vo. (12mo) 10s 6d, \$3.50. Gb—Ld—V. Macswinney, R. F. The law of mines, quarries and minerals. Lond. 1884.

508 Roy. 8vo. £1. 15s.

Macswinney, R. F., and Bristowe, L. S. The coal mines regulation act, 509 1887, with notes. Lond. 1888. P. 8vo. 3s 6d. Magnetic needle, see Brough 114, 115, Lintern 488.

510 Maitland, Col. Metallurgy and manufacture of modern British ordnance,

in 1881, II, No. 434.

Makins, G. A. Manual of metallurgy, more particularly of the precious metals. 2d ed., re-written and greatly enl. Illus. Lond. 1873. Sq. 8vo. 511 16s., red. to 4s 6d, \$3.00. B-Ck-Ri-V.

Contents.—General properties of the metals, combinations of the metals with the non metallic elements; metallic salts and alloys, of heating apparatus, furnaces, etc., of the fuels, applicable to metallurgic operations; mercury, silver, gold, platinum, palladium, lead, bismuth, copper, antimony, uranium, titanium and chromium; arsenic, iron and steel, manganese and cobalt, nickel, tin, zine and cadmium, aluminum, magnesium, potassium and sodium, the principles of electro-metallurgy.

Manganese, see Davies 208, Osborn 605, Pattinson 623, Spon, part 74. 774.

Manley, J. J. Salt, etc., in Bevans, B. M. I. No. 81. 512

513 †Mantell, G. A. Geological excursions through the Isle of Wight and along the Dorset coast. 3d. ed. Illus. and map. (Bohn's Sci. Lib.) Lond. (n. d.) 12mo. 5s.

514 †Mantell, G. A. Petrifactions and their teachings: an illustrated handbook to the organic remains in the British Museum. With index and illus. (Bohn's Sci. Lib.) Lond. (n. d.) 12mo. 6s.

515 †Mantell, G. A. The medals of creation; or, first lessons in geology and the study of organic remains. 2vols., illus. Lond. (1858.) 12mo. 15s. \$6.00.

Bi-V. 516 †Mantell, G. A. Wonders of geology; or a familiar exposition of geological phenomena. 8th rev. ed., augmented by T. R. Jones. 2 vols. W. Index, geolog. map of England, pl., and illus. (Bohn's Sci. Lib.) 12mo. 7s 6d each.

Map of British coal fields. Lond. 1861. 2s 6d, and 4s 6d. 517

Marbles. See also Stone.

Burnham, S. M. Hist. and uses of limestone and marbles. 1883. \$6.00. 126. Marcou, J. B. Bibliography of North American paleontology in the year 518 1886, from the Smithsonian report for 1886—'87. (Miscellaneous coll. No. 698.) Wash. D. C., 1889. 8vo. pap.

Marcou, J. B. Record of North American invertebrate palaeontology for 519 the year 1885: from the Smithsonian report for 1885. Wash. 1886. 8vo. pap.

Marcou, J., and Marcou, J. B. Mapoteca geologica americana. A catalogue of geological maps of America, north and south, 1752 to 1881. (U. S. 520 Gov. Surveys, bulletins.) Wash., D. C. 1884. 8vo. 10c.

Martin process, see Landrin 471.

521 Marvels of geology and physical geography: being a popular account of our earth and its history, its remarkable minerals and fossils, and the phenomina of its surface, including the science of weather and climate. (Scientific recreative Series.) Lond. 1888. P. 8vo. (12mo.) 1s, cloth 1s 6d, 75c.

Marvels under our feet, Hartwig G. 1888. 2s. 355.

Marvin, C. The region of eternal fire: an account of the journey to the 522 petroleum region of the Caspian in 1883. Pop. ed. Lond. 1888. P. 8vo. (12mo.) 7s 6d, \$3.00.

Mathers, Edw. P. Golden South Africa; or the gold fields revisited: being 523 further glimpses of the gold fields of South Africa. 4th ed. With maps. Lond. 1888. P. 8vo. bds. 2s 6d. Wk. Mather, J. The coal mines: their dangers and means of safety. To which

524 is added the report of the South Shields committee, appointed to investigate the causes of accidents in coal mines. With plans. Lond. 1868. Ck-Lm-V.

Folio (Roy. 8vo) £1.1s, \$8.40.

Matheson, E. Aid book to engineering enterprise abroad. Part I., Illus. Lond. 1878. 8vo, 12s 6d, \$5.00. o. p. see also No. 526. Ck-Sp-V.

Matheson, E. Aid book to engineering enterprise abroad. enl. ed. 2 vol. in one. Illus. Lond. 1889. £1. 1s, \$7.50. New rev. and 526 Ck-Sp-V.

Contents:—Public works; concessions for enterprises in foreign countries; railways; telegraphs; harbors and docks; bridges; irrigation and reclamation; water works; town drainage; gas works and electric lighting; tramways; markets; MINING ENTERPRISE: the conditions under which mining is permitted in different countries, royalties, circumstances which determine success or failure in regard to coal, copper, gold, iron, lead, silver, th; contract and purchase in the iron and engineering trades, various methods of contracting for works and purchase described and compared; establishment of factories; transmission of power; the commerce in coal, iron, and steel; conditions which determine choice and value for export; the various kinds of iron and steel, their uses, tests, relative value, and prices; usual shapes and sizes, and rules as to extras; Bessemer, open-

Ck-Cn-Lg-V.

hearth, and basic steel described, and the choice of carbon percentage, strength and nearth, and basic seer described, and the choice of caroni percentage, strength and quality for various purposes. The purchase of steam engines. Pumping engines and pumps, classified and compared, fire extinction, tanks, pipes, with sizes, weights, and prices. Machine tools. Hydraulic tools. Hydraulic and cleetric welding. Cranes. Contractors' plant. Excavating and boring tools. Portland cement. Iron roofs and buildings. Lighthouses.

527 Mauchline, Robt. The mine foreman's hand-book of practical and theorectical information, questions and answers on practical and theoretical mining, especially designed to assist in passing examinations for mine foremanship. Shenandoah, Pa. 1887. 8vo, \$2.00.

Ck-Cn-Co-Sp-Wn. N. B.-Contains: mine-gases; safety lamps; ventilation; problems in ventilation; maps;

mine timbers; opening of collieries. Mayer, John. Metallurgy. Illus. N. Y. (n. d.) 16mo. 75c.

528 529 Meade, Rich. The coal and iron industries of the United Kingdom. Comprising a description of the coal fields, and of the principal seams of coal, with returns of their produce and its distribution and analyses of special varieties. Also, an account of the occurrence of iron ores in veins or seams; analyses of each variety; and a history of the rise and progress of pig iron manufacture since the year 1740, exhibiting the economies introduced in the blast furnaces for its production and improvement. With maps of the coal fields and ironstone deposits of the United Kingdom. Ck-Lg-V Lond. 1881. 8vo. £1. 8s, \$11.20.

Mechanical engineering of collieries. Percy, C. M. I, 1882.

1885. 25s. 634.

532

Mechanical ventilation, see Percy II, 634. Medals of creation. Mantell, G. A. 15s. 515.

529a Meldola, R. Coal and what we get from it. Lond. 1891. Cr. 8vo. (12mo) 2s 6d. N. B.-Treats of coal and coal gas; bye-products of the manufacture of gas, and the production of coloring matters from coal-tar.

-530 Memoirs of the geological survey. England and Wales. The geology of the country around Lincoln. Explanation of sheet 83. By W. A. E. Ussher,

A. J. Jukes-Browne and Aubrey Strahan. In part from notes by W. H. Penning, W. H. Dalton, and A. C. G. Cam'eron. Lond. 1888. 38. E. Memoirs of the geological survey. England and Wales. The geology of North Cleveland. Explanation of quarter sheets 104 S. W., S. E. New series, sheets 34, 35. By George Barrow. Lond. 1888. 18 6d. E. Mercury. see Aaron 2, Kerl I, 445; Lock 495a, Osborn 605, Phillips 643, Spon part 77, 774; Spon, part 15, 775; see also Metallurgy.

Merivale, J. H. Notes and formulae for mining students. 2d rev. ed. Lond. 1887. P. 8vo. (12 mo.) 28 6d. \$1.00. 531

Lond. 1:87. P. 8vo. (12mo.) 2s 6d, \$1.00. Metal founding, see Foundry practice.

Metallic Alloys. See also Brass—Britannia Metal—Bronze. Brannt, W. T. Metallic alloys. 1889. \$2.50. 110.

Guettier, A. Pract. guide for manuf. of metallic alloys. 1872. \$3.00. Krupp and W. Metallic alloys. 1889. \$2.50. 463: see Brannt 111.

Metallic wealth of U. S. Whitney, J. D. 1854. \$2.50. 888.

Metalliferous Minerals and Mining. See also Mines—Metals—Minerals—Ores. Collins, J. H. Metal mining. 1875. 1s. 163.
Davies, D. C. Treat. on metall. minerals and mining. 1888. 12s 6d. 209.
Smith, W. W. Metallic mining. 3s 6d. (Bevan's B. M. I.) 766;
see Lock 495, Phillips 643.

Metallurgical exhibits, see Ashbury, T. 36.

Metallurgical furnaces, see Mills 545.

See also Alloys-Aluminium-Amalgams-Anthracite Fur-Metallurgy. naces—Arsenic—Bismuth—Blowpipe Anal.—Cadmium—Chemistry— Chromium—Cobalt—Copper—Electro-Metallurgy—Electrolysis—Hydrometall.-Mercury-Roasting-Leaching-Testing.

Barry, H. Russian metallurgical work. 1870. \$2.00. 52. Centennial exhibition, reports. 1878. \$2.00. 139.

Church, J. A. Metallurgical journey in Europe. 1873. \$2.00. Etheridge, and J. Catalogue of works, etc. 10s. 245. 145a.

Gower, A. R. Elem. Text-book of metallurgy. 1888. 3s. 314. Greenwood, W. H. Manual of metall. 2v. 6s 6d. 331. Gruener, M. L. Blast furnace phenomena. 1874. 7s 6d. 338. Hiorns, A. H. Praet. metall. 1888. 6s. 373.

Hiorns. Textb. of elem. metall. 1888. 4s. 374. Kerl, B. Pract. treat. on metall. 3v. 1868—70. 99s. Mayer, J. Metallurgy. 75c. 528. Overman, F. Treat. on metall. 1887. \$5,00. 612.

Percy, J. Metallurgy, 7 parts. 1875. 632.
Phillips, J. A. Metallurgy. 1887. 36s. 643.
Phillips, J. S. Explorer's, etc. comp. 2d ed. 1873. \$10.50. 646.
Phillips and D. Records of mining and metall. 1857. \$2.00. 647.

Roberts-Austen. Introd. to metallurgy. 1891. 6s. 691. Williamson, A. W. Metallurgical process. 1877. 20c. 903; see Bayley 29, Booth and M. 102, Byrne 129, Campin 134, 135; Gautier 290, Lock 495a, Miller 543, Pourcel 655, Spon, part 77, 774; Sutton 791, Wilson 904.

Metallurgy, of Aluminium, see Makins 511, Antimony, see Makins 511, Arsenic, see Makins 511, Bismuth, see Makins 511, British ordnance, see Maitland 510, Cadmium, see Makins 511, Chromium, see Makins 511, Cobalt, see Makins 511, Copper, see Lamborn 468, Makins 511, Piggot 649; Gold, see Egleston 234, Eissler 236. Makins 511, Iron, see Bauerman 58, Kerl II 445, Makins 511, Percy III, 632, Phillips 643, Rogers 701, Wedding 879, Lead, see Lamborn 469, Makins 511, Manganese, see Makins 511, Magnesium, see Makins 511, Mercury, see Egleston 234, Makins 511, Nickel, see Makins 511, Palladium, see Makins 511, Platinum, see Makins 511, Pottassium, see Makins 511, Precious metals, see Makins 511, Silver, see Egleston 234, Eissler 237, Lamborn 469, Makins 511, Sodium, see Makins 511, Steel, see Howe 385, 386, Landrin 471, Makins 511, Tin, see Flower 259, Makins 511, Titanium, see Makins 511, Uranium, see Makins 511, Zinc, see Makins 511.

Metal mining, principles of. Collins, J. H. 1875. 1s. 163.

Metals. See also Arsenic-Bell metal-Bismuth-Chromium-Cobalt-Copper—Precious metals—Zinc—Tin.

Bloxam, C. L. Metals, properties and treatment. 1882. 5s.

Del Mar, A. Precious metals, 10s6d. 215.

Pepper, J. H. Playbook of metals. 5s. 631. Scoffern, etc. Useful metals. 1869. 7s 6d. 733.

Treat. on progress, improvement of manuf. in metals. 1831. \$3.50. 830. Wright, C. R. A. Metals and their applications. 1878. \$1.25, 947; see Lock 495a, Smith 759.

Metals occurring sparingly in iron, see Howe, 385, 386.

Metals, planing of. See Report 679.

Mexican mines.

Dahlgren, C. B. Historic mines of Mexico. 1883. 52s 6d. 182.

Mexican mining code.

Chism, R. E. Mining code of Mexico. 1889. \$1.00. 143. Hamilton, L. Mexican Law. 1882. \$6.00 net. 349. Mining code of Mexico. 1885. \$2.00. 550.

Mexican process of leaching, see Aaron 4.

Michell, St. Mine drainage: being a complete and practical treatise on di-533 rect-acting underground steam pumping machinery, with a description of a large number of the best known engines, their general utility and the special sphere of their action, the mode of their application, and their merits compared with other forms of pumping machinery. Illus. Lond. 1881. 8vo. 15s, \$6.00. B-Ck-Lg-V.

Microscopical physiography. Rosenbusch, H. 1889. \$5.00. 708. 534 Milford, Ph. Pocket dictionary of mining terms. Lond. 1888. 18mo. 1s,

Ck-Wn-Wu. 40c. 535 †Miller, Hugh. Cruise of the "Betsy", with rambles of a geologist. New ed.

Edinburgh, 1889. P. 8vo. 3s 6d. Nc-Sf. Miller, Hugh. Edinburgh and its neighborhood. Geological and historical. With the geology of the bass rock. Edinburgh (n. d.) Cr. 8vo. 5s. Nc.

Miller, Hugh. Footprints of the Creator; or, the asterolepis of stromness. 537 With preface and notes by Mrs. Miller, and a biographical sketch by Prof. Agassiz. Illus. Edinburgh 1889. Cr. 8vo. 5s.

Miller, Hugh. Sketch book of popular geology. Edinburgh 1889. Cr. 8vo. 538 (12mo) 5s, \$1,50. Nc-Sf-V.

Miller, Hugh. The old red sandstone; or, new walks in an old field. Illus. 539 Nc-Sf-V. Edinburgh 1889. Cr. 8vo (12mo) 5s, \$1.50.

Miller, Hugh. The testimony of the rocks; or geology in its bearings on 540 the two theologies, natural and revealed. Illus, Edinburgh 1889. Cr. 8vo. Nc-Sf.

Miller, J. Coal mine gases and ventilation. Lond. 1878. P. 8vo. 10s 6d. Lm.

541 542 Miller, S. A. North American geology and paleontology, for the use of amateurs, students and scientists. Illus. Cincinnati, O., 1889. Ck-V.

Miller, W. J. The mining and metallurgical exhibits of the Glasgow Exhi-543 bition, in 1888, I, No. 434. Milling gold ores, see California 129b, Eissler 236.

544

Milling silver ores, see Eissler 237.

Mills, John, and Barker, N. A hand-book of quantitative analysis. Illus. Lond. 1889. P. 8vo. (12mo.) 3s 6d. \$1.40.

Ce—Sp.

Mills, E. J., and Rowan, E. J., assisted by others, including Mr. F. P. Dewey, of the Smithsonian Institute Washington. Fuel and its applications; being the first of a series of works on chemical technology; or chemistry in its application to a series of works on chemical technology; or chemistry 545 in its application to arts and manufactures, ed. by Chas. Edw. Groves, and Wm. Thorp. W. 7 pl. and illus. Phila. 1889. Roy. 8vo. cloth \$7.50; half mor. \$9.00. Bs-Cg-Sp.

Mine engineering. See also Drainage—Mine Surveying.

Greenwell, G. C. Pract. treat. on mine eng. 1870. 52s 6d. 327; 1889.

15s. 328. 1889. 80c. 329.

Michell, S. Pract. treat. on mine drainage. 1881. 15s. 533. Percy, C. M. Mech. eng. of collieries I. 1882, 158, 633; II, 1885, 258, 634. Phillips, J. S. Explorer's etc. companion, 2d ed. 1873, \$10.50, 646. Mine foreman's hand-book. Mauchline, R. 1887, \$2.00, 527.

Mine labor in Hocking Valley, see Walker 862.

Mine plants, see Brough 114.

Mine railways, see Light 487, Colliery 155, Hyslop 406.

Mine surveying. See also Angular Survey.—Subterraneous Survey.

Brough, B. H. Treat. on mine surveying. 1888, 786d. 114.

Fenwick and B. Subterraneous surveying. 1888. 286d. 256.

Haskoll, W. D. Engineer's field book. 1888. 128. 359.

Hearding W. H. Pract potes on mining surveying. 259. 21.75.

Hearding, W. H. Pract. notes on mining surveys. 1872. \$1.75. Hoskold, H. D. Pract. treat. on min. surveying. 1860. \$3.00. Lintern, W. Mineral surveyor. 1889. 3s 6d. 488. Rickard, W. Miner's manual. 1859. 10s 6d. 688. see Colliery 155, Fairley 252, Wardle 868—70.

Mine timbers, see Mauchline 527.

Mine ventilation, see Ventilation. Miner's almanack, see Colliery 155a.

Miner's calculator.

Bainbridge's coll. man. calcul. 12s 6d. 43a. Ireland, J. Colliery ready reckoner. 186d.

Patent calculator 1891. 75c. 622.

Tarbuck, J. Mine rent reckoner. 2s 6d. 804.

Miner's dial, see Brough 114.

Miner's guide. Budge, J. 1845. \$5.00. 123.

Miners of U. S., see Balch 45.

Miner, the practical. Daddow and Bannan. 1866. \$7.50. 181.

Mineral analysis. See also Mineralogy—Assaying—Anal. Chem.—Blowpipe. Osborn, H. S. Manual of minerals. 1888. \$4.50. 605.

Rammelsberg, C. F. Analysis of alloys, etc. 1872. \$2.25. 664. Wohler, F. Handb. of mineral anal. 1871. \$3.00. 942.

see Rocholl 694.

Mineral lands within railroad grant, see California 129d.

Mineral oils, see Oil—Petroleum.

Mineral physiology. Hunt, T.S. 1886. \$5.00 399; 1890. \$5.00 400.

Mineral products of U.S., see California 129c.

546 Mineral resources of Ontario, 1890. Report of the Royal commission. Toronto 1890. \$3.00. Fa-Wb.

Mineral resources of the U.S., calendar year 1886. By Dav. T. Day, Chief 547of division of mining, statistics, and technology. (U. S. Geol. Survey.) Wash., D. C. 1888. Demy 8vo. 50c.

Mineral resources of the states and territoriesWest of the Rocky Mountains. 548 10 vols. Wash., D. C. 1867—77, 8vo. (\$18,00.) Comprising: Browne, J. R. and Taylor, J. W. Reports for 1866, '67. Wash. 1867, '68. (@ \$1.50.) Raymond, R. W. First report for 1868. Wash., D. C. 1869. 8vo. (\$1.50); Second report for 1869. Wash., D. C. 1870. 8vo. (\$2.00.) Third report for 1870. Wash., D. C. 1871. 8vo. (\$3.00.) Fourth and fifth reports for 1871, 72. Wash., D. C. 1872, 73. 8vo. (each \$2.00.) Sixth report for 1873. Wash., D. C. 1874. 8vo. (\$3.00.) Seventh and eight reports, for 1874, '75. Wash., D. C. 8vo. (each \$2.00.) Ck-Ga.

N. B.—The prices appear here in parenthesis, being those given in a recent catalogue of Messrs. Clarke & Co.

Mineral resources.

Browne, J. R. Min. resources West of Rocky Mountains. 1868. \$3.00. 119. Campbell, J. L. Min. res. of James River Valley, Va. 1884. \$1.00. 133. Dawson, J. W. Acadian geology. 1878. 218. 213. Jenney, W. P. Mineral wealth of Black Hills, Dak. 1876. 50c. 422. McDougall, J. Min. res. of Canada, in Fairchild 251.

Mineral resources of Ontario. 1890. \$3.00. 546.

Mineral resources of U. S. 1886. 50c. 547.

Mineral resources of U. S. 1886. 50c. 547.

Mineral res. West of Rocky Mountains 1867—77. \$18.00. 548.

Patton, J. H. Natural res. of U. S. 1888. \$3.00. 625.

Pearson, A. N. Mineral resources of India. 1883. 28 6d. 627.

Stuart, G. Montana as it is. 1865. \$2.00. 785.

Williams, A. Min. res. of U. S. 1883. 50c. 894.

see California 129a to 129d; Daddow 181, Stansbury 777, Swinney 798.

Mineral wealth of New Spain, see Anderson 14.

Mineralogia cornubiensis. Pryce, W. 1778. (\$10.00) Scarce. 661. Mineralogical societies, see Official 596, 597.

Mineralogy. Elementary and advanced treatises. See also Blowpipe Anal. -Crystallography.—Ores.

Ansted, D. T. Elementary course in mineral. 12s. 26. Bauerman, H. Descriptive mineral. 1884. 6s. 56. Bauerman. Systematic mineral. 1881. 6s. 57. Bristow, H. W. Glossary of mineral. 1881. 6s. 113.

Brush, G. J. Determinat. mineral. 1890. \$3.50. 120.
Brush, G. J. Determinat. mineral. 1890. \$3.50. 120.
Buckland, F. T. Geology and mineral. 2 v., each 5s. 121.
Cleaveland, P. Elem. treat. on mineral. 2 v. 1822. (\$3.00) 15
Collins, J. H. Mineralogy, elem. ser. 1s. 157; 75c. 158.
Collins. The same. Advanced. 2 v. 1884. 6s. 159; \$2.50, 160.
Collins. Mineral, of Devon and Cornwall. 4s 6d. 161.

Collins. Mineral, of Devon and Cornwall. 4s 6d. 161.
Cyclopaedia of the arts, etc. \$6.00. 180.
Dana, E. S. Progress of mineral. 1885. n. p. 185; 1886, n. p. 186.
Dana. Textbook of mineral. 1889. \$3.50. 187.
Dana. Manual of mineral. 1887. \$2.00. 191.
Dana. Manual of mineral. and petrog. 1889. \$2.00 192.
Dana, and B. System of mineralogy: (descriptive.) 1889. \$10.00.
Dana. Appendices. 1882. \$2.00. 196.
Dana. 3d appendix. 1882. \$1.50. 197.
Egleston, T. Lectures on mineral. 1872. \$4.50. 233.
Elderhorst, W. Manual of determinat. miner. 1881. \$2.50. 239.
Erni, H. Mineralogy simplified. 1885. \$3.00. 243.
Etheridge, and J. Catalogue of works, etc. 10s. 245. Etheridge, and J. Catalogue of works, etc. 10s. 245.

Eyerman, J. Determinat. mineral. 1890. \$1.15. 249. Foye, J. C. Handb. of mineral. 1886. 50c. 270. Foye. Tables for determin. of minerals. 1882. \$1.00. 271. Frazer, P. Tables of minerals 1877. \$2.00. 272; 1891. \$2.00. 273. Fuchs, C. W. C. Determinat. of minerals. 1875. 5s. 280.

Fuchs, C. W. C. Determinat. of minerals. 1875. 5s. 280. Greg and L. Mineral. of Gt. Britain. 15s. 332. Hogan, K. E. Elem. mineral. 1889. 50c. 377. Hooker, W. Mineralogy. 90c. 380. Hunt, T. S. Mineral physiology. 1886. \$5.00 399; 1890. \$5.00. 400. Hunt. System. mineral., in press. 401. Hussak, E. Determin. of minerals. 1885. \$2.00. 402. Jameson, R. System of mineral. 3 v. 1820. \$5.00. 416. Jewesbury, F. N. Mineral. tables. 1s6d. 426. Nicol, J. Elem. of mineral. 7s 6d. 583. Orton, J. Underground treasures. 1887. \$1.50. 604. Osborn, H. S. Manual of minerals. 1888. \$4.50. 605. Overman, F. Pract. mineral. 1882. \$1.00. 611. Plympton, G. W. Blowpipe, 1881. \$1.50. 652.

Plympton, G. W. Blowpipe, 1881. \$1.50. 652.

Ramsay, A. Rudiments of mineral. 1885. 3s 6d. 665. Rutley, F. Mineralogy. (Elem) 2s. 720. Shepard, E. M. System. mineral record. 60c. 742a. Smith, E. H. Pocket geologist. 1890. \$1.00. 758. Southwick, A. P. Questionbk of mineral. 1883. 10c. 773 Sweeny, W. S. Nat. science note book I 1886. 20c. 795, Timbs, J. Yearbook of science. 1863—1873. \$10.00. 827. Wheeler, C. G. Elem determin mineral. 1880. \$100. Wheeler, C. G. Elem. determin. mineral. 1880. \$1.00. 885. Wheeler. Outlines of determin. min. 1884. \$1.00. 886; see Alford 11, Bayley 59, Berge 77, Booth 102, Boyd 108, Cornwall 170, Geol.

Rec. 302, Mott 562, Winchell 925.

See also Antimony—Asbestos—Asphalt—Baryta—China Clay— Clay — Cobalt — Corundum—Crystalline Rocks—Emery—Graphite—Gypsum—Haloid Minerals—Metalliferous—Mines—Opal—Quartz—Testing— Mineralogy—Ores. Bartlett, F. L. Minerals of New England. 1877. 50c, 25c. 55. Centennial exhibition, reports. 1878. \$2.00. 139. Clapp, H. L. Common minerals. 1889. 30c. 146. Clapp. Note book. 1889. 15c. 147. Clapp. Note book. 1889. 15c. 147.
Crosby, W. O. Common minerals. 60c. 176.
Crosby. Tables for determin. \$1.25. 177.
Davies, D. C. Earthy minerals. 1888. 12s 6d. 208. Davies, D. C. Earthy minerals, 1888, 128 6d, 208.
Davies, Metalliferous min, 1888, 128 6d, 209.
Kensington, E. T. Chem. compos. of min, 1876, 5s, 444.
Liversidge, A. Minerals of New S. Wales, 1888, 188, 490.
Osborn, H. S. Pract. manual of minerals, 1888, \$4.50, 605.
Pryce, W. Mineralogia cornub, 1778, Scarce, 661.
Richards, H. First lessons in minerals, 10c, 683.
Rutlay, E. Rock forming minerals, 10c, 683.

Rutley, F. Rock forming minerals. 1888. 7s 6d. 721.
Silberbach, J. H. Handb. of mineral products. 1888. 6d. 748.
Smith, E. H. Pocket geologist. 1890. \$1.00. 758.
Smith, F. H. Rocks, minerals, stocks. 1882. \$1.50. 759;

see Bowen 104, Cole 154, Swinney 798.

Minerals, catalogues of.

Chester, A. H. Catalogue of min. 1886. \$1.25. 141. Egleston, J. Cat. of min. 1889. n. p. 232. Robinson, S. Cat. of Amer. min. 1825. (\$3.75) 693. Minerals, importance of, see California 129b.

Minerals, law relating to.

Blanchard and W. Law of mines, etc. 1877. \$7.50. 88. Macswinney, R. F. Law of mines, etc. 1884. 35s. 508. Minerals of South Wales, see Swinney 798.

Mines and mining. See also Accidents—Asphalt—Atmosphere—Barrels— Coal mines—Comstock Mines—Copper—Drift Mining—Friction—Gases— Gold Mines—Haulage—Hydraulic Min.—Iron Mines—Leaching—Lead— Mexican Mines-Mine Engin.-Miners-Mining Code-Mining Industries Min. Mach.—Min. Schools—Mine Survey.—Natural Gas—Ore Deposits— Pits—Placer—Quartz—Prospecting—River Min.—Roasting—Safety Lamps Submarine—Testing—Timbering—Tin Min.—Tunneling—Underground— Valuation-Working.

Callon, J. Lectures on mining. 1890. \$3.00. 689 Centennial exhibition, reports. 1878. \$2.00. 139. Colorado. Biennial réport. 1887. 50c. 164. Collins, J. H. First book of mining. 1888. 1s 6d. 156. Daddow and B. Coal, iron, and oil. 1866. \$7.50. 181. Dahlgren, C. B. Hist. mines of Mexico. 1883. 52s 6d. 182. Davies, D. C. Earthy, etc. minerals. 1888. 128 6d. 208 Davies, D. C. Earthy, etc. minerals. 1888. 128 6d. 208
Davies. Metalliferous minerals. 1888. 128 6d. 209.
Dodd, G. Dictionary of manuf. 1869. \$1.50. 220.
East India. Hyderabad Decan Mining Co. 1888. 4s. 230.
Etheridge and J. Catalogue of works, etc. 10s. 245.
Hartwig, G. Workers under the ground. 1888. 2s. 358.
Hunt, R. Brit. mining. 1887. 42s. 393.
Hunt. Mineral statistics. 1880. 2s. 394.
Jones, L. A. A. Miner's manual. 1882. 2s 6d. 428.
Mauchline, R. Mine foreman's handb. 1887. \$2.00. 527.
Meriyale, J. H. Notes and formulae for min. stud. 1887.

Merivale, J. H. Notes and formulae for min. stud. 1887. 28 6d. 532

4s 6d. 549. 3 ary mines. 1890. 1s. 554. Mines and min. statistics. 1887. Mitton, A. D. Management of fiery mines. 1890. 1s. 554 Moreing, C. A. Telegraphic min. code. 1890. 10s6d. 555. Murphy, J. G. Pract. mining. 1889. \$1.50. 567. Overman, F. Pract. mineral. 1882. \$1.00. 611. Overman, F. Treat. on metall. 1887. \$5.00. 612. Osborn, H. S. Manual of min. and mines. 1888. \$4.50. 60 Phillips and D. Records of mining. 1857. \$2.00. 647. Pocket mining atlas. 1880. \$1.00. 653. Pott's mining register. 1890. 10s. 654. Ramsay, J. A. Laying of coaldust. 6d. 667; 1888. 25c. 668. Raymond, R. W. Statistics of mines. 1870. (\$4.50.) 672; 1871—76, (each \$3.00.) 673. Raymond. Mines of the West. 1865. (\$1.75.) 674. Report of inspectors of mines. 1887. 58 3d. 681. Rickard, W. Miner's manual. 1859. 1086d. 688. Skinner, W. Mining manual. 786d. 754. Smith, W. W. Metallic mining. 386d. in Bevan's 81. Stuart, J. M. Mining. 1879. \$1.00. 786. Transactions of Am. Institute of Min. U. S. Geol. Survey, v. 12. 1888. 848. Ure, A. Dictionary of arts, etc. 1878—81. 147s. 850. Weale's Dictionary of mining terms. 5s. 877. Whitney, J. P. Silver mining regions. 1865. 25c. 890; see Beeton 62, California 129a to 129d; Miller 543, Pryce 661.

549 Mines and mineral statistics for 1887. W. map. Lond. 1888. 4s 6d.

Mines and mineral statistics for 1887. W. map. Lond. 1888. 4

Mines, examination of, see Ricketts 689.

Mines in Virginia, see Virginia 855.

Mines, law relating to. See also Minerals—Mexican Min. Code.
Blanchard and W. Law of mines. 1877. \$7.50. 88.

Chism, R. E. Mining code of Mexico. 1889. \$1.00. 143.

Colorado. Biennial rep. 1887. 50c. 164.

Copp, H. N. American mining code. 1886. 50c. 166.

Copp. U. S. mineral lands. 1881. \$4.50. 167.

Macswinney, R. F. Law of mines. 1884. 35s. 508.

Morrison, R. S. Mining reports. 1882—89. 15v. \$75.00. 558.

Morrison and F. Mining rights. 1888. \$2.25. 559.

Rogers, A. Law rel. to mines. 1876. 31s 6d. 698.

Shinn, C. H. Land law of min. districts. 1884. 50c. 744.

Sickels, D. K. U. S. mining laws. 1881. \$6.00. 745. Sickels, D. K. U. S. mining laws. 1881. \$6.00. 745. Wade, W. P. American min. law. 1882. \$3.00. 857. Wilson, C. S. Mining laws of U. S. 1881. \$1.00. 905. Wilson and C. Min. laws of U. S. 1884. \$1.00. 906; see New York 576-78; United States 843, 844; Winchell 925. Mines, lighting of, see Wardle 868-70. Mining accidents, see Accidents in mines.

Mines, location of, see California 129d. Mines of U.S., see Balch 45.

Mining camps, see Shinn 743.

550 Mining code (the new) of the Mexican Republic, including the ordinance providing for the organization of commissions and tariff of regular fees and salaries. Trans. by Juan S. Hart. El Paso, Tex., 1885. 16mo. pap. \$2.00.

Mining code. Moreing, C. A. Telegraphic mining code, 1890. 10s 6d. Mining engineers, useful memoranda for, see Percy II, 634.

Mining formulae. Dron, R. W. 1890. 2s 6d. 227.

Mining industries, see Balch 45, Bevan 80, Higgin 369, Rein 677, United States 842.

Mining machinery. See also Air-compressing Mach.—Appliances—Automatic Expansion-Cages-Hauling-Mining Tools-Underground Steam Pump.-Winding.

Andre, G. G. Min. machinery. 1887—79. 72s. 17.
Blake, W. P. Mining machinery. 1870. \$2.00. 85.
Cornes, C. Min. machinery. 1889. 2s 6d. 168.
Cornes and C. Price-book of machinery. 10s 6d. 169.
Lock, C. J. W. Min. and ore-dressing machinery. 1890. 52s 6d. 495.

Rock drilling machinery. 1889. Gratis. 695; see Colliery 155, Davies 209, Eissler 236.

Mining of gold ores, see California 129d.

Mining picks, see Lock 495a. Mining plans, see Sopwith 771

Mining royalties. Sorley, W. R. 1889. 1s 6d. 772.

Mining schools.

White, J. S. Recent examin. papers. 1888. \$1.25. 887.

Mining terms.

Milford, P. Pocket dictionary of min. terms, 1886. 1s. 534;
see Anderson 15 Colliery 155

see Anderson, 15, Colliery 155. Mining tin. Charleston, A. G. 1884. 128 6d. 140.

Mining tools.

Morgans, W. Manual of min. tools. 1872. 3s 6d, 556;

see Andre 17.

Mississippi Expedition: Reports of explorations and surveys to ascertain the most practical and economical route for the railroad from the Mississippi river to the Pacific ocean, made under the direction of the Secretary of War in 1853—54, according to acts of Congress, March 3, 1854, May 31, 1854, and August 5, 1854. 12 vols. in 13 (the last volume being in two.) Maps and about a thousand plates, some colored, illustrating the botany, GEOLOGY, ornithology, ichthyology, costume and implements of the natives, etc., of the countries surveyed. Wash., D. C., 1855—60. 4to. (\$60.00.) (Originally cost \$300.00).

552 Mitchell, H. Diamonds and gold of South Africa. Account of the different diamond and gold fields and how to reach them. Laws of the Transvaal as regards mining, etc. List of South African companies. With maps. Lond. 1888. 8vo. 5s. Wu.

553 Mitchell, J. Manual of practical assaying; ed. by W. Crookes. 6th ed. partly re-written and enl. Illus. and pl. Lond. (1881) 1888. 8vo. £1. 11s 6d, \$10.00. B—Ck—Lm—Sp—V—Wm—Wn.

554 Mitton, A. D. The management of fiery mines. Durham 1890. 12mo. 1s.

Py—Sf.

Mixed metals, see Metallic Alloys.

Molybdenum, see Davies 208.

Moreing, C. A. Telegraphic mining code, alphabetically arranged. For the use of mining companies, mining engineers and all persons interested in

use of mining companies, mining engineers and all persons interested in mines. 3d ed. Lond. (1888.) 1890. 8vo, 10s 6d, \$4.25, interleaved \$6.25.

Cl—Sp—Wn—Wu.

Morgans, Wm. Manual of mining tools, for the use of mine managers,

Morgans, Wm. Manual of mining tools, for the use of mine managers, agents, students, etc., comprising observations on the materials from and processes by which they are manufactured, their special uses, applications, qualities and efficiency. (Weale's Ser.) Lond. 1872. 12mo. 3s 6d. \$1.25; atlas of engravings to same, containing 235 illustrations drawn to scale. Lond. 1872. 4to. 4s 6d, \$2.50.

B—Ck—Lg.

557 †Morris, John, and Jones, T. R. Geology. First series. Heads of lectures on geology and mineralogy in several courses. Lond. (n. d.) Fcap. 8vo. 2s 6d. Gu.

Morrison, R. S. Mining reports: cases on the law of mines found in the American and English reports; arranged alphabetically by subjects, with notes and references. Vols. 1 to 15. Chicago, Ill. 1882—'89. 8vo, shp., vols. 1 to 5, 13, 15, each \$5.25; vol. 6, \$5.50; vols. 7—12, 14, each \$6.25; vols. 1—15, \$75.00 net; vol. 16, including table of cases and digest of the entire series, in preparation.

559 Morrison, R. S., and Fillius, Jac. Mining rights in Colorado: lode and placer claims, possessory and patented, from the district organization to the present time. 6th rev. and enl. ed. Denver (1881) 1888. 16mo., shp.

\$2.25. C—Cd—Ck.

Morton, G. H. The geology of the country around Liverpool, including the North of Flintshire. 2d ed. Liverpool 1891. 8vo. 12s 6d. net. Pm.

561 Mosley, P. New method of mining coal, in 1882, I, No. 434.

562 Mott, H. A., jr. The chemist's manual: a practical treatise on chemistry; qualitative and quantitative analysis, stoichiometry, blowpipe analysis, mineralogy, assaying, toxicology, etc. New rev. ed. Illus. N. Y. 1883. Roy. 8vo. \$4.00.

Moulding. Overman, F. Moulder's and founder's pocket guide. 1882. \$2.00. 610; see Larkin 473.

N. B.—A larger list on this subject will be found in Handy Lists III.

Mouth blow pipe. See also Blowpipe Analysis. Scheerer, T. Use of mouth blowpipe. 1875. 4s,

Muir, M. M. P. A treatise on the principles of chemistry. 563 2d ed. Lond. 1891. 8vo.... \$4.50. Ca—Ma. 564

Munro, J. E. C. Sliding scale in coal industry: a paper at British Assoc. Manch. 1886. 8vo. 1s. Hm.

Murchison, Sir R. I. Siluria: a history of the oldest rocks in the British 565 Isles and other countries. 5th ed., including the Silurian system, with map and illus. 2 vols. Lond. 1873. 8vo. 18s, \$7.20. Mu-V.566

Murgue, D. Mine ventilation: the theories and practice of centrifugal ventilating machines, trans. and with an introduction by A. L. Steavenson. Lond. 1883. 8vo. 5s, \$2.00.

Murphy, J. G. Practical mining: a field manual for mine examinations, 567 with hints for investors in properties. N. Y. 1890. 12mo, mor., tucks, Sp-V-Wn. \$1.50.

568 †Murray, Alex., and Howley, J. P. Geological survey of Newfoundland. Rev. and corr. Including the annual reports of progress from the year of inception, 1864 to 1880. With maps and illus. Lond. (n. d.) Demy 8vo.

Mushet, Dav. Papers on iron and steel, practical and experimental. With 569 6 folding steel plates. Lond. 1840. 8vo. (published at £1.10s.) scarce and valuable. Ck.

Muter, J. Practical and analytical chemistry, quantitative and qualitative. New rev. ed. Illus. Lond. 1887. Roy. 8vo. (8vo) 6s 6d, \$2.00. Bh—Bs.

Napier, J. Manual of electro-metallurgy, with the application of the art 571 to manufacturing purposes. 5th ed. Illus. Lond. 1876. Cr. 8vo, (12mo) Ck—Fa—Gb—Sd—Sp—V. $7s\ 6d$, \$3.00. N. B.—A new ed. (reprint) in preparation.

Napier, J. The same. 4th American, from the 4th London ed., rev. and

572 enl. Illus. Phila. 1876. 8vo, \$1.50. B—Ck—Sp. Contents:—History of the art; description of galvanic batteries and their respective peculiarities; electrotype processes; miscellaneous application of the process of coating with copper; bronzing; deposition of metals upon one another; electro-plating, electro-gliding; results of experiments on the deposition on other metals as coatings; theoretical abser-

vations.

Narrow work, see Andre 18.

Natorp, G. Coal industry of the lower Rhine, and of Westphalia, in 1880, 573 II, No. 434.

Natural gas. See also Fuel.

Ashburner, C. A. Distribution of nat. gas. 40c. 33. Ashburner, C. A. Geology of nat. gas. 15c. 34. Ashburner, C. A. Petroleum and nat. gas. 50c. 3.
Bannister, L. Something about nat. gas. 25c. 48.
Weeks, J. D. Report for 1885. 20c. 881.
Weeks. The same for '86, '87, each 20c. 882.
Winchell, N. H. Natural gas in Minn. 938; see California 7th rep. 129a, Crew 175, Mills 545.

Needle disturbances, see Lintern 488.

573a Newberry, J. S. Report on Potsdam red sandstone as a building material.

Potsdam, N. Y. 1891. 32mo. pap. gratis.

New England, minerals of. Bartlett, F. L. 1877. 50c and 25c. 55.

New measure (a) for old time: an easy method of finding the age of the

earth's sedimentary crust, etc. By an amateur. Newport, I. o. W. 1889. P. 8vo, pap. 2d.

Newton, H., and Jenney, W. P. Geology and resources of the Black Hills 575 of Dakota. With an atlas. Wash., D. C. 1880. 4to; atlas in folio. n. p. Ga.

New York. The act authorizing the formation of corporations for manu-576 facturing, mining, mechanical, chemical, agricultural, medical, or commercial purposes, passed Feb. 17, 1848. With amendments to May 26, 1887. N. Y. 1888. 12mo., pap., 50c.

New York. The general statutes relating to the formation, regulation, etc., of corporations for manufacturing, mining, etc. With all the amendments to 1888. N. Y. and Albany, N. Y. 1888. 12mo. pap. 50c.

The same, with amendments, etc. to 1889. N. Y. and Albany, 578 N. Y. 1889. 12mo. pap. 75c; the same with amendments, etc. to 1891. N. Y. 1891. 4to. pap. \$1.50.

Nicholson, H. A. Text-book of geology. N. Y. (1871.) 12mo, \$1.05 net. 579

580 †Nicholson, H. A. The ancient life-history of the earth. An outline of the principles and leading facts of palaeontological science. Illus. Lond. (n. d.) Cr. 8vo. 10s 6d. Bo.

Nicholson, H. A., and Lydekker, R. A manual of palaeontology, for the use of students. W. a general introduction on the principles of palaeon-581 tology. 2d rev. and enl. ed. 2 vols., illus. Edinburgh 1879. 8vo. £2. 2s. \$15.00. Bo-V.

Nicholson, H. A., and Lydekker, R. The same. 3d ed., re-written and 582 greatly enl. 2 vols. Edinburgh 1889. 8vo. £3, 3s., \$22.50. Bo-V. Nickel, see Aaron 2, Kerl I, 445, Krupp and W. 463, Lock 495a, Osborn 605, Percy VII, 632, Phillips 643, Thurston III, 823.
583 †Nicol, J. Elements of mineralogy. 2d rev. and enl. ed. Illus. Edinburgh,

(n. d.) Cr. 8vo. 7s 6d, \$3.00. Bm-Ck.

Nicols, A. Geological history: chapters from the physical history of the 584 earth. Illus. N. Y. 1880. 12mo. \$1,25. Hd-V. Nitro-glycerine, see Eissler 238. Noice's battery, see Aaron, 4.

Non-metalliferous minerals, see Davies 208, Lock 495; see also Minerals. Nordenfelt, Th. Notes on iron ore deposits at Nacverhangen, in 1876, I,

585 No. 434.

Normandy, A. The commercial hand-book of chemical analysis; or, prac-586 tical instructions for the determination of the intrinsic or commercial value of substances used in manufactures, in trades and in the arts. Illus.

North, O. The practical assayer. Designed for explorers and those interested in mines. Illus. Lond. 1874. P. 8vo. 7s 6d, \$2.50. Cf—Ck. Northampton iron ore district, Butlin, W. H. 128. Notes and formulae for mining students. Merivale, J. H. 1887. 2s 6d. 532. Notes on a metallurgical journey. Church, J. A. 1873. \$2.00. 145a. 587

588 Nursey, P. F. Explosive compounds, in vol. 1869. Soc. Eng. Trans. 589

Nursey, P. F. Mechanical puddling, in vol. 1874. Soc. Eng. Trans. Nursey, P. F. Modern bronze alloys for engineering purposes, in vol. 1884. Soc. Eng. Trans. 590

Nursey, P. F. Recent development in high explosives, in vol. 1889, Soc. 591 Eng. Trans.

Nursey, P. F. Recent improvements in explosive compounds, in vol. 592 1871. Soc. Eng. Trans.

Nursey, P. F. Uses of blast-furnace slag, in vol. 1873. Soc. Eng. Trans. Nystrom, J. W. Pocket book of mechanics and engineering, containing a 594 memorandum of facts and connection of practice and theory. W. pl. 18th memorandum of racts and connection of practice and theory. W. p. rev. and greatly enl. ed. Phila. 1885. 16mo. mor. tucks; the same 19th rev. and enl. ed. by Wm. D. Marks. Phila. 1887. 12mo. mor. tucks, each \$3.50; 15s; the same, 20th rev. and enl. ed., with new original matter, by Wm. D. Masks. Illus. Phila., and Lond. 1891. 16mo. \$3.50, 15s.

B—Ck—Gb—Ld—Sp—V—Wn.

N. B.—The present edition of the standard work has been thoroughly revised by the author whose high reputation as an engineer and as an earnest worker in the advancement of mechanical science is sufficient guarantee of the comprehensiveness and accuracy of the book. It treats of the properties of air, heat and steam, the expansion of water, strength of materials, dynamics, acoustics, optics, assaying, and chemistry, etc.

Occlusion of gaseous matter by fused silicates. Bell, I. L. 67. Ocean placer, see California. 10th rep. 129d.

595 O'Driscoll, F. Notes on the treatment of gold ores. Illus. N. Y. 1889. Svo. \$2.00.

Sp-Wm Contents.—Some of the properties of gold; occurrences; remarks on the procedure of late years; losses; remedies; free milling.

596 †Official year-book of the scientific and learned societies of Great Britain and Ireland. Comp. from official sources. 6th annual issue. Comprising, together with other official information, lists of the papers read during 1888 before the royal societies of London and Edinburgh, the Royal Dublin Society, the British Association, and all the leading societies throughout the kingdom engaged in sciences generally; mathematics and physics, chemistry and photography, GEOLOGY, geography, and MINERALOGY, biology, economic science, mechanical science, literature, psychology, archaeolgy, etc. Lond. (n. d.) 786d.

597 †(Official year-book) the same, first issue, giving an account of the history, organization, and condition of membership of the various societies, with appendix on the leading scientific societies throughout the world. Lond.

(n. d.) 78 6d. Ohio coal field, see Roy 718.

598 Ohio. Report on the geological survey of Ohio, 3 vols. Columbus, O., 1873-78. 8vo. (\$12.50.)

599 Paleontology of Ohio. 2 vols. Columbus, O., 1873-75. 8vo. (\$15.00.) Ohio.

V. 600 Economic geology. Columbus, O., 1884. 8vo. (\$5.00). Oil, oil regions, oil wells. Daddow and Bannan. Coal, iron and oil. 1866. \$7.50. 181. Wright, W. Oil regions of Pennsylvania. 1865. \$1.50. 949; see Allen 12, Bevan's 81, California 129a, Crew 175, Davies 208, Leet 480,

Orton 603, Osborn 605, Ross 710, Smith 758.
Old red sandstone. Miller, H. 1889. 5s. 539.
601 †Oldham, Thom. Geological glossary for the use of students. Ed. by R. D.

Oldham. Lond. (n. d.) P. 8vo. 2s.

602 Otto, Dr. The most recent results obtained in Germany in utilizing the bye-products of the Hoffmann coke ovens, in 1884, II, No. 434. Opal.

Treatise on quartz and opal 1870. 6s. 828; Traill, G. W. see Davies 208.

Ores, ore deposits, dressing and machinery. See also Antimony-Asbestos-Gold Ores-Iron-Leaching-Lixiviation-Milling-Roasting-Testing-Treatment-Working.

Cotta B. Ore deposits. 1870. \$4.00. 172. Kunhardt, W. B. Ore dressing. 1884. 6s. 464.

Kustel, G. Concentration of ores. 1868. \$7.50. 466. Lock, C. J. W. Ore dressing machinery 1890. 52s 6d. 495. Phillips, J. A. Treatise on ore deposits. 1884. 25s. 644. Smyth, W. W. Lecture on ores of iron. 763. Whitney, J. D. Colorado, schedule of ores. 1867. 25c. 889; see Aaron 4, Cornwall 170, Davies 209, Erni 243, Kerl 446, Lock 495a, Ricketts 689. Smith 758. Snon. parts 79. 80. 774; Snon. part 15. 775; Thurston. etts 689, Smith 758, Spon, parts 79, 80. 774; Spon, part 15. 775; Thurston

II, 823. Ore formation, see Aaron 4.

Orton, Edw. Preliminary report on petroleum and inflammable gas in Ohio. Reprinted for the author, with a supplement, with maps, sections, 603 etc. Columbus, O., 1887. 8vo, pap. \$1.00, clo. \$1.25. S1-Wc.

N. B.—The report answers such questions as these; how were petroleum and gas formed and how accumulated? In what rocks are they contained? Are they forming now?—
This is the only volume which treats at length of the new horizon of gas and oil in Ohio and Indiana, viz.: the Trenton Ilmestone. The conditions under which oil and gas are found in this rock, the districts within which they can be looked for with most promise of success, and the reasons for failure or success in particular districts are pointed out. The most practical mode of measuring the flow of gas wells ever published are described in this volume.

The preliminary report of 1886 is rownisted units and to its assumption of the content of

The preliminary report of 1886 is reprinted entire, and to it a supplement is added, containing the more recent facts in the fields.

A map of the gas producing belts of Ohio at present developed is added and also a new map of great interest, showing the topography of the Trenton limestone in Western Ohio and by implication in Eastern Indiana.

604 Orton, J. Underground treasures: how and where to find them. A key for the ready determination of all the useful minerals in the United States. New enl. ed. Illus. Phila. (1881) 1887. 12mo. \$1.50.

B-Ck-Fa-Me. 605 Osborn, H. S. A practical manual of minerals, mines and mining, comprising suggestions as to the localities and associations of all the useful minerals, full descriptions of the most effective methods for both the qualitaOSB-PAL

tive and quantitative analyses of each of the minerals, and hints upon the various operations of mining. Illus. Phila. 1888. 8vo. \$4.50. £1.1s.

B-Ck-Me-Sp-Wn.

Osborn, H. S. The metallurgy of iron and steel: theoretical and practical, 606 in all its branches; with special reference to American materials and processes. W. pl. and illus. Phila. 1869. 8vo. \$25.00.

B—Ck.
Osmond, F. On the critical points of iron and steel. In 1890, I. No.

607

Overman, F. Manufacture of iron. Phila. 1854. 8vo. o. p., scarce. 608

Ck-V.

Overman, F. The manufacture of steel: containing the practice and prin-609 ciples of working and making steel. A handbook for blacksmiths and workers in steel and iron, wagon makers, die sinkers, cutlers and manufacturers of files and hardware, of steel and iron, and for men of science and art. Rev. and enl. ed. by. A. A. Fesquet. Illus. Phil. (1873) 1882. B-Ck-Wn.

Overman, F. The moulder's and founder's pocket guide: A treatise on 610 moulding and founding in green sand, dry-sand, loam and cement; the moulding of machine frames, mill-gear, hollow-ware, ornaments, trinkets, bells and statues; description of moulds for iron, bronze, brass and other metals; plaster of Paris, sulphur wax, etc.; the construction of melting furnaces, the melting and founding of metals; the composition of alloys and their nature, etc. New ed. with a supplement on statuary and ornamental moulding, ordnance, malleable iron castings, etc., by A. A. Fesquett. Illus. Phila. (1880) 1882. 12mo. \$2.00. B—Ck—Sp—V. Overman, F. Treatise on mineralogy, assaying and mining, with a descrip-

611 tion of the useful minerals and instructions for assaying and mining according to the simplest methods. 10th ed. Phila. 1882. 12mo. \$1.00.

B-Bs-Ck-Ld-V.

612 Overman, F. Treatise on metallurgy, comprising mining and general and particular metallurgical operations, with a description of charcoal, coke, and anthracite furnaces, blast-machines, hot blast, forge hammers, rolling

mills, etc. 6th ed. Illus. N. Y. 1887. 8vo. \$5.00. Am—B—Ck—V. Owen, Dav. D. Report of a geological reconnaissance of Indiana, made 613 during the years 1859 and 1860. W. pl. Indianapolis, Ind., 1862. 8vo. \$4.00.

Owen, Dav. D. Report of a geological survey of Wisconsin, Iowa and Min-614 nesota, and, incidentally, of a portion of Nebraska Territory. 2 vols. W. 15 pl., maps and illus. Phila. (n. d.) 4to. \$7.50. Owen, Dav. D. Second report of a geological reconnaissance of the middle

615 and southern counties of Arkansas, made during the years 1859 and 1860. Illus. Phila, 1860. 8vo. \$5.00. Ld-V.

Page, D. Advanced text-book of geology, descriptive and industrial. 6th 616 rev. and enl. ed. Illus. and glossary of scient. terms. Lond. 1876. Cr. 8vo. B—**B**o—V. (12mo) 7s 6d, \$3.00.

Page, D. Geology for general readers. A series of popular sketches in 617 geology and palaeontology. 2d enl. ed. Lond. 1866. Cr. 8vo. (12mo) 6s. \$2.40.

Page, D. Handbook of geological terms and geology. 2d enl ed. Lond. 618 1865. Cr. 8vo. (12mo) 7s 6d, \$3.00. Bo-V.

Page, D. Introductory text-book of geology. 12th rev. and enl ed and glossary. Lond. 1888. Cr. 8vo. (12mo) 3s 6d.
Page, D. The earth's crust. A handy outline of geology. 4th ed. 12th rev. and enl ed. Illus. 619

Edin-620 Bo-V. burgh, 1868. 16mo. 1s 6d, 75c.

Palxontology. See also Geology—Rhaeta Strata. Etheridge R. Stratig. geol. and palaent. 34s. 244. Etheridge and J. Catalogue of works, etc. 10s. 245. Keeping, W. Fossils and palaeont. affinities 1883. 10s 6d. 442. Page, D. Geol. for gen. readers. 1866. 6s. 617.

Marcou, J. B. Bibliog. of N. Amer. palaeont. 1889. n. p. 51

Marcou, J. B. N. Am. invertebrate palaeont. 1886. n. p. 519.

Miller, S. A. N. Amer. paleont. 1889. \$5.00. 542.

Nicholson, H. A. Ancient life-hist of earth. 10s 6d. 580.

Nicholson and L. Manual of paleont. 1879. 42s. 581; 1889. 63s. 582. Ohio palaentol. 2 vols. 1873—75. (\$15.00) 599.

Phillips, J. Manual of geology, I, 1885. 18s. 639; II 1885. 34s. 640. Seeley, H. G. Physical geol. and palaeont. 18s. 736.

Sharp, S. Rud. of geol. 4s. 740; see Geol. Record 302.

Palaeozoic rocks.

Sedgwick and M. British pal. rocks. 1851-55. 21s. 735.

621 Pamely, C. The colliery manager's handbook: a comprehensive treatise on the laying-out and working of collieries. A book of reference for colliery managers and for the use of coal mining students, preparing for first class certificates. Illus. and plans. Lond. 1891. 8vo. £1. 5s. \$10.00.

Parke's process, see Aaron 2. Patchen's process, see Aaron 4.

atent calculator for engineers. N. Y. 1891. $10x_3^2x_1^1$ inches, 75c. Sh. N. B—This calculator is announced to be a complete pocket-book for mechanical, mining, hydraulic-engineers, and for assayers, scientists, and men engaged in kindred brauches. Patent calculator for engineers. 622

New volumetric method of determining manganese in 623 manganiferous iron ores, spiegeleisen, steel, etc., in 1879, I, No. 434. 624

Pattinson, and Stead. The behaviour of arsenic in ores and metal during

smelting and purification processes, in 1888, II, No. 434.

Patton, J. H. Natural resources of the United States, compiled from in-625 formation placed at the disposition of the author by the governors of the various States, and from material derived from other authentic sources. N. Y. 1888. 8vo. \$3.00, 12s 6d.

Paul's pulverizing barrel, see Aaron 4.

626 Payen, B. H. Industrial chemistry: a manual for use in technical colleges or schools, and for manufacturers, etc. Edited and supplemented with chapters on the chemistry of the metals, etc., by B. H. Paul. Illus. Lond. 1878. 8vo. £2. 2s, \$10.50. B-Ck-Lm.

Pearls. See also Gems.

Streeter, E. W. Pearls and pearling life. 12s6d. 784.

see Kunz 465.

The development of the mineral resources of India. 627 Pearson, A. N. W. Diag. Lond. 1883. 8vo. páp. 2s 6d. \$1.00. Sp. See also Coal—Fuel.

Hall, C. E. Conversion of peat into fuel. 347. Leavitt, T. H. Facts about peat. 1867. \$2.00. 475. Peckham, S. F. Peat for domestic fuel. 1874. n. p. 628a. Richardson, R. Peat as substit. for coal. 1873. 186d. 684; see Clark 148, Mills 545, Percy I, 632.

Peat-charcoal, see Percy I,632.

Pebbles, see Hyatt 405, Kingsley 454—56.

Pechar, J. Paris International exhibition 1878: coal and iron in all coun-628 tries. Manch. 1878. 8vo. 5s. 628a Peckham, S. F., ed. Peat for domestic fuel. Minneapolis, 1874. pamphlet,

Peckham, S. F. Petroleum. Report on the production of technology, and uses of petroleum and its products. Wash. (n. d.) 4to \$3.50, 18s. Ck-Ga-Sp.

Pendred, H. W. Designs, specifications, and inspection of ironwork, in 630

vol. 1883, Soc. Eng. Trans.

Pepper, J. H. The play book of metals with experiments in the chemistry 631 of the fifty metallic elements, including personal narratives of visits to coal, lead, copper, and tin mines, etc. Illus. Lond. (n. d.) Cr. 8vo. (12mo) B-Ck-Rw-V 5s, \$2.00.

Percy, John. Metallurgy: the art of extracting metals from their ores and 632 adapting them to various purposes of manufacture. New rev. and greatly enl. ed. In 7 divisions with illus. drawn to scale. Division I: refractory materials and fuel. Illus. Lond. 1875. 8vo. £1. 10s. \$12.00.

N. B.—Contains: definition of metallurgy; on certain yhysical properties of metals, general considerations on metallurgical processes; slags; refractory materials; crucibles, furnaces, fire-bricks; fuel—comprising wood; peat or turf; coal; wood-charcoal; coke; peat-charcoal; combustible gases.

Division II: copper, zinc, and brass. In press.

PER-PHI

57

Division III: iron and steel. Illus. Lond. 1864, 8vo. (pub. at £2. 2s.) o. p. and scarce.

N. B.—A new rev. ed. with the author's latest corrections, and brought down to the present time, by H. Bauerman. Illus., in press.

Division IV: lead, including desilverization and cupellation. Illus. Lond. 1870. 8vo. £1. 10s, \$12.00.

N. B.—Contains: history, physical and chemical properties of lead; extraction of silver from lead; lead smelting.

Division V: silver and gold. Part I. Illus. Lond. 1880, 8vo. £1. 10s. \$12.00.

N. B.—Contains: historical notice; physical and chemical properties of silver; silver assaying and smelting.

Division VI: silver and gold. Part II. In preparation.

Division VII: tin, nickel, bismuth, arsenic, platinum, etc. In preparation. B-Ck-Le-Mu-Sd-V. The mechanical engineering of collieries. Vol. I. 4th rev.

and enl. ed. Illus. Lond. 1882. 8vo. 15s. Ck-Cn-Cp. Contents:—Mechanical ventilation; screening, picking and sorting; coal washing and coal heading; together with all the original matter revised on laying out surface plant at collieries, winding engines, colliery ropes and drums, cages and conductors; the Koepe system of winding; headgears and pulleys; brakes for winding and hauling; pitbanks and heapsteds; tipping and screening; steam boilers; ventilating machines; the indicator, winding; appliances, past, present future, history of the Wigan mining and mechanical school from foundation.

Percy, C. M. The mechanical engineering of collieries. Vol. II. 2d. rev. and enl. ed. Illus, Lond. 1885. 8vo, £1. 5s. Ck—Cn—Cp. Contents:—Mechanical system of screening; the exhaust injector; automatic expansion in winding engines; mechanical ventilation; pumping engines and appliances; haulage engines and arrangement; steel castings for colliery use; air compressing machinery; useful memoranda for mining engineers; etc. 634

635 Peters, E. D., jun. American method of copper smelting. A record of practical experience. With directions how to build furnaces and how to overcome the various metallurgical difficulties met with in copper smelting. Illus. N. Y. 1897. 8vo. \$4.00, 18s; the same, illus. N. Y. 1890. 8vo. \$5.00. B-Ck-Sb-Sp.

N. B.—Dr. Edward D. Peters has produced a work that is well-nigh a model of its kind. It contains much that is not found in any single work published, and that much is of value to the practical man in metallurgical work, because it is put so plainly that he who runs may read .- Mining Industry (Denver).

Petrifactions. Mantell, G. A. 6s. 514.

Petrography. See also Lithology.
Dana, J. D. Manual min. and petrog. 1889. \$2.00. 192.

Teall, J. J. H. Brit. petrog. 1888. 63s. 812. Williams, G. H. Modern petrog. 1886. 25c. 897. Petrographical tables. Rosenbusch, H. 1889, 3s 6d. 709.

Petrology. See also Crystallography—Lithology.

Hatch, F. H. Introd. to petrology. 1891. 3s 6d. 360; 1891. 90c. 361. Sedgwick and M. Brit. palaeozoic rocks. 1851-55. 21s. 735; see Geol. Rec. 302.

Petroleum.

633

Ashburner, C. A. Petroleum 50c. 35.

Bone, J. H. A. Petrol. and petrol. wells. 1865. 75c. 97.

Cones and J. Petrolia. 1870. \$3.00. 165.

Crew, B. J. Pract. treat. on petroleum. 1887. \$5.00. 175.

Henry, J. T. Hist. of petroleum. 1876. \$4.50. 367.

Leet, A. N. Petroleum distill. \$2.00. 480.

Little, G. H. Marine transport of petrol. 1890. 10s6d. 489.

Marvin, C. Region of eternal fire. 1888. 7s6d. 522.

Orton, E. Geol. survey of Ohio. 1887. \$1.25. 603.

Peckham, S. F. Report on petroleum. \$3.50. 629.

Redwood, B. Petrol. production and use. 1887. 50c. 676.

Wright, W. Oil regions. 1865. \$1.50. 949;

see Bayley 59, California 129a, Clark 148, Davies 208, Hunt, 39

see Bayley 59, California 129a, Clark 148, Davies 208, Hunt, 397, Ross 710, United States 841.

Petroleum as a fuel, see California 129a. Petroleum, law relating to, see Rules 719.

Phillips, H. J. Fuels, solid, liquid, and gaseous: their analysis and valuation for the use of chemists and engineers. Lond. 1890. P. 8vo. 3s 6d. Lg.

637 Phillips, J. Geology of Oxford and the valley of the Thames. Oxford, 1871. 8vo. £1. 1s, \$5.25 net. Ch-Ma.

Phillips, J. Guide to geology. 5th ed. Lond. 1864. 12mo. red. to 4s, \$2.00 638

Phillips, J. Manual of geology, theoretical and practical. Part I: physical geology and palaeontology, by H. G. Seeley. Lond. 1885. 8vo. 18s, \$6.50. Gb-V.

640 Phillips, J. Manual of geology; theoretical and practical. Part II: stratigraphical geology and palaentology, by Robt. Etheridge. Lond. 1885. 8vo. £1. 14s, \$12.00.

Phillips, J. Vesuvius. Oxford 1869. Cr. 8vo. 10s 6d, \$2.75 nct. 641 Ch-Ma.

642 Phillips, J. A. Copper, in Bevan's B. M. I., see No. 81.

643 Phillips, J. A. Elements of metallurgy: a practical treatise on the art of extracting metals from their ores. New rev. and enl. ed. by the author and by H. Bauerman. Illus. and fold. pl. Lond. 1887. Roy. 8vo. B-Ck-Gb-Ld-Me-Sp-V-Wn. £1. 16s, \$9.00.

General Contents:—A treatise on fuels and refractory materials; description of the principal General Contents;—A treatise on fuers and retractory materials; description of the principal metalliferous minerals, with their distribution; statistics of the amount of each metal annually produced throughout the world, obtained from official sources, or, where this has not been practicable, from authentic private information; methods of assaying the different ores, together with the processes of metallurgical treatment, comprising iron, cobalt, nickel, aluminium, copper, tin, Antimony, arsenic, zinc, mercury, bismuth, lead, silver, gold, and platinum.

N. B.—Many notable additions will be found in the sections devoted to iron, lead, copper, silver, and gold, dealing with new processes and development.

hilling, T. A. Treatise on ore deposits. Illus, Lond, 1884, 8vo. £1.5s.

644 Treatise on ore deposits. Illus. Phillips, J. A. Lond. 1884. Svo. £1. 5s, B-Ck-Fa-Ma-V.

645 Phillips, J. S. The explorer's and assayer's companion: rocks, veins, testing and assaying. Vol. 1 (complete in itself.) Illus. San Francisco 1879. Svo, \$6.00. Ck-Dc-Fa-Te. N. B .- This is vol. 1 of the third edition of explorers' miners' and metallurgists' companion.

Phillips, J. S. The explorer's, miner's, and metallurgist's companion. A 646 practical exposition of geology, exploration, mining engineering, assaying and metallurgy. 2d ed. Illus. San Francisco 1873. 8vo, \$10.50.

Ck-Dc-Fa-V.

647 Phillips, J. A., and Darlington, J. Records of mining and metallurgy.

Phila. 1857. 12mo. \$2.00 o. p.

Phipson, T. L. Phosphorescence, or, the emission of light by minerals, 648 plants and animals. Lond. 1862. 12mo. (18mo.) 5s, \$1.75. Phosphate of lime, see Davies 208. Phosphate rocks of S. Carolina. Holmes, F. S. 1870. \$1.25.

Phosphor-bronze, see Krupp and W. 463.

Phosphorescence. Phipson, T. L. \$1.75.

Phosphorus, see Davies 208.

Physics of the earth's crust. Fisher, O. 1889. 12s. 257.

Picking, see Percy I, 633,

Pig iron, chemical analysis, see Blair 84. Pig iron manufacture, see Meade 529.

Pig iron, separation of, from phosphorus, see Bell 69.

Pig making in Germany, see Schlink 731.

Piggott, A. S. The chemistry and metallurgy of copper, with a full description of the principal copper mines of the U. S., the art of mining, etc. 649 Illus. Phil. 1858. 12mo. \$1.00.

Pitbanks and heapsteads, see Percy I, 633.

Pits (New) for San Domingo mines, see Bernays 78a.

Placer mining, see Bowie 105.

650 Plan to accompany the report of the explosion at Udston Colliery. Lond. Pc. 1888. 6d. Platinum, see Kerl I, 445; Lock 495a, Osborn 605, Percy VII, 632, Phillips 643.

Plattner, T. H. Manual of quantitative and qualitative analysis, with the 651 blow-pipe. From the last German ed., rev. and enl. by Th. Richter. Trans. by H. B. Cornwall and John H. Caswell. 6th ed. Illus. and pl. N. Y. (1880) 1888. 8vo. \$5.00. Plattner process, see Aaron 3.

Plympton, Geo. W. The blowpipe: a guide to its use in the determination 652 of salts and minerals. Compiled from various sources. Illus. N. Y. B-Ck-Fa-V. (1874). 1881. 12mo. \$1.50.

Sp-V-Wn.

Pocket mining atlas. Compiled from the latest official surveys, and the most 653 authentic sources. N. Y. 1880. Obl. 16mo. Russia \$1.00. Potsdam sandstone, see Newberry 578a; Winchell 924.

Pott's mining register and directory for the coal and ironsides trades of Great Britain and Ireland for 1888. North Shields 1888. The same, for 654 1889, each, 8vo, 6s.; for 1890. 8vo 10s. Pv—Sf. Pourcel, A. The application of thermal chemistry to metallurgical reactions,

655 in 1889, I, No 434.

656 Practical mining. Murphy J. G. 1890. \$1.50. 567.

Precious metals. See also Gold—Silver—Platinum.
Blake, W. P. Report on prec. metals. 1869. \$2.00. 87.

Hake, W. 1. Report on prec. metals. 10s 6d. 215.

King, C. W. Nat. hist. of prec. metals. 1883. 6s. 450.

Makins, G. A. Matall. of prec. metals. 1873. 4s 6d. 511;

see California 129a, 129c; Report 680; Smith 759.

see California 129a, 129c; Report 680; Sinth 139.

Precious stones.—See also Crystallography—Diamonds—Jet—Opal.
Burnham, S. M. Prec. stones. 1886. \$3.50. 127.

Church, A. H. Prec. stones. 1883. 2s 6d. 144.

Dieulafait, L. Diamonds and prec. stones. 1875. 3s. 216.

Emanuel H. Diamonds and prec. stones. \$1887. 6s. 241.

Jones, W. History and mystery of prec. stones. 1880. 7s 6d. 432. King, C. W. Nat. hist. of prec. stones. 1883. 6s. 450. Kunz, G. F. Gems and prec. stones. 1890. \$10.00. 465. Rothschild, M. D. Handb. of prec. stones. 1890. \$1,00. 713.

Streeter, E. W. Prec. stones and gems. 1890. \$1.00. Westropp, H. M. Manual of prec. st. 1874. 6s. 884; see Smith 759.

657 **Prestwich**, J. Geological inquiry respecting the water-bearing strata of the country around London, with special reference to the water supply of the metropolis; and including some remarks on springs. W. map. and illus. Lond. (n. d.) 8vo. 8s 6d.

Prestwich, J. Geology: chemical, physical and stratigraphical. 2 vols. and 658 maps. Oxford 1886—88. Roy. 8vo, £3. 1s, \$15.25 net. Vol. I: Chemical and physical. Oxford 1886. Roy. 8vo (8vo) £1. 5s. \$6.25 net. Vol. II: straand physical. Oxford 1886. Roy. 8vo (8vo) £1. 3s. \$6.25 net. Vol. 11: Stratigraphical and physical, with new geolog. map of Europe, etc. Oxford 1888. Roy. 8vo (8vo) £1. 16s, \$9.00 net. B—Ch—Ma—Sp. 659 †Prestwich, J. The ground beneath us. Its geological phases and changes, being three lectures on the geology of Clapham and the neighborhood of London generally. W. 2 plates. Lond. (n. d.) 8vo 3s 6d. Gu. 660 Prestwich, J., Topley, W. and Goodchild, J. G. Geological map of Europe. Lond. 1888. 12mo, in case, 5s. Ch—Ma. Prospecting. See also Exploring—Mines

Prospecting. See also Exploring-Mines.

Anderson, J. W. Prospector's handbook. 1889. \$1.50.

Prospecting machinery, see Andre 17.

ryce, W. Mineralogia cornubiensis: A treatise on minerals, mines and mining, the theory and natural history of strata, fissures and lodes, with 661 methods of discovering and working of tin, copper and lead mines, etc. W. pl. and diag. Lond. 1778. Roy. 8vo, scarce.

· Puddling See also Iron—Furnace Practice.

Urbin and B. Guide for puddling iron, etc. 1868. \$1.00. 849; see Bell 68, 70; Howson 388, Justice 440, Kirk 458, Lewis 483, Nursey 589,

Smith 757, Smith-C. 762.

Pulsifer, W. H., comp. Notes for a history of lead and an inquiry into the 662 development of the manufacture of white lead and lead oxides. N. Y. La. 8vo. \$4.00.

Pulverizing machines, see Aaron 4.

Pumice stone, see Osborn 605.

Pumping, pumping machinery and appliances, see Andre 17, Percy II 634. Wardle 868—70.

663 Purdy, Wm. An essay on colliery explosions and safety lamps. Lond. 1880. 12mo. bds. (50c.) Purification.

Pattinson and S. Behavior of arsenic in ores and metal during smelting and purification. 624.

Pyroschists, see Hunt 397.

Quarrying. See also Slate-Stone. Burgoyne, J. Quarrying stone 1862. 1s 6d. 125. Collins, J. H. First book of mining and quarrying 1888. 1s 6d. 156. Macswinney, R. F. Law of mines, quarries, etc. 1884. 35s. 508. Stafford, H. N. Slate tables. 1880. \$3.00. 776. To builders and quarrymen: a circular 1880. 827a; see Davies 208, Rein 677, Spon's part 85. 774; United States 841.

Quarry tools, see Cornes and Calvert 169

Quartz and Quartz mining, See also Gold Mines.
Randall, P. M. Quartz operator's handbook. 1880. \$2
Traill, G. W. Treatise on quartz. 1870. 6s. 828, 671.
see Church 145, Davies 208, Davies 209, Eissler 236. 1880. \$2.00. 671.

Quicksilver, see Aaron 4, California 10th report 129b; see also Amalgams-Mercury.

664 Rammelsberg, C. F. Guide to a course of quantitative chemical analysis, especially of alloys, minerals and furnace products. Illus. by examples. Trans. by J. Towler. N. Y. 1872. 8vo, \$2.25. B-Ck-V-Wm. 665

Ramsay, A. The rudiments of mineralogy. A concise view of the general properties of minerals. 3d rev. and enl. ed. Illus. and pl. (Weale's Ser.)

Lond. 1885. P. 8vo. (12mo) 3s 6d, 4s, \$1.25. B—Ck—Lg—V. Ramsay, Sir A. C. Physical geology and geography of Great Britain. 5th enl. ed. Illus. and col. geolog. map of Great Britain. Lond. 1889. 666 P. 8vo, 15s.

Ramsay, J. A. On laying coaldust and purifying the atmosphere of mines, 667 etc. Reprinted from the Colliery Guardian. Illus. Lond. (n. d.) 8vo. 6d.

668 Ramsay, J. A. On laying coal-dust, and purifying and cooling the atmosphere in mines, tunnels, etc. Scranton, Pa. 1888. Pap. 25c.

Ramsay, J. A. Treatise on ventilating and working collieries. Lond. 1882. 669 La. 8vo. pap. 5s, \$2.00. Ck-Lm.

Randall, P. M. Practical hydraulics: a book for civil engineers, miners, 670 millmen, hydraulicians, mining engineers, and irrigators. San Francisco, 12mo, \$2.00. Ck—Dc—V.

Contents:—Discussion of the principles of hydraulics; rules deduced from formulae obtained; examples and calculations; extensive tables for ready reference; fundamental laws of hydraulics demonstrated and expressed in formulae and rules, flow of water through openings; weir coefficients; triangular weirs; flow of water over quadrant weir (tabulated); application of tables; submerged orifices; flow through orifices in thin partitions; tables and applications; miner's inches; tables and calculations; flow of water through short tubes and compound tubes; flow of water through pipes of velocities and cubic feet flows for giving fall per mile and diameter of pipe coefficient for bend—circular and angular flow through nozzles; inverted siphons; flow of water in open channels; extensive tables; rough and ready notes; hints for speedy and approximate estimates etc.

extensive tables; rough and ready notes; nints for specty and approximate estimates etc.

N. B.—This new work is by one of the most experienced hydraulicans of the country. It abounds with useful tables for ready reference, in which the results of abstruse calculations are all placed in a form so that one can find what he wants in a moment. For the engineer the principles, formulae, coefficients, etc., are given; and for those not familiar with higher mathematics, examples, rules, and tables are prepared. Thus the needs of the scientist and the practical miner or millman are each met. It is the most complete work on the subject yet published, and is specially applicable to the Pacific Coast.

Randall, P. M. The quartz operator's handbook. New rev. and enl. ed. Illus. N. Y. (1871) 1880, 12mo. \$2.00. 10s 6d. B—Ck—Fa—Sp—V. Raw coal used in blast furnace. Bell, I. L. 73.

Raymond, R. W. Statistics of mines and mining in the states and territories west of the Rocky Mountains. Wash., D. C., 1870. 8vo. (\$4.50.)

671

672 tories west of the Rocky Mountains. Wash., D. C., 1870. 8vo. (\$4.50.)

Raymond, R. W. The same. Wash., D. C., 1871—76, (each \$3.00.) V. Raymond, R. W. The mines of the West. A report to the Secretary of 673 674 the Treasury. N. Y. 1865. 8vo. (1.75) Ready reckoner for miners, see Bainbridge, 43a.

675 †Reason (The) why—physical geography and geology. Containing upwards of 1100 reasons explanatory of the physical phenomena of the earth, its geological history, and the geograpical distribution of plants, animals, and the human families. Illus. Lond. (n. d.) Cr. 8vo. 3s 6d. Hr. Records of the rocks. Symonds, W. 12s. 800.

Red sandstone, see Davies 208, Newberry 573a. Reduction, methods of, see Thurston II, 823.

Reduction of iron ores. Bell, I. L. 72.

Redwood, B. Petroleum: its production and use. Abridged from Cantor lectures before the Society of Arts, London. (V. N. S. S.) N. Y. 1887. 18mo. 676 B-Ck-V-Wn. Refining metals and minerals, see Bell 68, 70; California 129a, 129c; Eissler

Refractory materials, see Percy I, 632, Phillips 643.

Rein, J. J. The industries of Japan; together with an account of its agri-677 culture, forestry, arts and commerce, from travels and researches undertaken at the cost of the Prussian government. Illus. and maps. 1889. Roy. 8vo. \$10.00. An.

Report of an explosion at Udston Colliery, Hamilton. Lond. 1888. 11d. 678 Pc.

678a Report on explosives. 50th annu explosives for 1890. Lond. 1891. 50th annual report of Her Majesty's Inspectors of

Report of the United States Board, appointed to test iron, steel, and other 679 metals. Vol. II: 1, properties of the copper-zinc alloys; 2, tests of the copper tin-zinc alloys; 3, strength of iron girders and columns; 4, tests and analyses of steels; 5, tests of quality of steels for tools. With an appendix on the planing of metals, by M. Tresca. Illus. and pl. Wash., D. C. 1881. 8vo. (\$2 50.)

680 Report of the Director of the Mint upon the statistics of the production of

681

the precious metals in the U. S. Wash., D. C. 1881. 8vo. (\$1.00.) Ck.

Reports of inspectors of mines for 1887. Lond. 1888. 5s 3d.

Pc.

Rhaetic strata of the Val di Lerdo. Dale, T. N. 1876. \$1.76. 183.

Richards, J. W. Aluminium: its history, occurrence, properties, metallurgy, and application, including its alloys. Illus. Phila. 1887. 12mo.

(8vo) \$2.50, 12s 6d; the same, 2d rev. and greatly en. ed. Illus. Phila. 682 1889. 8vo. (Roy. 8vo.) \$5.00, £1.1s. B-Ck-Lo-Sp-V-Wn.

683 Richards, Mrs. H. First lessons in minerals. Bost. (n. d.) Pap. 10c. Hh.

684 **Richardson, R.** Peat as a substitute for coal. Lond. 1873. 8vo. 1s 6d.

685 Richter, Th. Plattner's manual of qualitative and quant. analysis, see Plattner, No. 651.

Richter, V. von. Chemistry of the carbon compounds, or, organic chem-686 istry; a complete textbook and laboratory guide for students. Trans. from 5th Germ. ed. Illus. Phila. 1891. 12mo. \$3.00; Iea. \$3.50. Bs. Richter, V. von. Inorganic chemistry; a textbook for students. 3d Amer-

687 ican, from 5th Germ. ed. Trans. by E. F. Smith. Illus. and col. pl. of

spectra. Phila. 1890. 12mo. \$2.00.

Rickard, Wm. The miner's manual of arithmetic and surveying. 688 Lond. 1859. 8vo. 10s 6d. Lm-V.

689 Ricketts, P. de P. Notes on assaying and assay schemes. With rules for the examination of mines, assayer's outfit, treatment of ores, etc. 12th rev. and enl. ed. Illus. N. Y. (1888) 1890. 8vo. \$3.00.

B—Ck—Fa—Wm. Ricketts, P. de P., and Russell, S. H. Skeleton notes upon inorganic chemistry. Part I. N. Y. 1887. Part II.—Metallic chemistry. N. Y. 1889. 690 Obl. 8vo., mor. \$2.00. Sp-Wm-Wn.

River mining, see California 129c.

River Orinoco gold mines. Barry, W. 53.

Roasting.

Kustel, G. Roasting of gold and silver ores. 1880. \$3.50. 467; see Aaron 4, Eissler 236, 237.

Roasting furnace, see Aaron 4.

691 Roberts-Austen, W. C. An introduction to the study of metallurgy. diag. Lond. 1891. Cr. 8vo. (12mo.) 6s, \$2.50. Gb-V.

Roberts-Austen, W. C. On the carburisation of iron by the diamond. In 692 1890, I, No. 434.

693 Robinson, S. A catalogue of American minerals, with their localities, etc. Bost. 1825. 8vo, half mor. (\$3.75.) Ck—V.

Rocholl, H. The separation of silica in the analysis of minerals, in 1880, I, 694 No. 434. Rock blasting. Andre, G. G. 1878. \$4.25.

Rock breakers, see Aaron, 4.

695 Rockdrilling and air compressing machinery of the Rand Drill Company.

A neat illus. catalogue, with tables, etc. N. Y. 1889. 8vo. pap. gratis. Ra. Rock drills.

Drinker, H. S. Explosive compounds and rock drills. 1883. \$5.00. 225; see Drinker 226, Spon, part 16, 775.

Rocks. See also Bass Rock—Blasting—Crystalline—Lithology—Palaeozoic— Petrifactions—Petrography—Petrology—Phosphate rocks—Silurian System-Stone.

Barnes, C. L. Rock history. 1884. 6s. 50. Bonney, T. G. Rock specimens from Socotra. Cotta, B. Rocks classified and described. 187 1883. 3s. 101.

Cotta, B. Rocks classified and described. 1878. 14s. 171. Crosby, W. O. Common minerals. 35c. 176. Irving, A. Chemical and physical studies in metamorphism of rocks. 1889.

Irving, R. D. Copper-bearing rocks. 1883. \$1.85. 412. Jannettez, E. Guide to determination of rocks. 1883. \$1.50. 417.

Kinahan, G. H. Handy book of rock names. 1873. 4s. 447. King and Rowney. An old chapter of the geological record.

Miller, H. Testimony of the rocks. 1889. 58. 540.

Phillips, J. S. Explorer's and assayer's companion. 1879. \$6.00. 645. Rosenbusch, H. Microscopical physiography of making minerals. 1889. \$5.00. 708.

Rosenbusch, H. Petrographical tables; 1889. 3s 6d. 709.

Rutley, F. Rock forming minerals. 1888. 7s 6d. 721. Rutley, F. Study of rocks. 1881. 4s 6d. 722; 1884. \$1.75. Smith, F. H. Rocks, minerals and stocks. 1881. \$1.50. 759.

Stockbridge, H. E. Rocks and soils. 1888. \$2.50. Symonds, W. Records of the rocks. 12s. 800.

Wadsworth, M. E. Lithological studies. \$3.00 net. 858. see Cole 154, Hunt 397.

Rocks, igneous, see Hatch 360, 361.

Rock salt, see Davies 208.

696 Rockwood, C. G., jr. An account of the progress in vulcanology and seismology in the year 1886. From the Smithsonian report for 1886—87. (Miscell. Coll. No. 699.) Wash., D. C. 1889. 8vo pap., n. p. Sk. Rocky Mountain gold and silver regions, see Fossett. 262.

odwell, G. F. Heat and halvid compounds of silver, mercury, lead and copper. Lond. 1881. 4to. 3s. Te. 697 Rodwell, G. F.

Rogers, A. Law relating to mines, minerals and quarries. 2d ed. 1876. 8vo, £1.11s 6d. \$12.00. 698 Lond. Ck-Ss.

Rogers, H. D. Geological and tepographical map of the anthracite fields 699 of Pennsylvania. Geological map of the state of Pennsylvania, and geological sections across Pennsylvania, to illustrate the geological map of the state. 12 sheets. Engraved by A. Keith Johnston. Phila. (n. d.) \$20.00.

Rogers, H. D. Geology of Pennsylvania. A complete treatise on the coal 700 formations. 3vols. W. pl. and maps. Phila. 1858; 4to. \$15.00.

Ck-Ld-V.

Rogers, S. B. An elementary treatise on iron metallurgy. Lond. 1857, 8vo. 701 £1.5s. \$5.00.

Rogers, Wm. The geology of the Virginias. A reprint of annual reports and other papers. W. maps, col. charts, etc. N. Y. 1884. 12mo. \$5.00. Am. 702

Roller mining machinery. Carter, J. H. 138.

Rollet, A. The Rollet process for producing a pure carbide of iron. In 703 1890, J, No. 434.

Rolling-mills, see Overman 612.

Roll turning.

Tunner, P. Treatise on roll-turning for manufacture of iron. 1869. \$10.00. 835.

Roscoe, Sir, H. E. Lessons in elementary chemistry, inorganic and organic. 704 New ed. Illus. N. Y. 1888. 12mo. \$1.50. $\mathbf{A}\mathbf{m}$ —B.

705 †Roscoe, Sir, H. E., and Schorlemmer, C. A treatise on chemistry. Illus. Lond. (n. d.) 8vo. £6. 18s., sold separately. Vol. I: The non-metallic elements. With a port. of Dalton. 18s; vol. II, parts 1,2, metals each 18s; vol. III, organic chemistry, parts 1, 2 each £1. 1s; part 3, 18s; part 4 £1. 1s.

Roscoe, Sir, H. E., and Schorlemmer, C. A treatise on chemistry. 3 vols: Illus. N. Y. (1884—89) 1888—90. 8vo. \$30.00; sold separately. Vol. I, non-metallic elements. N. Y. 1888. \$5.00; vol. 2, parts, 1, 2, metals. N. Y. 706 1889, 90, each part \$3.00; vol. 3, parts, 1, 2, organic chemistry. N. Y. 1890. each part \$5.00; vol. 3, part 3, org. chemistry. N. Y. 1890. \$3.00; vol. 3, part 4, org. chemistry. N. Y. 1888. \$3.00; vol. 3, part 5, org. chemistry. N. Y. 1889. \$3.00.

707 †Roscoe, Prof. What the earth is composed of. Illus. (Manch. Sci. Lect.) Manch. (n. d.) Cr. 8vo. 6d.

708 Rosenbusch, H. Microscopical physiography of the rock-making minerals. An aid to the microscopical study of rocks. Trans. by Jos. P. Iddings. 2d. ed. Illus. and pl. N. Y. (1888) 1889. 8vo. (Roy. 8vo.) \$5.00. £1. 4s. B-Ma-Sp-Wm.

Rosenbusch, H. Petrographical tables; an aid to the microscopical determination of rock-forming minerals. Trans. and ed. by F. H. Hatch. Lond. 1889. 4to. 3s 6d. \$1.40. 709

Ross, O. C. E. Air as fuel. Petroleum and mineral oils utilized, etc. 2d ed. Lond. 1875, P. 8vo. (12mo.) 3s 6d. \$1.40. Ck—Sp. 710

Ross, W. A. Alphabetical manual of blowpipe analysis. Showing all known methods, old and new. Illus. Lond. 1880. Cr. 8vo. (12mo.) 5s. 711 \$2.50. B—Ck—Te.

Ross, W. A. The blowpipe in chemistry, mineralogy and geology, con-712 taining all known methods of anhydrous analysis, many working examples and instructions for making apparatus. Illus. Lond. 1884. Cr. 8vo. (12mo.) 3s 6d. \$1.50; the same, 2d rev. and enl. ed. Illus. Lond. 1888 P. 8vo. (12mo.) 5s, \$2.00. B—Ck—Lg—Wn. Rothschild, M. D. A. handbook of precious stones. Illus. N. Y. 1890.

713 12mo. \$1.00.

Rowan, Th. Coal; spontaneous combustion of coal, occurring in coal car-714 goes, its treatment and prevention; also the prevention of fire or explosions in ships from cargoes or stores containing substances of a volatile or inflammable matter. Lond. 1882. 8vo. 5s. \$2.00. Ck-Cn-Sp.

Rowan, T. Explosion of gas in coal bunkers. Lond. 1883. 1d. 715 Kd. Coal freight commission and discount tables. Newcastle, 1869. 716 Rowell, R. 8vo. 7s 6d.

The coal mines. Containing a description of the various systems 717 Roy, A. of working and ventilating mines, together with sketch of the principal coal regions of the globe, including statistics of coal production. Illus. Columbus, O. 1876. 8vo. \$2.75. Ck-Cn-Ro.

Roy, A. The practical miner's companion; or, papers on geology and mining in the Ohio coal field. Columbus, O. 1885. 12mo. \$1.25. Cn—We. Contents:—The Ohio coal-field, early mining in Ohio; the manner of mining; the ventilation of miners; certificated managers; amelioration of miners; the geological survey; geology of Jackson County. 718

719 Rules and byelaws for the regulation of the carriage and landing of petroleum in the harbor and port of Portland, made under the authority of the petroleum acts, 1871 and 1879. Lond. 1888. 3d. Russel process, see Stetefeldt 780.

Russian metallurgical works. Barry H. 1870. \$2.00. 52.

720 †Rutley, F. Mineralogy. New and enl. ed. (Murby's Sci. and Art Ser.) Lond. (n. d.) 2s.

721Rock forming minerals. Illus. (Murby's Sci. and Art Ser.) Lond. 1888. Demy 8vo. (8vo) pap. 7s 6d. \$3.00.

Rutley, F. The study of rocks: an elementary textbook of petrology. 2d 722 ed, Illus. and pl. (Textb. of Sci.) Lond. 1881. Fcap. 8vo. (12mo) 4s 6d. \$1.50. B-Lm.

723 Rutley, F. The same. 4th ed. Illus. New Y. 1884. 12mo. \$1.75.

Am-V. 724 Ryan, J. Gold mining in India. Lond. 1881. Svo. 6d. 725 Ryland, A. The assay of gold and silver wares. Lond. 1852. P. 8vo. (12mo) 6s. \$2.40. Ck-Si.

Safety lamps. Purdy, W. Coll. explosions and safety lamps. 1880. 50c. 663. Thomas, B. H. Miner's safety lamp. 1886. 25c. 814; see Mauchline 527, Spon, parts 69, 70. 774; Wardle 868—70, Wilson 907. 726 Safford, J. M. Geology of Tennessee. Nashville, 1869. 8vo.

St. John, S. Elements of geology. N. Y. (n. d.) 12mo, \$1.50. o. p. 727

Salines, see Salt mines.

Salt. See also Brine Springs—Rock Salt—Sea Salt—Salt mines.

Boddy, E. M. History of salt. 1881. 2s 6d. 93.

Carey, A. Autobiographies of salt, etc 1870. Manley, J. J. Salt. 38 6d. 512. 2s 6d. 136.

Winchell, N. H. Report on salt spring lands. 1874. n. p. 939; see Aaron 2, Davies 208.

Salt cake furnaces, see Mills 545.

Salt deposits, Salt lakes, Salt mines, see Davies 208.

Salt production in Japan, see Rein 677. Salt wells in Minnesota, see Winchell 927. Sand, chemical analysis of, see Blair 84.

Sandstone, see Red Sandstone.

Sardinia, mineralogy of, see Alford 11.
728 Saward, Fred. E., ed. The coal trade. Annually. 18th year. N. Y. 1891. 8vo. N. B .- Contains statistics and important facts of the coal trade and the details of new coal

fields, conditions of the deposits, etc.

Sawyer, A. R. Accidents in mines, arising from the falls of roofs and slides; 729 their causes and the means of diminishing their frequency, with detailed sections of workable seams, and an account of the system of timbering in vogue in Staffordshire coalfields and applicable elsewhere. Illus. Manch. 1886. Roy. 8vo (8vo) £1 1s, \$7.00. the same, Manch. 1889. Roy. 8vo. (8vo) Ck-Cn-Hm-Sf-V-Wm.

Contents:—Nature of roofs. Description of faults, slips, and cleat; methods of working; effects on the roof by the extraction of minerals; influence on the roofs and minerals of the order in which contiguous seams are worked; general description of the methods of supporting the roof; classification of timber supports used in either in single pieces or combinations; holing, with a reference to sprags, cockers and stretchers; posts, with especial regard to their position in working places; lids; number of posts required in working places; chocks, stone cogs and packs. Timbering in levels and dips; drawing timber; customs with regard to setting and drawing timber; gas pressure in the coal and in the roof in relation to the class of accidents in question; atmospheric influence on roofs and sides; concluding remarks on accidents; rules for timbering; division of the North Staffordshire coalfield, with map; names of workable seams in four districts placed in approximate juxtaposition; table of incline measures; scale of figures; index of colors; table showing the depths of the workings from the surface.

Scheerer, T. Introduction to the use of the mouth blowpipe. 3d ed. Lond. 1875. 12mo, 4s. Ck—Wo. 730

731

Schlink, J. Pig making in Germany, in 1880, II, No. 434. Schinz, Chas. Researches on the action of the blast furnace. Trans. by W. H. Maw and M. Muller. Lond. 1870. P. 8vo. (12mo) 8s 6d. \$3.50

Scoffern, J., Truran, W., Clay, W., Fairbairn, W., Aitken, W. E., and others.
Useful metals and their alloys. With their application to the industrial arts, 733 including mining ventilation. Illus. Lond. 1869. Cr. 8vo, 7s 6d. \$3,00. Ck-Hr-V.

Scott, R. Ventilation of coal mines. (Newcastle) Lond. 1863. 734 8vo. 1s. Sp.

Screening, see Percy I, 633; II, 634. Sea Salt, see Davies 208; see also Brine Springs. Seaham mine explosion, see Atkinson 39.

Searching for coal, see Andre 18.

Sedgwick, A., and McCoy, F. A synopsis of the classification of the British palaeozoic rocks. W. pl. Cambridge 1851—55. Roy. 4to. £1. 18 \$6.00, net. 735 Ca-Ma.

736 †Seeley, H. G. Physical geology and palaeontology, on the basis of Phillips. Illus. Lond. (n. d.) Demy 8vo. 18s. Gb. Setting out slopes, see Light 486.

Settling tanks, see Aaron 4.

Shafts, shaftsinking, etc., see Andre 18, Simms 749, Simon 750, Spon, part 18, 775.

Shaler, N. S. Aspects of the earth: a popular account of some familiar 737 geological phenomena. Illus. N. Y. 1889. 8vo. \$4.00. Sd-Wn.

Shaler, N. S. First book in geology. Boston 1884, \$1.00. 738

Hh.

739

Shaler, N. S. On the fossil brachiopods of the Ohio Valley. (Geolog. Survey of Ky.) W. pl. Cinc. 1883. 4to pap. \$2.00. Ck. Sharp, S. Rudiments of Geology: introductory and physical, stratigraphical and palaeontological. 2d. rev. and enl. ed. Lond. (n. d.) Cr. 8vo. 4s. 740 †Sharp, S.

Shaw, Geo. Manual of electro-metallurgy. 2d. ed. Lond. 1844. 8vo. 7s 6d. 741 \$4.00.

Sheafer, P. W. Anthracite coal-fields of Pennsylvania, and their exhaustion. N. Y. 1881. 8vo. n. p. Db—Hf. 742

742a Shepard, E. M. Systematic mineral record. With a synopsis of terms and chemical reactions used in describing minerals. Prepared for instructors and students in mineralogy. Adapted to any textbook. 24 pages of descriptive and explanatory text, and 75 blank pages for record. N. Y. (n.d.) Sm. 4to. 60c. net.

Shinn, C. H. Mining camps: study in American frontier government. N. Y. 743 Sd.

1885. 12mo. \$2.00.

744 Shinn, C. H. Land laws of mining districts. Balto. 1884. 8vo, pap. 50c.

745 Sickels, D. K. The U.S. mining laws, and decisions of the commissioner of the general Land Office and the Secretary of the Interior, thereunder. San Francisco, 1881. 8vo. shp. \$6.00. Bc-Ck.

Siemens, C. W. Fuel. To which is appended the value of artificial fuels, 746 as compared with coal, by John Wormald. N. Y. (1873) 18mo. bds. 50c.

Siemens furnace, see Head and P. 364.

747 Siemens, F. Combustion with special reference to practical requirements, in 1886, II, No. 434.
Silberbach, J. H. Handbook of vegetable and mineral products of all coun-

748 tries imported into Great Britain, geographically arranged for schools. Liverpool, 1888. 8vo. pap., 6d. Ig. Silver mines, mining and metallurgy.

Anderson, A. D. Silver country. 1877. \$1.75. 14.
Calvert, J. Vazeeri Rupi. Silver country. 1873. 16s. 131.
Fossett, F. Colorado: silver mining region. 1880. \$2.50. 262.
Lamborn, R. H. Metallurgy of silver. 2s 6d. 469.
Rodwell, G. F. Heat and halvid compounds of silver. 1881. 3s. 697.
Whitney, J. P. Silver mining regions of Colorado. 1865. 25c. 890; see Blake 87, Davies 209, Eissler 237, Guillaume 340, Kerl, I, 445; Lock 495a, Osborn 605, Percy V, VI 632; Phillips 643, Smith 759, Spon, parts 90, 91. 774. Swipney 798. 774; Swinney 798.

Silver alloys, see Krupp and W. 463.

Silver, amalgamation of, see Eissler 237.

Curtis, J. S. Silver lead deposits. 1884. n. p. 179.

Silver lead furnaces, see Mills 545. Silver, lixiviation of, see Eissler 237.

Silver ores. See also Lixiviation—Roasting—Testing—Working.
Aaron, C. H. Assaying gold and silver ores. 1884. \$1.00. 1.
Aaron, C. H. Leaching gold and silver ores. 1881. \$3.00. 3; see Eissler 237, Kerl 446, Percy V, 632.
Silver, refining of, see Eissler 237.

Silver, roasting of, see Eissler 237.

Silica, see Davies 208, Rocholl 694.

Silicon, see Davies 208.

Silurian system.

Murchison, R. J. Siluria 1873. 18s. 565.

Simms, F. W. Practical tunneling. Explaining in detail the setting-out 749 of the works, shaft-sinking and heading-driving, ranging the lines and leveling under ground, sub-excavating, timbering, and the construction of the brickwork of tunnels, with the amount of labor required for, and the cost of the various portions of the work. With additional chapters illustrating the recent practice of tunneling as exemplified by the St. Gothard, Mont Cenis, and other modern works, by D. K. Clark. 3d ed., illus. and fold. pl. Lond. B-Ck-Cn-Lg-V-Wm. 1877. Imp. 8vo (8vo) £1. 10s, \$12.00.

750 Simon, H. On Chaudron's method of shaft-sinking, in 1877, I, No. 434.

762

Simon, H. Utilization of bye-products in the manufacture of coke, in 1880, I, 751 No. 434.

Sinking, see Hyslop 406.

752 †Skertchly, S. B. J. Geology. (Murby's Sci. and Art Ser.) Lond, (n. d.) 1s.

Skertchly, S. B. J. On the manufacture of gun flints, the methods of ex-753 cavating for flint, etc. Illus. Lond. 1879. Roy. 8vo. pap. 17s 6d, \$6.00.

Sketchbook of popular geology. Miller, H. 1889. 58. 538. 754 †Skinner, W. Mining manual. Annually. July. Lond. (n. d.) 8vo. 7s 6d.

Slag, see Blair 84, Lock 495a, Percy, I, 632; see also Blast Furnace Slag.

Slate and slate quarrying.

Davies, D. C. Slate and s. quarrying. 1887. 3s. Hower, F. M. Slate reckoner. 1888. \$1.50. 38 Stafford, H. N. Slate tables. 1880. \$3.00. 776. Walcott, E. D. Utica slate. 1889. 50c. 861;

see California 129c, Davies 208, Kingsley 454—56.
Sliding scale in coal industry. Munro, J. E. C. 1886. 1s. 564.

Smee, A. Elements of electro-metallurgy. N. Y. 1852. 12mo, scarce. (\$4.00)

Smelting. See also Blast Furnace—Copper S.—Iron S.—Lead S. Carnelly, T. Smelting and boiling point tables. 2v. 1885, each 42s. 137. Pattinson and S. Behaviour of arsenic in ores and metal. 624. Whitwell, T. Iron smelter's pocket analysis book. \$2.00. No. 891; see Aaron 4, Lock 495a, McMillan 507.

Smelting Cleveland ironstone. Bell, I. L.

Smelting: Gold, see Eissler 236; Iron, see Bell 71, 74; Tin, see Charleston, 140.

Smith, E. F. Electro-chemical analysis: a practical handbook. Illus. Phila. 756 1890. 12mo. \$1.00. Bs-V.

N. B.—This handbook is designed to meet the wants of a large and growing class of students and chemists, who are desirous of becoming acquainted with this method of quantitative analysis that is daily acquiring more importance. The author has devoted much time to this branch of analysis and has succeeded in making a book that is exceedingly clear, concise and practical.—Publ. Circular.

757 Smith, E. F. On the Casson-Dormoy puddling furnace, in 1876, I, No.

758 Smith, E. H. Revised pocket geologist and mineralogist. Sixteen chapters, on coals, oils, ores and other minerals for practical mining. Balto. 1890. 12mo. \$1.00. Ka-Sp-V-Wn.

Smith, F. H. Rocks, minerals, and stocks. Chicago, 1882. 12mo. \$1.50, 759 pap. 75c. Ck-Fa-R-Rc-V.

Contents: Rocks—world building; prime minerals and rocks; the formations; gold and silver; industrial metals; coal and oil; precious stones; stocks—stock companies; stock dealing; stock tricks.

760 Smith, Pye. Geology and scripture; or, the relation between the Holy Scripture and some parts of geological science. 2d ed. (Bohn's Sci. Lib.) Lond. 1852. 12mo. 5s, \$2.00. Bi-V.

Smith, W. The recovery of bye-products from coal, with special reference 761 to the coke and iron industries, in 1884, II, No. 434.

763

Smith-Casson, R. Gas puddling and heating furnaces, in 1884, I, No. 434. Smyth, W. W. Lecture on the ores of iron, in 1875, I, No. 434. Smyth, W. W. A rudimentary treatise on coal and coal-mining. 6th rev. myth, W. W. A rudimentary treatise on coal and coal-mining. 6th rev. and enl. ed. Illus. (Weale's Ser.) Lond. (1880) 1885. Cr. 8vo. (12mo) 3s 6d, 4s, \$1.40, \$1.75.

B—Ck—Cn—Lg—V. 764

765

766

Smyth, W. W. Collieries, in Bevan's B. M. I., No. 81. Smyth, W. W. Metallic mining, in Bevan's B. M. I., No. 81. Snelus, G. J. The use of molten iron direct from the furnace, and discussions. 767 sion on the same subject, in 1876, I, II, No. 434.

Snively, John H. Elements of systematic qualitative chemical analysis: a 768 hand-book for beginners. Illus. Phila. 1883. 12mo. \$2.00.

769 Snively, J. H. Tables for systematic qualitative chemical analysis. Nashville, 1879. 8vo. \$1.00.

769a Society of Engineer's transactions. Vols. for 1869—1872. Lond. 1870—73. 8vo, each 10s 6d, \$4.25; vols. for 1873—80. W. plates. Lond. 1874—81. 8vo, each 15s, \$6.00; for '81, 82. Lond. 1882, 83. 8vo, each 15s, \$6.00; for

83, 84, 85. Lond. 1884—86. 8vo, each 10s 6d, \$4.25; for '86. Lond. 1887. 8vo, 12s 6d, \$5.00; for '87, '88, '89. W. plates. Lond. 1888—90. 8vo. 15s, **\$**6.00.

Sodium, see Davies 208, Richards 682. Soils. Fream, W. 1890. 2s 6d. Solders, see Krupp and W. 463.

Somersetshire, coalfields of, see Anstie 31.

• 770 Sommerville, M. Engraved gems: their place in the history of art. Phila. (1877) 8vo. \$1.25.

Sopwith, J. Treatise on isometrical drawing, as applicable to geological

771

and mining plans. N. Y. (n. d.) 8vo. \$5.00. o. p. V. Sorley, W. R. Mining royalties and their effect on the iron and coal trades Lond. 1889. 8vo. bds. 186d. Ch—Ma. 772

773 Southwick, A. P. Question book of geology and mineralogy. 1883. 16mo. Pap. 10c. Speculum metal, see Krupp, and W. 463.

Splitting the air (in mines), see Wilson 907.

Spon's dictionary of engineering, civil, mechanical, military and naval, with 774 technical terms in French, German, Italian and Spanish, ed. by Byrne and Spon. Illus. Lond. 1874. Super Roy. 8vo, in 79 parts, and supplem. consisting of parts 80 to 97, ea. 1s, 40c, in 8 divisions, clo. ea. 13s 6d, \$5.00, in 3 vols., clo. 105s, \$40.00, in 3vols. $\frac{1}{2}$ mor. \$50.00, inclusive supplement in 11 divisions \$55.00, 4 vols. clo. \$55.00, half mor. \$70.00.

B-Ck-Sp-V.775 Spon, E. Supplement to the dictionary of engineering, civil, mechanical, military and naval. Lond. 1879-81. Sup. roy. 8vo. In 18 parts (sold separately) 2s. 75c. each; or in 3 divisions, cloth, each 13s 6d, \$5.00; or in one vol. cloth 40s, \$15.00. ½ mor. \$20.00. B—Ck—Sp—V. vol. cloth 40s, \$15.00. ½ mor. \$20.00. 776 **Stafford**, **H. N.** Slate tables. Design

afford, H. N. Slate tables. Designed for the use of slaters, quarrymen, architects and dealers. N. Y. 1880. 12mo., tucks \$3.00. B-Px.

777 Stansbury, H. An expedition to the valley of the Great Salt Lake, including a description of its geography, natural history, minerals, etc. 2 vols.W. maps and illus. Phila. 1855. 8vo. \$3.75, Ld—V. Statuary bronze, see Krupp and W. 463.

Steam boilers for collieries, see Percy I, 633.

778 Steavenson, A. L. On the coke manufacture of South Durham, in 1877, II, No. 434.

Steel. History, manufacture and metallurgy. See also Assaying—Basic B. P.— Bessemer-Iron.

Bell, I. L. Steel manufacture. 1884. 21s. 70.

Bevan's Brit. Manuf. Indust. 81.

Directory of iron and steel works. 1890. \$3.00.

Galbraith, W. Certain chem. phenomena. Galbraith. Estimation of phosphorus. 283.

Greenwood, W. H. Steel and iron. 1887. 58. 330.

Greenwood, W. H. Steel and iron. 1887. 5s. 330. Gruner, M. L. Manuf. of. steel. 1872. \$3.50. 337. Hewitt, A. S. Production of iron and st. 1868. \$1.00. 368. Hiorns, A. H. Manuf. of steel. 1889. 3s 6d. 371. Hoare, C. Iron and steel. 1876. 6s 375. Howe, H. M. Metallurgy of steel. 1891. \$10.00. 386. Iron, steel, etc.; trades. 1881. (\$2.00.) 410. Jeans, J. S. Hist., manuf., etc., of steel. 1880. 36s. 419. Jeans, W. T. Creators of age of steel. 7s 6d. 420; 1884. \$1.5 Journal of Iron and Steel Institute. 434. Landrin, M. H. C. Treat. on steel. 1868. \$3.00. 471. Mushet, D. Iron and steel. 1840. (\$20.00.) 569. Osborn, H. S. Metall, of iron and steel. 1869. \$25.00. 606.

\$1.50. 421.

Osborn, H. S. Metall. of iron and steel. 1869. \$25.00. 606. Osmond, F. Critical points. 607. Overman, F. Manuf. of steel. 1882. \$1.50. 609.

Wittgenstein and K. Manuf. of st. with brown coal. 941.

Williams, W. M. Chemistry of steel making. 1890. 9s. 900. Williams, W. M. Iron and steel. 902; see Kerl III, 445; Lock 495a, Percy III, 632; Spon, part 92, 774; Spon, part 18, 775; Swank 794; Thurston II, 823.

Steel castings for colliery use, see Percy II, 634.

779 Steele, J. D. 14 weeks in geology. N. Y. (1877) 12mo. \$1.00 net,

The lixiviation of silver ores with hyposulphite solutions, Stetefeldt, C. A. with special reference to the Russell process. Illus. N. Y. 1888, 8vo. \$5.00.

"This treatise is the most valuable, indeed the only valuable one on lixiviation. The amount of careful, intelligent, original and compiled research is enormous; the tables and drawings must be invaluable, and indeed indispensible to any manager of a lixiviation plant, and the figures there recorded are more convincing arguments as to the value and range of lixiviation as a method of extracting silver from certain ores than the author's dogmatic deductions."—John Heard, jr., Min, Engineer.

Stockbridge, H. E. Rocks and soils: their origin, composition and characteristics, chemical, geological and agricultural. W. 13 pl. N. Y. 1888.

781 8vo. \$2.50. B-Sp-Wm-Wn.

Stone. See also Blasting-Buhr S.-Building S.-Decorative S.-Drills-Granites—Grindstones—Limestone—Marbles—Pebbles—Potsdam—Pumice S.—Precious S.—Quarrying—Red Sandstone—Rocks—Rock Drills—Slate -Sand—Explosives.

Luard, C. E. Stone, how to get it, etc. 1890. 2s. 499. Miller, H. Old red sandstone. 1889. 5s. 539.

Winchell, N. H. Building stones in Minn. 1888. n. p. 935;

see Thurston I, 823.

Stone drift driving, see Wardle 868-70. Stone quarries in Japan, see Rein 677.

Stone polishing in Japan, see Rein 677. Strahan, A. The geology of Cheshire, in 1884, II, No. 434. 782

Streeter, E. W. Precious stones and gems. Their history and distinguish-783 ing characteristics. 4th rev. and partly re-written ed. W. col. pl. and photos. Lond. 1881. Demy 8vo. (8vo.) 15s, \$6.00.

Bi—Ck—Sd. 784 †Streeter, E. W. Pearls and pearling life. Illus. Lond. (n. d.) Demy 8vo.

12s 6d.

Stuart, G. Montana as it is; being a general description of its resources, both mineral and agricultural. N. Y. 1865. Svo, pap. (\$2.00.) V. 785

Stuart, J. M. Mining: its theory and its practice. N. Y. 1879. 12mo. \$1.00. 786

Ck-Me-V. Stubbs, Thos., jr. Coal and iron trades: being a review, dealing with the trade's progress during 100 years, also with future prospects. Lond. (n. d.)

1s 6d. o. p. Submarine mines. Bucknill, J. T. 1889. \$4.00. 122. 2s 6d. 256.

Subterraneous surveying. Fenwick and Baker. 1888.

Subterranean world. Hartwig, G. 1881. 10s 6d. 356. Sulphur and sulphur mines, see Aaron 2, Davies 208, Kerl I, 445.

Sulphurets.

787

Barstow, W. Sulphurets. 1867. \$1.00. 54. see Eissler 236.

Surface surveys, see Brough 114.

Surface work, see Andre 18.

Surveying. A large list of books on this subject will be found in Handy Lists, part 3.

Surveyor's scale. Bainbridge. 2s. 43b.

Sutherland, W. L. Production and utilization of gaseous fuel in the iron 788 manufacture, in 1883, I, No. 434.

Sutherland, W. S. The most recent results obtained in the application 789 and utilization of gaseous fuel, in 1884, I, No. 434.

Sutro Tunnel. Report of the commissioners and evidence taken by the 790 committee on mines and mining of the House of Representatives. Wash., Ga-V. D. C. 1872. 8vo. (\$3.50.)

Sutton, F. Systematic handbook of volumetric analysis; or, the quantita-791 tive estimation of chemical substances by measure, applied to liquids, solids and gases. Adapted to the requirements of pure chemical research, metallurgy, manufacturing chemistry, etc., and for the valuation of substances used in commerce, agriculture, and the arts. 6th ed. Lond. 1890. 8vo. 17s 6d, \$7.00.

Svedelius, G. Handbook for charcoal burners, Trans. from the Swedish, by R. B. Anderson, and ed. with notes, by W. J. L. Nicodemus. Illus. N. Y. 792 Ck-Wm. 1874. 12mo. \$1.50.

History of the manufacture of iron in all ages, and partic-793 Swank, J. M. Phila. 1884. 80, ularly in the U.S., for 300 years from 1585 to 1885. subs. \$5,00 net. Ao-Ck-Sp-St. 794 Swank, J. M. Statistical abstrast: a collection of statistics to the close of 1887 relating to the iron and steel industries of the U.S., to which is added much valuable statistical information relating to the iron and steel industries of Great Britain, the production and prices of anthracite coal in the U. S., railroad mileage in the U. S., imigration into the U. S., etc., 2d ed. Phila. 1888. 8vo. \$1.00.

Ao-St. Sweeny, W. S Natural science note-book No. 1. mineralogy. N. Y. 1886.

795 obl. 16mo. pap. 20c.

Sweet, S. H. Special report on coal showing its distribution, classification, and cost, delivered over different routes to various points in the state of 796 New York, and the principal cities on the Atlantic Coast. maps. N. Y. 1866. 8vo, \$3.00. 797

Sweet, W. Carbonate camps of Colorado: Leadville and Ten-Mile. City 1879. 12mo. pap. 25c. Kansas

Swinney, A. J. G. The collieries, coalfields, and minerals of New South 798 Wales, Australia. Lond. (n. d.) Cr. Svo. 3s.

N. B—Contains: coal, geology of coalfield; description and particulars of all collieries; their situation; map of coalfield and 13 sections of borings, sinkings, etc.; labor question and rates of wages, etc. Iron.—Tin.—Copper.—Silver and lead.—Gold.

Swords, J. F., comp. Coal points. Compiled for the use of those engaged

799 in the sale and transportation of anthracite and bituminous coal in the New England States. Hartford, Conn., 1891, subs. \$2.00. Cm—Su. N. B—Comprising within its 300 pages a ruled portion of 124 double pages for the entry of freight rates over 23 railway systems—showing receiving and delivery points ria "all rail" and "tide water and rail"—and preceded by an alphabetical index of about 2,500 railway stations. The edition is limited to 250 copies.

stations. The edition is limited to 250 copies.

800 †Symonds, W. Records of the rocks; or notes on the geology of Wales, Devon

and Cornwall. Lond. (n. d.) Cr. Svo. 12s.

Symons, G. J., ed. The eruption of Krakatoa and subsequent phenomena: 801

report of the Krakatoa committee of the Royal Society. Illus. 1888. 4to. £1. 10s. \$12.00.

802 System (A) for the construction of crystal models on the type of an ordinary plait exemplified by the forms belonging to the six axial systems in crystallography. W. 55 pl. Lond. 1888. 8vo, 5s. \$5.00.

803 **Table** (A) of the cubic area of various varieties of anthracite and bituminous coals. N. Y. 1891. \$1.00. COals. 1. 1. 1021. \$1.00.

N. B.—Fifty-six different kind of coal were carefully tested and the results of the experiments are given in this table. It is printed on a large card in the very finest style, the endeavor being to make its appearance in keeping with its value and its preservation for years an object easily effected. Great care was taken that the coals tested were true to name and from representative mines. In all questions regarding the capacity of cellars, new bins and pockets, and many other purposes, this table will be found extremely valuable.

804 A mine rent ready reckoner, or tables for, facilitating the cal-Tarbuck, J. culation of mine royalty, wayleave rent, etc., at rents from £1. to £200. per foot per Cheshire acre of 10,240 square yards, concluding with a table showing the rate per ton, at rents exstending from £5 to £200 per foot, and at weights varying from 2,200 to 3,800 tons per foot per Cheshire acre; giving also the weight per cubic foot and per cubic yard. Lond. (n. d.) red. to 2s 6d. Cp.

805 Tarbutt, P. F. Liquid fuel, in vol. 1886, Soc. Eng. Trans.

Tate, R. Historical geology, partly based on Portlock's rudiments. (Weale's Ser.) Lond. 1872. 12mo. 2s 6d. 806 Illus. Lg.

Tate, R. Physical geology, partly based on Portlock's "rudiments of geology." Illus. (Weale's Ser.) Lond. 1879. 12mo. 2s. Lg. 807

808 †Tate, R. Rudimentary treatise on geology, physical and historical. Consisting of physical geology, which sets forth the leading principles of the science; and historical geology, which treats of the mineral and organic conditions of the earth at each successive epoch, especial reference being made to the British series of rocks. Illus. (Weale's Ser.) Lond. (u. d.)

12mo. 4s 6d, and 5s.

Lg.

12mo. 4s 6d, and 5s.

Lg.

Lg.

Lg. graphed plates of fossils, and a large geologically colored map. Lond. (n.d.) 8vo, £1.8s.

810 †Taylor, J. E. Geological stories, 4th ed. Illus. Lond. (n. d.) Cr. 8vo. 2s 6d.

811 Taylor, H. C. Statistics of coal: including mineral bituminous substances employed in arts and manufactures; with their geographical, geological and commercial distribution and amount of production and consumption on the American continent. With incidental statistics of the iron manufacture. 2d rev. ed. by S. S. Haldemann. Illus. and maps. Phila. 1855. 8vo, scarce, \$10.00. B-Ck-V.

812

Teall, J. J. H. British petrography: with special reference to the igneous rocks. W. 47 pl. Lond. 1888. Roy. 8vo. £3. 3s. Du. Tenney, S. Geology. Rev. ed. Phila. (1859.) 12mo. \$1.25 net. By. 813 Testimony of the rocks. Miller, H. 1889. 5s. 540. Testing minerals and ores.

Aaron, C. H. Testing silver ores. 1876. \$2.00. 4. Phillips, J. S. Explorer's, etc. companion. 1879. \$6.00. 645; see Anderson 15, Triplett 833, Report 679.

Theodolite, use of, see Brough 114, Haskoll 359.

Thomas, B. H. The miner's safety-lamp. An essay on the relative utility 814 of the different safety-lamps in general use. Shenandoah, Pa. 1886. 25c. Cn—Ke.

815 Thomas, J. W. A treatise on coal, mine-gases, and ventilation, with copies of "researches on the gases inclosed in coal", etc. Lond. 1878. Cr. 8vo. (12mo) 10s 6d, \$4.20. Ck-Cn-Lm-V.

Thomas, T. F. Notes on coal mining. Intended as an assistance to can-816 didates for certificates of competency as colliery managers, and as a useful reference book for colliery managers and mining engineers. Lond. 1880.

Cr. 8vo. (12mo) 2s 6d, \$1.25. Ck—Cn—Cp. hompson, B. The middle lias of Northamptonshire, considered strati-817 Thompson, B. graphically, paleontologically, economically, as a source of water supply, as a mitigator of floods. Reprinted from the "Midland Naturalist." Bir-

mingham 1889. 8vo. 3s 6d. Hk—Sf. homson, Geo. The underground fire at Wynnstay colliery, Ruabon, in Thomson, Geo. 1875, I, No. 434. 818

819 Thorpe, T. E., ed. Coal: its history and uses, by Profs. Green, Miall, and others, ed. by Prof. Thorpe. Lond. 1878. 8vo. 12s 6d, \$4.00.

Thorpe, T. E. Dictionary of applied chemistry. 3 vols. Lond. 1890, '91. 820 (vols. 1, 2 issued, 3 in preparation.) Roy. 8vo. (8vo) half mor., each £2.2s, \$15.00. Lm.

Thorpe, T. E. Quantitative chemical analysis. Illus. (Textb. of Sci.) 821 Lond. 1885. Fcap. 8vo. (12mo) 4s 6d, \$1.50. B-Ck-Lm-Wm.

Thorpe, T. E., and Muir, M. M. P. Qualitative chemical analysis and laboratory practice. 3d ed. Illus. Lond. 1883. Fcap. 8vo. (12mo) 3s 6d, 822 \$1.25.

823 Thurston, R. H. Materials of engineering: a work designed for engineers, students, and artisans in wood, metal and stone. Also as a textbook in scientific schools, showing the properties of the subjects treated. Well illustrated. In three parts. Illus. N. Y. 1883—88. 8vo, \$11.00. B-Ck-Sp-Wm.

Part I: Treatise on the non-metallic materials for engineering. Stone, timber, fuel, labricants, etc., with measures in British and metric units, and metric and reduction tables. Illus. N. Y. 1883. 8vo, \$3.00, red. to

Part II: Treatise on iron and steel. The ores of iron; methods of reduction; manufacturing processes; chemical and physical properties of iron

tion; manufacturing processes; chemical and physical properties of from and steel; strength, ductility, elasticity, and resistance; effects of time, temperature, and repeated strain; methods of test; specifications. 4th ed. Illus. N. Y. (1885) 1888. 8vo, \$4.00, red. to \$3.50.

Part III: Treatise on brasses, bronzes, and other alloys, and their constituent metals: copper, tin, zinc, lead, antimony, bismuth, nickel, aluminum, etc.; the brasses, bronzes; copper-tin-zinc alloys; other valuable alloys; their qualities, peculiar characteristics, uses, and special adaptations: Thurston's "maximum alloys" strength of the alloys as commonly tations; Thurston's "maximum alloys" strength of the alloys as commonly made, and as affected by special conditions; the mechanical treatment of metals. Illus. N. Y. 1884. 8vo, \$3.00, red. to \$2.50.

Thurston, R. H. Report on a preliminary investigation of the properties of the copper-tin alloys. Illus. and pl. Wash., D. C. 1879. 8vo. (\$2.50.) V.

Gaseous fuel, including water gas, its production and 825 Thwaite, B. H. application. Lond. 1889. Cr. 8vo. 1s 6d.

826 Thwaite, B. H. Liquid fuel; its advantages for firing steam generators. Lond. 1887. 8vo, pap. 1s. 25c.

Timbering mines, etc., see Davies 209, Sawyer 729, Simms 749, Turner 838.

Timbs, J. The year-book of facts in science and art, exhibiting the most important discoveries and improvements of the past years in mechanics 827 and the useful arts, natural philosophy, electricity, chemistry, Geology, mineralogy, etc. Lond. 1862—73, 12mo. (\$10.00.)

Tin dressing machinery, see Cox 173.

Tin mines and mining.

Charleston, A. G. Tin. 1884. 12s 6d. 140.

Doyle, P. Tin mining in Larut. 1879. 3s 6d. 223;

see Davies 209, Flower 259, Graham 317, Kerl I, 445, Lock 495a, Osborn 605, Pepper 631, Percy VII, 632, Phillips 643, Pryce 661, Swinney 798, Thurston III, 823.

Tipping, see Percy I, 633.

827a To builders and quarrymen. (A circular of the Regents of the University of Minn.) Relating to the collection of two-inch cubes of building stones for physical tests of strength, and for chemical examination, and samples of clay and brick for the general museum. Minneapolis 1880.

Town geology. Heilprin, A. 1885. \$2.25. 366. Town geology. Kingsley, C. 1885. 6s. 454; 1890. \$1.50, 455; 1880. 15c. 456;

and in Scientific lectures 453.

828 Traill, G. W. Treatise on quartz and opal, including their varieties. Ck-Sf-V.

(Edinburgh,) 1870, sm. 4to. 6s. \$2.00.

Transactions of the American Institute of mining engineers. 829 Phila. 1880-90; vols. 1—4, each \$2.00; vols. 5—8, ea. \$3.00; vols. 9, 11—18, ea. \$5.00; vol. 10, \$10.00; index to vols. 1—15, \$1.00 and \$2.00. Transvaal, geological features of, see Alford, 10.

Transvaal mining laws, see Mitchell 552.

830 Treatise on the progressive improvement and present state of manufactures in metals. 2 vols. Illus. Lond. 1831. 16mo. (\$3.50.) Treatment of ores, see Ores.

Trenton limestone, see Orton 603.

- 830a Trewert, E. Electricity and its recent applications. Illus. Lynn, Mass. 1891. 12mo. \$2.00. N. B.—Contains a chapter on electrical mining apparatus.
- 831 Trewman, A. H. C. Flues and ventilation, in vol. 1876, Soc. Eng. Trans. 832 Trimble, H. Practical and analytical chemistry: being a complete course in

chemical analysis. 3d enl. ed. Illus. Phila. 1889. 12mo. \$1.50. Trimdon mine explosion, see Atkinson, 39. Triplett, F. How to assay. A book for the practical miner and prospector. N. Y. (n. d.) \$1.00.

N. B.—A new edition in preparation.

Troilius, M. Notes on the chemistry of iron. For professional men 834 students, iron and steel merchants, and all interested in iron. 2d rev. and enl. ed. N. Y. 1886. 8vo. \$2.00. B-Ck-Wm.

Tudhoe mine explosion, see Atkinson 39.

Tungsten, see Howe, 385, 386.

833

Tunneling. See also Aqueducts—Blasting—Rock Drills. Drinker, H. S; Tunneling. 1888. \$25.00. 226. Gripper, C. F. Railway Tunneling. 1879. 7s 6d. 335.

Simms, F. W. Pract. treat. on tunneling. 1877. 30s. 749.

Sutro tunnel report. 1872. \$3.50. 790. Turner, C. Timbering of tunnels. see Bowie 105, Wardle 868-70.

Tunneling in Japan, see Jones 431.

835 Tunner, P. Treatise on roll-turning for the manufacture of iron. Trans. and adapted by J. B. Pearse. Illus. and atlas. N. Y. 1869, text 8vo., atlas folio, \$10.00.

836 Tunner, Prof. Use of lignite or brown coal in the blast furnace, in 1882, I, No. 434.

837 Tuomey, M. Report on the geology of South Carolina. Columbia, S. C. 1848. 4to. (\$15.00.) Turf, see Peat.

838 Turner, Chas. Timbering of trenches and tunnels, in vol. 1871. Soc. Eng. Trans.

Tuttle, H. A. Pocket analysis book. For ores, iron, coal, steel, coke and limestone. With tables for miners, dealers, and iron smelters. N. Y. (n. d.) 18mo, pocket form, (\$2.00.) Ck.

Twinney, A. J. G. Handbook to the examinations for colliery managers' 840 certificates of competency. Lond. 1878. (18mo.) (\$2.00.)

Udston colliery explosion, see Report 678.

Underground fire. See also Explosions—Accidents.
Thomas, Geo. Underground fire at Wynnstay colliery.

Undergroud steam pumping machinery.

Michell, S. Mine drainage. 1881. 15s. Underground treasures. Orton, J. 1887. 533. 1.50. 604.

United States. Department of the Interior. Census Office. Production, 841 technology, and uses of petroleum, and its products, by S. E. Peckham; manufacture of coke, by Jos. D. Weeks; building stone of the U. S. and statistics of quarry industry, 1880, vol. 10. Illus. Wash., D. C. 1884. 4to.

842 United States. Department of the Interior. Census Office. (F. A. Walker, and C. W. Seaton, supts.) Report on the mining industries of the U. S. (exclusive of the precious metals,) with special investigations into the iron resources of the republic, and into the cretaceous coals of the Northwest, by R. Pumpelly. Illus., maps and plans. Wash., D. C. 1886. 8vo. n. p.

United States. Department of the Interior. Census Office. (F. A. Walker, 843 and C. W. Seaton, supts.) The U. S. mining laws and regulations thereunder, and state and territorial mining laws to which are appended local mining rules and regulations, comp. under direction of Hon. Cl. King. Vol. 14. Wash. D. C. 1885, 4to. n. p.

844

United Sates. Department of the Interior. General Land Office. Mining laws and regulations thereunder, Oct. 31, 1881; the same with circular to January 1884. Wash., D. C. 8vo. pap. 1881, '84. n. p.

United States. Department of the Interior. General Land Office. Coal land law and regulations thereunder, July 31, 1882. Wash., D. C., 1882. 845 Svo., pap., n. p.

United States geological survey. First annual report of the director C. King. 846 Illus, Wash., D. C., 1880. 8vo. n. p.

N. B-This is a preliminary report, describing the plan of organization and publication.

847

United States geological survey. Report of the director, J. W. Powell. Illus. Wash., D. C., 1880—81. 8vo. n. p.

United States geological survey. Vol. 12: geology and mining industry of Leadville, Colorado. With 45 plates, 6 figures and a separate fol. atlas of 35 sheets, by S. F. Emmons. Wash., D. C., 1888. 4to.

Ga. 848

849 Urbin, Ed., and Bruell, A. A practical guide for puddling iron and steel. A prize essay read before the Association of Engineers. To which is added a comparison of the resisting properties of iron and steel, by A. Brull. Trans. from the French by A. A. Fesquet. Phila. 1868. 8vo. \$1.00.

B—Sp—Wn. 850 Ure, A. Dictionary of arts, manufactures and mines, containing a clear exposition of their principles and practice. Ed. by Robt. Hunt. New enl ed. 4 vols. Illus. Lond. 1878—81. 8vo. £7. 7s, \$24.00; half mor. \$30.00.

Am-B-Lm-V.

Usworth mine explosion, see Atkinson, 39. Utilizing bye-products from Hoffman coke ovens, see Otto 602. Utilization of Basic Bessemer slag, see Wedding 878.

Valentin, Wm. G. Course of qualitative chemical analysis. 7th ed., revand ed. by W. R. Hodgkinson, and H. M. Chapman. W. tables, map of spectra, and illus. Lond. 1888. 8vo. 8s 6d. \$3.00.

Valleys. Kinahan, G. H. 1875. 7s 6d. 448. 851 Valuation of mining properties, see Lintern 488.

Van Wagenen, T. E. Manual of hydraulic mining, for the use of the practical miner. N. Y. 1880. 16mo (18mo) \$1.00. 5s. B-Ck-Fa-Sp-V. 852 Veins, see Phillips 645.

Ventilation of mines. See also Centrifugal—Friction—Gases—Explosions,

Andre, G. G. Ventil. of coal mines. 20. Atkinson, J. J. Friction of air in mines. 1875. 50c. 37. Atkinson. Gases met in coal mines. 2s. 37a; 1886. 50c. 38.

Bagot, A. Colliery ventilation. 1882. 5s. 43. Clarke, W. J. Coll. ventil. 1891. 1s, 148a. Fairley, W. Ventil. of coal mines. 3s; 254; 1882, 50c, 255, James, J. St. Coll. ventilation. 2s. 414. Miller, J. Coal mine's gases. 1878. 10s 6d. 541. Murgue, D. Mine ventilation 1883. 5s. 566. Ramssy, J. A. Ventil and marking a librium 1800. 5.

Ramsay, J. A. Ventil. and working collieries. Scott, R. Ventil. of coal mines. 1863. 1s. 734 1882. 58. 669.

Thomas, J. W. Coal, mine gases, and ventil. 1878. 10s 6d. 815.

Trewman, A. H. C. Flues and ventilation. 831.

Wilson, E. B. Mine ventil. 1891. \$1.25. 907;

see Andre 18, Colliery 155, Davies 209, Fairley 252, Hyslop 406, Mauchline 527, Percy I, 633; Roy 717, 718; Scoffern 733; Wardle 868—70.

Ventilation, machinery, see Andre 17, Percy I, 633; see also Mining Mach-

859

853 †"Verifier". Scepticism in geology; and the reasons for it. An assemblage of facts from nature combining to refute the theory of "causes now in action." Illus. Lond. (n. d.) Cr. 8vo. 6s. Vesuvius.

Lobley, J. L. Mount Vesuvius. 1889. 12s 6d. 492. Phillips, J. Vesuvius. 1869. 10s 6d. 641.

Views, description and progress of work on the new Croton Aqueduct tunnel, New York City. 4th ed. Illus. and tables. N. Y. 1886. A reprint of a 854 sheet from the Scientific American, gratis.

Virginia. A synopsis of the geology, geography, climate and soil of the state. Together with its resources of mines, forests and fields, its flocks and 855 its herds. W. map. Richmond, Va., 1889, 8vo, pap. 50c.

Vivian, H. H. Copper smelting, its history and processes. Illus. N. Y. 1881. 856 8vo. pap., o. p., and scarce. Ck-Sb. i. B.—This extremely valuable and very scarce work is the reprint of a lecture delivered at Swansea, in the Theater of the Royal Institution of South Wales on December 20th, 1880. Within the same cover there is given "a history of Baltimore Copper Works at Canton, Maryland," also "sketches of the Forrest Copper Works and the Haford Copper Works, Swansea, South Wales," which are illustrated by full-page pictures of the works.

See also Bala-Igneous rocks.

Dana, J. D. Characteristics of volcanoes. 1890. \$3.50.

Hartwig, G. Volcanoes. 1887. 2s 6d. 357. Judd, J. W. Volcanoes. 1881. 5s. 435.

Rockwood, C. G. Progress in vulcanology. 1889. n. p. 696.

Symons, G. J. Eruption of Krakatoa. 1888. 30s. 801;

see Darwin 200 to 206; Harker 350, Hunt 397, Lardner 472, Shaler 737.

Volumetric analysis. See also Analytical Chemistry—Chemistry. Fleischer, E. System of volum. anal. 1877. 78 6d. 258. Sutton, F. Systematic handb. of vol. anal. 1890. 178 6d.

857 Wade, W. P. Manual of American mining law, as practiced in the Western states and territories. St. Louis, Mo., 1882. 16mo. shp. \$3.00 net.

Wadsworth, M. E. Lithological studies: a description and classification of the rocks of the Cordilleras. Part I: W. 8 chromolithog. pl. (Memoirs 858 of the Museum of Comparative Zoology at Harvard College, Vol. XI, part I) Boston 1884. 4to, \$3.00 net. N. B.—May possibly be continued.

Wagner, Rud. Handbook of chemical technology. Trans. and ed. from the 8th Germ. ed., with extensive additions by Wm. Crookes. Illus. N. Y. (1882.) 1887. 8vo. \$5.00. Am—B—Ck.

860 Wahl, W. H. Galvanoplastic Manipulations: a practical guide for the gold and silver electroplater and the galvanoplastic operator. Comprising the electro-deposition of all metals by means of the battery and the dynamo-electric machine, as well as the most approved processes of deposition by simple immersion, with descriptions of apparatus, chemical products employed in the art, etc. Based largely on the "Manipulations Hydroplastiques" of Alfred Roseleur. Illus. Phila. 1883, 8vo, \$7.50. £1. 16s.

B-Ck-Fa-Sp-V.

Trans.

861 Walcott, E. D. Utica slate and related formations; also, fossils of the Utica slate and metamorphoses of triarthrus recki. W. pl. Albany, N. Y. 1889. Svo. pap. 50c.

Walker, F. A. The manual laboring class; also mine labor in the Hocking Valley, by E. W. Bemis; also, report of the second annual meeting, by R. T. Ely. Balto. 1888. Svo, pap. 75c. Mo. Wall rocks, see California 129b.

Wallace, J. Laws which regulate the depositions of lead ore in veins.
Lond. 1861. 8vo, £1.5s, \$10.00.
Gu—V.
Walsh, M. Chemical and geological observations relating to brick-making

in Western India. Lond. 1869. 8vo, pap. 1s, 40c. 865 Walton, Th. H. Coal mining described and illustrated. Illus. by 24 large and elaborate plates, after actual workings and apparatus. Phila. 1885.

4to. \$5.00, £1.5s. B-Ck-Lo. Wanklyn, J. A. Cooper's coal-liming process, in vol. 1884, Soc. Eng.

867 Ward, G. W. Utilization of coal slag, in vol. 1880, Soc. Eng. Trans.

Wardle, W. A comprehensive reference book on practical coal mining. Arranged in the form of questions and answers. Illus. Lond. 1882. (8vo.) \$4.25; the same, Illus. Lond. 1886. 8vo. 15s, \$6.00. Ck—Sp--V—Wa. Contents; -Geology; chemistry; boring, sinking, tubing, walling, etc.; tunneling and stone drift driving; meteorological paradoxes; ventilation; varieties of coal and other fuel; practical mining; safety lamps and lighting of mines; steam, steam boilers, and engines; pumping, shafts, ropes; cages, etc.; mathematics; land and mine surveying.

869 Reference-book of practical and scientific information for the use of colliery managers. Written with a view to assist candidates in passing their examination for certificates of competency as colliery managers. Illus. Lond. 1889. 8vo. 15s, \$6.00. Cn—Wa. Tardle, W. A reference-book of practical coal mining. Lond. 1891. 15s.

870 Wardle, W.

N. B.-A new thoroughly revised edition in preparation. Washoe District, geology of. Becker, G. F. 1883. \$11.00. 61. Washoe process, see Eissler 237.

Watt, Alex. Electro-deposition. A practical treatise on the electrolysis of gold, silver, copper, nickel and other metals and alloys with descriptions of voltaic batteries, magneto and dynamo-electric machines, thermopiles, and of the materials and processes used in every department of the art and several chapters on electro-metallurgy. 3d rev., corrected and enl. ed. Illus. and pl. Lond. (1886, 12s 6d, 1887, 9s.) . . . Cr. 8vo, (12mo) 9s, \$3.50. B-Ck-Fa-Lg-Sp-V-Wn.

Watt, Alex. Electro-metallurgy practically treated. 9th revised ed. with additional matter and illustrations, including the most recent processes. Illus. (Weale's Ser.) Lond. (1883) 1889. Cr. Svo. (12mo) 3s 6d, and 4s, \$1.20; \$1.40. B-Ck-Fa-Lg-Sp-V.

Dictionary of chemistry and the allied branches of other Watts, H. sciences. With contributions of eminent scientific and practical chemists. New ed. 5 vols., illus. Lond. 1868. 8vo. £7. 3s, \$50.25.

874 Watts, H. The same. First supplement. Lond. 1872. 8vo. £1. 11s 6d, \$11.25; second suppl. Lond. 1875. Svo. £2. 2s, \$13.50; third suppl., 8vo. £1. 16s, \$12.50; third suppl., part II. Lond. part I. Lond. 1879. 1881. Svo. £2. 10s, \$18.00. The whole work complete, consisting of 9 vols. £15.2s 6d, \$100.00, o. p. B-Ck-Lm.

Watts, H. The same. Rev. and entirely re-written by H. F. Morley, and P. Muir, assisted by eminent contributors. Vols. 1, 2, (to be complete in 4 vols.) Illus. Lond. 1889, '90. 8vo, each £2. 2s. \$14.50. Lm.

Watts, H. Manual of chemistry, physical and inorganic. 2d ed. (13th of 876 Fowne's), by W. Tilden. W. col. plate of spectra and illus. Lond. 1886. Cr. Svo. (12mo) 10s, \$2.25. Bs-Cg.

Weale, J. A dictionary of terms used in architecture, building, engineering, mining, metallurgy, archaeology, the fine arts, etc. 5th rev. ed. by Robt. Hunt. Illus. (Weale's Ser.) Lond. (1876.) Cr. 8vo. (12mo.) 5s and 6s, \$2.50.

878 Wedding, H. The basic Bessemer process; from the German by W. B. Phillips and E. Prochaska. With a supplementary chapter on dephosphorization in the Basic open-hearth furnace, by E. Prochaska. N. Y. 1891. 8vo. \$3.50. Sb-Wn. Contents:—Early dephosphorizing methods; the basic lining; construction and lining of the converter; the material; the basic Bessemer process; the chemical and physical reaction; general arrangement of basic Bessemer works; utilization of basic Bessemer slag; dephosphorization in the open-heart; economical results of the basic Bessemer process; desulphurization of pig iron; supplementary chapter: dephosphorization in the basic open-hearth furnace.

Wedding, H. Elements of the metallurgy of iron. Traby W. T. Brannt, Illus. Phila. 8vo. in preparation. 879 Elements of the metallurgy of iron. Trans. from the German B-Ck.

880 Weeks, Jos. D. The manufacture of coke. Report to the U.S. Geological Survey, giving statistics from 1880 to 1884. Pittsburgh, Pa. (n. d.) Pap. 40c; the same for 1885, in press 40c. Ag-Wc.

Weeks, Jos. D. Natural gas in the United States. Abstract from mineral 881 resources of the United States, calendar year 1885. (Pittsburgh, n. d.) 8vo. Pap. 20c.

N. B.—This report deals with the geology, history, transportation, use, etc. of natural gas, Its divisions, which are as follows, will give an idea of its contents; total consumption of natural gas in the United States in 1885—charges to consumers—economy in using natural gas—occurrence—history of use—natural gas as an illuminant—pressure and production of wells—storage of gas—exhaustion of gas.

882 Weeks, Jos. D. The same for 1886, '87. (Pittsburgh, n. d.) each 20c.

Weeks, Jos. D. The manufacture of coke. The most elaborate and com-883 plete monograph on the coke industry of the United States. N. Y. 1885. 4to, pap. \$1.50; cloth \$2.00. Ag-Ck-Wc. Wells, wellsinking and boring. A list on this subject will be found in Handy Lists I. West Stanley mine explosion, see Atkinson, 39.

884 Westropp, H. M. Manual of precious stones and antique gems. Illus. Lond. 1874. Cr. 8vo. (12mo.) 6d, \$2.00. Ck-Lo. What the earth is composed of. Roscoe. 6d. 707.

885 Wheeler, C. G. Elementary guide to determinative mineralogy; upon the method of Weisbach's Tabellen zur Bestimmung der Mineralien; applied to American species. Chicago, 1880. 12mo. \$1.00.

Wheeler, C. G. Outlines of determinative mineralogy for high schools, academies, etc. Chicago, 1884, 12mo. \$1.00. 886

887 White, J. S., ed. Recent examination papers for admission to Harvard, Yale, Princeton, Sheffield Scientific school, and Columbia School of Mines; selected and ed. for the use of preparatory schools. Bost. 1888, 12mo. \$1.25.

Whitehaven mine explosion, see Atkinson 39.

White Lead, see Pulsifer 662.

888 Whitney, J. D. Metallic wealth of the United States. Described and compared with that of our countries. Phila. 1854. 8vo, \$2.50.

Whitney, J. D. Colorado: schedule of ores contributed to the Paris exposition of 1867, with some information about the region and its resources W. maps. Loud. 1867. 8vo., pap. 1s, 25c. V—Wg. 889

890 Whitney, J. P. Silver mining regions of Colorada. N. Y. 1865. 12mo. pap.

891 Whitwell, Th. Iron smelters' pocket analysis book. Containing tables and blanks for analysis of ores. N. Y. (n. d.) obl., pocket form, mor. \$2.00. Ck-Wm.

Wigan mining school, see Percy I, 633; see also Mining schools.

Wilkie, Geo. The manufacture of iron in Great Britain. 892 With remarks on the employment of capital in iron works and collieries. Lond. 1857. 8vo. (10s.) \$4,00.

893 Tables of qualitative chemical analysis, with an introductory Will, H. chapter on the course of analysis. 3d American from the 11th German edition, ed. by Ch. F. Himes. Phila. 1881. 8vo. \$1.50.

894 Mineral resources of the United States. (U. S. Gov. Surveys, bulletins.) Wash., D. C. 1883. 8vo. 50c.

Williams, C. W. Fuel: its combustion and economy. Being an abridgement of "a treatise on the combustion of coal and the prevention of smoke." With extensive additions on recent practice in the combustion and economy of fuel, coal, coke, wood, peat, petroleum, etc., by D. K. Clark. Illus. (Weale's Ser.) Lond. 1886. 12mo, 3s 6d, 4s, \$1.40, \$1.60. 895

896 Williams, Edw. H., jr. Manual of Lithology. A practical work, intended to enable the student to classify at sight the more common species. N. Y. 1886. 18mo. \$1.25; red. to 75c.

897 Williams, G. H. Modern petrography: an account of the application of the microscope to the study of geology. Bost. 1886. 12mo. 25c.

898 Williams, G. H. Elements of crystallography. N. Y. 1890. 12mo.

899 Williams, S. G. Applied geology: treatise on the industrial relations of geological structure, and on the nature, occurrence, and uses of substances derived from geological sources. N. Y. 1886. 12mo. \$1.20 net. Ac. Williams, W. M. The chemistry of iron and steel making and of their

900 practical uses. Lond. 1890. P. 8vo. (12mo.) 9s, \$3.00. N. B.—This book is not only interesting to those technically concerned in the manufacture and uses of iron and steel, but also to students of chemistry, and to all who desire to understand why the manufacture of iron and steel is the most specially national of all our national industries.

901

902

Williams, W. M. Explosive compounds, in Bevan's B. M. I. No. 81. Williams, W. M. Iron and steel, in Bevan's B. M. I. No. 81. Williamson, A. W. Metallurgical processes. N. Y. 1877. 6d. 20c. Ma. 903 Wilson, A. Water gas as used for metallurgical purposes, in 1888, II, No. 904

905 Wilson, C. S. The mining laws of the United States, Colorado, New Mexico and Arizona. With notes, forms, diagrams, suggestions to prospectors, etc. Denver, Colo., 1881. 16mo. bds. \$1.00. Ck-L. Wilson, C. S., and Carpenter, S. W. Manual of the mining laws of the U.

906 S., Colorado, New Mexico and Arizona. Cont. statutes, decisions of the courts, etc. 2d ed., with supp., rev. to date. Denver, Col., 1884. bds. \$1.00 net.

Treatise on practical and theoretical mine ventilation. For Wilson, E. B. 907 the use of mining engineers, students and practical men. 4th ed., w. pl. Ck-Cn-Wm. N. Y. (1884) 1891. 16mo. \$1.25.

N. B.—Contains: atmosphere, natural ventilation, etc.; safety lamps, etc.; physical properties of air in motion, etc.; laws of pressure and friction of air in mines, with problems illustrating the same; laws regulating the quantity of air flowing through mines, etc.; ventilation of single pits or drifts, etc.; splitting the air, etc.; advantages of splits, etc.; quantity of air necessary for a mine, etc., air measurements, etc.; history of mechanical ventilators, etc.

908 Wiltshire, Th. The history of coal: an introductory lecture delivered before the principal members of the staff and students of the evening classes of King's College, 1878, at the commencement of the winter session. Illus. Lond, 1878. 8vo. pap. 1s. 40c.

Geological excursions: rudiments of geology for young 909 Winchell, A. learners. 5th ed. Illus. Chicago (1884, \$1.50.) 1889. 12mo. \$1.25. Gc. Winchell, A. Geological studies; or, elements of geology for high schools, 910

colleges, etc. 3d ed. Illus. Chicago (1886) 1889. 12mo. \$3.00 Gc. Winchell, A. Shall we teach geology? A discussion of the proper place of 911 geology in modern education. Chicago 1889. 12mo. (Cr. 8vo, \$1.00. 5s.

Gc-Te. Winchell, A. Sparks from a geologist's hammer. 3d ed. Illus. Chicago 912 (1881) 1887. 12mo. \$2.00. Gc.

Winchell, A. Walks and talks in the geological field. N. Y. 1886. 8vo. 913 \$1.00. Pn.

Winchell, A. World life: comparative geology. 3d ed. Illus. Chicago 914 (1883) 1889. 12mo. \$2.50. Gc.

Winchell, N. H., ed. First annual report on the geological and natural his-915 tory survey of Minnesota, for 1872. W. col. map of the state. 2d ed. Minneapolis 1872. 8vo.

Winchell, N. H., and Peckham, S. F., eds. Second annual report of the same for 1873. Illus. Minneapolis, 1873. 8vo. o. p.

Winchell, N. H., ed. Third annual report of the same, for 1874. With 2 county maps. Minneapolis 1874. 8vo. o. p.

Winchell, N. H., and Harrington, M. W., eds. Fourth annual report of the same for 1875. With the same for 1875.

918 the same, for 1875. With 4 county maps and illus. Minneapolis 1875. 8vo. U. o. p.

Winchell, N. H., ed. Fifth annual report of the same, for 1876. With 4 919 col. maps and illus.; with reports on chemistry, by S. F. Peckham. Min-U.

neapolis, 1876. 8vo. o. p.

920 Winchell, N. H., ed. Sixth annual report of the same, for 1877. With 3 geological maps and illus.; with reports on chemical analyses, by S. F. Peckham; on geology of Rice county, by L. B. Sperry, etc. Minneapolis, 1877. 8vo. o. p. U.

1877. 8vo. o. p.

Winchell, N. H., ed. Seventh annual report of the same, for 1878. With 21 plates; and with a field report, by C. W. Hall; chemical analyses, by S. F. Peckham, etc. Minneapolis 1878. 8vo, o. p.

U.

U.

U.

U.

U.

U.

U.

U.

U.

Winchell, N. H., ed. Eighth annual report of the same, for 1879. With 1 plate. Containing a statement of the methods of microscopic lithology, a discussion of the cupriferous series in Minn., and descriptions of new series of brachiopoda from the Trenton and Hudson River formations; with reports on the geology of Central and Western Minnesota, by W. Upham; on the Lake Superior region, by C. W. Hall; chemical analyses, by S. F. Peckham, etc. Minneapolis 1879. 8vo. o. p. U.

923 Winchell, N. H., ed. 9th annual report of the same, for 1880. Containing field descriptions of 442 crystalline rock samples, and notes on their geological relations, from the northern part of the state, etc. W. 6 plates. and illus. Minneapolis 1880. 8vo. o. p. U.

924 Winchell, N. H., ed. 10th annual report of the same, for 1881, Containing field descriptions of about four hundred rock samples, and notes on their geological relations, continued from the last report, the Potsdam sandstone; typical thin sections of the rocks of the cupriferous series, etc. With 26 plates and illus. Minneapolis 1881. 8vo. n. p. U.

925 Winchell, N. H., ed. 11th annual report of the same, for 1882. Containing a report on the mineralogy of Minn., and a note on the age of the rocks of the Mesabi and Vermilion iron districts; with papers on the crystalline rocks of Minn., by Λ. Streng and J. H. Kloos; on rock outcrops in Central Minn., and on Lake Agassiz, by W. Upham; on the iron region of Northern Minn., by Λ. H. Chester; chemical analyses, by J. Λ. Dodge; and an appendix containing Minnesota laws relating to mines and mining, abstracted by C. L. Herrick. Illus. and 1 plate. Minneapolis 1882. 8vo, n. p.

926 Winchell, N. H., ed. 12th annual report of the same, for 1883. Summary report, containing paleontological notes, and a paper on the comparative strength of Minn and New England granites, by N. H. Winchell, etc. With 30 plates and 1 map. Minneapolis 1883, n. p. U.

- 927 Winchell, N. H., ed. 13th annual report of the same, for 1884. Geological reconnoissances, the Vermilion iron ores, the crystalline rocks of Minn. and of the Northwest, the Humboldt salt-well in Kittson county, records of various deep wells in the state, fossils from the red quartzyte at Pipestone, reports on the New Orleans Exposition and on the General Museum, by N. H. Winchell; geology of Minnehaha County, Dakota, by W. Upham; Chemical report, by J. A. Dodge; geological notes in Blue Earth county, by A. F. Bechdolt; papers on the cretaceous fossils in the boulder clays in the Northwest, by G. M. Dawson and by Woodward and Thomas, etc. Minneapolis 1884. Svo, n. p.
- 928 Winchell, N. H., ed. 14th annual report of the same, for 1885. Containing summary report, notes on some deep wells in Minnesota, descriptions of four new species of fossils, a supposed natural alloy of copper and silver from the north shore of Lake Superior, and revision of the stratigraphy of the Cambrian in Minn., etc. With 2 plates and illus. Minneapolis 1885. 8vo, n. p.

929 Winchell, N. H., ed. 15th annual report of the same, for 1886, embracing reports on observations on the crystalline rocks in the northeastern part of the state, by A., N. H., and H. V. Winchell. Illus. and 2 col. maps. Minneapolis 1886. 8vo, n. p. U.

930 Winchell, N. H., ed. 16th annual report of the same, for 1887. Contains the Marquette iron region, on the Gogebic and Penokee iron-bearing rocks, the geology of the region northwest from Vermilion lake to Rainly lake and of the Little and Big Fork rivers, etc. With 2 plates and illus.

Minneapolis 1887. 8vo, n. p. U.

931 Winchell, N. H., ed. 17th annual report of the same, for 1888. Contains: report of N. H. Winchell; the crystalline rocks of Minn. a general report of progress made in the study of their field relations, with a bibliography

of recent works on the crystalline rocks; field observations in their on regions; report of U. S. Grant, geological observations in northeastern Minn. Illus. Minneapolis, 1888. 8vo, n. p.

Winchell, N. H., ed. 18th annual report of the same, for 1889. With illus. Minneapolis, 1889. 8vo, n. p.

Winchell, N. H., and Upham, W., eds. The geology of Minnesota. Vol. I of the final report. Containing an historical sketch of explorations and 933 surveys in Minnesota, the building stones and the geology of counties, by N. H. Winchell, M. W. Harrington, and W. Upham. Illus. and 43 plates. Minneapolis, 1872—82. 4to. \$3.50; half roan, \$5.00.

Distributed gratuitously to all public libraries and county auditor's offices in the state, to other state libraries and state universities, and to leading geologists and scientific societies; the remainder are held for sale at the cost of publication, \$3.50 per copy in cloth or \$5 in grained half roan binding, upon application to Prof. N. H. Winchell, Minneapolis.

934 Winchell, N. H., and Upham, W., eds. Geology of Minn. Vol. II of the final report. Containing chapters on the geology of counties by N. H. Winchell, and W. Upham. With 42 plates and illus. Minneapolis, 1882— 85. 4to. Distributed according to law in the same manner as vol. I.

Winchell, N. H., ed. The building stones, clays, limes, cements, roofing, 935 flagging, and paving stones of Minnesota: a special report. Minneapolis, 1880, n. p.

Winchell, N. H. History of geological surveys of Minnesota: a bulletin. 936

Minneapolis, n. p.
Winchell, N. H., and H. V. The iron ores of Minnesota. With illus., 44 plates, and geolog. map. Minneapolis. \$3.50. U.

Winchell, N. H. Natural gas in Minnesota: a bulletin. Minneapolis, n. p. U. 938 939 Winchell, N. H. Report on the Salt Spring Lands due the state of Minnesota: history of all official transactions relating to them, and a statement of their amount and location. Minneapolis, 1874, n. p. Winding appliances and machinery. See also Haulage-Hoisting Much.

Havrez, J. Wind. appliances, etc. 1875. 363;

see Andre 18, Percy I, 633. Winding coal, see Andre 18.

Winnall's Coal reckoner. New. ed. Lond. 1873. 12mo. 1s 6d. Sf. 940 Wittgenstein, K., and Kurzwernhart, A. The manufacture of steel with 841

brown coal at Teplitz, in 1882, II, No. 434.

Wohler, F. Handbook of mineral analysis, ed. by H. B. Nason. 942 1871. 12mo. \$3.00. B--Ck-V. Wolfram, see Charleston 140.

Wonders of geology. Mantell, G. A. 2v., each 7s 6d. 516.

Wonders under the ground. Hartwig, G. 1888. 2s. 358. Wood, Thos. Chemical notes for the lecture room, on heat, laws of chemi-943 cal combination, and the chemistry of the non-metallic elements. 2d ed. Lond. 1868. P. 8vo. 3s 6d. \$2.00.

Notes on the metals. A second series of chemical notes for 944 Wood, Thos. the lecture room. Lond. 1868. P. 8vo (12mo) 5s. \$2.00.

Wood charcoal, see Mills 545, Percy I, 632.

Woodward, H. B. Geology of England and Wales. 2d ed., with maps and 945 illus. Liverpool (1876, 14s \$5.60) 1887. 8vo. 18s. Working of mines, see Andre 18, Davies 209, Hyslop 406, Osborn 605. Working silver ores. Aaron, C. H. 1876. \$2.00. 4.

Worthen, A. H. Geological survey of Illinois. 5 vols. Springfield, Ill. 946 1866—73. 4to. (\$30.00)

947 Wright, Chas. R. A. Metals and their chief industrial applications. Lond. 1878. 16mo. \$1.25.

948 twright, Mrs. Our world: its rocks and fossils. A simple introduction to

geology. Sth ed. Illus. Lond. (n. d.) 12mo. 2s.

Wright, Wm. The oil regions of Pennsylvania; showing where petroleum is found; how it is obtained, and at what cost. With hints for whom it may concern. N. Y. (1865) 12mo. \$1.50. 949

Zinc. See also Metals. Graham, W. Brass, tin, zinc. 317; see Aaron 2, Boyd 108, Davies 209, Kerl I, 445, Lock 495a, Osborn 605, Percy II, 632; Phillips 643, Spon, parts 96, 97, 774. Thurston, III, 823.

Newspapers, Periodicals, Almanacs and Annuals.

N. B.—The prices of papers published in England do not include postage to the United States. In almost every case the postage has to be added to the price of subscription.

Age of Steel. Weekly. Saturday. (Since 1822.) Ed. by W. E. Barnes. \$3.00 per year. Pub. by Journal of Commerce Co., Equitable Building, St. Louis, Mo.; New York office: 3 Park Row. Aluminum Age. Trade Journal of progressive information for manufacturers,

metal workers, mechanics, etc. Monthly. (Since 1891.) 50c. per year. Pub. Office 67 E. Fifth St., Cincinnati, Ohio.

American Chemical Journal. Bi-monthly. (Since 1879) Ed. by Ira Remsen.

\$4.00 per year. Pub. by John Hopkins University, Baltimore, Md. merican Engineer. Devoted to engineering. Weekly Wednesday. (Since American Engineer. 1880.) \$2.00 per year. Ed. by T. P. Pemberton. Pub. by American Engineer

Pub. Co., 230 La Salle St., Chicago, Ill.

American Geologist. Devoted to geology and allied sciences. Monthly. (Since 1887). Ed. by S. Calvin, E. W. Claypole, F. W. Cragin, J. Eyerman, P. Frazer, R. T. Hill, A. Lakes, A. C. Lawson, E. O. Ulrich, I. C. White, and N. H. Winchell, \$3.50 per year, 35c per No. Pub. by Am.Geologist Pub. Co., Minneapolis, Minn.

American Journal of Industry. Monthly. (Since 1881) \$1.00 per year. Ed. and pub. by Geo. E. Williams, 112 Wood St., Pittsburgh, Pa.

American Journal of Science. Established by B. Silliman in 1818. Ed. by James D. and Ed. S. Dana, assist. ed. Prof. Josiah P. Cooke, Geo. L. Goodale, and John Trowbridge, of Cambridge; Prof. H. A. Newton and A. E. Verrill, of New Haven; and Prof. Geo. F. Barker, of Phila. Monthly. \$6.00 per year, 50c ea. No. Pub. by J. D. and E. S. Dana, New Haven, Conn.

American Machinist. Mechanical. Weekly. Thursday. (Since 1877) Ed. by

F. F. Hemenway. \$3.00 per year. Pub. by Am. Mach. Pub. Co., 96 Fulton St.,

American Manufacturer and Iron World. Weekly. Friday. (Since 1862.) Ed. by Jos. D. Weeks, \$4.00 per year. Pub. by National Iron and Steel Pub. Co., Pittsburgh, Pa.

American Metal Market. Weekly. Saturday. (Since 1883.) \$3.00 per year. Ed, and pub, by G. M. S. Horton, 343 Greenwich St., New York.

American Wood Worker and Mechanical Journal. Monthly. (Since 1883.) \$1.00

per year. Ed. and pub. by James Nolan, Scranton, Pa.

Artisan. Industrial. Monthly. (Since 1878) \$1.00 yer year. Ed. by A. A. Brown.

Pub. by Cincin, Artisan Co., 64 Longworth St., Cincinnati, Ohio.

Black Diamond. Semi-monthly. (Since 1885.) \$2.00 per year. Ed. and pub. by

Bischoff and Waterloo, Home Insurance Building, Chicago, Ill.

Bulletin, of the American Iron and Steel Association. Weekly. Wednesday.

(Since 1867). \$4.00 per year. Ed. and pub. by James M. Swank, 261 South 4th St., Philadelphia, Pa.

Bullion. Devoted to mining. Weekly. Tuesday. (Since 1883.) \$3 year. Ed. and pub. by Chas. Longuemare, El Paso, El Paso Co., Texas. (Since 1883.) \$3.00 per

Canadian Electrical News and Steam Engineering Journal. Monthly. (Since 1883) \$1.00 per year. Ed. and pub. by Chas. H. Mortimer, Toronto, Canada.

Canadian Magazine of Science and Patent Office Record. Monthly. (Since 1873) \$2.50 per year. Pub. by Burland Lithographic Co., lim., 9 Blenry St., Montreal,

Quebec, Canada.

Canadian Manufacturer and Industrial World. Semi-monthly. (Since 1882.)

\$1.00 per year. Ed. by J. J. Casidey. Pub. by Canad. Manuf. Pub. Co., lim., Toronto, Ont., Canada.

Canadian Mining and Mechanical Review. Monthly. (Since 1882.) \$1.50 per year. Ed. and pub. by B. T. A. Bell, Ottawa, Carleton Co., Ontario, Canada.

Canadian Record of Science. Quarterly. Jan., April, July, Oct. (Since 1882) \$1.50 per year. Ed. and pub. by the Natural History Society, 32 University St., Montreal, Quebec, Canada.

Chemical News. Devoted to analytical and technical chemistry. Weekly. Friday. 4d. (Since 1859) Office: Boy Court, Ludgate Hill, E. C., London.

Chemical Review. Devoted to the interests of manufacturing chemists. Monthly.

10s. per year. Office 47, Fetter Lane, E. C., London. Chemical Trade Journal. Devoted to the commercial aspect of the chemical and

chemical Trade Journal. Devoted to the commercial aspect of the chemical and allied industries. Weekly. 4d., 12s 6d. per year. Ed. by Geo. E. Davis. Pub. by Davis Bros., 5 John Dalton St., Manchester, England.

Coal Trade Journal. Weekly. Wednesday. (Since 1869) \$3.00 per year. Ed. and Pub. Fred. E. Saward, 111 Broadway, New York.

Colliery Engineer. An illustrated Journal of Coal and Metal Mining and kindred Interests. Special Features: Valuable Information relating to mining, with Details. Monthly. (Since 1881.) Ed. by Thos. J. and R. J. Foster. \$2.00 per year. Pub. by the Colliery Engineer. Co. Coal Exchange Scranton Page 1865. per year. Pub. by the Colliery Engineer Co., Coal Exchange, Scranton, Pa. See also Advertisement.

Colliery Guardian. Devoted to the Interests of the Coal and Iron Trades. Special Features: Latest Reports from all Coal and Iron Centres, Articles on theoretical and practical Coal mining and Surveying; Open Contracts; Prices of Coal and Iron; List of Shares; etc. Weekly, Friday, 5d; 24s per year. (Since 1860.) Pub. by H. Kirby Atkinson. 49 Essex St., Strand, W. C. London.

Colliery Guide. Annually, March. (Since 1883.) 6s 6d. Being a Directory of Colliery Owners and Managers. Office: 3 Summerhill Terrace, Newcastle on-Tyne,

England.

Colliery Manager and Journal of Mining Engineering. Contains full Information on all Topics interesting to Colliery Managers and Mining Engineers. Special Features: Very valuable technical Articles. Monthly, 6d; 6s, per year. (Since 1885.) Pub. by Wm. Cate. 32 Bouverie St., E. C. London.

Colliery Manager's Pocket Book, Almanack, and Diary. Annually, December. (Since 1869.) 2s and 3s. Pub. by W. M. Hutchings, 38 Hutton Street, White-friers F. C. London.

friars, E. C., London.

Colorado Mining Gazette. Weekly, Saturday. (Since 1882.) \$2.50 per year. Ed. and pub. by R. D. Blair, Idaho Springs, Clear Creek Co., Colo. Dixie. A Record of Southern industrial Possibility and Development. Monthly.

Since 1885.) \$1.00 per year. Pub. by Dixie Co., Atlanta, Ga. Domestic Engineering. Monthly. (Since 1889.) \$1.00 per year. Ed. and pub. by H. W. Culbertson. 557, 559, The Rookery, Chicago, Ill.

Engineer. Devoted to the Manufacture and Application of the Metals. Special features: New Inventions, etc.; Lists of Patents; Details of Specifications, Reviews of Scientific Works, etc. Weekly, Friday, 6d. (Since 1856.) Pub. by Sydney White. 163 Strand, W. C. London.

Engineer. Bi-weekly, (Since 1881.) \$2.00 per year. Ed. and pub. by Egbert P. Watson & Son, 150 Nassau St., New York.

Engineer and Iron Trade's Advertiser. Devoted to the Iron Industries in Scotland particularly. Weekly, Thursday, 2d. Pub. by A. R. Goldie, Glasgow, Scotland.

Engineering. Devoted to Engineering in all its Branches. Special features: Latest Inventions; Important work in Progress; Subjects connected with the Profession. Weekly, Friday. Ed. by Wm. H. Maw and James Dredge. 6d. (Since 1866.) Pub. by C. Gilbert, 35, 36, Bedford St., W. C. London.

Engineering and Building Record and Sanitary Engineer. Weekly, Saturday. (Since 1877.) Ed. by Henry C. Meyer. \$4.00 per year. Pub. by Wm. Gibson, jr.

277 Pearl St., New York.

Engineering and Mining Journal. Devoted to everything new and valuable to the Engineer, the Miner, the Metallurgist, the Investor, and the general reader who desires to understand the Foundations of wealth, how Metals and Minerals ENG-IRO

are produced, manufactured and used. Weekly, Saturday. (Since 1866.) \$4.00 per year. Ed. by Rich. P. Rothwell. Pub. by the Scientific Pub. Co. 27 Park Place, New York.—An Export edition issued Monthly. See also Advertisement.

Engineering Magazine. Devoted to industrial progress. (With special department on Mining.) Monthly. (Since 1891.) \$3.00 per year, 25c per No. Pub. by Engineering Co., World Buildg., New York.

Engineering News and American Railway Journal. Weekly, Saturday. (Since 1867.) Ed. by D. McN. Stauffer and A. M. Willington, \$5.00 per year. Pub. by the Engineering News Pub. Co., 97 Tribune Buildg., Printing House Square, New York. New York.

English Mechanic and World of Science. Devoted to all subjects connected with Engineering, Chemistry, and allied Branches. Weekly, Friday, 2d. (Since 1865.) Pub. by E. J. Kibblewhite, 332 Strand, W. C. London.

Financial and Mining Record. Devoted to Finance, Commerce and the Industries. Weekly, Saturday. (Since 1877.) Ed. by Th. Jordan. \$4.00 per year. Pub. by the Unit Co., Edwin S. Schenck, Manager, 61 Broadway, New York. See also Advertisement.

Financial Observer and Mining Herald. Devoted to Exposures of Bogus Finance, (especially in Mining.) Weekly, Saturday. (Since 1890.) 10s per year, 2d, per No. Ed. and pub. by C. W. Perryman, 96 Queen St., E. C. London.

N. B.—Valuable to investors.

Geological Magazine. A Journal of Geology. Monthly. 1s 6d. Pub. by Kegan

Paul, Truebner & Co., lim. London.

Geological Record. Annually. January. (Since 1874.) 16s. Pub. by Taylor & Francis, 7½ Red Lion Court, Fleet St., E. C. London.

Geologist's Association Proceedings. Special Features: Geological Papers. Ed. by G. S. Boulger. Quarterly. 1s 6d. Pub. by E. Stanford, 26, 27 Cockspur St., Charing Cross, London.

Ceologist's Society Journal. Quarterly, Feb., May, Aug., Nov. 58, Pub. by

Longmans, Green & Co., London. Granite Cutter's Journal. Monthly. (Since 1877.) Ed. by J. B. Dyer. \$1.00 per year. Pub. by the Granite Cutter's National Union, Barre, Washington Co., Vermont.

Industrial World. Weekly, Saturday. (Since 1890.) \$2.00 per year. Pub. by

the World Pub. Co., Spokane Falls, Wash.

Industrial World and Iron Worker. Weekly, Thursday (Since 1859.) \$3.00 per year. Ed. by D. H. Mason. Pub. by the Industrial World Co., 51, 53 La Salle

St., Chicago, Ill.

Industries. Devoted to all matters connected with the Industrial Life and Progress. Weekly, Friday, 6d. (Since 1886.) Office: 358 Strand, W. C. London.

Iron. (Formerly Mechanic's Magazine.) Devoted to every interest connected with Iron and Steel, Metals, Manufactures and Science generally. The only metallurgical Paper publ. in the United Kingdom. Weekly, Friday, 6d. Ed. by P. F.

Nursey. (Since 1823.) Office: 161 Fleet St., E. C. London.

Iron. Monthly. (Since 1882.) Ed. by John W. Graiff, jr. \$2.00 per year. Pub. by Iron Pub. Co., Drexel Build., Philadelphia, Pa.

Iron Age. A Review of the Hardware Iron, and Metal Trades. Weekly, Thursday. (Since 1847.) \$4.50 per year; Semi-monthly edition, \$2.30 per year; Monthly edition, \$1.15 per year. Pub. by Dav. Williams, 66 Duane St., New York.

Iron and Coal Trades Review. Devoted to the Iron and Coal Trades and allied Interests. Weekly, Friday, 6d. (Since 1866.) Office 342 Strand, W. C. London.

Iron and Steel Trade's Journal. Devoted to the Iron, Steel, Machinery and Tinplate Trades. Special Features: Reports from various centres of Industry; Prices for the week; Contracts entered into. Weekly, Saturday, 6d. (Since 1849.) Pub. by Samuel Griffiths and Co., lim. 82, 84 Cannon St., E. C. Lon-

Iron Belt. Monthly. (Since 1890.) Ed. by John C. Hill. \$2.00 per year. Pub. by

J. T. Hall and J. C. Hill, Roanoke, Va.

Iron Industry Gazette. Monthly. (Since 1881.) \$1.50. Ed. and pub. by McFaul and Nolan. Cor. Seneca and Pearl Sts., Buffalo, N. Y.

Iron Trade Circular (Ryland's). Organ of the Iron, Steel, and Hardware Trade generally. Weekly, Saturday. 21s per year. (Since 1864.) Office: 46 Union Passage, Birmingham, England.

Iron Trade Review. Weekly, Thursday. (Since 1868.) Ed. by W. M. Day. \$3.00 per year. Pub. by Cleveland Printing & Pub. Co., 27 Vincent St., Cleveland, Ohio.

Journal of Commerce and Cotton, Wool and Iron. Weekly, Saturday. (Since 1854.) \$3.00 per year. Pub. by the Journal of Commerce Pub. Co., 128 Pur-

chase St., Boston, Mass.

Journal of the Franklin Institute. Devoted to Science and the Mechanic Arts. Monthly. (Since 1826.) Ed. by Chas. Bullock, P. Frazer, Edw. J. Houston, Theo. D. Rand, C. Sellers, and others. \$5.00 per year. Pub. by the Franklin Institute 15 South 7th Street, Philadelphia, Pa.

Journal of Oil and Gas. Weekly, Saturday. (Since 1889.) \$2.00 per year. Ed. and pub. by H. E. Woods, Lima, Allen Co., Ohio.

Journal of the United States Association of Charcoal Iron Workers, Devoted to Metallurgy. Bi-monthly. (Since 1880.) \$3.00 per year. Ed. and pub. by John Birkinbine, 25 N. Juniper St., Philadelphia, Pa.

Journal of Useful Inventions and Patent Solicitor's Directory. Monthly. (Since

1889.) \$2.00 per year. Office, 874, Temple Court, New York.

Kansas City Scientist. Official Organ of the Kansas City Academy of Science. Monthly. (Since 1887.) Ed. by R. B. Trouslot. \$1.00 per year. Pub. by

Academy of Science Pub. Co., Kansas City, Mo.

Light, Heat and Power. Weekly, Saturday. (Since 1880.) Ed. by Geo. W.

Graeff, jr. \$4.00 per year. Office: Drexel Building, Philadelphia, Pa.

Machinery World. Commercial, Monthly. (Since 1890.) \$1.00 per year. Ed.

and pub. by D. Elsinger, Scranton, Pa.

Manufacturer and Builder. Monthly. (Since 1869.) Ed. by Wm. H. Wahl.

\$1.50 per year. Pub. by Henri Gerard, 83 Nassau St., New York.

Manufacturer and Inventor. Devoted to the Industries, Trades, Manufactures, and Inventions. 15th of each Month. 10s 6d, per year. (Since 1887.) Office: 22 St. Andrew St., E. C. London.

Manufacturer's Record. A Southern industrial Railroad and financial newspaper. Weekly, Saturday. (Since 1873.) Ed. by R. H. Edmonds. \$4.00 per year. Office: Cor. Exchange Place and Commerce St., Baltimore, Md. New York Office: 132 Nassau St.

Manufacturer's Review and Industrial Record. Monthly. (Since 1868.) \$2.00 per

year. Pub. by Industrial Record Pub. Co., lim. 140 Nassau St., New York.

Mechanical News. Semi-monthly. (Since 1871.) \$1.00 per year. Pub. by James
Leffel & Co., 110 Liberty Street, New York.

Mechanics. Monthly. (Since 1882.) Ed. by H. H. Suplee. \$2.00 per year. Pub.
by John M. Davis, 430 Walnut St., Philadelphia, Pa.

Metal, and Iron Journal, English and German, Monthly, \$1.00 per year.

Metal and Iron Journal. English and German. Monthly. \$1.00 per year. (Since 1890.) Ed. and pub. by E. A. Sittig & Son. Cor. Lake and Clark Streets, Chicago, Ill., and 3 East 14th St. New York.

Mineralogical Magazine and Journal of the Mineralogical Society. Devoted to Mineralogy and Petrology. Irregular. Price varies. Pub. by Simpkin, Mar-

shall, Kent & Co. Stationer's Hall Court, E. C. London.

Mining and Scientific Press. An illus. Journal of mining, Popular Science and General News. Weekly, Saturday. Ed. by W. B. Ewer. \$3.00 per year. (Since 1832.) Pub. by Dewey & Co. 220 Market St., San Francisco, Cal. London Office: Alfred E. Ann. 63, 64 New Broad St., E. C.

N. B.—An excellent professional paper. Special Features: Progress of Mining and allied branches with details; stocks, and useful information of value to the profession. See also Advertisement.

Mining and Scientific Review. Devoted to the Mining, Scientific, Manufacturing, Railway and trade interests of the Great West. Weekly, Thursday. (Since 1868.) \$2.00 per year. Ed. and pub. by H. L. Wadsworth. 1209 17th St., Denver, Colo.

Mining Engineer. Monthly. $2\frac{1}{2}d$. Pub. by the Associated Miner's Corporation, Grampound Road, London.

Mining Exchange Journal. Devoted to the Interests of Investors. Daily, except Sunday. (Since 1889.) \$3.00 per year. Ed. and pub by H. L. Comstock & Co. Room 16, Granite Building, Denver, Colo.

Mining Industry and Tradesman. Devoted to Mining, Manufacturing and Trade. Weekly, Friday. (Since 1886.) \$3.00 per year. Ed. by W. C. Wynkoop. Pub. by the Mining Industry Pub. Co. Room 17, Patterson and Thomas Block, Denver, Colo.

MIN-SAF

83

Mining Journal. Independent. Semi-weekly: Wednesday and Sunday. (Since 1886.) \$7.50 per year. Ed. and pub. by W. J. Penrose, Butte City, Silver Bow Co., Mont.

Mining Journal. Record of Mining, Metallurgical, etc. Progress. Special Features: Price Current of Metals, Lead, Copper, etc., Lists of Shares and Stocks. Weekly, Saturday, 6d. (Since 1835.) Office: 18 Finch Lane, and 26 Fleet St. London

Mining Manual (The). Annually. 7s 6d, net. Pub. by Walter Robt. Skinner, 4 Birchin Lane, E. C., and 150 Fleet St., E. C. London.

Mining, Manufacturing and Real Estate South. Semi-Monthly. (Since 1890.) \$2.00 per year. Ed. by W. O. Groce, Manager: Harry Krouse, 7 Kimball House, Wall Street, Atlanta, Ga.

Mining News. Weekly, Saturday, 1d. Pub. by E. Reid, 17 Telegraph St., E. C.,

London.

Mining News. Devoted to the Development of Mining Industries in the Pacific Northwest. Fortnightly. (Since 1891.) \$1.25 per year. Office: 203, 204 Pioneer Buildg., Seattle, Wash.

Mining Reporter. Weekly, Saturday. (Since 1890.) \$3.00 per year. Ed. and

pub. by J. C. Lewis, Castle, Meagher Co., Mont.

Mining Review, in which is incorporated the Trade and Mining Review. Weekly, Wednesday. (Since 1878.) \$2.00 per year. Ed. by Harry Chatterton. Pub. Office: 30 Lakeside Building, Chicago, Ill.

Mining Review. Monthly. \$1.00 per year. (Since 1889.) Pub. by Mining Review

Pub. Co., San Francisco, Cal.

Mining World and Engineering Record. A thoroughly impartial Organ of the Mining, Engineering, etc. Interests. Special Features: Information of Foreign and Colonial Mines and Mining Projects. Weekly, Saturday, 6d. (Since 1871.) Pub. by W. D. Quinlan. 234—236 Gresham House, Old Broad St., E.C. London.

Montana Mining Journal. Weekly, Wednesday. (Since 1890.) \$2.00 per year.

Pub. by the Journal Pub. Co., Helena, Mont.

Montana Mining Review. Devoted to Development of Mineral Resources of Montana in particular, and the country in general. Weekly, Wednesday. (Since 1888.) \$3.00 per year. Ed. and pub. by Wm. Thurber & Co., Jackson St., Helena, Mont.

Northwestern Mechanic. Devoted to the Advancement of the Science of Mechanics, (also of Mining.) Monthly. (Since 1889.) Ed. by J. N. Nind. \$1.00 per year. Pub. by Northw. Mechanic Pub. Co., Minneapolis, Minn.

Ore and Metal Review. Weekly, Wednesday. (Since 1890.) \$1.00 per year. Ed. and pub. by D. W. Osgood, jr. Pueblo, Colo.

Pacific Coast Wood and Iron. Monthly. (Since 1884.) \$1.50 per year. Ed. and pub. by S. L. Everett, 4 California St., San Francisco, Cal.

Popular Science News and Journal of Chemistry. Monthly. (Since 1866.) Ed. by A. P. Nichols and J. Wm. Rolfe, \$1.00 per year. Pub. by Popular Science News Co., 5 Somerset St., Boston, Mass.

Portage Lake Mining Gazette. Weekly, Thursday. (Since 1859.) \$2.00 per year. Ed. and pub. by B. T. Judkins, Houghton, Mich.

Pott's, Mining Register and Directory. Annually. January, 6s 6d. Pub. by W. J. Pott's Atlas Works, North Shields, England.

Power and Transmission. Mechanical. Monthly. (Since 1885.) Ed. by Ed. A. Jernegan, \$1.00 per year. Pub. by Power and Transmission Pub. Co., Mishawaka, St. Joseph Co., Ind.

Power-Steam. Devoted to Engineering. Monthly. (Since 1881.) Ed. by H. M. Swetland. \$1.00 per year. Pub. by Power Pub. Co., Rooms 145, 146, Putlitzer

Buildg., New York.

Practical Engineer: Metallurgical, Mineralogical, and Commercial. Weekly, 2d. Pub. Technical Pub. Co., Victoria Approach, Manchester, England.

Practical Mechanic. Mechanical. Monthly. (Since 1887.) Ed. by B. F. Robinson. \$1.00 per year. Pub. by F. S. Blanchard & Co., Worcester, Mass.

Railroad and Engineering Journal. Monthly, (Since 1832.) \$3.00 per year. Ed.

and pub. by M. N. Forney 145 Broadway, New York.

Reporter. Mechanical. Monthly. (Since 1868.) Ed. by Frank M. Nichols. \$2.00 per year. Pub. by Nichols & Co 204 Washington Boulevard, Chicago, Ill. Safety Valve. Mechanical. Monthly. (Since 1887.) \$2.00 per year. Office: 55 Liberty Street, New York.

St. Louis Mechanic and Tradesman. Devoted to Science, Mechanics and Industries. Weekly, Saturday. (Since 1881.) \$1.50 per year. Ed. by S. Sheldon. Pub.

by Wm. Wilson & Co., 926 N. Broadway, St. Louis, Mo.

School of Mines Quarterly. Feb., May, Aug., Nov. (Since 1880.) \$2.00 per year. Ed. and Pub. by The Alumni Assoc'n., Engineering and Chemical Societies of the School of Mines, Columbia College. Office: Cor 49th St. and Fourth Ave., New York.

Science. Devoted to all the Arts and Sciences of the Period. Weekly, Friday. (Since 1883.) \$3.50. Ed. and pub. by N. D. C. Hodges, 47 Lafayette Place, New

York.

Scientific American. Weekly, Saturday. (Since 1845.) \$3.00 per year. Export EDITION, monthly \$5.00 per year; Spanish edition: La America Cientifica e Industrial, monthly, \$3.00 per year; Architect's and Builder's edition, monthly. (Since 1883.) \$2.50 per year. Pub. by Munn & Co. 361 Broadway, New York. Scientific American Supplement. Weekly, Saturday. \$5.00 per year; if taken with the Scientific American, \$7.00 per year. Pub. by Munn & Co. 361 Broadway. New York.

way, New York. South Western Iron and Lumber Record. Monthly. (Since 1890.) \$1.00 per year. Ed. and pub. by John M. Claiborne, New Birmingham, Cherokee Co., Texas.

Stationary Engineer. Devoted to Engineering. Weekly, Saturday. \$2.00 per vear. Ed. and pub. by the Engineer Co. 9 Lakeside Building, Chicago, Ill. New York Office: 179 Broadway.

Stone. A first-class journal for the interests of the Stone, Marble and Granite Trade. Monthly. (Since 1888.) Ed. by L. H. Gibson. \$2.00 per year. Pub. by

D. H. Ranck Pub. Co., Indianapolis, Ind.

Transactions of the American Society of Civil Engineers. Monthly. (Since 1871.) Ed. by John Bogart. Pub. by American Society of Civil Engineers, 127 East 23d Street, New York.

Virginia Manufacturer. Weekly, Thursday. (Since 1890.) \$2.00. Virginia

Manuf. Pub. Co., Buchanan, Botetourt Co., Va.
Wealth of the Northwest. Monthly. (Since 1889.) \$1.00 per year. Ed. and pub. by Frank B. Cole, Tacoma, Wash.

Western Machinist. Semi-monthly. (Since 1883.) \$1.00 per year. Pub. by Western

Mach. Co., 27 Vincent St., Cleveland, Ohio.

Word and Works. A family journal with literary household and scientific department, Monthly. (Since 1884.) Ed. by Ire R. Hicks. 50c per year. Pub. by Word and Works Pub. Co., 1136 North 3d St., St. Louis, Mo.

World's Progress. Monthly. (Since 1877.) \$1.00 per year. Ed. and pub. by O. J.

Bailey & Co. 73 West 5th St., Cincinnati, Ohio.

Some Local Papers published in Mining Districts.

D.—Daily; S. W.—Semi-weekly; W.—Weekly.

Name of	Paper.	Place of publication.	Feat. of place.	Publisher.
Bessemer.	W. \$1.50.	Bessemer, Jefferson Co.,	Iron and Coal	Bessemer
MINING RECOR		Alabama. Juneau, near Sitka,	mining. Mining.	Print.&Pub.Co F. F. Myers.
Mohave Co. M	W. \$3.00. MINER. W. \$4.00,	Alaska. Kingman, Mohave Co., Arizona.	Mining.	C. M. Funston
PROSPECTOR. I		Tombstone, Cochise Co., Arizona.	Silver and Gold mining.	S. C. Baggs.
EVENING MINI		Bodie, Mono Co., Cal.	Gold and Silver min.	O. E. Jones.
MOUNTAIN ME		Downieville, Sierra Co., Cal.	Quartz and Gravel Min.	Vaughn & Downer.
Iron Hand.	W, \$3.00.	Bessemer, P. O. Pueblo, Pueblo Co., Colo.	Mining.	Comstock & Christmann.
ELK MOUNTAIN	N PILOT. W. \$3.00.	Crested Butte, Gunnison Co., Colo.	Gold, Silver, Coal Min.	John E. Phillips.
San Juan Pro	SPECTOR. W. \$2.00.	DelNorte, Rio Grande Co., Colo.	Mining.	Prospector Pub. Co.
FLUME.	W. \$2.00.	Fair Play, Park Co., Colo.	Gold and Silver Mines.	Hawkins & Cleghorn.
OIL REFINER.	W. \$2.00.	Florence, Tremont Co., Colo.	Petroleum, Oil, Minerals.	J. W. Work.
MINER.	W. \$2.50.	Georgetown, Clear Creek Co., Colo.	Mining.	Wirt & Doris.
MINER.	W. \$2.50.	Pitkin, Gunnison Co.,	Gold, Silver, Coal min.	C. E. Adams.
MINER.	W. \$4.00.	Silverton, San Juan Co., Colo.	Gold and Silver min.	A. Iles.
SILVER STAND	W. \$2.00.	Silver Plume, Clear Creek Co., Colo.	Silver min.	Fred. L. Miner.
WOOD RIVER I	W. \$3.00.	Hailey, Alturas Co., Idaho.	Rich Mining Centre.	Richard & Richards.
News.	W. \$2.00.	Calumet, Houghton Co., Mich.	Rich Copper Mine.	Fred. Mackenzie.
Michigan Con Journal. Current.	W. \$2.00. W. \$2.00.	Hancock, Mich. Norway, Menominee	Copper Mining. Mining.	Thos. J. Prince. James B.
MENOMINEE R		Co., Mich. Iron Mountain, Mich.	Iron min.	Knight. R. P. Tuten.
Iron Co. Repo	W. \$2.00.	Iron River, Iron Co.,	Iron min.	P. O'Brien.
IRON OO. HERO	W. \$2.00. W. \$2.00.	Mich. Ishpeming, Mich.	Iron, Gold,	Geo. A.
MINING JOURN		Marquette, Mich.	Silver, Marble. Iron, Stone	Newett.
Iron Herali	W. \$2.00.	Negaunee, Mich.	Quarries. Iron min.	Journal Co. Griffey &
MINER'S JOUR	W. \$2.50.	Pottsville,	Anthracite	Flynn. Miner's
	D. \$3.00. V. \$1.00.	Schuylkill Co., Penna.	Coal Mining.	Journal Pub. Co.
OKANOGAN OU	TLOOK, W. \$2.50.	Conconully, Okenogan Co., Wash.	Gold and Silver min,	H. W. Thompson.
MINER.	W. \$2.50.	Ruby, Okanogan Co.,	Mining Camp.	C. F. Webb.

Wash.

A SHORT LIST CF

Books in the German Language.

N. B.—The prices are given in Mark and Pfennig. For more descriptive titles look up the advertisements of the firms mentioned	in each title.
Basaltwork of Urach. Leibbrand. Das staatliche Basaltwerk Urach in Wuerttemberg.	Paper, M. 5.00. Ernst and S.
Bessemerizing and Electrolysis for Copper, Nickel and Lead. Hering, C. A. Bessemern und Electrolyse fuer Kupfer-, Nickel- M. 2.00.	
Canals in the United States. Mosler, Chr. Die Wasserstrassen in den Vereinigten Staaten. M. 6.00.	1877. Paper, Ernst and S.
Coke, -Manufacture of, in Dortmunt. Simmersbach, F. Die Koks-Fabrikation im Oberbergamtsbezin 1887. Paper, M. 8.00.	rke Dortmund. Ernst and S.
Copper Mining in the Superior Lake District in the United States. Mosler, Chr. Der Kupferbergbau am Obern See in Nord Am Paper, M. 2.00.	erica. I. 1877. Ernst and S.
Cupriferous Slate Mining Company. Mansfelder Kupferschiefer bauende Gewerkschaft. M. 6.00. Dislocations.	Craz and G.
 Dannenberg, R. Verwerfungen, M. 2.50. Excavation. Rziha, F. von. Der Englische Einschnittbetrieb. 1872. Paper, 1 	Craz and G.
Furnaces for metallurgical processes.	Ernst and S.
Ledebur, A. Oefen tuer metallurgische Prozesse. M. 4.00. Hoisting and Hauling by Chains. Braun, E. Kettenfoerderung. M. 8.00.	Craz and G.
Iron Works.—Outlines of the practice of. Wedding, H. Grundriss der Eisenhuettenkunde. Paper, M. M. 10.50.	9.00; bound, Ernst and S.
Journal of Mining, Metallurgy, etc. Zeitschrift fuer das Berg-, Huetten- und Salinenwesen. Lateral Secretion, Theory of.	Ernst and S.
Stelzner, A. W. Lateralsecretions Theorie. M. 1.50. Management of Mines in Prussia.	Craz and G.
Lange, C. F. R. Grubenhaushaltswesen in Preussen. M. 4.00. Mechanical Dressing, Development of, during the last 100 years. Althans, F. Die Entwickelung der mechanischen Aufbereitung.	Craz and G. 1879. M. 8.00.
Mechanics: introduction to.	Ernst and S.
Undeutsch, H. Einfuehrung in die Mechanik. M. 12.00. Metallurgy, Contributions to, from Bolivia: Amalgamation of Silv	Craz and G. er—Working-off

Gmehling, A. Metallurgische Beitraege aus Bolivia. M. 2.00.
 Craz and G. Method of Dressing and Coking Coal in the Saar District.
 Remy, R. Die Kohlenaufbereitung und Verkokung im Saargebiet. 1890.

Ernst and S.

Zinc-ore.

Remy, R. M. 8.00.

Method of forming Patent-fuel from Coal-dust.

Ueber die technisch und oekonomisch am meisten geeignete Methode zur Briquettirung der westfaelischen Feinkohle. 1880. Paper, M. 10.00.

Ernst and S.

Craz and G.

Mine Gases: General Report of the Prussian Commission on.

Hasslacher, A. Hauptbericht der preussischen Schlagwetter-Commission. 1887. Paper, M. 10.00. Ernst and S.

Mine Gases: Supplement to General Report of Commission on.

Hasslacher, A. Anlagen zum Hauptbericht der preussischen Schlagwetter Commission. 5 Baende. M. 56.00.

Mines and Foundries of the Upper Hartz (District.)

Creg and G.

Capacci, C. Les Mines et Usines du Hartz Superieur. M. 8.00. Craz and G.

Mine Surveying.

Borchers, E. Die praktische Markscheidekunst. M. 16.00. Kuehtmann. Mine Surveying.

Mittheilungen aus dem Markscheiderwesen. M. 12.50.

Mining and Metallurgy at the Philadelphia Exhibition 1876. Althans, F. Das Berg- und Huetten-Wesen auf der Weltausstellung 1876. Ernst and S.

Mining and Metallurgy: Quarterly Report of the Literature of.

Vierteljahrsbericht ueber Berg- und Huettenmaennische Literatur. Per Jahr, M. 2.00. Craz and G. Mining.—Contribution to the History of Mining in Silesia.

Serlo, A. Beitrag zur Geschichte des schlesischen Bergbaues in den letzten 100 Jahren. 1869. Paper, M. 5.50. Ernst and S.

Mining and Metallurgy at Freiberg.

Freiberg's Berg- und Huettenwesen. M. 7.00.

Mining of Mineral Coal in the Vicinity of Saarbruecken. Craz and G.

Hasslacher, A., etc. Der Steinkohlenbergbau des preussischen Staates in der Umgebung von Saarbruecken. 1-5. (Separately.) M. 50.00. Ernst and S.

Mining Schools in Prussia. Bergschulen, die, im preussischen Staate. 1889. Paper, M. 4.00. Ernst and S. Mining Terms.

Gaetzschmann, M. F. Bergmaennische Ausdruecke. M. 2.25. Craz and G.

New Pumping Engines.

Hoermann, A. Die neuen Wasserhaltungsmaschinen auf den Dechenschaechten bei Saarbruecken, etc. 1864. Boards, M. 20.00. Ernst and S.

Pocketbook for Chemists and Metallurgists.

Taschenbuch fuer Chemiker und Huettenleute. Hrsg. von dem' Verein "Huette" 1883. Paper M. 8.00, bound M. 9.00. Ernst and S. Pressed Fuel. (Briquette.)

Presskohlen-Industrie. M. 8.00. Craz and G. Preissig, Ed.

Refrigeration process.

Poetsch, F. A. Gefrierverfahren. M. 1.50. Craz and G. Safety Lamps.

Sicherheitslampen beim Steinkohlenbergbau. M. 24.00. Ernst and S. Scaffolding for Wire-rope pulleys in Mining Plants.

Eichenauer, A. Die Seilscheibengerueste der Bergwerks-Anlagen. M. 20.00. Kuehtmann.

Technical Excursions: Sketches of Machinery used on the Rhine and in Westphalia. Riedler, A. Maschinentechnische Excursionen: Skizzen vom Rheinland und Westphalen, etc. M. 18.00. Craz and G.

Tunneling,—Complete manual of.

Rziha, F. von. Lehrbuch der gesammten Tunnel-Baukunst. 2 Baende. 1874. M. 54.00. Ernst and S. Tunneling.—New Method of tunneling with application of Iron.

Rziha, F. von. Die neue Tunnel-Baumethode in Eisen. 1864. Paper, M. 4.00. Ernst and S.

Working of the Collieries near Saarbruecken.

Nasse, R. Der technische Betrieb der Steinkohlengruben bei Saarbruecken. See Mining: Hasslacher.

The Financial Mining Record.

PUBLISHED EVERY SATURDAY

61 BROADWAY, NEW YORK.

The * Best * Mining * Paper * Published.

The only journal fully representing the MINING INTERESTS of NORTH AMERICA.

Contains complete Weekly Reports from the MINING DISTRICTS of all the STATES and TERRITORIES.

Latest Improvements in the Processes for the TREAT-MENT OF ORES, and NEW DEVICES in MINING MACHINERY.

BULLION PRODUCTS and SHIPMENTS, Dividends, Assessments, etc.

\$4.00 A YEAR. SAMPLE COPY FREE.

THE SCIENTIFIC PUBLISHING CO.

PUBLISHERS AND BOOKSELLERS,

27 PARK PLACE, NEW YORK.

PUBLISHERS OF THE BEST BOOKS IN THEIR CLASSES:

The Metallurgy of Steel. Howe. (2d Edition.) \$10.	00
Gems and Precious Stones of North America. Kunz 10.	00
Modern American Methods of Copper Smelting. $Peters.$ (2d $Edition in Press.$) 4.	00
The Lixiviation of Silver Ores. Stetefeldt 5.	00
Mining Accidents and their Prevention. Abel 4.	00
Mining Code of the Republic of Mexico. Chism 1.	00
The Basic Bessemer Process. Wedding 3.	50
Chemical and Geological Essays. Hunt. (3d Edition.) - 2.	50
A New Basis for Chemistry. Hunt. (2d Edition.) 2.	00
Mineral Physiology and Physiography. Hunt. (2d Edition.) - 5.	00
Systematic Mineralogy Based on a Natural Classification. Hunt. (In Pres	s.)
ETC., ETC., ETC.	

ETC., ETC., ETC.

Send for Catalogue of Scientific and Technical Books, which will be sent free and inquires answered concerning the Best Books to Buy.

Technical and Scientific Books, Magazines and Papers supplied.

ALSO PUBLISHERS OF

"THE BEST MINING PAPER IN THE WORLD."



Gives everything new and valuable to the Engineer, the Miner, the Metallurgist, the Investor and the general reader, who desires to understand

THE FOUNDATIONS OF WEALTH,

how metals and minerals are produced, manufactured and used.

SCIENTIFIC.

POPULAR.

RELIABLE.

Subscription Price, \$4 00 a Year.

BEST ADVERTISING MEDIUM.

The Largest Circulation of any Technical Paper in America.
(In placing orders please mention "Handy Lists".)

MINING AND SCIENTIFIC PRESS.

A FIRST-CLASS ILLUSTRATED MINING AND MECHANICAL WEEKLY.

THE BEST PRACTICAL MINING JOURNAL IN THE WORLD.

Established in 1860, this paper has been eminently successful as a popular and useful mining and mechanical journal. Relative to precious metals especially, it is the leading mining paper of the world.

It is largely patronized by the leading Miners, Mine Owners, Superintendents, Engineers, Metallurgists, Chemists, Manufacturers, Mechanics, Scientific, Professional and Industrial "Men of Progress" on the Pacific Coast, and many leading Mining Men throughout the mining fields of the world.

It is by far the best advertising medium in the Pacific States and Territories for Mining, Mechanical, Engineering, Building and Manufacturing Tools and Implements, Goods, Supplies, etc.

Being thoroughly able and reliable in its editorial and business management, and long established in the most progressive industrial portion of the Union, at present its power as an advertising medium is unsurpassed.

Subscription, \$3.00 a year. Advertising rates, moderate. Send for samples and further information.

DEWEY & CO., PUBLISHERS,

220 Market Street, SAN FRANCISCO.

NOW COMPLETE.

MORRISON'S MINING REPORTS

AND IRRIGATION CASES.

A COLLECTION OF ALL THE CASES INVOLVING THE LAW OF MINES TO BE FOUND IN THE VARIOUS STATE AND FEDERAL REPORTS AND IN THOSE OF ENGLAND, arranged according to subjects, alphabetically, and the whole edited with elaborate notes, by R. S. Morrison, Esq., of the Colorado Bar, and author of "Morrison's Mining Digest", "Mining Rights", etc. 15 vols., \$75.00.

The necessity of bringing together the entire body of the decided cases on this most important and growing branch of the law is so plain as to need no explanation. The law is now scattered through the Reports of nearly every State in the Union and of England, and is practically inaccessible except to the few practitioners who have access to complete libraries. By bringing all these scattered decisions together, arranging them according to the subject-matter of the case and supplementing them with numerous and thoroughly written notes, the lawyer has at his command, not only all the case law, but the case law arranged so that he can get a complete knowledge of it in the shortest possible time and with a minimum of labor.

These reports present not merely the leading cases, but the bulk or mass of the cases of importance. Also the leading irrigation cases.

The entire opinion is given in every instance with statement of facts as full as that contained in the Original Report. This, together with the annotations by Mr. Morrison, makes these Reports of inestimable value.

CALLAGHAN & COMPANY,

114 MONROE STREET.

CHICAGO, ILL.

CRAZ & GERLACH, (Joh. Stettner) Freiberg in Sachsen,

GEGRUENDED 1783.

Specialgeschaft fuer Berg- und Huettenmaennische Litteratur.

VERLAC UND SORTIMENT.

Braun,	E.,	die	Ketten-Færde	rung auf	horizontaler	und	geneigter	Schienenbahn.
M	it 18	Tafe	eln.					M 8—

Capacci, C	., memoire su	r les mines	et usines	du l	Hartz 8	Superieur.
	4 planches.					Supplied to the

M 8—

Dannenberg, R., ueber Verwerfungen. Mit 12 Tafeln.

M 2.50

- Freiberg's Berg. und Huettenwesen. Darstellung der orographischen, geologischen, historischen, technischen und administrativen Verhaltnisse. Herausgegeben vom "Bergmaennischen Verein zu Freiberg. Mit 10 Tafeln. M 7—
- Gaetzschmann, M. F., Sammlung bergmaennischer Ausdruecke. Mit englischen und franzesischen Synonymen von Dr. A. Gurlt. 2. Auflage. M 2.25
- Gmehling, A., metallurgische Beitræge aus Bolivia. Aeltere und neuere Methoden der Silberamalgamation, sowie jetzt gebræuchliches Verfahren der Verhuettung von Zinkerzen. Mit 2 Tafeln. M 2—
- Hering, C. A., Bessemern und Elektrolyse fuer Kupfer-, Nickel- und Bleisteine.

 Mit 3 Tabellen.
- Lange, C. F. R., das Grubenhaushalts-, Kassen- und Rechnungswesen der kgl. preussischen Bergbeherden. Mit vielen Tabellen. M 4—

Ledebur, A., die Oefen fuer metallurgische Processe.

M 4-

- Mansfelder Kupferschieferbauende Gewerkschaft. Der Kupferschieferbergbau und der Huettenbetrieb zur Verarbeitung der gewonnenen Minern. Mit 3 Tafeln. M6—
- Mittheilungen aus dem Markscheiderwesen. Heft 1-5, mit vielen Tafeln. (Jæhrlich erscheint ein Heft.) M 12.50
- Poetsch, F. A., das Gefrierverfahren. Methode fuer schnelles, sicheres und lothrechtes Abteufen von Schæchten im Schwimmsande und ueberhaupt im wasserreichen Gebirge. Mit 4 Tafeln. M 1.50
- Preissig, Ed., die Presskohlen-Industrie. Handbuch der Steinkohlen- und Braunkohlen-Briquettirung. M8—
- Riedler, A., maschinentechnische Excursionen. 62 Blætter Maschinen-Skizzen von Anlagen im Rheinland, in Westphalen und Belgien. M 18—
- Stelzner, A. W., die Lateralsecretions-Theorie und ihre Bedeutung fuer das Pribramer Ganggebiet.

 M 1.50

Undeutsch, H., Einfuehrung in die Mechanik. Mit 333 Holzschnitten. M 12-

Vierteljahresbericht, Kritischer, ueber die berg- und huettenmaennische Litteratur, unter Mitwirkung von Fachmænnern, herausgegeben von der Craz & Gerlach'schen Buchhandlung (Joh. Stettner) in Freiberg in Sachsen.

(Erscheint seit dem Jahre 1882.) Pro Jahrgang M 2—

We beg leave to call your special attention to our large Assortment of Books on Mines, Mining, Metallurgy and kindred Branches of which we make a specialty.

ALL ORDERS RECEIVE PROMPT ATTENTION.

LARGEST STOCK OF MINING AND METALLURGICAL LITERATURE.

Catalogues on Application to any Address in the World.

We correspond either in German, English or French.

Books * Relating * to * Mining,

PUBLISHED BY

E. & F. N. SPON.

MINING AND ORE DRESSING MACHINERY.

A comprehensive treatise dealing with the modern practice of mining both metalliferous and non-metalliferous minerals, including all the operations incidental thereto, and preparing the product for the market. By C. G. Warnford Lock. Large 4to volume, fully illustrated, price \$21.00.

HYDRAULICING.

The Hydraulic Gold Miner's Manual, giving sufficient data for the construction of the necessary plant for successful Hydraulic Mining. By T. S. G. Kirkpatrick. Illustrated, 12mo, cloth \$2.25.

PRACTICAL COLD-MINING.

A comprehensive treatise on the origin and occurrence of gold-bearing gravels, rocks, and ores, and the methods by which the gold is extracted. By C. G. Warnford Lock. 788 pages, with 8 plates and 271 engravings in the text, price \$15.00.

COAL MINING.

A practical treatise on Coal Mining, by Geo. G. Andre, F. G. S. Illustrated by 84 full-page working drawings to scale, comprising geological sections and formations, and all the tools, machines, appliances, and apparatus employed in coal mining. In two volumes, price \$15.00.

MINING MACHINERY.

A descriptive treatise on the machinery, tools and other appliances used in mining, by Geo. G. Andre, F. G. S. Containing 182 plates drawn to scale. In two volumes, price \$15.00.

ROCK BLASTING.

A practical treatise on the means employed in blasting rocks for industrial purposes. By Geo. G. Andre, F. G. S. 56 illustrations, and 12 plates. 8vo, cloth \$3.00.

COAL MINING.

A practical treatise on mine engineering. By G. C. Greenwell, F. G. S. Third edition, reprinted from the second, 64 large plates, some colored, price \$6.00.

MINE VENTILATION.

The theories and practice of centrifugal ventilating machines. By Daniel Murgue. Translated by $\Lambda.$ L. Steavenson. Illustrated, price \$2.00.

COAL MINING TERMS.

A glossary of terms used in coal mining. By W. S. Gresley. Illustrated with woodcuts and diagrams, price \$2.00.

MINES OF MEXICO.

Historic Mines of Mexico; a review of the mines of that Republic for the past three centuries, by Chas. B. Dahlgren. *Now out of print*. Price \$25.00.

Illustrated List of Books relating to Mining, sent free on application.

E. & F. N. SPON, Publishers, 12 Cortlandt St., NEW YORK.

THE COLLIERY ENGINEER.

An Illustrated Journal of

COAL AND METAL MINING AND KINDRED INTERESTS.

PUBLISHED MONTHLY BY

The Colliery Engineer Co., Scranton, Pa.

SUBSCRIPTION,

(postage prepaid) to all points in U. S., Canada, British Columbia or Mexico, \$2.00 per year.

To Foreign Countries in the Universal Postal Union, \$2.50 per year.

The Leading Technical Mining Journal Published.

The Colliery Engineer

POCKET ** BOOK

Over Four Hundred Pages of Valuable Tables, Rules, and Formula for

Mine Officials, & Mining Engineers, & and Mining Students.

SIMPLE AND THOROUGH.

All branches of science connected with mining are treated on, and simplified as much as possible. For the working miner who is preparing to stand any examination required by the governments of the several states it is an invaluable text-book. For the superintendent, mining engineer, mine foreman, or fire-boss, it is the best book of reference that has ever been published, containing rules and tables specially prepared for his use.

NO OTHER BOOK CONTAINS AS MUCH VALUABLE IN-

FORMATION FOR MINING OFFICIALS IN SO

CONDENSED AND PLAIN A FORM.

PRICES.

Bound in cloth	2.00
Bound in flexible leather; round corners	
Bound in flexible leather, with flap	
The Colliery Engineer for I year, and Pocket-Book bound in cloth	
The Colliery Engineer for I year, and Pocket-Book bound in flexible leather, round corners	
The Colliery Engineer for 1 year, and Pocket-Book bound in flexible leather, with flap	4.25

THE COLLIERY ENGINEER CO.,

Coal Exchange, SCRANTON, PA.

THE

AMERICAN LAW REGISTER

Is the standard legal reference magazine of the country, having been published in monthly numbers since 1852. Each number contains an exhaustive leading article upon some subject not fully examined by current text writers, and whose value remains permanent. Several recent and important cases are also printed in full in each number, with opinions, readable and accurate statements of what other courts and writers have considered to be the law upon one or more of the points involved in the printed cases. A distinctive feature of the magazine is its careful editing of the published articles, involving the printing in full of statutes, the giving dates and cross-references to the citations and other matters of accurate detail.

Subscription price, five dollars a year. Back volumes since 1861, newly re-printed from the original plates, five dollars each. Complete sets can be obtained only from the publishers. Single numbers, fifty cents each, cash with the order. No free copies.

THE D. B. CANFIELD CO.,

LIMITED.

P. O. Box 1528.

PHILADELPHIA, PA.

AMERICAN SYSTEM OF SHORTHAND.

To supply the increasing demand for stenographers, schools of shorthand and type-writing hav been established in various parts of the country, and, with few exceptions, all business colleges now hav a "department of shorthand." A number of systems ar taught, but that of Benn Pitman is more generally used than any other in this country, and may be called the "American System."—Extract from the Report of the Commissioner of Education (Washington, D. C.), for the Year 1887-88, page 927.

For catalog of shorthand publications by Benn Pitman and Jerome B. Howard, address

THE PHONOGRAPHIC INSTITUTE,

CINCINNATI, O.

Empfehlenswerthe Werke

AUS DEM VERLAGE VON

Gerhard Kuehtmann,

DRESDEN, (Germany.)

Marschall Strasse, 39.



* Mine surveying.—Practical treatise. *

BORCHERS, A., Bergrath, frueher Oberberg-Amts-Markscheider, etc. zu Clausthal. Die praktische Markscheidekunst, unter Anwendung des Luitblasen-Niveaus und des Theodolithen. Mit 127 Holzschnitten und 11 lithographischen Tafeln. Gross-Octav. Geheftet 16 M.

I. Das Nivelliren mit dem Luftblasenniveau und die Bestimmung des Seigerteufen in Schechten und Abbauen. — II. Die Messungen mit dem Theodolithen und die damit in Verbindung stehenden Operationen. — Anhang. Anwendung eines Magnets zur Ermittelung der Durchschlagsrichtung, der Stærke des festen Mittels und des Sohlenstandes zweier Gegenærter. I. Die Bestimmung der Durchschlagsrichtung. II. Die Ermittelung der Stærke des festen Mittels. III. Die Ermittelung des Sohlenstandes. IV. Die Apparate und Vorrichtungen zur Ausfuehrung der vorstehenden Ermittelungen.

Scaffolding for Wire-rope pulleys in Mining Plants.

EICHENAUER, A., Ingenieur. Die Seilscheibengerueste der Bergwerks-Anlagen. Mit Holzschnitten und 20 lithographischen Tafeln in Gross-Folio. Geheftet 20 Mk.

Aus dem reichen Schatze seiner Erfahrungen bietet der Verfasser nach einer kurzen Einleitung und einigen allgemeinen Betrachtungen ueber Lage der Seilscheiben, freien Raum bei den Hængebænken, Form, Material und Stærke der Gerueste, eine interessante, von Zeichnungen begleitete Erlæuterung und Vergleichung der gebræuchlichen drei Hauptsysteme.

Hiernach folgt eine ausfuehrliche Anleitung zur Berechnung der Gerucste und an diese schlieszt sich die Beschreibung nebst Berechnung einer grossen Zahl wirklich ausgefuehrter Seilscheibengerueste mit so detaillirten Zeichnungen, dass direct darnach construirt werden kann.

Im Uebrigen bringen die Beschreibungen, sowie die trefflichen Zeichnungen soviel interessantes Material und praktische Winke, dass das Werk nur bestens empfohlen werden kann.

Some * important * Publications * for * Miners, Metallurgists * and * Engineers.

Werthvolle Werke auf dem Gebiete der Ingenieur- und Bergbauwissenschaft, aus dem Verlage von:

Wilhelm Ernst & Sohn,

vormals Ernst & Korn.

Berlin, W. 41.

Wilhelm Strasse 90.

Basaltwork of Urach.

Leibbrand, Kgl. Wuerttemb. Oberbaurath. Das staatliche Basaltwerk Urach in Wuerttemberg. Mit 3 Kupfertafeln. gr. 4. geh. * 5 M.

Canals in the United States.

Mosler, Chr. Die Wasserstrassen in den Vereinigten Staaten von Amerika in ihrer kommerziellen und industriellen Bedeutung. Im Auftrage Seiner Excellenz des Herrn Ministers fuer Handel, Gewerbe und oeffentliche Arbeiten verfasst. Mit zwei Farbendruck-Tafeln. Lex. 8. 1877. geh. 6 M.

Coke,—Manufacture of, in Dortmunt.

Simmersbach, F. Die Koks-Fabrikation im Oberbergamtsbezirke Dortmund. Mit Beruecksichtigung des fremden Wettbewerbs. Im Auftrage des Verwaltungsrathes der Vereinigung der Koks-Anstalten und Fettkohlenzechen des Oberbergamtsbezirks Dortmund. Mit 2 Tafeln. 4. 1887. geh. * 8 M.

Copper Mining in the Superior Lake Distrist in the United States.

Mosler, Chr., Kgl. Bergassessor. Der Kupferbergbau am Obern See in Nordamerika. Mit einer geognostischen Uebersichtskarte. 1. Theil. 4. 1877. geh. 2 M.

Excavation.

Rziha, F. von. Der Englische Einschnitts-Betrieb. Ein Beitrag zum Erdbau. Mit einer Tafel, gr. 8. 1872. geh. 2 M.

Iron Works.—Outlines of the practice of.

Wedding, Dr. Hermann, Kgl. (ieh. Bergrath. Grundriss der Eisenhuettenkunde. Dritte umgearbeitete Auflage. Mit 215 in den Text gedruckten Holzschnitten und 2 lithographirten Tafeln. gr. 8. geb. 9 M. geb. 10,50 M.

Journal of Mining, Metallurgy, and Salines (Salt Works) in Prussia.

Zeitschrift fuer das Berg-, Huetten- und Salinenwesen

in dem Preussischen Staate.

Herausgegeben im Ministerium fuer Handel und Gewerbe.

Band I—XIV (Jahrgang 1853—1866). 4. je 12 M. — Band XV—XXI (Jahrgang 1867—1873). 4. je 13,60 M. — Band XXII—XXXVIII (Jahrgang 1874 bis 1890). Text in 4. Atlas in Fol. je 20 M.

- **Haupt-Register** zur Zeitschrift fuer das Berg-, Huetten- und Salinenwesen im Preussischen Staate zu Band I—XXV (Jahrg. 1853—1877). 4. geh. 3,50 M. Von dieser Zeitschrift werden die Baende VI, VII, XVII, XVIII, XX, XXI einzeln nicht mehr abgegeben.)
- Mechanical Dressing, Development of, during the last 100 vears.
- Althans, F. Die Entwickelung der mechanischen Aufbereitung in den letzten hundert Janren. Mit 3 Tafeln. 4. 1879. geh. 8 M.
- Method of Dressing and Coking Coal in the Saar District.
- Remy, Richard. Die Kohlenaufbereitung und Verkokung im Saargebiet. 4. Text mit Atlas in gr. Folio. 1890. (Siehe: Hasslacher, Steinkohlenbergbau V.)

Method of forming Patent-fuel from Coal-dust.

Berg, Ferd., Berg-Referendar. Ueber die technisch und oekonomisch am meisten geeignete Methode zur Briquettirung der westfaelischen Feinkohle, Mit einem Atlas von 9 Tafeln. Folio. 1880. geh.

Mines Gases, General Report of the Prussian Commission on.

Hasslacher, A., Oberbergrath. Hauptbericht der Preussischen Schlagwetter-Commission. Erstattet im Namen der Commission. gr. 8. 1887. geh.

Mine Gases, Supplement to General Report of the Prussian Commission on.

- Hasslacher, A. Anlagen zum Haupt-Bericht der Preussischen Schlagwetter-Com-
 - Band I. gr. 8. 1887. geh. 6 M. Band II. gr. 8. 1887. geh. 8 M. Band III. gr. 8. 1887. Mit einem Atlas von 66 Tafeln in 4. in Mappe 24 M. Band IV. gr. 8. 1887. geh. 6 M. Band V. gr. 8. 1887. geh. 12 M.

Mit Ausnahme des IV. Bandes werden die Baende auch einzeln abgegeben, soweit die Vorraethe des vollstaendigen Werkes dies gestatten.

Der Preis des vollstaendigen Werkes, 5 Baende und Hauptbericht, ist 60 M.

Mining and Metallurgy at the Philadelphia Exhibition 1876.

Althans, F., Oberbergrath. Das Berg- und Huettenwesen auf der Welt-Ausstellung zu Philadelphia im Jahre 1876. 4. 1877. geh.

Mining. Contribution to the History of Mining in Silesia.

Serlo, A., Kgl. Ministerial-Direktor. Beitrag zur Geschichte des Schlesischen Bergbaues in den letzten Hundert Jahren. Festschrift zur Feier des hundertjaehribaues in den letzten Hundert Jamen. Festschutz zur Folgt um 1869. Im Aufgen Bestehens des Kgl. Ober-Bergamtes zu Breslau am 5. Juni 1869. Im Auftrage Sr. Excellenz des Herrn Ministers fuer Handel, Gewerbe und oeffentliche Arbeiten Grafen von Itzenplitz. Mit 2 Kupfertafeln. gr. Lex. 8. 1869. geh. 5,50 M.

Mining of Mineral Coal in the Vicinity of Saarbruecken.

Hasslacher, A. Jordan, B., und Nasse, R. Der Steinkohlenbergbau des Preussischen Staates in der Umgebung von Saarbruecken. Im Auftrage des Herrn Ministers der oeffentlichen Arbeiten dargestellt.

I. Geologische Skizzen des Saarbruecker Steinkohlengebirges von R. Nasse.

Mit 5 Tafeln. 4. 1884. geh. 7,50 M.

II. Geschichtliche Entwickelung des Steinkohlen-Bergbaues im Saargebiete, von A. Hasslacher. Mit 3 Tafeln. 4. 1884. geh. 7,50 M.

III. Der technische Betrieb der Kgl. Steinkohlengruben bei Saarbruecken, von R. Nasse. Mit 24 Tafeln. 4. 1885. geh. 24 M. 7,50 M. IV. Die Absatzverhaeltnisse der Kgl. Steinkohlengruben bei Saarbruecken in den letzten 30 Jahren, von B. Jordan. Mit einer Tafel. 4. 1884. geh. 3 M.

V. Die Kohlenaufbereitung und Verkokung im Saargebiete, von Rich. Remy, Kgl. Bergassessor. Mit 10 Tafeln. 1890. geh. 8 M.

Mining Schools in Prussia.

Bergschulen, die, im Preuss. Staate. Nach amtl. Quellen. 4. 1889. geh. * 4 M.

New Pumping Engines.

Hoermann, A., Professor und Lehrer der Maschinenkunde an der Kgl. Bergakademie zu Berlin. Die neuen Wasserhaltungsmaschinen auf den Dechenschaechten bei Saarbruecken, der Tiefbauanlage zu Ruedersdorf und der Ferdinandsgrube bei Kattowitz. Text in 4. geh. Hierzu ein Atlas mit 29 Tafeln in Doppel-Folio. 1864. steif geh.

Pocketbook for Chemists and Metallurgists.

Taschenbuch fuer Chemiker und Huettenleute. Herausgegeben von dem Verein "Huette". Mit 220 in den Text eingedruckten Holzschnitten. 8. 1883. geh. 8 M. geb. in Sarsenet 9 M.

Safety Lamps.

Sicherheitslampenwesen beim Steinkohlenbergbau. Bericht der Preussischen Schlagwetter-Commission. Text in gr. 8. geh. Mit einem Atlas von 66 Tafeln gr. 4. In Mappe. (Siehe: Hasslacher.)

Tunneling,—Complete manual of.

Rziha, F. von, Professor der k. k. technischen Hochschule in Wien.

Lehrbuch der gesammten Tunnel-Baukunst.

Zwei Baende. Mit 650 in den Text eingedruckten Holzschnitten. Zweite Auflage. gr. Lex. 8. 1874. 54 M.

Der Herr Verfasser spricht sich im Vorworte zum 1. Bande wie folgt darueber aus:

Die guenstigen Beurtheilungen des Vorlaeufers dieses Werkes haben das Beduerfniss einer in die Einzelnheiten der Tunnelbaukunst eingehenden Arbeit so nachdruecklich hervorgehoben, dass in mir die Bedenken sich nur vergroessern mussten, ob das vorliegende Lehrbuch denjenigen Anforderungen, welche an dasselbe gestellt werden duerfen, auch entsprechen werde. Nicht eine Unterschaetzung des Materials, welches ich im Laufe langjachriger Praxis gesammelt habe, liegt dem zu Grunde, sondern die besonderen Schwierigkeiten, welche bei einer ersten systematischen Behandlung eines ungemein ausgebreiteten Stoffes hervortreten. Es kann demnach das gegenwaertige Werk auch keinen Anspruch darauf machen, diesen gewaltigen Stoff vollstaendig erschoepft zu haben, vielmehr wird es nur als ein erster Versuch der Loesung einer Aufgabe zu betrachten sein, die im Ingenieurwesen immer mehr an Bedeutung gewinnt, eine Loesung, welche ich nur in Folge vielfacher Ermunterung dazu unternommen habe.

Tunneling.—New Method of tunneling with application of Iron.

Rziha, F., von. Die neue Tunnel-Baumethode in Eisen, angewendet bei den Tunnelbauten zu Naensen und Ippensen auf der Herzoglich Braunschweig-Holzmindener Eisenbahn. Ein Vorlaeufer des Lehrbuchs der gesammten Tunnel-Baukunst. Mit 33 in den Text eingedruckten Holzschnitten. gr. Lex. 8. 1864. geh. 4 M.

Working of the Collieries near Saarbruecken.

Nasse, R. Der technische Betrieb der Kgl. Steinkohlengruben bei Saarbruecken. — (Siehe: "Hasslacher, Steinkohlenbergbau III.")

SCIENTIFIC AND MECHANICAL

BOOKS!

The undersigned have a large stock of works on the Industrial Λ rts and Sciences, embracing Works on

Architecture, Carpentry, Building, Astronomy, Meteorology, Navigation, Brewing,

Distilling, Wine Making, Chemistry, Physics, Philosophy, Coal Oil, Oil, Gas, Drawing, Painting, Photography, Electricity, Electric Telegraph, Engineering, Machinery, Mechanics, Geology, Mineralogy, Metallurgy, Hydraulics, Hydrostatics, Iron, Steel, Mathematics, Ship Building, Works of Reference, etc.

A complete Catalogue will be sent post paid, gratis, on application.

D. VAN NOSTRAND CO.,

23 MURRAY AND 27 WARREN STS., NEW YORK.
SPECIAL RATES ON SCHOOL AND COLLEGE TEXT BOOKS.

C. A. Rohde CO.,

Booksellers and Importers,

300 Third Street, Metropolitan Block, Milwaukee, Wis.

WE MAKE A SPECIALTY OF TECHNICAL BOOKS IN GERMAN, ENGLISH and FRENCH,

Books on Mines and Mining, Metallurgy, etc. supplied on short notice, or quickly imported.

——WE KEEP A LARGE STOCK OF——

⇒DRAWING-INSTRUMENTS, MATERIALS and PAPER.≪

⇒Lists of Books furnished on any given Subject.

Books OUT OF PRINT and SCARCE procured at moderate prices.

Your correspondence is respectfully solicited.

(In placing orders, please mention "Handy Lists".)

Art Printing.





Book and Catalogue Work a specialty.

"HANDY LISTS OF TECHNICAL LITERATURE."

PART I: Useful Arts in general, products and processes used in manufacture, technology and trades. 100 pages; paper cov., \$1.50; cloth, \$1.75.

PART II: Military and Naval Science, navigation, rowing, sailing, yachting; boat, ship and yacht building; ammunition, arms, tactics and war. With a list of non-technical books, illustrating soldier and sailor life, battles, etc., and a list of periodicals, etc., in these branches. 104 pages, paper cov., \$1.50; cloth, \$1.75.

PART III: Engineering and Mechanics. Comprising applied and theoretical mechanics, machinery; steam and marine engineering, railroad building, construction; engineering, management and practice; civil engineering, surveying, leveling, hydraulic and sanitary engineering, sewerage and drainage, etc., mechanical drawing. With a list of periodicals in these branches. 8-168 pages, paper cov., \$2.50; cloth, \$2.75.

PART IIa: Electricity and Magnetism; Telegraph, Gas, etc., (including Issues up to October, 1890, and a number of old books frequently met with in catalogues.) Together with a list of Periodicals and Annuals in these branches. Paper cov., 75c; cloth, \$1.00.

PART IV: Mines and Mining, Assaying, Metallurgy, Analytical Chemistry.

Minerals and Mineralogy, Geology and Palaeontology, Cloth, \$1.00: \$1.25 with Key

To Booksellers and Librarians we furnish to each part a KEY TO

PUBLISHERS. Liberal discount to the trade.

In Preparation: PART V: Fine Arts. PART VI: Architecture. PART VII: Reference Works.

DESCRIPTIVE CIRCULARS ON APPLICATION.

H. E. HAFERKORN.

MILWAUKEE, WIS.

Formerly HAFERKORN & HEISE, National Publishing and Printing Co.

DIRECTORY OF TECHNICAL LITERATURE.

A Classified Catalogue of all books, annuals and journals published in

AMERICA, ENGLAND, FRANCE and GERMANY,

Including their relations to LEGISLATION, HYGIENE and DAILY LIFE. Published by FRITZ von SZCZEPANSKI.

1st Annual Issue, 1889, 100pp.

Price, 75 Cents.

Advertisements in all the issues will be:

2 pages, \$20.00; 1 page, \$12.50; half page, \$7.50; quarter page, \$5.00,

International News Company, 83 and 85 Duane Street, New York. St. Petersburg and Leipzig, Verlag von Fritz von Szczepanski. London: Sampson, Low, Marston & Co. Paris: E. Bernard & Co.

Indispensible to Booksellers and Librarians.

* SCHLAGWORT-KATALOG. *

Verzeichniss der Buecher und Landkarten in sachlicher Anordnung, bearbeitet von CARL GEORGE und LEOPOLD OST.

Brochirt, 32 Mark.

1883-'87.

Gebunden, 35 Mark.

Fuer Bibliothekare und Buchhaendler unentbehrlich.

1888, I. u. II. Semester, @ 162 Seiten. Brochirt @ 4 M. 80 Pf.; gebunden @ 5 M. 40 Pf PROSPECTE UND PROBEBOGEN GRATIS.

FR. CRUSE'S BUCHHANDLUNG.

OST & GEORGE, Hannover, Germany.

E. STEIGER

ESTABLISHED 1864.

PURCHASING AGENTS FOR LIBRARIES, Etc.

Branch at No. 2 Thalstrasse, LEIPZIG.

LONDON: 13 Bedford St., Covent Garden. PARIS: 189 Boulevard St. Germain.

Direct connections with all Publishers and Dealers in Second-hand Books in Germany, Austria, Switzerland, Denmark, Sweden, Norway, and with many prominent firms of England, France, Italy, Holland, Belgium, Spain, etc.—Experienced, prompt, and reliable Agents in Amsterdam, Brussels, Copenhagen, Stockholm, Milan, Rome, Madrid.

We have ever been keeping the

Largest Assortment of German Books

in all departments, and recently, after doubling the space of our sales-rooms, made further additions, so that we are enabled to fill most orders immediately. are thousands of German publications on our shelves that cannot be found elsewhere in America.

New publications suitable for our customers we receive as soon as issued.

Books, Periodicals, etc., which are not on hand, we import from all countries, having them either mailed direct to our customer's address, or enclosed in our semiweekly shipments. Not only large lots, but even single volumes we import, and thus secure to our customers the lowest price, whilst the quickest possible and frequent receipt of small lots affords bookbuyers advantages over even a connection with an agency in Europe, saving them also the expense and inconvenience of entry at the Custom House; these costs and delays are the same for small and for large shipments, the same also whether the goods are dutiable or duty free.

Inasmuch as we are enabled to purchase everything on the most favorable terms, our prices are as low and our terms as advantageous as those of other firms.

By means of a very extensive collection of bibliographical catalogues we are in a

position to answer most inquiries concerning books without delay.

We are paying special attention to procuring second-hand copies of valuable books in all departments and in any language, and shall be glad to supply catalogues of second-hand books to all librarians and other bookbuyers who desire to receive such. Scarce books specially wanted we try to procure as quickly and cheaply as possible by advertising for the same in America, England, Germany and France.

To make room for new publications, we offer part of our stock—surplus copies, or such as are shelfworn but otherwise perfect, or copies of former editions—in Bulletins

entitled

Steiger's Bargain Lists of Books at Reduced Prices,

which will be issued in quick succession. They will enumerate, at bargain prices, valuable publications in the following departments:

Novels, Tales, Stories, Poems and Anthologies, His ory of Literature, His tory, Biography, Memoirs, etc., Archaeologie and Mythology, Geography and Travel, Geographical Atlases. Philosophy, Natural Sciences, Medical Sciences, Pharmacy, Chemistry and Chemical Technology, Mathematics and Astronomy, Engineering, Architecture and Decoration,

Protestant Theology, Comparative Philology, Languages, Classical and Modern, Commerce, Law and Politics, Music and History of Music, Encyclopaedias, Illustrated Works and Editions.

Either of these Bargain Lists as well as our other catalogues and those of foreign Dealers in Second-hand Books, will be mailed to any address given us for that purpose. We also supply all American Books, Periodicals, etc.

E. STEIGER & CO, 25 Park Place, New York.

Henry Carey Baird & Co.,

Industrial + Publishers, + Booksellers + and + Importers,

810 WALNUT ST., PHILADELPHIA, PA., U. S. A.

A NEW BOOK ON ASSAYING.

THE BEST IN THE ENGLISH LANGUAGE. * IT LEADS ALL OTHERS.

----RECENTLY PUBLISHED,----

THE ASSAYER'S MANUAL.

An Abridged Treatise on the Docimastic Examination of Ores, and Furnace and other Artificial Products. By BBUNO KERL, Professor in the Royal School of Mines; Member of the Royal Technical Commission for the Industries, and of the Imperial Patent office, Berlin. Translated from the German by William T. Brannt, Editor of "The Techno-Chemical Receipt Book", etc. Second American Edition. Edited with extensive additions by F. Lynwood Garrison, Member of the Am. Institute of Mining Engineers, Iron and Steel Institute, Verein Deutscher Eisenhuettenleute,

Mining Engineers, Iron and Steel Institute, Verein Deutscher Eisenhuettenleute, etc. Illustrated by 87 Engravings. Three hundred and fifty-four pages, 8vo, cloth, price \$3.00. By mail, free of postage, to any address in the world.

Abstract of Contents: General Division.—I, Mechanical Manipulations; II, Chemical Operations; III, Assay Furnaces, IV, Assay Vessels; V, Balances and Weights; VI, Tools and Implements; VII, Assay Reagents. Special Division.—I, Lead; II, Copper; III, Silver; IV, Gold; V, Platinum; VI, Nickel; VII, Cobalt; VIII, Zinc, IX, Cadmium; X, Tin; XI, Bismuth; XII, Mercury; XIII, Antimony; XIV, Arsenic; XV, Uranium; XVI, Tungsten; XVII, Chromium; XVIII, Manganese; XIX, Sulphur; XX, Fuel; Appendix; Index.

A circulur of 8 pages, quarto, giving the full Table of Contents of this important Book, as well as a new List of Leading Books on Metal-Mining, Metallurgy, Mineralogy, Assaying, Chemical Analysis, etc., sent free to any one in any part of the world who will apply.

The above or any of our Books sent by mail, free of postage, at the publication price, to any address in the world.

tion price, to any address in the world.

19 Our New and Revised Catalogue of Practical and Scientific Books—88 pages, Svo-and our other catalogues, the whole covering every branch of Science applied to the Arts, sent free, and free of postage, to any one in any part of the world who will furnish his address.

A New American Book on Minerals, Mines, and Mining.

A PRACTICAL MANUAL OF MINERALS, MINES, AND MINING; comprising suggestions as to the localities and associations of all the useful Minerals, full description of the most effective methods for both the qualitative and quantitative analyses of each of these minerals, and hints upon the various operations of mining, including architecture and construction. By Prof. H. S. Osborn, LL.D., author of "The Metallurgy of Iron and Steel". Illustrated by 171 engravings. In one volume, 8vo, 367 pages. Price \$4.50, by mail, free of postage, to any address in the world.

CONTENTS:—Part I. Mining, Mineralogy, and Economic Treatment and History of the Useful Minerals. Mining, Mineralogy, Preliminary Principles and Preparations, Economic Treatment and History of the Useful Minerals, Gold, Silver, Copper, Nickel, Iron, Tin, Zinc, Lead, Manganese, Platinum, Iridium, Mercury, Antimony, Bismuth, Chromium, Cobalt, Corundum and Emery, Pumice Stone, Infusorial Earth, Grindstones, Buhrstones, the Diamond.

Part II. Mining Work and Architecture, including Various Suggestions, with Description of Associated Apparatus and Machinery. Mining Construction and Machinery. [This part comprises 90 pages, illustrated by 165 engravings, with details too full to be comprised within the limits of this advertisement.]

Appendix. Sinking Artesian Wells, Oil and Gas Wells. Index.

APPENDIX. Sinking Artesian Wells, Oil and Gas Wells. Index. An illustrated Circular, 4 pages, 4to, giving the full Table of Contents of this volume, will be sent free of postage to any one in any part of the world who will apply by letter. The above or any of our Books sent by mail, free of postage, at the publication

price, to any address in the world.

Henry Carey Baird & Co.,

Industrial + Publishers & Booksellers sund + Import as SIO WALKUT ST., PHILADELPHIA, PA., U. S A.

THE ASSAYER'S MANUAL.

An Abridged Treatise on the Doctractic Examination of Ores, and Foreign and ding Arthresh Products, for Baryo Kela, Protestar in the Boys School of Miles

Maing Jan mears, Iron and Steal Institute, Verein Doutscher Elsenburgenberger in the Hamiltonian of the Company of the analysis of the standard and filey from parces, No. 1906 percent parces of the standard of the standard

A New American Book on Minerals, Mines, and Mining

