

## COOPERATIVE PUBLICATIONS

The following reports and papers, resulting from investigations conducted cooperatively by the Bureau of Mines and the agencies noted, have been written either wholly or in part by members of the Bureau and published otherwise than by the Bureau, by journals of various technical societies, or by the technical press.

*Publications marked with daggers are out of print and unobtainable from any source. Copies may be consulted in many of the larger technical libraries.*

### WITH THE AMERICAN PETROLEUM INSTITUTE

- †API 1. National Survey of Fuel-Oil Distribution, 1926, by E. B. Swanson. 1927. 22 pp., 2 figs.
- †API 2. National Survey of Fuel-Oil Distribution, 1927, by E. B. Swanson. 1928. 27 pp., 2 figs.
- †API 3. National Survey of Fuel-Oil Distribution, 1928, by E. B. Swanson. 1929. 28 pp., 2 figs.
- †API 4. National Survey of Fuel-Oil Distribution, 1930, by A. T. Coumbe, A. H. Redfield, and E. B. Swanson. 1931. 31 pp., 2 figs.

### WITH THE AMERICAN PETROLEUM INSTITUTE AND THE SPECIAL LIBRARIES ASSOCIATION

- †APS. Recent Articles on Petroleum and Allied Substances, compiled monthly by Melissa Speer. 1929-33.

### WITH THE ASSOCIATION OF NATURAL GASOLINE MANUFACTURERS

- †NGM. Hazards Involved in the Transportation of Natural-Gas Gasoline, by D. B. Dow. 1922. 10 pp., 7 figs.

### WITH THE CARNEGIE INSTITUTE OF TECHNOLOGY AND THE MINING AND METALLURGICAL ADVISORY BOARD<sup>1</sup>

- †CIT 1. The Yield and Quality of the Gas, Oil, and Other Byproducts of the Constituents of the Freeport Coal Bed, Pennsylvania, by J. D. Davis and H. G. Berger. Bull. 1. 1922. 43 pp., 11 figs.
- †CIT 2. A Microscopic Study of the Freeport Coal Bed, Pennsylvania, by Reinhardt Thiessen and A. W. Voorhees. Bull. 2. 1922. 75 pp., 44 figs.
- †CIT 3. Some Factors in the Spontaneous Combustion of Bituminous Coal, by J. D. Davis and J. F. Byrne. Bull. 3. 1922. 38 pp., 9 figs.
- †CIT 4. Corrosion Tests on Metals and Alloys in Acid Mine Waters from Coal Mines, by W. A. Selvig and G. M. Enos. Bull. 4. 1922. 71 pp., 47 figs.
- †CIT 5. Microstructural Aspects of Metals and Alloys Corroded by Acid Mine Waters, by R. J. Anderson and G. M. Enos. Bull. 5. 1923. 44 pp., 52 figs.
- †CIT 6. Accelerated Corrosion Tests of Metals and Alloys in Acid Mine Water, by R. J. Anderson, G. M. Enos, and J. R. Adams. Bull. 6. 1923. 61 pp., 15 figs.
- †CIT 7. A Study of the Desulphurization of Coke, by A. R. Powell and J. H. Thompson. Bull. 7. 1923. 56 pp., 17 figs.
- †CIT 8. The Low-Temperature Carbonization of Pennsylvania Coals—the Pittsburgh and Upper Kittanning, by J. D. Davis and V. F. Parry. Bull. 8. 1923. 56 pp., 22 figs.
- †CIT 9. Correlation of Coal Beds in the Monongahela Formation of Ohio, Pennsylvania, and West Virginia, by Reinhardt Thiessen and J. N. Staud. Bull. 9. 1923. 64 pp., 34 figs.
- †CIT 10. Correlation of Coal Beds of the Allegheny Formation of Western Pennsylvania and Eastern Ohio, by Reinhardt Thiessen and F. E. Wilson. Bull. 10. 1924. 56 pp., 43 figs.
- †CIT 11. Efficiency in Blasting Coal: Production of Lump Coal, by J. E. Tiffany and C. W. Nelson. Bull. 11. 1924. 48 pp., 23 figs.
- †CIT 12. Rate of Combustion of Coal-Dust Particles. Part I.—Size Classification of Finely Powdered Coal by Air Currents, by C. M. Bouton and J. M. Pratt. Bull. 12. 1924. 42 pp., 22 figs.
- †CIT 13. Mine-Car Friction, as Influenced by Wheel Diameter and other Variables, by M. D. Hersey and H. E. Wetzel. Bull. 13. 1924. 37 pp., 13 figs.
- †CIT 14. Use of Carbon Monoxide Gas Masks in Mines, by S. H. Katz, G. S. McCaa, and A. L. Barth. Bull. 14. 1924. 76 pp., 16 figs.
- †CIT 15. Effect of Acidity and Oxidation Capacity on Corrosion of Metals and Alloys in Acid Mine Water, by R. E. Hall and W. W. Teague. Bull. 15. 1924. 62 pp., 8 figs.
- †CIT 16. Washing Characteristics of Coal from the Thick Freeport Bed, Pennsylvania, by H. F. Yancey. Bull. 16. 1924. 44 pp., 12 figs.
- †CIT 17. Mechanical Loading in Coal Mines, by F. E. Cash and E. H. Johnson. Bull. 17. 1925. 113 pp., 54 figs.
- †CIT 18. Methods and Costs of Rock-Dusting Bituminous-Coal Mines, by C. W. Owings and C. H. Dodge. Bull. 18. 1925. 192 pp., 59 figs.
- †CIT 19. Factors Affecting Production of Lump Coal, by J. E. Tiffany and B. L. Lubelsky. Bull. 19. 1925. 94 pp., 34 figs.
- †CIT 20. Mine-Car Friction with Six Types of Trucks, by M. D. Hersey, P. L. Golden, Henry Shore, and M. S. Downs. Bull. 20. 1925. 35 pp., 6 figs.
- †CIT 21. Quantitative Mineralogical Analysis of Rock-Dusting Materials and Survey of Some Coal-Measure Shales of Western Pennsylvania, by A. H. Emery and R. DeChicchis, with a chapter on Chemical Analysis of Rock-Dusting Materials, by W. A. Selvig. Bull. 21. 1925. 77 pp., 9 figs.
- †CIT 22. Rate of Combustion of Coal-Dust Particles. Part II.—Effect of Particle Size of Pressure Increase Attending Flammation of Coal Dust, by C. M. Bouton and J. H. Hayner. Bull. 22. 1925. 24 pp., 8 figs.
- †CIT 23. Service Conditions of Refractories for Open-Hearth Steel Furnaces, by B. M. Larsen, F. W. Schroeder, E. N. Bauer, and J. W. Campbell. Bull. 23. 1925. 127 pp., 37 figs.

<sup>1</sup> Obtainable only from the Secretary, Mining and Metallurgical Advisory Boards, Carnegie Institute of Technology, Pittsburgh, Pa.

†Out of print.

- †CIT 24. A Physico-Chemical Study of Scale Formation and Boiler-Water Conditioning, by R. E. Hall, G. W. Smith, H. A. Jackson, J. A. Robb, H. S. Karch, and E. A. Hertzell. Bull. 24. 1927. 239 pp., 42 figs.
- †CIT 25. The Effect of Phosphorus on the Resistance of Low-Carbon Steel to Repeated Alternating Stresses, by F. F. McIntosh and W. L. Cockrell. Bull. 25. 1925. 33 pp., 24 figs.
- †CIT 26. Progress Report of Mining Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, May 29, 1919, to May 29, 1925, by W. L. Affelder and Edward Steidle. Bull. 26. 1925. 18 pp.
- †CIT 27. Progress Report of Metallurgical Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, January 1923 to January 1926, by T. D. Lynch and Edward Steidle. Bull. 27. 1926. 32 pp., 11 figs.
- †CIT 28. Mechanical Loading for the Coal Mines of the Pittsburgh District, by H. F. McCullough and J. W. Paul. Bull. 28. 1926. 78 pp., 21 figs.
- †CIT 29. Fusibility of Coal Ash as Related to Clinker Formation, by W. A. Selvig, P. Nicholls, W. L. Gardner, and W. E. Muntz. Bull. 29. 1926. 63 pp., 11 figs.
- †CIT 30. The Explosibility of Methane and Natural Gas, by H. F. Coward, G. W. Jones, C. G. Dunkel, and B. E. Hess. Bull. 30. 1926. 42 pp., 14 figs.
- †CIT 31. Composition of Light Oils from Low-Temperature Carbonization of Utah Coal, by R. L. Brown and R. B. Cooper. Bull. 31. 1926. 15 pp., 3 figs.
- †CIT 32. Certain Relations Between Refractories Service, Insulation, and the Flow of Heat in the Open-Hearth Furnace, by B. M. Larsen and A. Grodner. Bull. 32. 1927. 20 pp., 11 figs.
- †CIT 33. Methods and Costs of Treating Mine Timber: What to Treat and What Life to Expect, by L. D. Tracy and N. A. Toich. Bull. 33. 1927. 312 pp., 65 figs.
- †CIT 34. The Physical Chemistry of Steel Making: The Solubility of Iron Oxide in Iron, by C. H. Herty, Jr., J. M. Gaines, Jr., B. M. Larsen, W. A. Simkins, R. L. Geruso, and S. P. Watkins. Bull. 34. 1927. 69 pp., 31 figs.
- †CIT 35. Composition of Tar from Low-Temperature Carbonization of Utah Coal—I, by R. L. Brown and B. F. Branting. Bull. 35. 1928. 14 pp., 2 figs.
- †CIT 36. The Physical Chemistry of Steel Making: Deoxidation with Silicon and the Formation of Ferrous Silicate Inclusions in Steel, by C. H. Herty, Jr., and G. R. Fitterer. Bull. 36. 1928. 94 pp., 27 figs.
- †CIT 37. The Physical Chemistry of Steel Making: A Study of the Dickenson Method for the Determination of Nonmetallic Inclusions in Steel, by C. H. Herty, Jr., G. R. Fitterer, and J. F. Eckel. Bull. 37. 1928. 27 pp., 4 figs.
- †CIT 38. The Physical Chemistry of Steel Making: Deoxidation with Silicon in the Basic Open-Hearth Process, by C. H. Herty, Jr., C. F. Christopher, and R. W. Stewart. Bull. 38. 1930. 172 pp., 38 figs.
- †CIT 39. Second Progress Report of the Metallurgical Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, January 1926 to October 1928, by T. D. Lynch, Edward Steidle, and J. D. Beatty. Bull. 39. 1928. 21 pp.
- †CIT 40. Second progress Report of the Mining Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, May 29, 1925, to October 31, 1928, by W. L. Affelder, Edward Steidle, and J. D. Beatty. Bull. 40. 1928. 11 pp.
- †CIT 41. Composition of Tar from Low-Temperature Carbonization of Utah Coal—II, by R. L. Brown and R. N. Pollock. Bull. 41. 1929. 13 pp., 2 figs.
- †CIT 42. Efficiency, Cost, and Safety of Storage-Battery Equipment in Bituminous-Coal Mines, and Some Comparisons with Wired Transmission of Power, by C. W. Owings and D. C. Jones. Bull. 42. 1929. 263 pp., 42 figs.
- †CIT 43. Sulfur Forms and Ash-Forming Minerals in Pittsburgh Coal, by W. A. Selvig and Henry Seaman. Bull. 43. 1929. 23 pp., 1 fig.
- †CIT 44. Theoretical Considerations in the Electrolytic Determination of Nonmetallic Inclusions in Steel, by C. H. Herty, Jr., G. R. Fitterer, and W. E. Marshall, Jr. Bull. 44. 1929. 27 pp., 4 figs.
- †CIT 45. Abnormality in Case-Carburized Steels, by C. H. Herty, Jr., B. M. Larsen, V. N. Krivobok, R. B. Norton, R. E. Wiley, A. W. Sikes, and J. E. Jacobs. Bull. 45. 1929. 70 pp., 34 figs.
- †CIT 46. The Physical Chemistry of Steel Making: Deoxidation of Steel with Aluminum, by C. H. Herty, Jr., G. R. Fitterer, and J. M. Byrns. Bull. 46. 1930. 45 pp., 11 figs.
- †CIT 47. Temperature-Viscosity Relations in the Lime-Silica System, by C. H. Herty, Jr., F. A. Hartgen, J. A. Heidish, Kenneth Metcalfe, F. G. Norris, and M. B. Royer. Bull. 47. 1930. 28 pp., 13 figs.
- CIT 48. Study of Wax from Low-Temperature Tar, by J. D. Davis and K. M. Irey. Bull. 48. 1931. 8 pp., 1 fig.
- CIT 49. Mechanism of Combustion of Individual Particles of Solid Fuels, by D. F. Smith and Austin Gudmundsen. Bull. 49. 1931. 21 pp., 15 figs.
- CIT 50. The Relative Ignitibility and Relative Ease of Propagation of Flame of Suspensions of Powdered Coal and Semicoke in Air. Part I, by H. K. Griffin, D. L. Reed, and F. A. Hartgen. Rate of Burning of Individual Particles of Solid Fuels, Part II, by H. K. Griffin and J. R. Adams. Bull. 50. 1931. 179 pp., 55 figs.
- CIT 51. Method of Electrolytic Extraction of MnO, MnS, FeS, and SiO<sub>2</sub>. Inclusions from Plain Carbon Steels, by G. R. Fitterer. Bull. 51. 1931. 19 pp., 2 figs.
- CIT 52. Third Progress Report of the Metallurgical Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, October 1928 to October 1931, by F. N. Speller and John D. Beatty. Bull. 52. 1931. 22 pp.
- CIT 53. Third Progress Report of the Mining Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, October 1928 to October 1931, by L. E. Young and John D. Beatty. Bull. 53. 1931. 14 pp.
- CIT 54. Composition of Low-Temperature Tars: V. Isolation and Identification of Certain Alcohols, by E. B. Kester and H. W. Daeschner. Bull. 54. 1932. 31 pp.
- CIT 55. Electrostatic Method for Determining Fusain in Bituminous Coal, by J. D. Davis and J. A. Younkens. Effect of Fine Inerts on Agglutinating Power of Pittsburgh Coal, by J. D. Davis and W. D. Pohle. Bull. 55. 1932. 17 pp., 8 figs.
- CIT 56. Temperature-Viscosity Relations in the Systems CaO-SiO<sub>2</sub>-CaF<sub>2</sub>, by C. H. Herty, Jr., F. A. Hartgen, and G. W. Jones. Bull. 56. 1932. 32 pp.
- CIT 57. Effect of Inerts on Coking Properties of Pittsburgh Bed Coal, by J. D. Davis and O. G. Hanson. Bull. 57. 1932. 13 pp., 7 figs.
- CIT 58. The Physical Chemistry of Steel Making: Deoxidation of Open-Hearth Steel with Manganese-Silicon Alloys, by C. H. Herty, Jr., C. F. Christopher, M. W. Lightner, and Hyman Freeman. Bull. 58. 1932. 73 pp., 17 figs.
- CIT 60. Agglutinating-Value Test for Coal, by W. A. Selvig, B. B. Beattie, and J. B. Clelland, with a chapter on Plastic Properties of Coking Coals, by Joseph D. Davis, F. W. Jung, Bernard Juettner, and D. A. Wallace. Bull. 60. 1933. 40 pp., 12 figs.

†Out of print.

Cooperative Publications

CIT 61. The Distribution of Micro-Organisms in Four Peat Deposits, by Reinhardt Thiessen and H. S. Strickler. Bull. 61. 1934. 20 pp., 4 figs.

CIT 63. Fourth Progress Report of the Mining Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, by L. E. Young and John D. Beatty. Bull. 63. 1934. 16 pp.

CIT 71. Fifth Progress Report of the Metallurgical Advisory Board to Carnegie Institute of Technology and United States Bureau of Mines, October 1931 to October 1934, by F. N. Speller and John D. Beatty. Bull. 71. 1934. 16 pp.

WITH THE CITY OF BUFFALO, N.Y.

†CB. A Fuel Program for the City of Buffalo, N.Y., by G. S. Brewer and Benjamin Joy Hatmaker. 1924. 88 pp., 7 figs.

WITH THE CITY OF NEWBURGH, N.Y.

†CN. The Explosions in Newburgh, N.Y., September 16, 1929. Report of G. W. Jones to W. Johnston McKay, City Manager, Newburgh, N.Y. 1929. 36 pp.

WITH THE CONSUMERS' COUNSEL DIVISION, OFFICE OF THE BITUMINOUS COAL CONSUMERS' COUNSEL, OR UNITED STATES OFFICE OF BITUMINOUS COAL CONSUMERS' COUNSEL

†BCC 1. Typical Analyses Bituminous Coals Produced in Districts 7 and 8 (Eastern Kentucky, Southern West Virginia, Virginia, Northeastern Tennessee, and North Carolina), by Frederic L. Kirgis, W. E. Rice, and H. E. Moran. Data book, vol. 1. 1941. 28 pp., 11 figs.

†BCC 2. Typical Analyses, Bituminous Coals Produced in District 1 (Central Pennsylvania, Maryland, and Northeastern West Virginia), by Frederic L. Kirgis, W. E. Rice, and H. E. Moran. Data Book, vol. 2. 1941. 18 pp., 10 figs.

†BCC 3. Typical Analyses, Bituminous Coals Produced in Districts 2, 3, 4, 5, and 6 (Eastern Ohio, Western Pennsylvania, Northern West Virginia, and Michigan), by Luther Harr, W. E. Rice, and H. E. Moran. Data Book, vol. 3. 1941. 29 pp., 18 figs.

†BCC 4. Typical Analyses, Bituminous Coals Produced in District 13 (Alabama, Southeastern Tennessee, and Northwestern Georgia), by Luther Harr, W. E. Rice, and H. E. Moran. Data Book, vol. 4. 1942. 11 pp., 4 figs.

†BBC 5. Typical Analyses, Bituminous Coals Produced in Districts 10 and 11 (Illinois and Western Indiana), by Luther Harr, W. E. Rice, and H. E. Moran. Data Book, vol. 5. 1942. 48 pp., 13 figs. Volumes 6 and 7, published by the Bureau of Mines, are listed on page 352.

WITH THE EL DORADO (ARK.) CHAMBER OF COMMERCE

†EDC. Engineering Report on the Smackover Oil and Gas Field, by P. S. Haury and R. B. Kelly. 1924. 30 pp., 7 figs.

WITH THE FEDERAL BOARD FOR VOCATIONAL EDUCATION

†VE 39. Coal-Mine Gases. Bull. 39. 1931. 41 pp., 3 figs.

†VE 40. Coal-Mine Timbering. Bull. 40. 1931. 100 pp., 88 figs.

†VE 41. Coal-Mine Ventilation. Bull. 41. 1931. 92 pp.

†VE 42. Flame Safety Lamps, Devices for Detecting Firedamp, and Miners' Electric Lamps. Bull. 42. 1931. 67 pp., 24 figs.

†Out of print.

WITH THE FOUR HEAVY CLAY PRODUCTS ASSOCIATIONS

†HCP. The Burning Problems of Industrial Kilns, by R. T. Stull and Others, with a chapter on Laboratory Control, by G. A. Bole and R. T. Watkins. 1924. 184 pp.

WITH THE GEOLOGICAL SURVEY OF GEORGIA AND THE UNITED STATES GEOLOGICAL SURVEY<sup>1</sup>

GGs. Kyanite and Vermiculite Deposits of Georgia, by Louis M. Prindle, W. D. Johnston, Jr., Geoffrey W. Crickmay, B. W. Gandrud, and Richard W. Smith. Bull. 46. 1935. 50 pp., 15 figs.

WITH THE ILLINOIS STATE GEOLOGICAL SURVEY<sup>2</sup>

IGS. The Fluorspar Industry of the United States, with Special Reference to the Illinois-Kentucky District, by Paul Hatmaker and Hubert W. Davis. Illinois State Geological Survey Bull. 59. 1938. 128 pp., 14 figs.

WITH THE INTERDEPARTMENTAL COMMITTEE

†IDC. Oil Pollution of Navigable Waters. Report to the Secretary of State by the Interdepartmental Committee. 1926. 119 pp., 1 fig.

WITH THE KANSAS STATE BOARD OF HEALTH<sup>4</sup>

KBH 1. Contamination of Domestic Water Supplies by Inadequate Plugging Methods of Faulty Casings, by Ludwig Schmidt and C. J. Wilhelm. 1936. 15 pp., 5 figs.

†KBH 2. Protection of Fresh-Water Horizons in Oil-Producing Areas, with Special Reference to Kansas, by C. J. Wilhelm. 1937. 15 pp., 7 figs.

WITH THE MCGRAW-HILL BOOK CO.

†McG-H. Mineral Raw Materials, by the Foreign Minerals Division, Bureau of Mines. 1937. 342 pp., 65 figs.

WITH THE MINNESOTA SCHOOL OF MINES EXPERIMENT STATION

†MIN. Minnesota Manganiferous Iron Ore in Relation to the Iron and Steel Industry, by T. L. Joseph and S. P. Kinney. Bull. 12. 1927. 101 pp., 31 figs.

WITH THE MISSOURI SCHOOL OF MINES AND METALLURGY

†MIS 6-2. Bibliography on the Electrothermic Metallurgy of Zinc, by B. M. O'Harra. Bull., vol. 6, No. 2. 1922. 65 pp.

†MIS 6-4. Experiments on the Distillation of Zinc from Complex Zinc-Lead-Silver Ores, by B. M. O'Harra and E. S. Wheeler. Bull., vol. 6, No. 4. 1923. 44 pp., 13 figs.

†MIS 7-3. Mechanical Underground Loading in Metal Mines, by C. E. van Barneveld. Bull., vol. 7, No. 3. 1924. 639 pp., 226 figs.

†MIS 7-4. Briquetting of Zinc Ores, by B. M. O'Harra. Bull., vol. 7, No. 4. 1924. 67 pp., 15 figs.

†MIS 8-1. Reduction of Zinc Oxide by Carbon, by G. A. Zeller and B. M. O'Harra. Bull., vol. 8, No. 1. 1924. 32 pp., 7 figs.

<sup>1</sup> Obtainable only from the Geological Survey of Georgia, 425 State Capitol, Atlanta, Ga.

<sup>2</sup> Obtainable only from the Illinois State Geological Survey, Urbana, Ill.

<sup>4</sup> Obtainable only from the Kansas State Board of Health, Room 2, Marvin Hall, Lawrence, Kans.

- †MIS 8-4. Bibliography on Zinc Retorts and Condensers, by B. M. O'Harra. 1925. Bull., vol. 8, No. 4, 15 pp.
- †MIS 10-2. Properties of Refractories in Zinc Metallurgy, by H. M. Lawrence, E. S. Wheeler, and A. H. Kuechler. Bull., vol. 10, No. 2. 1927. 139 pp., 94 figs.
- †MIS 10-3. Recent Developments in Ammonia Leaching for Zinc Ores, by H. M. Lawrence. Bull., vol. 10, No. 3. 1927. 12 pp.
- †MIS 11-1. The Scientific Fundamentals of Gravity Concentration, by Josef Finkey. Translated by C. O. Anderson and M. H. Griffiths. Bull., vol. 11, No. 1. 1927. 295 pp., 44 figs.
- †MIS 11-3. Laboratory Concentration of the Missouri Iron Ores of Iron Mountain and Pilot Knob, by F. D. DeVaney and S. R. B. Cooke. Bull., vol. 11, No. 3. 1928. 38 pp., 17 figs.

## WITH THE NATIONAL BUREAU OF STANDARDS

- †BS. Coking of Illinois Coal in Koppers-Type Oven, by R. S. McBride and W. A. Selvig. Bureau of Standards Technol. Paper 137. 1919. 49 pp.

## WITH THE NATIONAL BUREAU OF STANDARDS AND THE AMERICAN PETROLEUM INSTITUTE

- †BSA. National Standard Petroleum Oil Tables, Approved by the American Petroleum Institute, the Bureau of Mines, and the Bureau of Standards. Bureau of Standards Circ. 154. 1924. 175 pp.

## WITH THE NATIONAL COAL ASSOCIATION

- †NC 1. Research Activities in Coal, by A. C. Fieldner. 1927. 34 pp.
- †NC 2. Research Activities in Coal. An Outline of Work in Progress During 1928 in America and Abroad, as Reported to the National Coal Association. 1928. 36 pp.

## WITH THE NATIONAL RESEARCH COUNCIL COMMITTEE ON EXPLOSIVES

- †NRC. TNT as a Blasting Explosive, by C. E. Munroe and S. P. Howell. United States Department of Agriculture Circ. 94. 1920. 23 pp., 12 figs.

## WITH THE NEVADA STATE BUREAU OF MINES\*

- †NUN 1. Placer Mining in Nevada, by Alfred Merritt Smith and Wm. O. Vanderburg. University of Nevada Bull., vol. XXVI, No. 8. 1932. 104 pp., 34 figs.
- NUN 2. Placer Mining in Nevada, by William O. Vanderburg. University of Nevada Bull., vol. XXX, No. 4. 1936. 180 pp., 65 figs.

## WITH THE NEW MEXICO SCHOOL OF MINES\*

- NMM. Mining and Milling of Fluorspar in New Mexico, by C. H. Johnson, published as Part 2 of Fluorspar Resources of New Mexico. New Mexico Bureau of Mines and Mineral Resources, New Mexico School of Mines Bull. 21. 1946. Pp. 197-219, 10 figs., 6 pls.

## WITH THE NORTH TEXAS GEOLOGICAL SOCIETY

- †NTG. Engineering Study of the Texhoma-Gose Pool, Archer County, Tex., by C. E. Sutton, C. J. Wakenhut, and H. B. Hill. 1928. 45 pp., 12 figs.

\* Obtainable only from the University of Nevada, Reno, Nev.  
\* Obtainable only from the New Mexico Bureau of Mines and Mineral Resources, New Mexico School of Mines, Socorro, N. Mex.

†Out of print.

## WITH THE OFFICE OF INDIAN AFFAIRS

- †OIA. Report on the Quinn Dome in the Lyons-Quinn Oil and Gas Field, Okfuskee and Okmulgee Counties, Okla., with Special Reference to the Migration of Gas Found Below the Lyons Oil Sand and the Resulting Effect on the Oil and Casing-Head Gas Production of This Sand, by M. J. Kirwan, C. O. Rison, and D. P. Wardwell. 1924. 53 pp., 8 figs.

## WITH THE OFFICE OF INDIAN AFFAIRS AND THE STATE OF OKLAHOMA

- †OIK. Petroleum Engineering in the Cromwell Oil Field, Seminole and Okfuskee Counties, Okla., by C. O. Rison and John R. Bunn. 1924. 38 pp., 6 figs.

## WITH THE OFFICE OF INDIAN AFFAIRS, THE STATE OF OKLAHOMA, AND THE ARDMORE CHAMBER OF COMMERCE

- †IOA. Petroleum Engineering in the Fox and Graham Oil and Gas Fields, Carter County, Okla., by H. C. George and J. R. Bunn. 1924. 71 pp., 13 figs.

## WITH THE OHIO STATE UNIVERSITY AND THE UNITED STATES COAL COMMISSION

- †OHC. Coal Losses in Ohio, by J. D. Sisler and C. A. Allen. Engineering Experiment Station, Ohio State University, Bull. 29. 1925. 64 pp.

## WITH THE OKLAHOMA GEOLOGICAL SURVEY\*

- †OGS 36. Petroleum Engineering in the Papoose Oil Field, Okfuskee and Hughes Counties, Okla., by J. R. Bunn, with a chapter on the Geology of the Papoose Oil Field, by Louis Roark. Oklahoma Geological Survey, Bull. 36. 1926. 61 pp., 11 figs.
- OGS 12. Carbonizing Properties of Henryetta-Bed Coal From Atlas No. 2 Mine, Okmulgee County, Okla., by Joseph D. Davis and D. A. Reynolds. Oklahoma Geological Survey, Mineral Report 12. 1941. 8 pp.
- OGS 15. Carbonizing Properties of McAlester-Bed Coal From Dow No. 10 Mine, Dow, Pittsburg County, Okla., by Joseph D. Davis and D. A. Reynolds. Oklahoma Geological Survey, Mineral Report 15. Prelim. mim. rept. 1942. 12 pp., 1 fig.

## WITH THE OREGON STATE DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES\*

- OGM 6. Preliminary Report of Some of the Refractory Clays of Western Oregon, by Hewitt Wilson and Ray C. Treasher. Oregon State Department of Geology and Mineral Industries, Bull. 6. 1938. 98 pp., 39 figs.
- OGM 4. Beneficiation by Flotation of Willamette Valley Limestone of Oregon, by J. B. Clemmer and B. H. Clemmons. Oregon State Department of Geology and Mineral Industries, Short Paper 4. 1940. 8 pp.
- OGM 20. Analyses and Other Properties of Oregon Coals as Related to Their Utilization, by H. F. Yancey and M. R. Geer. Oregon State Department of Geology and Mineral Industries, Bull. 20. 1940. 38 pp., 2 figs.

\* Obtainable only from the Oklahoma Geological Survey, Norman, Okla.

\* Obtainable only from the Oregon State Department of Geology and Mineral Industries, 702 Woodlark Building, Portland, Oreg.

WITH THE PENNSYLVANIA STATE COLLEGE\*

- PSC 23. The Chemistry of the Petrographic Constituents of Bituminous Coal. I. Studies on Fusain, by Walter Fuchs, A. W. Gauger, C. C. Hsiao, and C. C. Wright. Pennsylvania State College, Mineral Industries Experiment Station, Bull. 23. 1938. 43 pp.
- PSC 26. Hydrogenation of the Petrographic Constituents of Pittsburgh Seam Coal, by C. C. Wright and George C. Sprunk. Pennsylvania State College, Mineral Industries Experiment Station. Bull. 26. 1939. 32 pp., 6 figs.
- PSC 28. Hydrogenation of the Petrographic Constituents of the High Splint Seam, by C. C. Wright and George C. Sprunk. Pennsylvania State College, Mineral Industries Experiment Station, Bull. 28. 1939. 23 pp., 7 figs.

WITH THE PENNSYLVANIA TOPOGRAPHIC AND GEOLOGIC SURVEY AND THE DEPARTMENT OF FORESTS AND WATERS

- †PTG 6. Bituminous-Coal Fields of Pennsylvania. Part IV. Coal Analyses, by G. H. Ashley, J. W. Paul, J. D. Davis, A. C. Fieldner, H. M. Cooper, F. G. Osgood, and N. H. Snyder. Pennsylvania Geological Survey, 4th ser., Bull. M 6. 1928. 256 pp.
- †PTG 12. Anthracite Cull and Silt, by J. D. Sisler, Thomas Fraser, and D. C. Ashmead. Pennsylvania Geological Survey, 4th ser., Bull. M 12. 1928. 268 pp., 21 figs., 34 pls.

WITH THE PENNSYLVANIA TOPOGRAPHIC AND GEOLOGIC SURVEY, THE DEPARTMENT OF FORESTS AND WATERS, AND THE UNITED STATES COAL COMMISSION

- †PTF 4. Bituminous-Coal Losses and Mining Methods in Pennsylvania, by J. D. Sisler. Pennsylvania Geological Survey, 4th ser., Bull. M 4. 1924. 216 pp.
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<sup>22</sup> Obtainable only from the University of Alabama, University, Ala.

<sup>23</sup> Obtainable only from the University of California, Berkeley, Calif.

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- †UTA B 9. Report of the Department of Metallurgical Research, by D. A. Lyon and O. C. Ralston. Bull. 9. 1916. 32 pp., 6 figs.
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- The following reports have been compiled by the Bureau of Mines as a part of the Materials Surveys series on strategic and critical materials in cooperation with the agency noted. The Information Circular series also includes several reports of a similar nature.
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- †MS 2. Asbestos. 1952. 153 pp., 8 figs. Revised as IC 7880.

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#### MONOGRAPHS

Monographs are detailed reports of cooperative investigations of special subjects in which the Bureau of Mines and another organization are mutually interested. They usually relate to studies of problems encountered in production, distribution, and utilization of mineral fuels.

- †M 1. Ventilation of Vehicular Tunnels, by A. C. Fieldner, Yandell Henderson, J. W. Paul, R. R. Sayers, and others. 1927. 171 pp., 69 figs. Report of the Bureau of Mines to the New York State Bridge & Tunnel Commission and the New Jersey Interstate Bridge & Tunnel Commission.
- †M 2. Experimental Studies on the Effect of Ethyl Gasoline and Its Combustion Products, by R. R. Sayers, A. C. Fieldner, W. P. Yant, and B. G. H. Thomas. 1927. 447 pp., 42 figs. Report of the Bureau of Mines to the General Motors Research Corporation and the Ethyl Gasoline Corporation.
- †M 3. Function of Natural Gas in the Production of Oil, by H. C. Miller. 1929. 256 pp., 36 figs. Report of the Bureau of Mines in cooperation with the Division of Development and Production Engineering of the American Petroleum Institute, based on data gathered and reported by the Kansas and Oklahoma, Pacific coast, Rocky Mountain, and Texas and Louisiana regional committees of the Gas Conservation Committee of the American Petroleum Institute.
- †M 4. Warning Agents for Fuel Gases, by A. C. Fieldner, R. R. Sayers, W. P. Yant, S. H. Katz, J. B. Shohan, and R. D. Leitch. 1931. 177 pp., 31 figs. Report of the Bureau of Mines in cooperation with the American Gas Association.
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- M 6. Flow of Natural Gas Through High-Pressure Transmission Lines. A joint report by T. W. Johnson and W. B. Berwald. 1935. 120 pp., 25 figs. Based upon experimental work in cooperation with the State of Oklahoma and the Natural-Gas Department of the American Gas Association. (May be obtained only from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y. Price \$1.)
- M 7. Back-Pressure Data on Natural-Gas Wells and Their Application to Production Practices, by E. L. Rawlings and M. A. Schellhardt. 1939. 210 pp., 66 figs. (Revised). Presents a more extended discussion of the subject matter in earlier Bureau of Mines publications relating to the same study. (See RI 2929 and 2930.) Supplements the information they contain with recommended procedure for obtaining data and analyzing results that are more practical and easier to use. In addition it includes an analysis of the application of back-pressure data to gas-production problems. (May be obtained only from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y. Price \$1.50.)
- M 8. Gas Hydrates and Their Relation to the Operation of Natural-Gas Pipe Lines, by W. M. Deaton and E. M. Frost, Jr. 1948. 101 pp., 41 figs. Gives results of an investigation conducted by the Bureau in cooperation with the American Gas Association to prevent the "freezing" of natural-gas transmission lines. Describes the types of dehydration plants for drying gases, and discusses the kinds of "freezes" that occur, their frequency, the time of most frequent occurrence, the location of the "freezes" in the line, the temperatures at which they occur, and remedial measures to remove or prevent "freezes." (May be obtained only from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y. Price \$1.50.)
- M 9. Flow of Natural Gas Through Experimental Pipelines and Transmission Lines, by R. V. Smith, J. S. Miller, and J. W. Ferguson. 1956. 89 pp., 43 figs. This investigation, conducted by the Bureau in cooperation with the Pipeline Research Committee of the American Gas Association and with the State of Oklahoma, was made to study existing literature on flow of natural gas in pipe and to determine relationships between transmission factor, Reynolds number, and absolute roughness for experimental pipelines and transmission. (May be obtained only from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y. Price \$2.50.)
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- M 10. Phase Relations of Gas-Condensate Fluids. Correlations of Test Results and Component Properties, by C. Kenneth Eilerts and others. 1959. Vol. II. 522 pp., 263 figs. Presents correlations of experimental data of the Bureau of Mines and complementary data available in the literature and descriptions of equipment and techniques. Work done in cooperation with the Pipeline Research Committee of the American Gas Association and with the State of Oklahoma. (May be obtained only from the American Gas Association, 420 Lexington Avenue, New York 17, N.Y. Price \$15.00.)

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