WORKS ON ELECTRICAL ENGINEERING, TELEGRAPHY, ETC.

- CENTRAL ELECTRICAL STATIONS: Their Design, Organisation, and Management. By Charles H. Wordingham, A.K.C., M.Inst.C.E., M.I.Mech.E. Second Edition, Revised. In large 8vo. Cloth. Profusely Illustrated. 24s. net.
- ELECTRICITY METERS. By HENRY G. SOLOMON, A.M.Inst.E.E. In large Crown 8vo. Handsome Cloth. With 334 pages and 307 Illustrations. 16s. net.
- TRANSFORMERS. By Prof. HERMANN BOHLE, M.I.E.E., and Prof. D. ROBERTSON, B.Sc., of Bristol. In large 8vo. Profusely Illustrated.
- ELECTRICAL PHOTOMETRY AND ILLUMINATION. By Prof. Hermann Bohle, M. I. E. E. In Large 8vo. Cloth Fully Illustrated. 10s. 6d. net.
- ELECTRIC CRANE CONSTRUCTION. By CLAUDE W. HILL, A.M.Inst.C.E., M.I.E.E. In Medium 8vo. Fully Illustrated. 25s. net.
- TELEGRAPH SYSTEMS AND OTHER NOTES. By ARTHUR CROTCH, of the Engineer-in-Chiefs' Department, G.P.O. In Large Crown 8vo. Cloth. Illustrated. 5s. net.
- WIRELESS TELEGRAPHY. By GUSTAV EICHHORN, Ph.D In Large 8vo. Profusely Illustrated. 8s. 6d. net.
- ELECTRICITY IN MINING. By SIEMENS BROTHERS DYNAMO WORKS, Ltd. In Crown Quarto. Cloth. 10s. 6d. net.
- ELECTRICAL PRACTICE IN COLLIERIES. By D. Burns, M.E., M.Inst. M.E. Crown 8vo. Fourth Edition, Revised. Cloth. With Numerous Illustrations. 7s. 6d. net
- TREATISE ON ELECTRO-METALLURGY. By W. G. McMillan, F.I.C., and W. R. COOPER, M.A., B.Sc. Third Edition, Revised and Enlarged, 12s. 6d. net.
- G. W. de Tunzelmann, B.Sc. In Large 8vo. Cloth. 15s. net.
- MAGNETISM AND ELECTRICITY (An Elementary Manual of). By Prof. A. Jamieson, M.Inst.C.E., M.I.E.E. Eighth Edition. 3s. 6d.
- ELECTRICAL RULES AND TABLES (A Pocket-book of). By John Munro, C.E., and Prof. Jamieson, M.Inst.C.E., M.I.E.E. NINETEENTH EDITION. 6s. net.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND,

GRIFFIN'S NAUTICAL SERIES.

- *** For further information regarding these Volumes consult Index.
- A MANUAL OF ELEMENTARY SEAMANSHIP. By D. WILSON-BARKER. SEVENTH EDITION, Revised and Enlarged. Profusely Illustrated. Price 6s.
- NAVIGATION, PRACTICAL AND THEORETICAL. By D. WILSON-BARKER and WILLIAM ALLINGHAM. THIRD EDITION, Revised. Fully Illustrated. Price 3s. 6d.
- MARINE METEOROLOGY, for Officers of the Merchant Navy. By WILLIAM ALLINGHAM. Very fully Illustrated. Price 7s. 6d.
- PRACTICAL MECHANICS, Applied to the Requirements of the Sailor.

 By Thos. Mackenzie. Fifth Edition. Price 3s. 6d. net.
- A MANUAL OF TRIGONOMETRY. By RICHARD C. BUCK. FOURTH EDITION, Revised and Corrected. Fully Illustrated. Price 3s. 6d.
- A MANUAL OF ALGEBRA. By RICHARD C. BUCK. SECOND EDITION. Price 3s. 6d.
- LATITUDE AND LONGITUDE: How to Find them. By W. J. MILLAR, C.E. THIRD EDITION. Price 2s.
- LEGAL DUTIES OF SHIPMASTERS. By Benedict W. Ginsburg. Third Edition, Very Thoroughly Revised. Price 5s.
- A MEDICAL AND SURGICAL HELP. For Shipmasters and Officers in the Royal Navy. By W. Johnson Smith. Fourth Edition. Revised by Arnold Chaplin (of the P. & O. S. N. Coy.). Price 5s. net.
- KNOW YOUR OWN SHIP. By Thos. Walton. Thirteenth Edition. Revised by John King. Profusely Illustrated. 7s. 6d. net.

OTHER WORKS OF INTEREST TO SAILORS.

- NOTES ON THE PRACTICAL DUTIES OF SHIPMASTERS. By Capt. W. HARRY WILKES. Price 2s. 6d. net.
- **DEFINITIONS IN NAVIGATION AND NAUTICAL ASTRONOMY.** By P. Groves Showell. Price 2s. 6d. net.
- ENGLISH-SPANISH AND SPANISH-ENGLISH SEA TERMS AND PHRASES.

 By Fleet-Paymaster Graham-Hewlett. Pocket Size. Price 3s. 6d. net.
- HYDROGRAPHIC SURVEYING. By Commander S. Messum. With Coloured Plates and Numerous other Illustrations. Price 12s, net.
- NATURE NOTES FOR OCEAN VOYAGERS. By Captain A. CARPENTER and Captain D. Wilson-Barker. Price 5s. net.
- THE PREVENTION AND TREATMENT OF DISEASE IN THE TROPICS.
 By E. S. CRISPIN, M.R.C.S. In Cloth. Price 1s, net.
- LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

GRIFFIN'S MINING AND GEOLOGICAL WORKS.

Ore and Stone Mining. Foster and Cox,	Net 28s. 0d.
Elements of Mining and Quarrying. Foster and Cox, .	Net 7s. 6d.
Methods of Air Analysis. J. S. HALDANE,	Net 5s. 0d.
The Air of Mines. Cadman and Haldane,	. At Press.
Text-Book of Coal-Mining. H. W. HUGHES,	Net 24s. 0d.
Practical Coal-Mining. G. L. KERR,	Net 12s. 6d.
Elementary Coal-Mining. G. L. KERR,	Net 3s. 6d.
Treatise on Mine Surveying. B. H. Brough,	Net 7s. 6d
Effects of Errors in Surveying. H. Briggs,	Net 5s. 0d.
Theodolite Surveying and Levelling. J. PARK,	Net 10s. 6d.
Practical Surveying and Field Work. V. G SALMON	. At Press.
Mining Geology. Prof. Jas. Park,	Net 6s. 0d.
Text-Book of Geology. Prof. Jas. Park,	Net 15s. 0d.
Modern Mine Valuation. M. H. BURNHAM,	Net 10s. 6d.
	Net 8s. 6d.
Mine Accounts and Book-Keeping. J. G. LAWN,	. 10s. 6d.
Mining Engineers' Report Book. E. R. FIELD,	. 3s. 6d.
Spanish-English and English-Spanish Mining Terms. E. HALSE	, Net 10s. 6d.
Prospecting for Minerals. Prof. S. H. Cox,	. 5s. 0d.
Mineralogy of Rarer Metals. CAHEN AND WOOTTON, .	Net 6s 0d.
Shaft-Sinking in Difficult Cases. J. RIEMER,	Net 10s. 6d.
Blasting: and Use of Explosives. O. GUTTMANN,	
Testing Explosives (New Methods). C. E. BICHEL,	Net 6s. 0d.
Practical Hydraulies for Mining Students. Prof. J. Park.	Net 12s. 6d.
Electrical Practice in Collieries. Prof. Burns,	Net 7s. 6d.
Compressed Air Practice in Mining. D. PENMAN,	Net 5s. 0d
Cyaniding Gold and Silver Ores. JULIAN AND SMART, .	
Cyanide Process of Gold Extraction. Prof. J. PARK, .	Net 8s. 6d.
Getting Gold. J. C. F. Johnson,	. 3s. 6d.
Gold Seeking in South Africa. THEO. KASSNER,	. 4s. 6d.
Bibliography of Mineral Wealth and Geology of China. C. WAN	G, Net 3s. 0d.
Sampling and Assaying of Precious Metals. E. A. Smith,	Net 15s. 0d.
Stratigraphical Geology and Palæontology. ETHERIDGE, .	. 34s. 0d.
A Text-Book of Geology. Prof. J. Park,	Net 15s 0d.
Geology for Engineers. LieutCol. Sorsbie,	Net 10s. 6d.
Aids in Practical Geology. Prof. G. Cole,	. 10s. 6d.
	. 8s. 6d.
The Earth: Its Genesis and Evolution. A. Swaine, .	Net 7s. 6d.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

WORKS BY SIR CLEMENT LE NEVE FOSTER, D.Sc., F.R.S.

SIXTH EDITION. Pp. i-xxx+799. With Frontispiece and 712 Illustrations. Price 28s. net.

ORE & STONE MINING.

By SIR C. LE NEVE FOSTER, D.Sc., F.R.S., LATE PROFESSOR OF MINING, ROYAL COLLEGE OF SCIENCE REVISED, AND BROUGHT UP-TO-DATE By Prof. S. H. COX, Assoc.R.S.M.

GENERAL CONTENTS.

INTRODUCTION. Mode of Occurrence of Minerals.—Prospecting.—Boring.
—Breaking Ground.—Supporting Excavations.—Exploitation.—Haulage or Transport.—Hoisting or Winding.—Drainage.—Ventilation.—Lighting.—Descent and Ascent.—Dressing—Principles of Employment of Mining Labour.—Legislation affecting Mines and Quarries.—Condition of the Miner.—Accidents.—Index

"We have seldom had the pleasure to review a work so thorough and complete as the present one. Both in manner and in matter it is FAR SUPERIOR TO ANYTHING ON ITS SPECIAL SUBJECT HITHERTO PUBLISHED IN ENGLAND."—Athenœum.

"Not only is this work the acknowledged text-book on metal mining in Great Britain and the Colonies, but that it is so regarded in the United States of America is evidenced by the fact that it is the book on that subject recommended to the students in most of the mining schools of that country."—The Times.

THIRD EDITION, Revised. In Crown 8vo. Pp. i-xviii+323. Handsome Cloth. With nearly 300 Illustrations. Price 7s. 6d. net.

THE ELEMENTS OF MINING AND OUARRYING.

An Introductory Text-Book for Mining Students. BY SIR C. LE NEVE FOSTER, D.Sc., F.R.S., Late Professor of Mining at the Royal College of Science.

Revised by Prof. S. H. Cox, A.R.S.M., &c.

GENERAL CONTENTS. - INTRODUCTION. - Occurrence of Minerals. - Prospecting.—Boring.—Breaking Ground.—Supporting Excavations.—Exploitation.—Haulage or Transport.—Hoisting or Winding.—Drainage.—Ventilation.—Lighting.—Descent and Ascent.—Dressing, &c.—INDEX.

"A remarkably clear survey of the whole field of mining operations."—Engineer.

"Rarely does it fall to the lot of a reviewer to have to accord such unqualified praise as this book deserves. . . . The profession generally have every reason to be grateful to Sir C. Le Neve Foster for having enriched educational literature with so admirable an elementary Text-book."—Mining Journal.

In Crown 8vo. Handsome Cloth. Pp. i-xii+300. 8s. 6d. net.

MINING LAW OF THE BRITISH EMPIRE.

BY CHARLES J. ALFORD, F.G.S., M.Inst.M.M.

Contents.—The Principles of Mining Law.—The Mining Law of Great Britain.—British India.—Ceylon.—Burma.—The Malay Peninsula.—British North Borneo.—Egypt.—Cyprus.—The Dominion of Canada.—British Guiana.—The Gold Coast Colony and Ashanti.—Cape of Good Hope.—Natal.—Orange River Colony.—Transvaal Colony.—Rhodesia.—The Commonwealth of Australia.—New Zealand, &c.—Index.—"Cannot fail to be useful we cordially recommend the book."—Mining World.

WORKS ON COAL-MINING.

SIXTH EDITION Pp. i-vii+563. With 4 Plates and 690 Illustrations, Price 24s. net.

A TEXT-BOOK OF COAL-MINING:

FOR THE USE OF COLLIERY MANAGERS AND OTHERS ENGAGED IN COAL-MINING.

BY HERBERT WILLIAM HUGHES, F.G.S., Assoc. Royal School of Mines, General Manager of Sandwell Park Colliery.

GENERAL CONTENTS.—Geology.—Search for Coal.—Breaking Ground.—Sinking.—Preliminary Operations.—Methods of Working.—Haulage.—Winding.—Pumping.—Ventilation.—Lighting.—Works at Surface.—Preparation of Coal for Market.—Index.

"Quite the best book of its kind . . . as practical in aim as a book can be . . . The illustrations are excellent."—Athenoum.

"We cordially recommend the work."-Colliery Guardian,

"Will soon come to be regarded as the STANDARD WORK of its kind."-Birmingham Daily Gazette.

FIFTH EDITION, Thoroughly Revised and Greatly Enlarged. Re-set throughout. Large Crown 8vo. Handsome Cloth. Pp. i-xi+778. With 755 Illustrations, 12s. 6d. net.

PRACTICAL COAL-MINING:

A MANUAL FOR MANAGERS, UNDER-MANAGERS, COLLIERY ENGINEERS, AND OTHERS.

With Worked-out Problems on Haulage, Pumping, Ventilation, &c.

BY GEORGE L. KERR, M.E., M.INST.M.E.

Contents.—Sources and Nature of Coal.—Search for Coal.—Sinking.—Explosives.—
Mechanical Wedges, Rock Drills, and Coal Cutting Machines.—Coal Cutting by Machinery.
—Transmission of Power.—Modes of Working.—Timbering Roadways.—Winding Coal.—
Haulage. — Pumping. — Ventilation. — Safety Lamps. — Rescue Apparatus. — Surface Arrangements, Coal Cleaning, etc.—Surveying, Levelling, and Plans.—INDEX.

"This is one of the best known treatises on the technical aspect of the Coal-Mining Industry . . . the book is an admirable one, and may be placed with confidence in the hands of all students of coal-mining."—Mining Journal.

FOURTH EDITION, Revised. In Crown 8vo. Handsome Cloth. Pp. i-vii+225. 3s. 6d. net.

ELEMENTARY COAL-MINING:

FOR THE USE OF STUDENTS, MINERS, AND OTHERS PREPARING FOR EXAMINATIONS.

BY GEORGE L. KERR, M.E., M.INST.M.E.

CONTENTS.—Sources and Nature of Coal.—Exploration and Boring for Coal.—Breaking Ground.—Explosives, Blasting, &c.—Sinking and Fitting of Shafts.—Modes of Working.—Timbering Roadways.—Winding and Drawing.—Haulage.—Pumping and Drainage.—Ventilation.—Cleaning and Sorting Coal.—Surveying. Sorting Coal. -Surveying, &c.

"An abundance of information conveyed in a popular and attractive form. . . . Will be of great use to all who are in any way interested in coal mining."—Scottish Critic.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

FOURTEENTH EDITION, Revised. Greatly Enlarged. Pp. i-xviii+477. Re-set. With Numerous Diagrams. Cloth. 7s. 6d. net.

TREATISE ON MINE-SURVEYING:

For the use of Managers of Mines and Collieries, Students at the Royal School of Mines, &c.

BY BENNETT H. BROUGH, ASSOC.R.S.M., F.G.S.

Revised and Enlarged by HARRY DEAN, M.Sc., A.R.S.M.

CONTENTS.—General Explanations.—Measurement of Distances.—Chain Surveying.—
Traverse Surveying.—Variations of the Magnetic-Needle.—Loose-Needle Traversing.—
Local Variations of the Magnetic-Needle.—The German Dial.—The Vernier Dial.—The
Theodolite.—Fixed-Needle Traversing.—Surface-Surveying with the Theodolite.—Plotting the Survey.—Plane-Table Surveying.—Calculation of Areas.—Levelling.—Underground and Surface Surveys.—Measuring Distances by Telescope.—Setting-out.—MineSurveying Problems.—Mine Plans.—Applications of the Magnetic-Needle in Mining.—
Photographic Surveying.—APPENDICES.—INDEX.

"The last word on the subject of mine-surveying . . . the new edition is a masterly production."—Mining World.

In Handsome Cloth. Pp. i-xi + 179. Fully Illustrated. 5s. net.

THE EFFECTS OF ERRORS IN SURVEYING.

BY HENRY BRIGGS, M.Sc.

CONTENTS.—Introduction.—Analysis of Error.—The Best Shape of Triangles.—
Propagation of Error in Traversing.—Application of the Methods of determining Average
Error to certain Problems in Traversing.—Propagation of Error in Minor Triangulation.—
Suppose of Possible Appropriate Appr

Summary of Results.—APPENDIX.—INDEX.

"Likely to be of the highest service to surveyors . . . it is a most able treatise."—Engineer.

THIRD EDITION, Thoroughly Revised and greatly Enlarged. In Crown 8vo. Pp. i-xiii+430. Handsome Cloth. Fully Illustrated. 10s. 6d. net.

A HANDBOOK ON THEODOLITE SURVEYING AND LEVELLING.

For the use of Students in Land and Mine Surveying.

By Professor JAMES PARK, F.G.S.

CONTENTS.—Scope and Object of Surveying.—Theodolite.—Chains and Steel Bands—Obstacles to Alignment.—Meridian and Bearings.—Theodolite Traverse.—Co-ordinates of a Station.—Calculation of Omitted or Connecting Line in a Traverse.—Calculation of Areas.—Subdivision of Land.—Triangulation.—Determination of True Meridian, Latitude, and Time.—Levelling.—Railway Curves.—Mine Surveying.—INDEX.

"A book which should prove as useful to the professional surveyor as to the student."—Nature.

In Handsome Cloth. With Diagrams.

PRACTICAL SURVEYING AND FIELD-WORK.

Including the Mechanical Forms of Office-Calculations. By VICTOR G. SALMON, M.A. For Contents see page 31 General Catalogue.

In Medium 8vo. Fully Illustrated. Pp. i-xi + 160. 10s. 6d. net.

MODERN MINE VALUATION.

BY M. HOWARD BURNHAM, B.Sc., M.A.I.M.E., Late H.M. Inspector of Mines for the Transvaal.

CONTENTS.—Preliminary Considerations.—Block Calculations.—Bases of Sound Valuation.—Sampling.—Explanation of Sinking Fund Table (XXII).—APPENDIX.—INDEX.

"One of the best volumes of its kind that we have seen."—Mining World.

Griffin's Metallurgical Series.

Standard Works of Reference for Metallurgists, Mine-Owners, Assayers, Manufacturers, and all interested in the development of the Metallurgical Industries.

EDITED BY

SIR W. ROBERTS-AUSTEN, K.C.B., D.C.L., F.R.S.

In Large 8vo, Handsome Cloth. With Illustrations.

For further particulars refer to Index.

INTRODUCTION to the STUDY of METALLURGY. By Sir WM, ROBERTS-AUSTEN, K.C.B., &c. 18s. net. GOLD (The Metallurgy of). Sir T. K. Rose. 22s. 6d. net. LEAD (The Metallurgy of). H. F. Collins. 21s. net. SILVER (The Metallurgy of). H. F. COLLINS. SECOND EDITION. At Press. IRON (The Metallurgy of). T. TURNER. 16s. net.

STEEL (The Metallurgy of). F. W. HARBORD and J. W. HALL. 36s. net. THE NON-FERROUS METALS. W. GOWLAND. SECOND EDITION. At Press. ALLOYS. EDWARD F. LAW. SECOND EDITION. 128. 6d. net. ANTIMONY. C. Y. WANG. 128. 6d. net. SAMPLING and ASSAYING of PRECIOUS METALS. E. A. SMITH. 158. net.

OTHER METALLURGICAL WORKS.

MODERN COPPER SMELTING. D. M. LEVY. 10s. 6d. net. CAST IRON, in the Light of Recent Research. W. HATFIELD. 10s. 6d. net. METALLIC ALLOYS. G. H. GULLIVER. 10s. 6d. net. MICROSCOPIC ANALYSIS of METALS. OSMOND and STEAD. 8s. 6d. net TEXT-BOOK of ASSAYING. J. J. and C. Beringer. 10s. 6d. PRACTICAL ASSAYING. Prof. J. Park. 7s. 6d. net. METALLURGICAL ANALYSIS and ASSAYING. MACLEOD and WALKER. 12s. 6d. net.

QUANTITATIVE METALLURGICAL ANALYSIS TABLES. J. J. MORGAN.

ELECTRIC SMELTING. BORCHERS and McMillan. 21s. net. ELECTRO-METALLURGY. McMillan and Cooper. 12s. 6d. net. INTRODUCTION to PRACTICAL METALLURGY. T. TURNER. 3s. net. ELEMENTARY METALLURGY. A. H. SEXTON. 6s. GENERAL FOUNDRY PRACTICE. McWILLIAM and LONGMUIR. 15s. net. LECTURES on IRONFOUNDING. T. TURNER. 3s. 6d. net. BLAST FURNACE PRACTICE. J. J. MORGAN. 1s. 6d. net. NOTES on FOUNDRY PRACTICE. J. J. MORGAN. 2s. 6d. net. ROBERTS-AUSTEN: Addresses and Scientific Papers. S. W. SMITH.

Also Works on Petroleum.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

SECOND EDITION, Revised Throughout. In Medium 8vo. With Numerous Plates, Maps, and Illustrations. Pp. i-xxiv + 460. 21s. net.

CYANIDING GOLD & SILVER ORES.

A Practical Treatise on the Cyanide Process; its Application, Methods of Working, Design and Construction of Plant, and Costs.

BY H. FORBES JULIAN,

AND EDGAR SMART, A.M.I.C.E.,

Civil and Metallurgical Engineer.

Civil and Metallurgical Engineer.

Contents.—Early History of the Cyanide Process.—Preliminary Investigations.—
Crushing.—Weighing and Measuring.—Percolation and Leaching.—Principles involved in Dissolution and Precipitation of Metals.—Dissolution of the Gold and Silver.—Temperature Effects.—Absorption of Air by Solutions.—Action of Various Cyanide Solutions.—Sources of Loss of Cyanide.—Precipitation.—Precipitation by Zinc.—Electrical Precipitations.—Other Methods of Precipitation.—Cleaning-up, Refining, and Smelting.—Applications of the Cyanide Process.—Double Treatment.—Direct Treatment of Dry Crushed Ore.—Crushing with Cyanide Solution.—Slimes.—Dissolving the Gold and Silver in Slimes.—Extraction by Successive Washings.—Agitation and Natural Settlement.—Filter Presses.—Vats.—Essential Parts of a Cyanide Plant (Construction).—Piping, Cocks, Launders, and Buildings.—Handling Material.—Ropes and Gears for Haulage.—Belt Conveyors.—Pumps.—Spitzlutte and Spitzkasten.—Cost of Plant.—Cost of Treatment.—Complete Plants.—Rossting.—INDEX.

"A handsome volume of 400 pages which will be a valuable book of reference for all

"A handsome volume of 400 pages which will be a valuable book of reference for all associated with the process."—Mining Journal.

In Handsome Cloth. With Portrait and Several Plates. Pp. i-xii + 310. 6s. net.

MEMORIALS OF HENRY FORBES JULIAN

(who perished in the "Titanic" Disaster).

BY HESTER JULIAN.

"A faithful record of the life of a righteous man, whose memory will remain fragrant."

FIFTH ENGLISH EDITION. In Large Crown 8vo. With 22 Plates and many Illustrations in the Text. Handsome Cloth. Pp. i-xiv + 347.

THE CYANIDE PROCESS OF GOLD EXTRACTION.

A Text-Book for the Use of Metallurgists and Students at Schools of Mines, &c.

By JAMES PARK, F.G.S., M.Inst.M.M.,

Professor of Mining and Director of the Otago University School of Mines; late Director
Thames School of Mines, and Geological Surveyor and Mining Geologist
to the Government of New Zealand.

Thoroughly Revised and Greatly Enlarged. With additional details concerning the Siemens-Halske and other recent processes.

CONTENTS,—The McArthur-Forrest Process.—Chemistry of the Process.—Laboratory Experiments.—Control, Testing, and Analysis of Solutions.—Appliances and Plant for Cyanide Extraction.—Actual Extraction by Cyanide.—Production and Treatment of Silmes.—Cyanide Treatment of Concentrates.—Leaching by Agitation.—Zinc Precipitation and Treatment of Gold Slimes.—Application of the Process in Different Countries.—The Siemens-Halske Process.—Other Cyanide Processes.—Antidotes for Cyanide Poison-

"Deserves to be ranked as amongst the BEST OF EXISTING TREATISES."-Mining Journal.

GRIFFIN'S METALLURGICAL SERIES.

Edition, Thoroughly Revised Throughout. With 51 Folding Plates, Comprising 112 Figures, over 500 Illustrations in the Text, and nearly 80 Photo-Micrographs of Steel Sections. Large 8vo. Two Volumes. In all 1000 pages. Handsome Cloth. 36s. net.

With Additional Chapter on The Electric Smelting of Steel.

By F. W. HARBORD, Assoc.R.S.M., F.I.C., AND J. W. HALL, A.M. INST. C.E.

Vol. I.-Metallurgy. Vol. II. - Mechanical Treatment.

(N.B.—These Volumes are not Sold Separately.)

ABRIDGED CONTENTS.—The Plant, Machinery, Methods and Chemistry of the Bessemer and of the Open Hearth Processes (Acid and Basic).—The influence of Metalloids, Heat Treatment, Special Steels, Microstructure, Testing, and Specifications.—The Mechanical Treatment of Steel comprising Mill Practice, Plant and Machinery.

The Engineer says, at the conclusion of a review of this book:—"We cannot conclude without earnestly recommending all who may be interested as makers or users of steel, which practically means the whole of the engineering profession, to make themselves acquainted with it as speedily as possible."

FOURTH EDITION, Revised and Enlarged. Pp. i-xv + 486. With 130 Illustrations. 16s. net.

METALLURGY OF IRON

BY THOMAS TURNER, M.Sc., Assoc.R.S.M., F.I.C., Professor of Metallurgy in the University of Birmingham,

General Contents.—Early History of Iron.—Modern History of Iron.—The Age of Steel.

—Ohlef Iron Ores.—Preparation of Iron Ores.—The Blast Furnace.—The Air used in the Blast Furnace.—Reactions of the Blast Furnace.—The Gaseous Products of the Blast Furnace.—The Fuel used in the Blast Furnace.—Slags and Fuxes of Iron Smelting.—Properties of Cast Iron.—Foundry Practice.—Wrought Iron.—Indirect Production of Wrought Iron.—The Puddling Process.—Further Treatment of Wrought Iron.—Corrosion of Iron Smelting.—Properties Iron.—Indirect Production of Wrought Iron.—Recent Pages Iron.—Iron.—Iron.—Corrosion.—Iron of Iron and Steel.—Recent Progress.—INDEX

"A THOROUGHLY USEFUL BOOK, which brings the subject UP TO DATE. OF GREAT VALUE to those engaged in the iron industry."-Mining Journal.

* ** For Professor Turner's "Lectures on Iron-Founding," &c., see page 67 General Catalogue.

In Medium 8vo. Handsome Cloth. Pp. i-xv + 460. With 166 Illustrations. 15s. net.

The Sampling & Assay of the Precious Metals:

Comprising Gold, Silver and Platinum, in Ores, Bullion and Products.

By ERNEST A. SMITH, A.R.S.M., M.INST.M.M., Deputy Assay Master of the Sheffield Assay Office; Late of the Royal School of Mines

CONTENTS.—Introduction.—Design and Equipment of Assay Offices.—Furnaces and Appliances.—Precious Metal Ores.—Valuation of Ores.—Sampling of Ores.—Preparation of Samples for Assay.—Fluxes and Principles of Fluxing.—Assay Operations—(a) Roasting; (b) Fusion; (c) Scorification; (d) Cupellation.—Systems of Working.—Assay of Gold and Silver Ores.—Of Complex Ores.—Calculating and Reporting Results.—Special Methods of Ore Assay.—Bullion.—Valuation of Bullion.—Sampling of Bullion.—Assay of Gold, Silver, and Base Bullion.—Of Auriferous and Argentiferous Products.—Assay Work in Cyanide Mill—Platinum and the "Platinum Metals."—Assay of Platinum in Ores, Bullion and Products.—APPENDICES.—INDEX.

"May safely be placed in the hands of students, and will be of the greatest value to assayers as a book of reference."—Nature.
"Unique . . . the book should be added to the Mining Engineer's Library."—Mining World.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

In Medium 8vo. Handsome Cloth. Pp. i-xii+259. With 19 Plates (2 Coloured), and 60 other Illustrations. 10s. 6d. net.

LECTURES ON

MODERN COPPER SMELTING

By DONALD M. LEVY, M.Sc., A.R.S.M.,

Assistant Lecturer in Metallurgy, University of Birmingham.

ABRIDGED CONTENTS,-Historical,-Price and Cost of Production and Statistics.-Uses of Copper as Metal and Alloy.—Effect of Impurities.—Compounds.—Ores.—Preliminary Treatment.—Sampling.—Concentration.—Principles of Copper Smelting.—Sintering.—Reverberatory Smelting Practice.—Blast Furnace Practice.—Bessemerising of Copper Mattes.—Purification and Refining of Crude Copper.—Casting.—INDEX.

"A welcome addition to existing literature on the subject." - Chemical Trade Journal-

In Medium 8vo. Handsome Cloth Pp. i-xiii + 249. With Frontispiece and 164 Illustrations, including many Photo-Micrographs. 10s. 6d. net.

CAST IRON

IN THE LIGHT OF RECENT RESEARCH.

By W. H. HATFIELD, D.Sc., A.M.I.Mech.E.

CONTENTS.—INTRODUCTION.—The Non-Carbon Alloys and Cast Iron from the Standpoint of the Equilibrium Diagram.—Influence of Silicon.—Of Phosphorus.—Of Sulphur.—Of Manganese.—Of Other Elements.—Of Casting Temperature.—Shrinkage and Contraction.—Growth of Cast Iron under Repeated Heatings.—Effect of Superheated Steam upon Cast-iron Fittings.—Malleable Cast Iron.—Heat Treatment of Cast Iron.—Decarburisation of Cast Iron without further Fusion.—Mechanical Properties of Cast and Malleable Cast Iron.—Furnaces and Slags.—Appendices.—Index.

"A valuable addition to Griffin's noted metallurgical publications."-Mining

SECOND EDITION. In Crown 8vo. Handsome Cloth. Pp. i-xxvii+409. Thoroughly Revised and very greatly Enlarged. With many New, and in all 310 Illustrations. 10s. 6d. net.

A HANDBOOK ON

METALLIC ALLOYS:

Their Structure and Constitution.

BY GILBERT H. GULLIVER, B.Sc., F.R.S.E.

NTENTS.—Methods of Investigation.—The Physico-Chemical Equilibrium of Mixed Substances.—Binary Alloys in which no Definite Chemical Compounds are formed.

—Do. which show Evidence of the Formation of Definite Chemical Compounds.—Transformations in Completely Solid Metals.—Alloys.—Equilibrium Conditions in Metallic Mixtures.—The Structures of Metals and Alloys.—The Bronzes, Brasses, and other Alloys of Copper.—Steel and other Alloys of Iron.—Alloys of more than Two Metals.—The Microscope in Engineering Practice.—INDEX.

"This book offers most exhaustive information, and is profusely illustrated."-Metal Industru

Second Edition, Thoroughly Revised. Pp. i-xvii+313. With 195 Photo-Micrographs, Diagrams, and Figures. 8s. 6d. net

THE MICROSCOPIC ANALYSIS OF METALS.

BY FLORIS OSMOND AND J. E. STEAD, D.MET., F.R.S.

REVISED AND CORRECTED BY L. P. SYDNEY.

CONTENTS.—PART I. Metallography considered as a Method of Assay.—PART II. he Science of Polishing.—PART III. The Microscopic Analysis of Carbon Steels.— APPENDICES.—INDEX.

"The subject is treated in a masterly manner... altogether the new edition should prove invaluable to metallurgists."—Mining World.

"Of all the books which have dealt with this subject in its many aspects, surely this one remains supreme."—Chemical World.

THIRD EDITION, Thoroughly Revised, Enlarged, and Re-set Throughout.
In Three Volumes, with Valuable Bibliography, New Maps,
Illustrations, &c. 50s. net.

A TREATISE ON PETROLEUM.

BY SIR BOVERTON REDWOOD, BART.,

D.Sc., F.R.S.E., Assoc.Inst.C.E., F.I.C.

CONTENTS.—SECTION I.: Historical Account of the Petroleum Industry.—SECTION II.: CONTENTS.—SECTION I.: Historical Account of the Petroleum Industry.—SECTION III.: Geological and Geographical Distribution of Petroleum and Natural Gas.—SECTION IV.: The Chemical and Physical Properties of Petroleum and Natural Gas.—SECTION IV.: The Origin of Petroleum and Natural Gas.—SECTION IV.: The Production of Petroleum, Natural Gas, and Ozokerite.—SECTION VII.: The Refining of Petroleum.—SECTION VIII.: The Brabe Oil and Allied Industries.—SECTION VIII.: The Transport, Storage, and Distribution of Petroleum.—SECTION IX.: The Vesting of Crude Petroleum, Petroleum and Shale Oil Products, Ozokerite, and Asphalt.—SECTION X.: The Uses of Petroleum and Shale Oil Products.—SECTION XI.: Statutory, Municipal, and other Regulations relating to the Testing, Storage, Transport, and Use of Petroleum and its Products.—BIBLIOGRAPHY.—APPENDICES.—INDEX.

"It is indisputably the most comprehensive and complete treatise on petroleum, and this atatement is true, no matter on what branch of the industry a test of its merits is made. It is the only book in existence which gives the oil man a clear and reliable outline of the growth and present-day condition of the entire petroleum world. . . . There is a wonderfully complete collection of plates and illustrations."—Petroleum World.

THIRD EDITION, Revised. Pp. i-xix+340. Price 8s. 6d. net.

A HANDBOOK ON PETROLEUM.

FOR INSPECTORS UNDER THE PETROLEUM ACTS.

And for those engaged in the Storage, Transport, Distribution, and Industrial Use of Petroleum and its Products, and of Calcium Carbide. With suggestions on the Construction and Use of Mineral Oil Lamps.

BY CAPTAIN J. H. THOMSON, H.M. Chief Inspector of Explosives.

AND SIR BOVERTON REDWOOD, BART., REVISED BY MAJOR A. COOPER-KEY AND SIR BOVERTON REDWOOD.

CONTENTS.—Introductory.—Sources of Supply.—Production, Refining, etc.—Commercial Products.—Flash Point and Fire-Test.—Testing,—Legislation.—Precautions.—Oil Lamps.—Calcium Carbide.—Appendices.—Index.

"Of unique value. . . . The book has attained the reputation of a classic, and is an extremely handy and useful work for all interested in the oil business."—Chemical

In Pocket Size. Pp. i-xxi + 454. Strongly Bound in Leather. Fully Illustrated. 8s. 6d. net.

THE PETROLEUM TECHNOLOGIST'S POCKET BOOK.

By SIR BOVERTON REDWOOD, Bart., D.Sc., &c., And ARTHUR EASTLAKE, M.I.M.E., A.M.I.Mech.E., &c.

AND ARTHUE EASTLARE, M.I.M.E., A.M.I.Mech.E., &C.

Synopsis of Contents.—Part I.: General Information about Petroleum (Origin, Occurrence, Prospecting, acquiring Land, Raising, Storage, Refining, etc.). Part II.: Geological (Identification of Rocks, Angle of Dip, Maps, Oil-bearing Areas, Oil per acre, Bitumens, etc.). Part. III.: Physical and Chemical (Specific Gravity, Analysis of Gas, Viscometry, Calorific Value, Flash Point, Distillation, Candle Power, etc., etc.). Part IV.: Production Orilling, Casing, Water, Raising Oil, Plugging, Cost of Drilling, etc., etc.). Part VI.: Refining, Transport, Storage and Testing (Tanks, Flow of Gas in Pipes, Pipe Lines, Pumping, Railway Cars, Barrels, etc., etc.). Part VII.: Uses (Liquid Fuel, Air required, Oil Engines, Natural Gas, Asphalt, etc.). Part VIII.: Weights and Measures (English and Foreign). Part VIII: Miscellaneous. Part IX.: Statistics (of Production, Asphalt, Oil Shale, Ozokerite, Natural Gas).

"Excellent in every way . . . the tables and statistics appear to be exactly those which will be of most use."—Engineer.

LONDON: CHARLES GRIFFIN & CO., LTD., EXETER STREET, STRAND.

Griffin's Local Government Handbooks.

WORKS SUITABLE FOR MUNICIPAL AND COUNTY ENGINEERS, ANALYSTS, AND OTHERS.

For further particulars of the following, see Index.

Civil Engineering Practice. By F. Noel Taylor. With over 800 Pages and over 1,000 Illustrations. Cloth. 25s. net.

The Main Drainage of Towns. By F. Noel Taylor. Pp. i-xi+313.

With over 350 Illustrations. 12s. 6d. net.

Practical Sanitation: A Handbook for Sanitary Inspectors and others.
By Geo. Reid, M.D., D.P.H. Seventhenth Edition, Thoroughly Revised. 6s.

By Geo. Reid, M.D., D.P.H. Seventeenth Edition, Thoroughly Revised. 6s.

Sanitary Engineering. By Francis Wood, A.M.Inst.C.E. Third
Edition, Revised. Pp. ixv + 306. 8s. 6d. net.

Modern Methods of Sewage Purification. By G. Bertram
Kershaw, Engineer to the Sewage Commission. Fully Illustrated. 21s. net.

The Principles of Sewage Disposal. By Prof. Dunbar of Hamburg.
Translated by H. T. Calvert, M.Sc. 15s. net.

Trade Waste Waters. By H. Wilson, M.D., and H. T. Calvert,
Ph.D. Fully Illustrated. 18s. net.

Trades' Waste: Its Treatment and Utilisation. By W. Naylor,
F.C.S. A.M.Inst.C.E. 21s. net.

F.C.S., A.M. Inst.C.E. 21s. net. Modern Destructor Practice. By W. F. Goodrich, A.M. Inst. C. E.

Refuse Disposal. By Prof. E. R. MATTHEWS, A.M. Inst. C.E. Very

fully Illustrated. 6s. net.

Water Supply: Selection of Sources and Distribution. By REGINALD E. MIDDLETON, M.Inst. C.E., M.Inst. Mech. E., F.S.I. Crown 8vo. 8s. 6d. net.

Water Analysis for Sanitary and Technical Purposes. By H. B. STOCKS, F.I.C., etc. 4s. 6d. net.

Calcareous Cements: Their Nature, Preparation, and Uses. By Gilbert Redgrave, Assoc.Inst.C.E., and Chas. Spackman, F.C.S. Second Edition

Handbook for Cement Works Chemists. By F. B. GATEHOUSE.

Handbook on Town Planning. By Julian Julian, B.E. 5s. net. Road Making and Maintenance. By Thos. AITKEN, A.M.Inst.C.E.

SECOND EDITION. Fully Illustrated. 21s. net.

Dustless Roads: Tar-Macadam. By J. Walker Smith. Fully

Illustrated. 10s. 6d. net.

Central Electrical Stations: Their Design, Organisation, and Management. By C. H. Wordingham, A.K.C., M.Inst.C.E. SECOND EDITION. 24s. net.

Transformers. By Hermann Bohle, M.I.E.E., and Prof. David Robertson, B.Sc. Pp. ixiv+356. Profusely Illustrated. 21s. net.

Electrical Photometry and Illumination. By Prof. H. Bohle. Pp. ixi+222. Profusely Illustrated. 10s. 6d. net.

Electricity Meters. By Henry G. Solomon, Assoc. M. Inst. E. E. In Medium 8vo, Handsome Cloth. Profusely Illustrated. 16s. net.

Gas Manufacture (The Chemistry of). By W. J. A. Butterfield, M.A., F.I.C., F.C.S. With Illustrations. Fourth Edition, Revised. Vol. 1., 7s. 6d. net. Vol. II., in preparation.

The Calorific Power of Gas. By J. H. Coste, F.I.C., F.C.S.

Fuel: Gaseous, Liquid, and Solid. By J. H. Coste, F.I.C., and E. Andrews, F.I.C. 6s net.

ANDREWS, F.I.U. 98. net.

Smoke Abatement. A Manual for Manufacturers, Inspectors, Engineers, and others. By WILLIAM NICHOLSON. Fully Illustrated. 6s. net.

Fire and Explosion Risks. The Detection, Investigation, and Prevention of Fires and Explosions. By Dr. VON SCHWARTZ. Cloth. 16s. net.

Milk: Its Production and Uses. With Chapters on Dairy Farming,

The Diseases of Cattle, and on the Hygiene and Control of Supplies. By EDWARD F. WILLOUGHBY, M.D., D.P.H. 6s. net.

Flesh Foods: With Methods for their Chemical, Microscopical, and Bacteriological Examination. By C. AINSWORTH MITCHELL, B.A., F.I.C. Illustrated. 10s. 6d.

Foods: Their Composition and Analysis. By A. WYNTER BLYTH, M.R.C.S., F.C.S., and M. W. BLYTH, B.A., B.Sc. SIXTH EDITION, Thoroughly