BIBLIOGRAPHY OF BUREAU OF MINES INVESTIGATIONS OF COAL AND ITS PRODUCTS, 1945 TO 1950

By E. P. Carman, M. Opperman, S. Nishiyama, and L. Racoosin



UNITED STATES DEPARTMENT OF THE INTERIOR

Douglas McKay, Secretary

BUREAU OF MINES

J. J. Forbes, Director

Foreword

Publications concerning Bureau of Mines investigations of coal and its products since the Bureau was established in 1910 to January 1, 1935, are listed in Technical Paper 576. Technical Paper 639 lists these publications from 1935 to January 1, 1940, and Technical Paper 698 gives those from 1940 to January 1, 1945. The present publication covers the 5 years from January 1, 1945, to January 1, 1950.

These investigations are described in printed or mimeographed publications issued by the Government Printing Office or the Bureau of Mines and in articles by staff members

published in periodicals, books, and journals distributed by the technical press.

The publications have been classified according to subject. Within each subject classification the papers are separated into groups based on the medium of publication and are arranged, within each group, alphabetically by authors. The publications issued by the Government include bulletins, technical papers, economic papers, miners' circulars, the Minerals Yearbook, handbooks, schedules, the Director's annual report, reports of investigations, information circulars, special reports, and various periodic economic reports

detailed under the section headed Economics and Statistics.

In general, bulletins contain original scientific or technical results of studies of major problems. Technical papers are similar to bulletins but are limited to definite subdivisions of major problems and as a rule are shorter than bulletins. Economic papers summarize and analyze the history of production of various important minerals and discuss sources and resources. Miners' circulars give data and information on the prevention of mine accidents, first-aid and rescue methods, and precautions against disease. The last three publications were discontinued in 1950. Minerals Yearbook presents an economic review and statistical summary of the mineral industry of the United States. It is published about August or september following the calendar year reviewed. Handbooks are special manuals on subjects relating to safety, or efficiency and use of fuels and fuel-burning equipment. Schedules indicate the requirements and procedure for testing electrical equipment, gasdetecting equipment, devices for respiratory protection, and explosives for permissibility for use in mines, mainly coal mines. Director's annual reports summarize the Bureau's work in any fiscal year. All of these publications are printed and are sold, if not out of print, by the Superintendent of Documents, Washington 25, D. C., at the price stated.

Reports of investigations, issued in mimeographed form, quickly make available important data pertaining to special phases of major problems. They are used also to outline briefly the results of original studies on minor problems. Frequently the information contained in these papers is incorporated with additional findings and published in bulletins or technical papers. Reports of investigations are numbered serially, beginning with No. 2000, which was published in February 1919. Information circulars are short mimeographed papers, similar in form and manner of publication to reports of investigations, that concisely present the principal facts on various subjects. The material may not represent the results of original investigative work and frequently consists of compilations, reviews, abstracts, and discussions. Information circulars are numbered serially, beginning with No. 6000, which was published in December 1925. Before that date, papers of a general informational character were classified as reports of investigations. Special reports are issued at intervals to make available data of special and immediate interest. They are not numbered but are designated by title or subject matter. Reports of investigations, information circulars, and other mimeographed reports are distributed, free of charge, upon written request, by the Bureau of Mines, Publications Distribution Section. 4800 Forbes Street,

As there has been a liberal distribution of all publications throughout the country and to some extent in foreign countries, reports that are now out of print usually may be found in technical and larger public libraries. Likewise, bound volumes of the scientific and trade periodicals in which Bureau of Mines papers appear may be consulted in libraries throughout the country. Dealers in new and secondhand books sometimes have copies

of some of the reports.

Pittsburgh 13, Pa.

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By

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1. GENERAL

TECHNICAL PAPERS

1. DAVENPORT, S. J. Bibliography of Bureau of Mines Publications Dealing With Health and Safety in the Mineral and Allied Industries, 1910-46. Tech. Paper 705, 1948, 154 pp. 30 cents.

2. FIELDNER, A. C., FISHER, P. L., AND POLLOCK, M. B. Bibliography of Bureau of Mines Investigations of Coal and Its Products, 1940 to 1945. Tech. Paper

698, 1947, 53 pp. 15 cents.

3. Good, J. E., ABREU, ALVARO, AND FRASER, THOMAS. The Coal Industry of Brazil. Part 1. General Economy, Production, and Marketing. Tech. Paper 713, 1949, 38 pp. 20 cents.

ANNUAL REPORTS OF THE DIRECTOR

4. BOYD, JAMES. Annual Report of the Director of the Bureau of Mines, 1948, pp. 166-169, 175-188. Reprinted from the Annual Report of the Secretary of the Interior, 1948. This annual report reviews work done by the Bureau of Mines during the fiscal year and discusses some of the future programs of the Bureau.

Annual Report of the Director of the Bureau of Mines, 1949, pp. 131-135, 141-146, 148-158. Reprinted from the Annual Report of the Secretary

of the Interior, 1949. See item 4.

6. SAYERS, R. R. Annual Report of the Director of the Bureau of Mines to the Secretary of the Interior, for the Fiscal Year Ended June 30, 1944, pp. 68-70, 72-73, 79-81, 84-89, 92-93. (Out of print.) Reprinted from the Annual Report of the Secretary of

the Interior, 1944. See item 4.

Annual Report of the Director of the Bureau of Mines, 1945, pp. 72-74, 82-86, 88-94, 96. (Out of print.) Reprinted from the Annual Report of the Secretary of the Interior, 1945. See item 4.

-. Annual Report of the Director of the Bureau of Mines, 1946, pp. 156–160, 168–171, 173–181, 183. Reprinted from the Annual Report of the Secretary of the Interior, 1946. See item 4.

Annual Report of the Director of the Bureau of Mines, 1947, pp. 180-181, 188-190, 192-196, 198-199. Reprinted from the Annual Report of the Secretary of the Interior, 1947. See item 4.

Work on manuscript completed December 1952.
 Chemical engineer, Office of Coal Technology Coordinator, Bureau of Mines.

Editorial clerk, Fuels and Explosives Division, Bureau of Mines.
*Editorial clerk, Office of Coal Technology Coordinator,

Bureau of Mines.

*Clerk (stenographer), Office of Coal Technology Coordinator, Bureau of Mines.

CONGRESSIONAL PUBLICATIONS

10. BOYD, JAMES. Statement on the Investigation of Natural Resources. Hearings before National Resources Economic Subcommittee, Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., on Investigation of the Factors Affecting Minerals, Fuels, Forestry, and Reclamation Projects, May 15, 16, and 20, 1947, pp. 125-131.

11. Buch, J. W., Hendricks, T. A., and Toenges, A. L. Statement on the Investigation of Natural Resources. Hearings before National Resources Economic Subcommittee, Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., on Investigation of the Factors Affecting Minerals, Fuels, Forestry, and Reclamation Projects, May 15, 16, and 20, 1947, pp. 231-235.

12. FIELDNER, A. C. Statement on the Investigation of Natural Resources. Hearings before National Resources Economic Subcommittee, Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., on Investigation of the Factors Affecting Minerals, Fuels, Forestry, and Reclamation Projects, May 15, 16, and 20, 1947, pp. 201-205.

13. LASKY, S. G., AND PEHBSON, E. W. Statement on the Investigation of Natural Resources. Hearings before National Resources Economic Subcommittee. Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., on Investigation of the Factors Affecting Minerals, Fuels, Forestry, and Reclamation Projects,

May 15, 16, and 20, 1947, pp. 176-184.

14. SAYERS, R. R. Statement on the Investigation of Natural Resources. Hearings before National Resources Economic Subcommittee, Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., on Investigation of the Factors Affecting Minerals, Fuels, Forestry, and Reclamation Projects, May 15, 16, and 20, 1947, pp. 17-90.

REPORTS OF INVESTIGATIONS

15. Parry, V. F. Résumé of Bureau of Mines Research and Development Work on Western Coals, 1942-47. R. I. 4171, 1948, 9 pp.; Proc. Rocky Mt. Coal Min. Inst., 1947, pp. 18-20.

INFORMATION CIRCULARS

- 16. FIELDNER, A. C. Coal-Research Activities of the Bureau of Mines. I. C. 7367, 1946, 14 pp.; abstract, Coke Smokeless-Fuel Age, vol. 8, No. 91, December 1946, p. 276.
- FIELDNER, A. C., AND AMBBOSE, P. M. Annual Report of Research and Technologic Work on Coal, Fiscal Year 1946. I. C. 7417, 1947, 142 pp.

Annual Report of Research and Technologic Work on Coal, Fiscal Year 1947. I. C. 7446, 1948, 113 pp.

19. FIELDNER, A. C., AND BREWER, R. E. Annual Report of Research and Technologic Work on Coal, Fiscal Year 1945. I. C. 7352, 1946, 103 pp. 20. FIELDNER, A. C., AND GOTTLIEB, SIDNEY. Annual

Report of Research and Technologic Work on Coal, Fiscal Year 1948. I. C. 7518, 1949, 87 pp.

21. FIELDNER, A. C., FISHER, P. L., AND BREWER, R. E. Annual Report of Research and Technologic Work on Coal, Fiscal Year 1944. I. C. 7322, 1945, 79 pp. (Out of print.)

22. LOWRY, H. H., AND ROSE, H. J. Some Observations on German Coal Research and Developments. I. C. 7422, 1947, 27 pp.

OTHER PUBLICATIONS

23. Anderson, S. M. Latin-American Minerals' Role During the War Years. For. Com. Weekly, vol. 23, No. 10, June 8, 1946, pp. 4-7, 49-50.

-. Review of the Mineral Industries of Latin Econ. Geol., vol. 43, No. 3, May 1948, America.

pp. 226-231.

25. BOYD, JAMES. Coal Conservation. Min. Cong. Jour., vol. 34. No. 6, June 1948, pp. 26-28; Proc. Illinois Min. Inst., 1948, pp. 88-93.

The Mineral Programs of the U.S. Bureau of Mines. Min. Cong. Jour., vol. 33, No. 11,

November 1947, pp. 19-22.

Problems Facing the Bureau of Mines and the Coal Industry. Proc. Coal Min. Inst. America, 61st Annual Report, 1947, pp. 37-45.

3.——. U. S. Bureau of Mines Activities, 1947 and 1948. Mechanization, vol. 12. No. 2. February

1948. pp. 55-59.

- 29. -----. U. S. Bureau of Mines Reorganizes. Min. Eng. (News Sec.), vol. 1, No. 9, September 1949, pp. 40-41.
- 30. Buch. J. W. New Anthracite Research Laboratory at Schuylkill Haven, Pa. Reading RR. Mag., vol. 12, May 1948, pp. 3-5, 25.
- 31. Bureau of Mines. Solid Fuels in Germany. Chem. and Eng. News, vol. 23, No. 23, Dec. 10, 1945, p. 2193.
- 32. BUREAU OF MINES AND GEOLOGICAL SURVEY. Mineral Resources of the United States. Public Affairs Press, Washington, D. C., 1948, 212 pp. \$5.00.
- CORGAN, J. A. Future Supplies of Principal Fuels in Competition With Anthracite. Trans. 6th Ann. Anthracite Conf., Lehigh Univ., 1948, pp 43-55.
- 34. East, J. H., Jr. The European Coal Situation in 1945. Mines Mag. (Colorado), vol. 36, No. 4, April 1946, pp. 142-147.
- . Italy's "Coal Quandary"-Dire Need. Diverse Effect. For. Com. Weekly, vol. 26, No. 7, Feb. 15, 1947, pp. 6, 7, 25, and 26.

- 36. FEISS, J. W. The U. N. Resource Conference. Min. Eng., vol. 1, No. 10, October 1949, p. 50.
- 37. FIELDNER, A. C. Coal Research for 1946. Mechanization, vol. 10, No. 2, February 1946, pp. 105, 106, 108, 109.
- -. Frontiers of Fuel Technology. Chem. Eng. News, vol. 26, No. 23, June 7, 1948, pp. 1700-1701; Fuel—A Jour. of Fuel Sci. (London), vol. 28, No. 1, January 1949, pp. 19-21; discussion, Am. Gas Assoc. Monthly, July-August 1948, p. 49.

-. Fuel Research of the Bureau of Mines, U. S. Department of the Interior. Jour. Inst. Fuel, vol. 18, No. 100, February 1945, p. 71.

- Disc. of "How Much Coal Do We Really Have?-The Need for An Up-to-Date Survey," A. B. Crichton. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177, 1948, pp. 33-34.
- . Nation's Reserve of Solid Fuels and Its Relation to Future Supply of Gaseous and Liquid Fuels. Gas Age, vol. 98, No. 6, Sept. 19, 1946, pp. 37-40, 42; Ry. Age. vol. 122, No. 2, Jan. 11, 1947, pp. 142-145; Gas. vol. 22, No. 10, October 1946, pp. 70, 72, 75, 78; Mech. Eng., vol. 69, No. 3, March 1947, pp. 221-226, 228; discussion, vol. 69, No. 10, October 1947, pp. 866-867; abs. Chem. Abs., vol. 41, 1947, p. 2549.

—. The National Fuel Reserves and Future Fuel Supplies. Am. Min. Cong., Coal Mine Moderni-

zation Year Book, 1949, pp. 374-390.

Solid Mineral-Fuel Resources of the United States. Mechanization, vol. 11, No. 3, March 1947, pp. 124-126.

- 44. Fraser, Thomas. Coal in South America. U. S. Sec., Pan. Am. Inst. Min. Eng. and Geol., Tech. Paper 6, 1948, 16 pp.
- 45. Grove, G. W. President's Address, Coal Mining Institute of America. Proc. Coal Min. Inst. America, 60th Annual Report, 1946, pp. 12-13.
- 46. KRUG, J. A. The Mineral Position of the United States. Am. Inst. Min. and Met. Eng., Anniversary Volume, 75 Years of Progress in the Mineral Industry, 1947, pp. 551-558.
- 47. McCABE, L. C. The Bureau of Mines Anthracite Research Program. Trans. 5th Ann. Anthracite Conf., Lehigh Univ., 1947, pp. 321-326.
- 48. Parry, V. F. Future Prospects for Western Fuel Supply. West. Ind., vol. 13. No. 1, January 1948. Supply. pp. 38-41.
- 49. ----. Production, Classification, and Utilization of Western U. S. Coals. Econ. Geol., vol. 45, No. 6, September-October 1950, pp. 515-532.
- 50. Pehrson, E. W. The Mineral Position of the United States and the Outlook for the Future. Min. and Met., vol. 26, April 1945, pp. 204-214.
- 51. REID, W. T. The Fuel Industry of Japan. Combustion, vol. 18, No. 10, April 1947, pp. 41-42.

2. METHODS OF SAMPLING, ANALYZING, AND TESTING

A. SOLID

REPORTS OF INVESTIGATIONS

- 52. Ballard, J. W., and Schrenk, H. H. Routine Quantitative Analysis by X-Ray Diffraction. 1. Photometric Procedure. 2. Analytical Method. R. I. 3888, 1946, 10 pp.
- 53. BERGER, L. B., SCHRENK, H. H., GALE, J. A., STEW-ART, R. W., AND SIEFFERT, L. E. Toxicity and Flame Resistance of Thermosetting Plastics. R. I. 4134, 1947, 11 pp.
- 54. JONES, G. W., SCOTT, G. S., KENNEDY, R. E., AND SPOLAN, I. Apparatus for Determining the Reactivity of Calcium Carbide and Acetylene-Water Vapor Mixtures. R. I. 4067, 1947, 15 pp.
- McCartney, J. T. Determination of the Size Distribution of Fine Coal Particles by the Electron Microscope. R. I. 3827, 1945, 11 pp. (Out of print.)

OTHER PUBLICATIONS

- 56. BAILEY, A. L., AND LANDRY, B. A. Sampling of Coal for Float-and-Sink Tests. Trans. Am. Inst. Min. and Met. Eng., vol. 184; Min. Eng., Tech. Pub. 2539-F, vol. 1, No. 3, March 1949, pp. 79-84; author's reply to disc., vol. 1, No. 11, November 1949, pp. 407, 408, 410.
- 57. CHAYES, FELIX. Correction Factor for Specific Gravity and Volume Differences in Fragment Analysis. Econ. Geol., vol. 41, No. 7, November 1946, pp. 749-760.
- 58. Fraser, Thomas. Foreword to "Sampling of Coal for Float-and-Sink Tests," by A. L. Bailey and B. A. Landry. Trans. Am. Inst. Min. and Met. Eng., vol. 184; Min. Eng., Tech. Pub. 2539-F, vol. 1, No. 3. March 1949, p. 79.
- 59. FRIEDEL, R. A., AND SHARKEY, A. G., JR. Comparison of Glower and Globar Sources for Infrared Spectrometry. Rev. Sci. Instr., vol. 18, No. 12, December 1947, p. 928.

B. LIOUID

OTHER PUBLICATIONS

- FRIEDEL, R. A., SHARKEY, A. G., JR., AND HUMBERT, C. R. Liquid Sampling for Analysis by Mass Spectrometer. Anal. Chem., vol. 21, No. 12, December 1949, pp. 1572-1573.
- Orchin, Milton. Modified Dropping Funnel. Ind. Eng. Chem., anal. ed., vol. 17, No. 2, February 1945, p. 99.

C. GASEOUS

REPORTS OF INVESTIGATIONS

- 62. Berger, L. B. Determination of Carbon Monoxide by Absorption in the Haldane-Type Gas-Analysis Apparatus. R. I. 4187, 1947, 6 pp.
- 63. Busch, H. W., and Berger, L. B. Sampling and Determination of Aldehydes in Diesel-Engine Exhaust Gas and in Mine Air. R. I. 4531, 1949, 9 pp.
- 64. Pearce, S. J., AND Schrenk, H. H. Determination of Sulfur Dioxide in Air by Means of the Midget Impinger. R. I. 4282, 1948, 6 pp.
- 65. Sands, A. E., Grafius, M. A., Wainwright, H. W., and Wilson, M. W. The Determination of Low Concentrations of Hydrogen Sulfide in Gas by the Methylene Blue Method. R. 1. 4547, 1949, 19 pp.

INFORMATION CIRCULAR

66. Berger, L. B., and Schrenk, H. H. Laboratory Equipment for the Analysis of Mine Atmospheres. I. C. 7441, 1948, 18 pp.

- BRINKLEY, S. R., JR. On the Equation of State for Gases at Extremely High Pressure. Jour. Chem. Phys., vol. 15. February 1947, pp. 113-114.
 DAVIS, R. F., AND ELLIOTT, M. A. The Removal of
- 68. DAVIS, R. F., AND ELLIOTT, M. A. The Removal of Aldehydes From Diesel Exhaust Gas. Trans. Am. Soc. Mech. Eng., vol. 70, No. 6, August 1948, pp. 745-750.
- 69. ELLIOTT, M. A., AND DAVIS, R. F. The Composition of Diesel Exhaust Gas. Auto. Ind., vol. 101, Dec. 1, 1949, pp. 28-29.

3. OCCURRENCE, ORIGIN, MICROSTRUCTURE, PETROGRAPHY, AND CLASSIFICATION

TECHNICAL PAPERS

70. Toenges, A. L., Davis, J. D., Turnbull, L. A., and Schoff, J. M. Reserves, Bed Characteristics, and Coking Properties of the Willow Creek Coal Bed, Kemmerer District, Lincoln County, Wyo. Tech. Paper 673, 1945, 48 pp. 25 cents.
71. Toenges, A. L., Dowd, J. J., Turnbull, L. A., Davis,

J. D., SMITH, H. L., AND JOHNSON, V. H. Reserves, Petrographic and Chemical Characteristics, and Carbonizing Properties of Coal Occurring South of Dry Fork of Minnesota Creek, Gunnison County. near Paonia, Colo., and the Geology of the Area.

Tech. Paper 721, 1949, 48 pp. 30 cents.

72. Toenges, A. L., Dowd, J. J., Turnbull, L. A., Schopf, J. M., Cooper, H. M., Abernethy, R. F., YANCEY, H. F., AND GEER, M. R. Minable Reserves, Petrography, Chemical Characteristics, and Washability Tests of Coal Occurring in the Coos Bay Coal Field, Coos County, Oreg. Tech. Paper 707, 1948,

56 pp. 50 cents.

73. TOENGES, A. L., TURNBUIL, L. A., JOLLEY, T. R., SHIELDS, J. J., SMITH. H. L., O'DONNELL, H. J., COOPER, H. M., ABERNITHY, R. F., GANDRUD, B. W., RILEY, H. L., AND ROTHROCK, H. E. Investigation of Coal Deposits in the Fairview and Coal City Basins, Coosa Field, St. Clair County, Ala.: Reserves, Petrography, and Chemical Properties of Coals; Washability Characteristics of Coal From Fairview Bed; and Geology of Area. Tech. Paper

719, 1949, 104 pp. 50 cents.
74. TOENGES, A. L., TURNBULL, L. A., SCHOPF, J. M.,
YANCEY, H. F., JOHNSON, K. A., GEER, M. R., AND
NEWMAN, L. L. Exploration, Composition, and
Washing, Burning, and Gas-Producer Tests of a Coal Occurring Near Coaldale. Esmeralda County,

Nev. Tech. Paper 687, 1946, 79 pp. 30 cents.

75. Toenges, A. L., Turnbull, L. A., Williams, L., Smith, H. L., O'Donnell, H. J., Cooper, H. M., ABERNETHY, R. F., AND WAAGE, K. M. Investigation of Lower Coal Beds in Georges Creek and North Part of Upper Potomac Basins, Allegany and Garrett Counties, Md.: Reserves, Petrographic and Chemical Characteristics of Coals, and Stratigraphy of Area. Tech. Paper 725, 1949, 142 pp. \$4.75.

REPORT OF INVESTIGATIONS

76. Toenges, A. L., Turnbull, L. A., Neale, A., Schopf, J. M., ABERNETHY, R. F., AND QUINN, A. W. Investigation of Meta-Anthracite in Newport and Providence Counties, R. I.: Petrography, Chemical Characteristics, and Geology of Deposits. R. I. 4276, 1948, 37 pp.

INFORMATION CIRCULAR

77. THIESSEN, REINHARDT. What is Coal? I. C. 7397, 1947, 53 pp.

OTHER PUBLICATIONS

- 78. FIELDNER, A. C., AND SELVIG, W. A. Report of Committee D-5 on Coal and Coke. Proc. Am Soc. Test. Mat., vol. 45, 1945, pp. 255-256; vol. 46, 1946, pp. 372-374; vol. 47, 1947, pp. 350-351; vol. 48, 1948, pp. 389-394.
- 79. FOSTER, W. D., AND FEICHT, F. L. Mineralogy of Concretions From Pittsburgh Coal Seam, With Special Reference to Analcite. Am. Mineral., vol. 31, Nos. 7 and 8, July-August 1946, pp. 357-364.

80. McCartney, J. T. Electron Microscopy of Coal. Econ. Geol., vol. 44, No. 7, November 1949, pp. 617-

- 81. Parks, B. C. Petrographic Analysis of Coal by Particle-Count Method. Econ. Geol., vol. 44, No. 5, August 1949, pp. 376-424.
- Petrography of American Lignites. Ahs. in Econ. Geol., vol. 44, No. 7, November 1949, p. 645. Pres. at 30th Annual Meeting, Society of Economic Geologists, 1949.
- 83. PARKS, B. C., AND O'DONNELL, H. J. Determination of Petrographic Components of Coal by Examination of Thin Sections. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177, 1948, pp. 535-551; discussion, pp. 551-555; Coal Technol., Tech. Pub. 2492, November 1948, vol. 3, No. 4, 17 pp.
- 84. Schoff, J. M. Botanical Aspects of Coal Petrology: Coal From the Coos Bay Field in Southwestern Oregon. Am. Jour. Botany, vol. 34, No. 6, June 1947,
- Variable Coalification-The Processes Involved in Coal Formation. Bull. Geol. Soc. America, vol. 58, No. 12, part 2, 1947, pp. 1225-1226.
- 86. Schopf, J. M., and Cross, A. T. A Glacial Age Peat Deposit Near Pittsburgh. Am. Jour. Sci., vol. 245, No. 7, July 1947, pp. 421-433.
- 87. SELVIG, W. A., AND SAWYER, C. H. Report of Committee D-5 on Coal and Coke. Proc. Am. Soc. Test. Mat., vol. 49, 1949, pp. 401-403.

4. PHYSICAL AND CHEMICAL PROPERTIES OF COAL; PROXIMATE AND UL-TIMATE ANALYSES, CALORIFIC VALUES, ASH ANALYSES AND FUSING TEMPERATURES: OXIDATION AND SPONTANEOUS HEATING: PLASTIC PROPERTIES: AND RESINS AND RARE ELEMENTS IN COAL

TECHNICAL PAPERS

88. DAVIS. J. D., REYNOLDS, D. A., BREWER, R. E., NAUGLE, B. W., AND WOLFSON, D. E. Effect of Oxidation Upon the Carbonizing Properties of Pocahontas No. 3- and No. 4-Bed Coals From Eastgulf, Raleigh County, W. Va. Tech. Paper 702, 1947, 18 pp. 10 cents.

89. ELDER, J. L., SCHMIDT, L. D., STEINER, W. A., AND DAVIS, J. D., Schmin, E. B., Sienker, W. A. AND PAVIS, J. D. Relative Spontaneous Heating Tend-encies of Coal. Tech. Paper 681, 1945, 24 pp. (Out of print); excerpts, Mechanization, vol. 10. No. 1, January 1946, p. 117; Am. Gas Assoc. Monthly, vol. 27. September 1945, pp. 411-414.

90. FIELDNER, A. C., ANDREWS, D. A., HENDRICKS, T. A., HUDDLE, J. W., BELL, C. H., ANDERSON, R. L., SNYDER. N. H., COOPER. H. M., ABERNETHY, R. F., TARPLEY, E. C., AND SWINGLE, R. J. Analyses of Arizona. California, Idaho, Nevada, and Oregon Coals. Tech. Paper 696, 1947, 83 pp. 25 cents.

- 91. FIELDNER, A. C., ANDREWS, D. A., HUDDLE, J. W., Toenges, A. L., Bell, C. H., Anderson, R. L., Snyder, N. H., Cooper, H. M., ABERNETHY, R. F., AND TARP-LEY, E. C. Analyses of Michigan, North Dakota, South Dakota, and Texas Coals. Tech. Paper 700, 1948, 106 pp. 35 cents.
- 92. FIELDNER, A. C., AVERITT, PAUL, TOENGES, A. L., OLIN. H. L., BELL, C. H., SNYDER, N. H., COOPER, H. M., ABERNETHY, R. F., AND TARPLEY, E. C. An-alyses of Iowa Coals. Tech. Paper 706, 1949, 65 pp. 25 cents.
- 93. FIELDNER, A. C., GATES, G. O., BELL, C. H., ANDER-SON, R. L., SNYDER, N. H., COOPER, H. M., ABERNETHY, R. F., Tarpley, E. C., and Swingle, R. J. Analyses of Alaska Coals. Tech. Paper 682, 1946, 114 pp. 25 cents.
- 94. FIELDNER, A. C., NELSON, W. A., TOENGES, A. L., FRASER, THOMAS, CRENTZ, W. L., ANDERSON, R. L., BELL, C. H., SNYDER, N. H., COOPER, H. M., ABER-NETHY, R. F., TARPLEY, E. C., AND SWINGLE, R. J. Analyses of Tennessee Coals (Including Georgia). Tech. Paper 671, 1945, 243 pp. 35 cents.
- 95. Selvig, W. A. Resins in Coal. Tech. Paper 680, 1945, 24 pp. 10 cents.
- 96. Selvig, W. A., and Gibson, F. H. Analyses of Ash From Coals of the United States. Tech. Paper 679, 1945, 20 pp. 10 cents: Summary in Combustion, vol. 17, No. 4, October 1945, p. 57.
- 97. TOENGES, A. L., DAVIS, J. D., TURNBULL, L. A., AND Schopf, J. M. Reserves, Bed Characteristics, and Coking Properties of the Willow Creek Coal Bed, Kemmerer District, Lincoln County, Wyo. Tech. Paper 673, 1945, 48 pp. 25 cents.
- 98. Toenges, A. L., Dowd, J. J., Turnbull, L. A., DAVIS, J. D., SMITH, H. L., AND JOHNSON, V. H. Reserves, Petrographic and Chemical Characteristics. and Carbonizing Properties of Coal Occurring South of Dry Fork of Minnesota Creek, Gunnison County, Near Paonia, Colo., and the Geology of the Area. Tech. Paper 721, 1949, 48 pp. 30 cents.

99. Toenges, A. L., Dowd, J. J., Turnbull, L. A., Schopf, J. M., Cooper, H. M., Abernethy, R. F., YANCEY, H. F., AND GEER, M. R. Minable Reserves. Petrography, Chemical Characteristics, and Washability Tests of Coal Occurring in the Coos Bay Coal Field, Coos County, Oreg. Tech. Paper 707, 1948. 56 pp. 50 cents.

100. TOENGES, A. L., TURNBULL, L. A., AND COLE, W. A. Exploration, Reserves. Bed Characteristics, and Strip-Mining Possibilities of a Lignite Deposit Near Toledo, Lewis County, Wash. Tech. Paper 699, 1947.

55 pp. 35 cents.

- 101. TOENGES, A. L., TURNBULL, L. A., JOLLEY, T. R., SHIELDS, J. J., SMITH, H. L., O'DONNELL, H. J., COOPER, H. M., ABERNETHY, R. F., GANDRUD, B. W., RILEY, H. L., AND ROTHROCK, H. E. Investigation of Coal Deposits in the Fairview and Coal City Basins. Coosa Field, St. Clair County, Ala.; Reserves, Petrography, and Chemical Properties of Coals; Washability Characteristics of Coal From Fairview Bed: and Geology of Area. Tech. Paper 719, 1949, 104 pp. 50 cents
- 102. Toenges, A. L., Turnbull, L. A., Schopf. J. M., YANCEY, H. F., JOHNSON, K. A., GEER, M. R., AND NEWMAN, L. L. Exploration, Composition, and Washing, Burning, and Gas-Producer Tests of a Coal Occurring Near Coaldale, Esmeralda County, Nev. Tech. Paper 687, 1946, 79 pp. 30 cents.

 103. Toenges, A. L., Turnbull, L. A., Williams, Lloyd.

SMITH, H. L., O'DONNELL, H. J., COOPER, H. M., ABERNETHY, R. F., AND WAAGE, K. M. Investigation of Lower Coal Beds in Georges Creek and North Part of Upper Potomac Basins, Allegany and Garrett Counties, Md.: Reserves, Petrographic and Chemical Characteristics of Coals, and Stratigraphy of Area. Tech. Paper 725, 1949, 142 pp. \$4.75.

DATA BOOKS

104. FIELDNER, A. C., SWEENY, H. P., RICE, W. E., AND MOBAN, H. E. Typical Analyses, Bituminous Coals Produced in District 9 (Western Kentucky). Data

Book 6, vol. 6, 1945, 32 pp. 20 cents. 105. Fieldner, A. C., Sweeny, H. P., and Flynn, G. J., Jr. Typical Analyses, Bituminous Coals Produced in Districts 12, 14, and 15 (Arkansas, Iowa, Kansas, Missouri, Oklahoma, and Texas). Data Book 7, vol. 7, 1946, 74 pp. 25 cents.

CODE OF FEDERAL REGULATIONS

106. BUREAU OF MINES. Helium and Coal. Part 10. Coal Analysis; Fees and Conditions. Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. A, pp. 11–12, incl.

REPORTS OF INVESTIGATIONS

107. COOPER, H. M., TARPLEY, E. C., AND ABERNETHY, R. F. Determination of Moisture in Coal With the Brabender Semiautomatic Tester. R. I. 4304, 1948, 15 pp.

- 108. COOPER, H. M., TARPLEY, E. C., AND ABERNETHY, R. F. Heating-Value Loss of Coal on Air-Drying, R. I. 4197, 1948, 6 pp.
- 109. Schmidt, L. D., and Seymour, W. A Rapid Method for Determining Surface Moisture in Coal. R. I. 3811, 1945, 11 pp.: disc. by David Brownlie, in Steam Eng. (London), vol. 15, No. 170. November 1945, pp. 58-60; summary, Am. Gas Assoc. Monthly, vol. 27, July-August 1945, pp. 355-358; summary, Blast Fur. and St. Plant, vol. 33, No. 7, July 1945, p. 858; abs. in Steam Eng., vol. 15, November 1945, pp. 58-60.
- 110. Selvig, W. A., and Ode, W. H. An Investigation of a Laboratory Test for Determination of the Free-Swelling Index of Coal (revision of R. I. 3989). R. I. 4238, 1948, 11 pp.
- 111. Toenges, A. L., Turnbull, L. A., Neale, Arthur, Schoff, J. M., Abernethy, R. F., and Quinn, A. W. Investigation of Meta-Anthracite in Newport and Providence Counties, R. I.: Petrography, Chemical Characteristics, and Geology of Deposits. R. I. 4276, 1948, 37 pp.
- 112. WINDES, S. L. Physical Properties of Mine Rock. Part 1. R. I. 4459, 1949, 79 pp.

INFORMATION CIRCULAR

113, FLYNN, G. J., Jr. Average Heating Value of American Coals by Rank and by States. I. C. 7538, 1949, 11 pp.

- 114. Brewer, R. E. Plastic, Agglutinating, Agglomerating, and Swelling Properties of Coals. Chap. 6, Chemistry of Coal Utilization, John Wiley & Sons, Inc., New York, N. Y., vol. I, 1945, pp. 160-309.
- JONAKIN, J., COHEN, PAUL, COREY, R. C., AND JAIN,
 Measurement of the Reactivity of Solid Fuels by the Crossing-Point Method. Proc. Am. Soc. Test. Mat., vol. 48, 1948, pp. 1269-1289.
- Mat., vol. 48, 1948, pp. 1269-1289.

 116. McCabe, L. C. Disc. of "Recovery of Resin from Utah Coal," by Ernest Klepetko. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177, 1948, p. 447.
- Min. and Met. Eng., Coal Div., vol. 177, 1948, p. 447, 117, SELVIG, W. A., AND GIBSON, F. H. Calorific Value of Coal. Chap. 4, Chemistry of Coal Utilization, John Wiley & Sons, Inc., New York, N. Y., vol. I, 1945, pp. 132-144.
- 118. YANCEY, H. F., AND GEER, M. R. Hardness, Strength, and Grindability of Coal. Chap. 5, Chemistry of Coal Utilization, John Wiley & Sons, Inc., New York, N. Y., vol. I, 1945, pp. 145-159.

5. GASES AND DUSTS

A. ORIGIN, ABSORPTION, EVOLUTION, COMPOSITION, SAMPLING, AND ANALYSIS

BULLETIN

119. ASH, S. H., AND FELEGY, E. W. Analyses of Complex Mixtures of Gases. Application To Control and Extinguish Fires and To Prevent Explosions in Mines, Tunnels, and Hazardous Industrial Processes. Bull, 471, 1948, 202 pp. 75 cents.

TECHNICAL PAPER

120. Johnson, L. H. Dust Problems in the Mines of the Pennsylvania Anthracite Region. Tech. Paper 704, 1947, 34 pp. 15 cents.

REPORTS OF INVESTIGATIONS

121. Brown, C. E., AND FEICHT, F. L. Size of Smallest Dust Particles Revealed by Various Microscopic Systems. R. I. 3821, 1945, 11 pp.

122. Brown, C. E., AND SCHRENK, H. H. Relation Between and Precision of Dust Counts (Lightand Dark-Field) From Simultaneous Impinger, Midget-Impinger, Electric-Precipitator, and Filter-Paper Samples. R. I. 4568, 1949, 35 pp.

INFORMATION CIRCULARS

123. Brinkley, R. F., and Brinkley, S. R., Jr. Determination of the Size of Submicroscopic Particles by X-Rays, by A. Guinier (trans. from the Jour. chim. phys., vol. 40, Nos. 3-4, pp. 133-150, July-

August 1943). I. C. 7391, 1946, 17 pp.

124. Brown, C. E., Beatty, R. L., and Kirby, T. B.
Dust-Counting Cells. I. C. 7331, 1945, 9 pp. (Out

of print.)

125. HARMON, J. P. Wetting-Agent Concentration in a Water Solution Determined by the Drop-Number Method. I. C. 7351, 1946, 6 pp.

OTHER PUBLICATIONS

126. ALBRIGHT, C. W., HOLDEN, J. H., SIMONS, H. P., AND SCHMIDT, L. D. Pneumatic Feeder for Finely Divided Solids. Chem. Eng., vol. 56, No. 6, June 1949, pp. 108-111.

127. DOTSON, J. M., HOLDEN, J. H., SEIBERT, C. B., SIMONS, H. P., AND SCHMIDT, L. D. New Method Measures the Solid: Gas Ratio in High-Solid Flow. Chem. Eng., vol. 56, No. 10, October 1949, pp. 129-130.

B. INFLAMMABILITY AND EXPLOSIBILITY, INCLUDING TESTING METHODS

TECHNICAL PAPER

128. GREENWALD, H. P., HOWARTH, H. C., NAGY, JOHN, AND HARTMANN, IRVING. Tests on the Ignition of Natural Gas-Air Mixtures by Permissible Explosives in the Experimental Coal Mine. Tech. Paper 716. 1949, 38 pp. 15 cents.

MINERS' CIRCULAR

129. FORBES, J. J., AND GROVE, G. W. Protection Against Mine Gases (revised 1948). Miners' Circ. 35, 1948, 58 pp. 20 cents.

REPORTS OF INVESTIGATIONS

- 130. Busch, H. W., Berger, L. B., and Schrenk, H. H. The "Carbon-Oxygen Complex" as a Possible Initiator of Explosions and Formation of Carbon Monoxide in Compressed-Air Systems. R. I. 4465. 1949. 22 pp.
- 131. HARTMANN, IRVING, AND NAGY, JOHN. Effect of Relief Vents on Reduction of Pressures Developed by Dust Explosions. R. I. 3924, 1946, 22 pp.
- 132. HOWARTH, H. C., NAGY, JOHN, HARTMANN, IRVING. GREENWALD, H. P., AND LEWIS, BERNARD. Tests in The Experimental Coal Mine To Determine Requirements for Preventing Propagation of Coal-Dust Explosions in Rooms. R. I. 4195, 1948, 12 pp.
- 133. JONES, G. W., AND SCOTT, G. S. Limits of Inflammability and Ignition Temperatures of Naphthalene. R. I. 3881, 1946, 5 pp.

INFORMATION CIRCULARS

- 134. Brown, H. R. Industrial-Dust Explosions. I. C. 7309, 1945, 7 pp.; Heat. and Vent., vol. 43, March 1946, pp. 73-75; abs. in Safety Eng., vol. 91, June 1946, pp. 16-17, 35-37.
- 135. GROVE, G. W., AND FREAS, G. L. Small Portable Coal-Dust Explosion Gallery. I. C. 7520, 1949, 3 pp.

- 136. BLANC. M. V., GUEST, P. G., VON ELBE, GUENTHER, AND LEWIS, BERNARD. Ignition of Explosive Gas Mixtures by Electric Sparks, I. Minimum Ignition Energies and Quenching Distances of Mixtures of Methane, Oxygen, and Inert Gases. Jour. Chem. Phys., vol. 15, No. 11, November 1947, pp. 798-802.
- Ignition of Explosive Gas Mixtures by Electric Sparks. III. Minimum Ignition Energies and Quenching Distances of Mixtures of Hydrocarbons and Ether With Oxygen and Inert Gases. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 363-367.
- 138, Brown, H. R. Dust Explosions: What Firemen Should Know About Them. Firemen (Nat. Fire Protec. Assoc.), vol. 16, No. 4, April 1949, pp. 6-7,
- 9. ——. Explosion Venting Meeting and Demonstration. Nat. Fire Protec. Assoc. Quart., vol. 41. No. 3, January 1948, pp. 149-152.
- 140. Industrial Dust Explosions. Heat. and Vent., vol. 43, March 1946, pp. 73-75.
- 141. CASSEL, H. M., DAS GUPTA, A. K., AND GURUSWAMY, S. Factors Affecting Flame Propagation Through Dust Clouds. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 185-190.

142. HARRIS, M. E., GRUMER, J., VON ELBE, GUENTHER, AND LEWIS, BERNARD. Burning Velocities, Quenching, and Stability Data on Nonturbulent Flames of Methane and Propane With Oxygen and Nitrogen. Application of the Theory of Ignition, Quenching, and Stabilization to Flames of Propane and Air. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 80-89.

143. HARTMANN, IRVING. Explosion and Fire Hazards of Combustible Dusts. Chap. 13, Industrial Hygiene and Toxicology, Interscience Publishers, Inc., New York, and Interscience Publishers, Ltd., London, vol.

1, sec. 2, 1948, pp. 439-454.

144. ———. Recent Research on the Explosibility of Dust Dispersions. Ind. Eng. Chem., vol. 40. No. 4, April 1948, pp. 752-758.

145. ——. Why Have Dust Explosions? Disc. in Chem. Ind., vol. 60, June 1947, p. 1009. Pres. at meeting, American Chemical Society, 1947.

146. Jones, G. W. Fire and Explosion Hazards of Combustible Gases and Vapors. Chap. 13, Industrial Hygiene and Toxicology, Interscience Publishers, Inc., New York, N. Y., and Interscience Publishers, Ltd., London, England, vol. 1, sec. 1, 1948, pp. 409–438.

147. Lewis, Bernard. Introduction. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 1-2.

148. Lewis, Bernard, and von Elbe, Guenther. Ignition of Explosive Gas Mixtures by Electric Sparks. II. Theory of the Propagation of Flame From an Instantaneous Point Source of Ignition. Jour. Chem. Phys., vol. 15, No. 11, November 1947, pp. 803-808.

149.—. Ignition and Flame Stabilization in Gases. Trans. Am. Soc. Mech. Eng., vol. 70. No. 4, May 1948, pp. 307-314; discussion, pp. 314-316.

150. ———. The Mechanism of Chain Initiation in the Thermal Reaction Between Hydrogen and Oxygen. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 484–493.

151. Scott, G. S., JONES, G. W., AND Scott, F. E. Determination of Ignition Temperatures of Combustible Liquids and Gases—Modification of the Drop Method Apparatus. Anal. Chem., vol. 20, No. 3, March 1948,

pp. 238-241.

152. VON ELBE, GUENTHER, AND LEWIS, BERNARD.
Theory of Ignition, Quenching, and Stabilization of Flames of Nonturbulent Gas Mixtures. 3d Symposium on Combustion and Flame and Explosion Phenomena, Williams & Wilkins Co., Baltimore, 1949, pp. 68-79.

153. VON ELBE, GUENTHER, AND MENTSER, MORRIS. Further Studies of the Structure and Stability of Burner Flames. Jour. Chem. Phys., vol. 13, No. 2, February 1045, pp. 89, 100.

February 1945, pp. 89-100.

C. PHYSIOLOGICAL EFFECTS, PROTECTIVE DEVICES, AND TREATMENT

FEDERAL REGISTER

154. Bureau of Mines. Supplied-Air Respirators. Miscellaneous Amendments. Code of Federal Regulations 30. part 12, Federal Register, vol. 13, part 2, 1948. pp. 1339-1340, approved Feb. 27, 1948.

155. ——. Procedure for Testing Nonemergency Gas Respirators (Chemical Cartridge Respirators) for Permissibility. Schedule 23, Federal Register, vol. 10, No. 9, Jan. 12, 1945, 5 pp.; vol. 10, No. 27, Feb. 7, 1945, 1 p.

REPORTS OF INVESTIGATION

156. OWINGS, C. W. Suggested Methods for Installing Dust-Allaying Equipment in Bituminous-Coal Mines. R. I. 3843, 1945, 31 pp. (Out of print.)

157. THOMAS, EDWARD, AND HARTMANN, IRVING. Use of Salts to Allay Dust on Shuttle-Car Roadways in Coal Mines. R. I. 3828, 1945, 15 pp.

INFORMATION CIRCULARS

158. Berger, L. B. Supplemental List of Respiratory Protective Devices Approved by the Bureau of Mines, Additions to List Published in I. C. 7444. I. C. 7513, 1949, 3 pp.

159. Grove, G. W., and Quenon, E. E. Approval of Newly Developed Self-Contained Breathing Apparatus, Instructions in Its Care and Use, and Training Procedure. I. C. 7413, 1947, 18 pp.

160. McCleary, E. H., Price, M. W., and Mather, J. V. Safeguarding Underground Workmen From Noxious Gases Resulting From Blasting in Strip Mines. 1. C. 7503, 1949, 8 pp.

161. SCHRENK, H. H. Interpretation of Permissible Limits in the Breathing of Toxic Substances in Air. I. C. 7457, 1948, 7 pp.

162. ——. List of Respiratory Protective Devices Approved by the Bureau of Mines. I. C. 7444, 1948, 14 pp.

- 163. PEARCE, S. J., AND SCHRENK, H. H. Significance of Bureau of Mines Approval in Selection of Respiratory Devices. Safety Eng., vol. 93, No. 1, January 1947, pp. 54-59.
- 164. SCHRENK, H. H., AND PEARCE, S. J. Testing Respiratory Protective Devices. Trans. 34th Nat. Safety Cong., 1946, vol. 1, part 1, pp. 145-152.

6. MINING, INCLUDING INVESTIGATIONS OF MINABLE RESERVES

BULLETIN

165. Toenges, A. L., Kelly, L. W., Davis, J. D., REYNOLDS, D. A., Fraser, Thomas, Crentz, W. L., AND ARERNETHY, R. F. Coals of Chile. Bull. 474, 1048, 106 pp. 25 coars. 1948, 106 pp. 35 cents.

TECHNICAL PAPERS

166. Toenges, A. L., Davis, J. D., Turnbull, L. A., AND SCHOPF, J. M. Reserves, Bed Characteristics, and Coking Properties of the Willow Creek Coal Bed. Kemmerer District, Lincoln County, Wyo. Tech. Paper 673, 1945, 48 pp. 25 cents.

167. TOENGES, A. L., DOWD, J. J., TURNBULL, L. A., DAVIS, J. D., SMITH, H. L., AND JOHNSON, V. H. Reserves, Petrographic and Chemical Characteristics, and Carbonizing Properties of Coal Occurring South of Dry Fork of Minnesota Creek, Gunnison County, Near Paonia, Colo., and the Geology of the Area. Tech. Paper 721, 1949, 48 pp. 30 cents.

- 168. TOENGES, A. L., DOWD, J. J., TURNBULL, L. A., SCHOPF, J. M., COOPER, H. M., ABERNETHY, R. F., YANCEY, H. F., AND GEER, M. R. Minable Reserves, Petrography, Chemical Characteristics, and Washability Tests of Coal Occurring in the Coos Bay Coal Field, Coos County, Oreg. Tech. Paper 707, 1948, 56 pp. 50 cents.
- 169. Toenges, A. L., Turnbull, L. A., and Cole, W. A. Exploration, Reserves, Bed Characteristics, and Strip-Mining Possibilities of a Lignite Deposit Near Toledo, Lewis County, Wash. Tech. Paper 699, 1947, 55 pp. 35 cents.
- 170. Toenges, A. L., Turnbull, L. A., Jolley, T. R., SHIELDS, J. J., SMITH, H. L., O'DONNELL, H. J., COOPER, H. M., ABERNETHY, R. F., GANDRUD, B. W., RILEY, H. L., AND ROTHROCK, H. E. Investigation of Coal Deposits in the Fairview and Coal City Basins, Coosa Field, St. Clair County, Ala.; Reserves, Petrography, and Chemical Properties of Coals: Washability Characteristics of Coal From Fairview Bed; and Geology of Area. Tech. Paper 719, 1949, 104 pp. 50 cents.
- 171. TOENGES, A. L., TURNBULL, L. A., SCHOPF, J. M., YANCEY, H. F., JOHNSON, K. A., GEER, M. R., AND NEWMAN, L. L. Exploration, Composition, and Washing, Burning, and Gas-Producer Tests of a Coal Occurring Near Coaldale, Esmeralda County, Nev. Tech. Paper 687, 1946, 79 pp. 30 cents.
- 172. Toenges, A. L., Turnbull, L. A., Williams, Lloyd, Smith, H. L., O'Donnell, H. J., Cooper, H. M., Abernethy, R. F., and Waage, K. M. Investigation of Lower Coal Beds in Georges Creek and North Part of Upper Potomac Basins, Allegany and Garrett Counties, Md.: Reserves, Petrographic and Chemical Characteristics of Coals, and Stratigraphy of Area. Tech. Paper 725, 1949, 142 pp. raphy of Area. **\$4**.75.

MINERS' CIRCULAR

173. Bureau of Mines. Accidents From Falls of Roof and Coal in Bituminous-Coal Mines. Coal-Mine Accident-Prevention Course—Section 2. Miners' Circ. 48, 1945, 114 pp. 30 cents.

CODE OF FEDERAL REGULATIONS

174. BUREAU OF MINES. Helium and Coal. Part 9. Payments Required From Owners of Private Lands Upon Which the Bureau of Mines Performs Exploration or Development Work to Investigate Known Coal Deposits. Code of Federal Regulations, 1949 ed., ch. 1, subch. A, p. 11. Sec 60 Stat. 373.

REPORTS OF INVESTIGATIONS

175. BUCH, J. W., AND ALLAN, ANDREW, JR. Anthracite Mechanical Mining Investigations. Progress Report Preliminary Underground Tests of the Bureau of Mines Scraper-Shaker Loading Machine for Driving Gangways. R. I. 4500, 1949, 9 pp.

Anthracite Mechanical Mining Investigations. Progress Report 2. Preliminary Testing of Eickhoff Shearing Machine, Model DEK. R. I.

4501, 1949, 14 pp.

177. COULTER, D. M. Coking Coal Deposits on Lookout Mountain, Dekalb and Cherokee Counties, Ala.

R. I. 4030, 1947, 89 pp. 178. Duvall, W. I. Stress Analysis Applied to Underground Mining Problems. Part I. Stress Analysis Applied to Single Openings. R. I. 4192, 1948, 18 pp.

- —. Stress Analysis Applied to Underground Mining Problems. Part II. Stress Analysis Applied to Multiple Openings and Pillars. R. I. 4387, 1948, 11 pp.
- 180. JULIHN, C. E., AND MOON, L. B. Summary of Bureau of Mines Exploration Projects on Deposits of Raw Material Resources for Steel Production. R. I. 3801, 1945, 35 pp.
- 181. Long, A. E., and Agnew, W. G. Effect of Lubricating Agents in a Diamond-Drilling-Bit Coolant and Cuttings-Removal Medium. R. I. 3793, 1945,
- 182. MARSTRANDER, H., APELL, G. A., RUTLEDGE, F. A., AND HULBERT, J. H. Exploration of Leasing Block No. 28 in the Nenana Coal Field, Alaska. R. I. 3951, 1946, 21 pp.
- 183. OBERT, LEONARD, AND DUVALL, W. I. A Gage and Recording Equipment for Measuring Dynamic Strain in Rock. R. I. 4581, 1949, 11 pp.
- ... Microseismic Method of Predicting Rock Failure in Underground Mining. Part I. General Method. R. I. 3797, 1945, 7 pp.
- The Microseismic Method of Predicting Rock Failure in Underground Mining. Part II. Laboratory Experiments. R. I. 3803, 1945, 14 pp.
- 186. OBERT, LEONARD, WINDES, S. L., AND DUVALL, W. I. Standardized Tests for Determining the Physical Properties of Mine Rock. R. I. 3891, 1946, 67 pp.
- 187. SANFORD, R. S., AND PIERCE, H. C. Exploration of Coal Deposits of the Point Barrow and Wainwright Areas, Northern Alaska. R. I. 3934, 1946, 17 pp. 188. Toenges, A. L., and Fish, E. L. Coal-Mining
- Methods and Practices in Western Arkansas, Preliminary Investigation. R. I. 4448, 1949, 25 pp.
- 189. Toenges, A. L., and Jolley, T. R. Investigation of Coal Deposits for Local Use in the Arctic Regions of Alaska and Proposed Mine Development. R. I. : 4150, 1947, 19 pp.

42-4:

190. TOENGES, A. L., AND JOLLEY, T. R. Investigation of Coal Deposits in South Central Alaska and the

Kenai Peninsula. R. 1, 4520, 1949, 37 pp.

191. TOENGES, A. L., TURNBULL, L. A., DAVIS. J. D., AND REYNOLDS, D. A. Investigation of Coal Deposits in the Coal Creek District. Gunnison County. Colo. Progress Report 1. R. I. 4104, 1947, 20 pp. (Out of print.)

192. Toenges, A. L., Turnbull, L. A., Neale, Arthur, SCHOPF, J. M., ABERNETHY, R. F., AND QUINN, A. W. Investigation of Meta-Anthracite in Newport and Providence Counties, R. I.; Petrography, Chemical Characteristics, and Geology of Deposits. R. I. 4276,

193. TURNBULL, L. A., SHIELDS, J. J., DOWD, J. J., FISH, E. L., AND TOENGES, A. L. Use of Scrapers and Other Light Earth-Moving Equipment in Bituminous-Coal Strip Mining. R. I. 4033, 1947, 37 pp.

INFORMATION CIRCULARS

194. ARENTZEN, E. M. Description of the Eickhoff-Schrämlader Longwall Coal-Cutting and Loading

Machine. I. C. 7390, 1946, 5 pp.

195. Artz, R. T., and Simpson, O. V. Emergency
Escapeways From Coal Mines. I. C. 7478, 1948, 11

- 196. ASH, S. H., AND WESTFIELD, JAMES. Backfilling Problem in the Anthracite Region As It Relates to Conservation of Anthracite and Prevention of Subsidence. I. C. 7342, 1946, 18 pp.
- 197. AYVAZOGIOU, W., AND SKITSKY, V. Bibliography of Russian Literature on Geophysical Exploration, 1929-41. I. C. 7323, 1945, 44 pp. (Out of print.) 198. Buch, J. W. Design and Operation of the Coal
- Planer, Ruhr District, Germany. I. C. 7377, 1946. 20 pp.

199. Cole, W. A. Shaft Sinking by Stripping Churn-Drill Holes. I. C. 7308, 1945, 6 pp.

200. EAST, J. H., JR. Information on Coal Mining in Spain. I. C. 7396, 1947, 27 pp.
201. HARRINGTON, D., AND EAST, J. H., JR. Wash and Change Houses at American Mines. I. C. 7423, 1947,

44 pp.

202. MITCHELL, G. W., AND JOHNSON, A. C. Shaft-Sinking Methods and Costs and Cost of Plant and Equipment at the Fad Shaft, Eureka Corp., Ltd., Eureka, Nev. I. C. 7495, 1949, 17 pp.

203. SHIELDS, J. J., AND TURNBULL, L. A. Slope Sinking Through Water-Bearing Strata at Mine 3, Bell & Zoller Coal & Mining Co., Williamson County, Ill.

I. C. 7509, 1949, 5 pp.

204. THOMAS, EDWARD, BARRY, A. J., AND METCALFE, ARTHUR. Suspension Roof Support. Progress Re-

port 1. I. C. 7533, 1949, 13 pp.

205. THOMAS, EDWARD, SEELING, C. H., PERZ, FRANK, AND HANSEN, M. V. Control of Roof and Prevention of Accidents From Falls of Rock and Coal. Suggested Roof Supports for Use at Faces in Conjunction With Mechanical Loading. I. C. 7471, 1948,

9 pp. 206. Turnbull, L. A., and Toenges, A. L. Mechanical Mining in Some Bituminous-Coal Mines. Progress Report 5. Extraction of Pillars With Mechanized Equipment. 1. C. 7527, 1949, 59 pp.; abstract, Coll.

Guard., vol. 179, Oct. 13, 1949, p. 458.

207. YOUNG, W. H., AND ANDERSON, R. L. Thickness of Bituminous Coal and Lignite Seams Mined in the United States in 1945. I. C. 7442, 1947, 17 pp.; Mechanization, vol. 11, No. 7, July 1947, pp. 89-90.

OTHER PUBLICATIONS

208. Anderson, R. L. Full-Seam Mining With Mechanical Loading. Min. Cong. Jour., vol. 33, No. 5, May 1947, pp. 41-44. 209. ASH, S. H., AND EATON, W. L. Barrier Pillars in the Anthracite Region of Pennsylvania. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177. 1948, pp. 62-79; disc., pp. 80-81; Coal Technol., Tech. Pub. 2289, vol. 2, No. 4, November 1947, 20 pp. 210. Benson, James. Experience in German Coal Mines. Proc. Kentucky Min. Inst. 1948-50, pp. 111-130

111-130.

J. W. Mining Thin, Steeply Pitching 211. Висн. Seams With the Coal Planer in the German Ruhr District. Mechanization, vol. 9, No. 11, November 1945. pp. 92-97.

- Trends in Anthracite Underground Mine 212. -Mechanization. Trans. 7th Annual Anthracite Conf., Lehigh Univ., Bethlehem, Pa., May 5-6, 1949. pp. 195-206.
- 213. Dovidas, C. M. Recovering Mining Machinery From Squeezed Area. Min. Cong. Jour., vol. 31. August 1945, pp. 23-25.
- 214. Evans, W. J., Pasquan, J. E., and Johnson, L. H. Fog Gun for Safer Shooting. Coal Age, vol. 52, November 1947, pp. 93-95.
- 215. GARDNER, E. D. Annual Review-Mining Practice. Min. and Met., vol. 29, 1948, pp. 76-79.
- 6. ——. Mining Methods Sessions Unusually Good, With Lively Discussion of Most Papers. Min. 216. -and Met., vol. 27, April 1946, pp. 218-219.
- 217. GREENWALD, H. P. Disc. of "A New Method for Determining Hazardous Roof Conditions," by C. G. Brennecke and R. T. Gallagher. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 168, 1946, p. 98; Coal Technol., Tech. Pub. 2088, vol. 1, No. 4, November 1946, p. 15.
- Disc. of "Research on Strata Control in Great Britain," by D. W. Phillips. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 168, 1946, pp. 49-50; Coal Technol., vol. 1, No. 4, November 1946. pp. 23-24.
- Surface Factors Affecting Pillar Recovery (a Report of the Committee on Roof Action, Coal Div., Am. Min. Cong. t. Min. Cong. Jour., vol. 35. No. 3, March 1949, pp. 54-57.
- What Roof Conditions Permit Pillar Recovery? Min. Cong. Jour., vol. 33, No. 3, March 1947, p), 56-77.
- 221. HAWKINS, R. A. Australian Coal Mining. Min.
- and Met., vol. 26, August 1945, pp. 382-384. 222. Huleatt, W. P. Exploration by Federal Bureau of Mines in Colorado. 1946 Mining Yearbook. Colorado Min. Assoc., pp. 21-22.
- 223. McCabe, L. C. Belgian and German Coal Mining During the European Campaign. Proc. Illinois Min. Inst., 1946, pp. 53-63; abstract, Coal Age, vol. 51. December 1946, p. 134.
- 224. Moon, L. B. Mining Exploration. (Abs. of I. C. 7312.) Queensland Govt. Min. Jour., vol. 46, No. 526, Aug. 20, 1945, pp. 220-221.
- 225. Thomas, Edward. Conventional Timbering vs. Suspension Supports. Trans. 36th Nat. Safety Cong., vol. 8, 1948, pp. 24-26; Mechanization, vol. 13, No. 2, February 1949, pp. 147-152; section in Bull. 489, 1950, pp. 175-181.
- Methods of Roof Control at Face Regions and on Haulage Roads. Mentioned in Coal Age, vol. 53, No. 12, December 1948, p. 173. Pres. at meeting of Coal Mining Section, National Safety Council, Chicago, 1948.
- -. Suggestions for Roof Supports for Use 227 at Faces in Conjunction With Mechanical Mining. Proc. 38th Convention, Mine Insp. Inst. America, 1948, pp. 72-80.
- Suspension Roof Support for Coal-Mine Roadways. Coal Age, vol. 53, July 1948, pp. 87-88; Proc. Coal Min. Inst. America, 1949, pp. 14-25.

229. Toenges, A. L. Coal-Mine Development in Alaska. Min. Eng., Min. Trans. Sec., vol. 1, No. 10, October 1949, pp. 361-364; Trans. Am. Inst. Min. and Met. Eng., Min. Branch, Tech. Pub. 2686, vol. 184, 1949, pp. 361-364; discussion p. 425.

Rapid Progress. Min. and Met., vol. 27, July 1946.

pp. 398–395.

231. WALKER, W. D., Jr. Modern Methods of Roof Support—Face Areas. Proc. Coal Min. Inst. America, 1947, pp. 67-71.

232. WARNCKE, R. G. Observations on Postwar Safety Conditions in the Coal Mines of Japan. Proc. Coal

Min. Inst. America, 1948, pp. 72-88.

233. YANCEY, H. F. Mining in Europe: Wartime Coal Production and Utilization. Coal Age, vol. 50. No. 12, December 1945, pp. 115-118.

234. Young, L. E. Trends in Mechanical Mining of Bituminous Coal. Min. Cong. Jour., vol. 32, No. 2,

February 1946, pp. 77-83.

- 235. YOUNG, W. H., AND ANDERSON, R. L. Mine Size and Mechanization. Coal Age, vol. 54, June 1949, pp. 98-100.
- 236. Tons-per-Man Raised by Use of Machines at Bituminous Mines. Coal Age, vol. 51, April 1946, pp. 105-108.
- 237. Tons-per-Man Record Proves Worth of Mechanical Coal Loading. Coal Age, vol. 50, June 1945, pp. 101-107.

A. VENTILATION

TECHNICAL PAPER

238. McElroy, G. E. Design of Injectors for Low-Pressure Air Flow. Tech. Paper 678, 1945, 50 pp. 10 cents.

MINERS' CIRCULAR

239. BERGER, L. B., AND SCHRENK, H. H. Sampling and Analysis of Mine Atmospheres. Miners Circ. 34, 1948, 103 pp. 25 cents.

REPORT OF INVESTIGATIONS

240. McElroy, G. E. A Mine Air-Conditioning Chart. R. I. 4165, 1947, 23 pp. (Chart reproduced on larger scale in 1949, available from Publications Distribution Section, Bureau of Mines, Pittsburgh, Pa.)

INFORMATION CIRCULARS

241. BERGER, L. B. Ventilation Involved in the Use of Gasoline-Powered Equipment in Enclosed Spaces (Not in Mines or Tunnels). I. C. 7404, 1947, 8 pp.

242. FORBES, J. J., DAYENPORT, S. J., AND MORGIS, GENEVIEVE. Review of Literature on Conditioning Air for Advancement of Health and Safety in Mines. Part III. Methods of Controlling the Chemical and Physical Qualities of Underground Air. I. C. 7528, 1949, 57 pp.

243. SMITH, C. M. Routine Ventilation Surveying in South Wales Anthracite Mines. I. C. 7530, 1949,

11 pp.

244. SCHRENK, H. H. Interpretation of Permissible Limits in the Breathing of Toxic Substances in Air. 1. C. 7457, 1948, 7 pp.

OTHER PUBLICATIONS

245. ARTZ, R. T. Ventilation and Other Safety Problems in Connection With Continuous Mining Equipment. Proc. Coal Min. Inst. America, 1949. pp. 56-61; Coal Age, vol. 54, No. 11, November 1949, pp. 94–95.

249883°--54----3

246. COURTNEY, E. F., AND JOHNSON, J. A. Mine-Ventilation Safety Door. Min. Cong. Jour., vol. 31, No. 6, June 1945, pp. 35-36.

247. GREENWALD, H. P. Disc. of "Use of Smoke Apparatus in Practical Mine-Ventilation Work,' A. T. Beckwith. Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177, 1948, p. 129.

248. Grove, G. W. Canned Air. Safety Eng., vol. 96, No. 6, December 1948, pp. 10–12, 45–46.

249. HARRINGTON, D. Mine Ventilation and Its Relation to Health and Safety. Heat. Pip. and Air Cond., vol. 17, May 1945, Am. Soc. Heat. and Vent. Eng. journal sec., pp. 275-281.

250. McElroy, G. E. Disc. of "Use of Smoke Apparatus in Practical Mine-Ventilation Work," by A. T. Beckwith, Trans. Am. Inst. Min. and Met. Eng., Coal Div., vol. 177, 1948. p. 128. 251. Owings, C. W. Suggested Limits of Air Dusti-

ness in Bituminous-Coal Mines. Mechanization, vol. 10, No. 11, November 1946, pp. 51-53, 144.

B. EXPLOSIONS, MINE FIRES, AND THEIR CONTROL

MINERS' CIRCULARS

252. Bureau of Mines. Explosive Accidents in Bituminous-Coal Mines. Coal-Mine Accident-Prevention Course—Section 5. Miners' Circ. 58, 1947, 82 pp. 25 cents.

253. FORBES, J. J., AND GROVE, G. W. Procedure in Sealing and Unsealing Mine Fires and in Recovery Operations Following Mine Explosions, Revised May 1948. Miners' Circ. 36, 1948, 84 pp. 30 cents.

CONGRESSIONAL PUBLICATIONS

254. ANKENY, M. J. Statement at Hearings on Mine Explosion at Centralia, Ill., before special subcommittee of the Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., pursuant to S. Res. 98, A Resolution to Investigate the Explosion at Centralia Coal Mine No. 5. Wamac, Ill., on March 25, 1947. Apr. 3, 4, 5, 10, 16, and 17, 1947, pp. 373-414. 255. Gallagher, W. A. Testimony at Investigation of

Mine Explosion at Centralia, Ill., before special subcommittee of the Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., pursuant to S. Res. 98, A Resolution to Investigate the Explosion at Centralia Coal Mine No. 5, Wamac, Ill., on March 25, 1947. Apr. 3, 4, 5, 10, 16, and 17, 1947, pp. 68-79.

256. Krug. J. A. Statement at Hearings on Mine Explosion at Centralia, Ill. Hearings entitled "Investigation of Mine Explosion at Centralia, Ill.," before a special subcommittee of the Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., pursuant to S. Res. 98, A Resolution to Investigate the Explosion at Centralia Coal Mine No. 5, Wamac, Ill., on March 25, 1947. Apr. 3, 4, 5, 10, 16, and 17, 1947, pp. 297-315.

257. Perz. Frank. Testimony at Investigation of Mine Explosion at Centralia, Ill., before special subcommittee of the Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., pursuant to S. Res. 98, A Resolution to Investigate the Explosion at Centralia Coal Mine No. 5, Wamac, Ill., on March 25, 1947. Apr. 3, 4, 5, 10, 16, and 17, 1947, pp. 40–63.

258. SAYERS, R. R. Statement at Investigation of Mine Explosion at Centralia, Ill., before special subcommittee of the Committee on Public Lands, U. S. Senate, 80th Cong., 1st sess., pursuant to S. Res. 98, A Resolution to Investigate the Explosion at Centralia Coal Mine No. 5, Wamac, Ill., on March 25, 1947. Apr. 3, 4, 5, 10, 16, and 17, 1947, pp. 414-427.

REPORTS OF INVESTIGATIONS

259. Denues, A. R. T. Powder-Powered Tools: The Firedamp Safety of Devices for Splicing Cables and Punching Rails. R. I. 4105, 1947, 11 pp.

INFORMATION CIRCULARS

- 260. FORBES, J. J., AND OWINGS, C. W. Use of Rock Dust and Water Under the Federal Mine Safety Code in Limiting Coal-Dust Explosions. I. C. 7421, 1947, 12 pp.
- 261. Grove. G. W., Griffith, F. E., and Burdelsky, H. R. Procedure Used in Fighting and Scaling a Fire in an Ohio Coal Mine and Recovery of the Mine by Air-Locking Methods. I. C. 7418, 1947, 18 pp.
- 262. Grove, G. W., AND QUENON, E. E. Outerop and Underground Mine Fires in Allegheny County, Pa. I. C. 7434, 1948, 6 pp.
- 263. Grove, G. W., and Simpson, O. V. Fire-Fighting Facilities at Four Pennsylvania Bituminous-Coal Mines. I. C. 7498, 1949, 17 pp.
- 264. HARRINGTON, D., AND EAST, J. H., JR. Burning Refuse Dumps at Coal Mines. I. C. 7439, 1948, 28
- 265. HARRINGTON, D., AND FENE, W. J. Coal-Mine Explosions and Coal- and Metal-Mine Fires in the United States During the Fiscal Year Ended June 30, 1944. I. C. 7330, 1945, 35 pp.
- 266. Harrington, D., Fene, W. J., and Humphrey, H. B. Coal-Mine Explosions and Coal- and Metal-Mine Fires in the United States During the Fiscal Year Ended June 30, 1945. I. C. 7359, 1946, 22 pp.
- 267. ———. Coal-Mine Explosions and Coal- and Metal-Mine Fires in the United States During the Fiscal Year Ended June 30, 1947. I. C. 7456, 1948, 21 pp.
- 268. Herbert, C. A., Gallagher, W. A., and Smith, F. J. Investigation of Fire in the Kings Mine, Princeton Mining Co., Princeton, Ind. I. C. 7491, 1949, 14 pp.

OTHER PUBLICATIONS

- 269. Ankeny, M. J. The Centralia Mine Disaster. Trans. 35th Nat. Safety Cong., 1947, vol. 8, pp. 22-27.
- 270. Brown, H. R. Dust Explosions Are Continuing To Increase. East. Und., vol. 50, No. 11, 1949, p. 24.
- 271. ——. Explosion Venting Meeting and Demonstration. Nat. Fire Protec. Assoc. Quart., vol. 41, No. 3, January 1948, pp. 149-152.
- 272. Mine Fires. Nat. Fire Protec. Assoc. Handbook of Fire Protection, Boston, Mass., 10th ed., ch. 70, 1948, pp. 1238-1242.
- 273. Grove, G. W. Control of Coal Dust and Use of Rock Dust To Prevent Mine Explosions. Proc. 17th All-Ohio Safety Congress, Industrial Commission of Ohio, Div. of Safety and Hygiene, 1947, pp. 459-466, discussion 466-469; abs., Engineering, vol. 164, July 4, 1947, p. 14.
- 274. ———. Mine Inspectors' Institute Holds 36th Annual Convention. Lessons To Be Learned From Recent Mine Explosions. Coal Age, vol. 51, July 1946, pp. 118. 120; Mechanization, vol. 10, No. 11, November 1946, pp. 95-96, 98-99.
- 275. HARTMANN, IRVING. Good Housekeeping Essential To Control Dust and Prevent Explosions. Steel, vol. 120, May 12, 1947, p. 121.
- 276. HOWARTH, H. C., NAGY, JOHN, AND HARTMANN, IRVING. Experiments in the Control of Coal-Mine Fires. Proc. 39th Convention, Mine Insp. Inst. America, 1949, pp. 68-75.

277. MOYER, F. T. Explosions Mar Safety Record in 1947. Coal Age, vol. 53, February 1948, pp. 85-86.
278. VAN FLEET, L. A. Safety in Small Mines—Fire Protection. Pay Dirt. No. 130, Apr. 18, 1949, pp. 11-12.

C. EXPLOSIVES

BULLETIN

279. TOURNAY, W. E., BOWER, F. M., AND BROWN, F. W. Safety and Performance Characteristics of Liquid-Oxygen Explosives. Bull. 472, February 1949, 88 pp. 30 cents.

TECHNICAL PAPER

280. Grant, R. L., and Tiffany, J. E. Detonators: Initiating Efficiency by the Miniature-Cartridge Test. Tech. Paper 677, 1945, 34 pp. 10 cents; Ind. Eng. Chem., anal. ed., vol. 17, No. 1, January 1945, pp. 13-19.

CODE OF FEDERAL REGULATIONS

- 281. Bureau of Mines. Explosives (Including Sheathed Explosives) and Blasting Devices; Tests for Permissibility and Suitability; Fees. Part 15, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. C, pp. 60-72.
- 282. ———. Mechanical Equipment for Mines; Tests for Permissibility; Fees. Part 31. Diesel Mine Locomotives. Code of Federal Regulations, 1949 ed., ch. 1, subch. E, pp. 117-137.

REPORTS OF INVESTIGATIONS

- 283. Brown, F. W., Kusler, D. J., and Gibson, F. C. Sensitivity of Explosives to Initiation by Electrostatic Discharges. R. I. 3852, 1946, 8 pp. (Out of print.)
- 284. ELLIOTT, M. A. Exothermal Decomposition of Mixtures Containing Ammonium Nitrate. R. I. 4244, 1948, 11 pp.
- 285. ELLIOTT, M. A., AND BROWN, F. W. Investigations of Explosion Hazards of Perchloric Acid and Mixtures of Perchloric Acid and Organic Materials. R. I. 4169, 1948, 17 pp.
- 286. GIBSON, F. C., AND BROWN, F. W. Vibrator-Type Multiple-Shot Blasting Unit. R. I. 4136, 1947, 5 pp.
- 287. Huff, W. J. Studies on Explosives and Explosions, Fiscal Year 1944. R. I. 3794, 1945, 35 pp.
- 288. ——. Studies on Explosives and Explosions, Fiscal Year 1945. R. I. 4031, 1946, 57 pp.
- 289. Lewis, Bernard. Annual Report of Research and Technologic Work on Explosives, Explosions, and Flames, Fiscal Year 1946. R. I. 4176, 1947, 62 pp.
- 290. ——. Report of Research and Technologic Work on Explosives. Explosions, and Flames, Fiscal Years 1947 and 1948. R. I. 4502, 1948, 92 pp.
- Lewis, Bernard, and von Elbe, Guenther. Ignition of Firedamp by Explosives. R. I. 4382, 1948, 11 pp.
- 292. Murphy, E. J. Effects of Sheaths on Gaseous Products From Permissible Explosives. II. R. I. 4220, 1948, 57 pp.
- 293. NISEWANGER, C. R., AND BROWN, F. W. Electronic Chronoscope for Measuring Velocities of Detonation of Explosives. R. I. 3879, 1946, 18 pp.
- 294. Scott, F. E., Burns, J. J., and Lewis, Bernard. Explosive Properties of Hydrazine. R. I. 4460, 1949, 18 pp.

- 295-296. TIFFANY, J. E., AND GAUGLER, Z. C. Active List of Permissible Explosives and Blasting Devices Approved Previous to December 31, 1945. R. I. 3910, 1946, 20 pp.
- 297. ——. Supplement to Active List of Permissible Explosives and Blasting Devices Approved Previous to December 31, 1945. Supplement to R. I. 3910, 1947, 1 p.

INFORMATION CIRCULARS

- 298. GALLAGHER, F. J. Two Devices to Prevent Electric Arcs With Airdox Operations in Coal Mines. I. C. 7515, 1949, 5 pp.
- 299. HARRINGTON, D., AND EAST, J. H., JR. Safe Storage, Handling, and Use of Commercial Explosives in Metal Mines, Nonmetallic Mines, and Quarries. I. C. 7380, 1946, 30 pp. (Out of print.)
- 300. HARRINGTON, D., AND WARNCKE, R. G. Hazards of Black Blasting Powder in Underground Coal Mining. I. C. 7492, 1949, 29 pp.
- 301. ——. Surface Storage of Explosives. I. C. 7307, 1945, 16 pp. (Out of print.)
- 302. Kabir, Irving. Hazards From Chlorates and Perchlorates in Mixtures With Reducing Materials. I. C. 7340, 1945. 6 pp.
- 303. LEITCH, R. D., AND MOYER, P. R. Destruction of Damaged, Deteriorated or Unwanted Commercial Explosives. I. C. 7335, 1945, 6 pp.
- **304.** MALESKY, J. S. Breaking Coal With Airdox. I. C. 7480, 1948, 9 pp.
- 305. Moyer, P. R. Some Results of Inspections of Explosives-Storage Facilities Under the Federal Explosives Act. I. C. 7398, 1947, 60 pp.

OTHER PUBLICATIONS

- 306. CAVE, G. A., KROTINGER, N. J., AND MCCALEB, J. D. Preparation of Explosives of Fixed Particle Size and Shape. Ind. Eng. Chem., vol. 41, No. 6, June 1949, pp. 1286-1290.
- 307. Evans, W. J., Pasquen, J. E., and Johnson, L. H. Use of Evans Fog Gun for Multiple Shooting, Bellingham No. 1 Mine, Bellingham Coal Mines, Inc., Bellingham, Wash. Coal Age, vol. 52, November 1947, pp. 93-95.
- 308. Grant, R. L., and Tiffany, J. E. Factors Affecting Initiating Efficiency of Detonators. Ind. Eng. Chem., ind. ed., vol. 37, No. 7, July 1945, pp. 661-666.
- 309. HARTMANN, IRVING. Pressure Release for Dust Explosions. Nat. Fire Protec. Assoc. Quart., part 1, vol. 40, No. 1, July 1946, pp. 47-53.
- 310. HARTMANN, IRVING, AND GREENWALD, H. P. Coal-Mining Institute of America Tackles Postwar Problems (Tests Made by U. S. Bureau of Mines With Gelatin Explosives). Coal Age, vol. 52, January 1947, p. 120.
- 311. ——. Tests of Permissible Explosives in the Experimental Coal Mine. Proc. Coal Min. Inst. America, 1946, pp. 68-84.
- 812. Kintz, G. M. The Need of Standardized Instructions for Handling Explosives by Geophysical Parties. Mines Mag. (Colorado), vol. 35, No. 12. December 1945, pp. 677-686.
- 313. Look, A. D. Safety in Small Mines. Blasting Caps Can Injure Children. Pay Dirt, No. 137, Nov. 18, 1949, p. 4.
- 314. SHARP, A. A. Safety in Small Mines—Safe Use of Explosives. Pay Dirt, No. 128, Feb. 18, 1949, p. 4.

D. ELECTRICITY, SAFETY LAMPS, COMMUNICATION, AND TRANSPORTATION

MINERS' CIRCULARS

815. BUREAU OF MINES. Accidents From Hoisting and Haulage in Bituminous-Coal Mines—Coal-Mine Accident-Prevent Course, Section 3. Miners' Circ. 49, 1946, 59 pp. 20 cents.

316. ———. Electrical Accidents in Bituminous-Coal Mines, Coal-Mine Accident-Prevention Course, Section 6. Miners' Circ. 59, 1947, 93 pp. 30 cents.

tion 6. Miners' Circ. 59, 1947, 93 pp. 30 cents.
317. Harrington, D., and East, J. H., Jr. Safe Practices in Mine Hoisting. Miners' Circ. 61, 1946, 55 pp. 15 cents.

CODE OF FEDERAL REGULATIONS

318. Bureau of Mines. Electrical Equipment, Lamps, Methane Detectors; Tests for Permissibility; Fees—Junction Boxes and Electric Motor-Driven Mine Equipment. Part 18, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 73-92, incl.

319. ———. Electrical Equipment, Lamps, Methane Detectors; Tests for Permissibility; Fees—Electric Cap Lamps. Part 19, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D. pp. 92-96, incl.

1949 ed., Title 30, ch. 1, subch. D, pp. 92-96, incl. 320. — Electrical Equipment, Lamps, Methane Detectors; Tests for Permissibility; Fees—Electric Mine Lamps Other Than Standard Cap Lamps. Part 20, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 96-100, incl.

322. ———. Electrical Equipment, Lamps, Methane Detectors: Tests for Permissibility; Fees—Portable Methane Detectors. Part 22, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 103-106, incl.

323. ———. Electrical Equipment, Lamps, Methane Detectors: Tests for Permissibility: Fees—Telephones and Signaling Devices. Part 23, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 106–110, incl.

324. — Electrical Equipment. Lamps, Methane Detectors; Tests for Permissibility; Fees—Single-Shot Blasting Unit. Part 24, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 110-113, incl.

325. ———. Electrical Equipment, Lamps, Methane Detectors; Tests for Permissibility; Fees—Multiple-Shot Blasting Units. Part 25, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. D, pp. 113-116, incl.

REPORTS OF INVESTIGATIONS

- 326. Berger, L. B., and Artz, R. T. Performance of a Diesel Mine Locomotive. R. I. 4287, 1948, 15 pp.; abs. Diesel Power, vol. 26, No. 11, November 1948, pp. 64-65, 80.
- 327. BERGER, L. B., ELLIOTT, M. A., HOLTZ, J. C., AND SCHRENK, H. H. Diesel Engines Underground: VI. Use of Diesel Locomotives in Construction of the Delaware Aqueduct: Effect of Exhaust Gases Upon Quality of Tunnel Air. R. I. 4032, 1947, 26 pp.

328. Brown, C. L., Gallagher, F. J., and Hyvarinen, John. A Study of Stray Electric Currents in Airdox Systems in Coal Mines. R. I. 4537, 1949, 13 pp.

329. COGGESHALL, E. J., FELEGY, E. W., AND HARRISON, L. H. Some Studies on Emergency Mine Communications. R. I. 4135, 1948, 44 pp. 330. Elliott, M. A. Review of Bureau of Mines Work on Use of Diesel Engines Underground. R. I. 4381, 1948, 28 pp.

331. FELEGY, E. W., AND COGGESHALL, E. J. Applica-

bility of Radio to Emergency Mine Communications. Progress Report, September 1946-November 1947. R. I. 4294, 1948, 56 pp.

332. FORBES, J. J., GRIFFITH, F. E., CASH, F. E., AND Peterson, M. S. Mine Rescue Life-Line Telephone

Assemblies. R. I. 3875, 1946, 11 pp.

333. NICHOLAS, R. H., WHITTAKER, J. S., DORNENBURG, D. D., HARMON, J. P., AND BANK, WALTER. Shuttle-Car Tire and Roadbed Study. R. I. 4624, 1949, 22

INFORMATION CIRCULARS

334. Brown, C. L. Description of Typical Mine-Telephone Systems and Suggestions for Making Improved Installations. I. C. 7385, 1946, 17 pp.

335. DURHAM, A. C. Design and Operation of Electrical Control Mechanisms in Underground Pumping Plants. Progress Report 1, I. C. 7476, 1948. 21 pp.

- 336. East, J. H., Jr. Operating Diesel Locomotives Underground in European Mines. I. C. 7378, 1946, 13 pp.; Mines Mag., vol. 37, No. 5, May 1947, pp. 26-27; vol. 37, No. 7, July 1947, pp. 27-29; South African Min. and Eng. Jour., vol. 58, No. 2854, part 2, Oct. 26, 1947, pp. 177, 179, 181–182.
- 337. GALLAGHER, F. J. Two Devices to Prevent Electric Arcs With Airdox Operations in Coal Mines. I. C. 7515, 1949, 5 pp.
- 338. GLEIM, E. J. Guarding Trolley Wires in Mines. I. C. 7332, 1945, 19 pp.
- 339. HARRINGTON, D., AND EAST, J. H. JR. Diesel
 Equipment in Underground Mining. 1, C, 7406, 1947,
 87 pp.; abs. Coll. Eng., vol. 24, No. 282, August 1947, pp. 262-265; vol. 24, No. 283, September 1947, pp. 305-307; Coal Age, vol. 52, No. 8, August 1947, pp.
- 0. ——. Safety Catches on Mine Cages and Methods of Testing Them. I. C. 7436, 1948, 43 pp.
- 341. HARRINGTON, D., AND WARNCKE, R. G. Hazards of the Trolley-Locomotive Haulage System in Coal Mines. I. C. 7328, 1945, 38 pp.
- 342. HARRINGTON, D., PARKER, D. J., AND HARRISON, L. H. Protection Against Lightning at Surface and Underground Mining Plants. I. C. 7447, 1948. 23 pp.
- 343. HOOKER, A. B. Permissible Mine Equipment Approved During 1944. I. C. 7316, 1945, 4 pp. (Revised as I. C. 7432.) (Out of print.)
- -. Permissible Mine Equipment Approved to January 1, 1947. With Appended List of Available Flame-Lamp Fuels. I. C. 7432, 1947, 44 pp. (Revision of I. C. 7207, 7240, 7283, and 7316. Cites additional equipment approved from Jan. 1, 1945, to Jan. 1, 1947.)
- 5. ———. Permissible Mine Equipment Approved During the Calendar Year 1947. Supplement to Information Circular 7432. I. C. 7465, 1948, 5 pp.
- 346. HOOKER, A. B., AND COGGESHALL, E. J. Fuel for Permissible Flame Safety Lamps (a Revision of R. I. 3389). I. C. 7301, 1945, 6 pp.
- 347. McCleary, E. H., and Mather, J. V. Installation of a Model Man Cage at the Avoca Shaft of the Heidelberg Coal Co., Avoca, Luzerne County, Pa. I. C. 7407, 1947, 5 pp.
- 348. MECHLING, M. J., AND SLOMAN, H. J. Mine Man-Trip and Ambulance Cars. I. C. 7435, 1948, 6 pp.
- 349. Sanford, H. E. Some Observations on Coal-Mine Haulage Hazards. I. C. 7467, 1948, 13 pp.

OTHER PUBLICATIONS

350. BERGER, L. B., ELLIOTT, M. A., HOLTZ, J. C., AND SCHRENK, H. H. Diesel Engines Underground. Engineering, vol. 165, No. 4277, Jan. 16, 1948, pp. 54-55; vol. 165, No. 4278, Jan. 23, 1948, pp. 95-96,

351. Brown, C. L. An Elevator for Man-Trips, Consolidation Coal Co. Min. Cong. Jour., vol. 34, No. 1,

January 1948, pp. 42-43.

352. DRIESSEN, M. G. New Type of Diesel Locomotive for Use in Dutch State Coal Mines. Trans., Inst. Min. Eng., vol. 105, part 4, January 1946, pp. 169-181; disc., pp. 182-186, and 189.

353. East, J. H., Jr., and Maize, E. A. Diesel Power for Underground Haulage. (Abs. of I. C. 7378.) Am. Inst. Min. and Met. Eng., Min. Technol., Tech. Pub. 2384, vol. 12, No. 4, 1948, 8 pp; Trans., vol. 181, 1949, pp. 274–281.

354. ELLIOTT, M. A. Considerations in the Use of Diesel Engines Underground. Proc. West Virginia

Coal Min. Inst., 1948, pp. 116-141.

Conversion of Measurements of Power Output of Diesel Engines to Standard Atmospheric Conditions. Trans. Am. Soc. Mech. Eng., vol. 68, No. 5, July 1946, pp. 525-539.

356. Felegy, E. W. Progress in a Practical Method of Voice Communication Through Soil and Strata. Proc. 38th Convention, Mine Insp. Inst. America, Columbus, Ohio, June 7, 8, 9, 1948, pp. 112-118, disc., pp. 118-119; Trans. Nat. Safety Cong., 1948. pp. 19–24.

357. GLEIM, E. J. Care and Maintenance of Permissible Electrical Mine Equipment. Trans. Nat. Safety Cong., vol. 1, part 1, 1947, pp. 285-289; abs. in Mechanization, vol. 11, No. 10, October 1947, p. 111.

-. Electrical Protection of Mine Circuits for the Prevention of Fires. Coal Min., vol. 22, No. 5. May 1945, pp. 8-10; abs. Mechanization, vol. 9, No. 8, August 1945, pp. 111, 113.

359. — Some Recent Developments and Research in Underground Communication. Proc. Coal Min.

Inst. America, 1945, pp. 63-68.

360. Griffith, F. E. Advantages and Disadvantages of the Machine Safety Ground. Trans. 35th Nat.

Safety Cong., vol. 8, 1947, pp. 44-47.

Safety Considerations for Flame-Resist-361. ing Trailing Cables. Trans. Am. Inst. Min. and Met. Eng. Coal Div., vol. 177, 1948, pp. 191-197; Coal Technol., Tech. Pub. 2288, vol. 2, No. 4, November 1947, 7 pp.

362, HARRINGTON, D., AND EAST, J. H., Jr. Diesel Power Can Be Used Underground With Safety. Eng. Min. Jour., vol. 148, No. 6, June 1947, pp. 70-76.

- 363. Diesels in Underground Mining. Part I. Diesel Prog., vol. 13, No. 11, November 1947, pp. 50-53; Part II. Vol. 13, No. 12, December 1947, pp. 56-57, 89.
- Utilizing Diesel Power Equipment in Underground Mining. Pit and Quarry, vol. 41, No. 1, July 1948, pp. 162-166.
- 365. HARRISON, L. H. Stray Electric Currents in Coal Mines, Elec. Eng., vol. 68, No. 5, May 1949, p. 423. 366. Mather, J. V. Safety Dogs Protect Man-Cars on

Slopes. Coal Age, vol. 51, No. 8, August 1946, pp.

110 and 112.

367. PEARCE, C. M., AND CASH, F. E. Testing Safety Catches on Mine Cages. Part I. Min. Cong. Jour., vol. 31, No. 9. September 1945, pp. 46-49; Part II. Vol. 31, No. 10, October 1945, pp. 35-37.

368. Rodriguez, E. R. Safety in Small Mines. Electrical Hazards. Pay Dirt, No. 138, Dec. 16, 1949,

pp. 9–10.

369. SHARP, A. A. Safety in Small Mines-Haulage Accidents. Pay Dirt, No. 134, Aug. 19, 1949, p. 7.

- 370. SLOMAN, H. J. Testing Safety Catches on Mine Cages at Some Eastern Bituminous-Coal Mines. (Abs. of 1. C. 7290.) Mechanization, vol. 9, No. 3. March 1945, pp. 119-120.
- 371. WEICHEL, T. R. Safe Use and Installation of Electric Cables in Coal Mines. Am. Inst. Elec. Eng., Min. and Met. Ind. Sess., Pittsburgh, Pa., Jan. 30, 1948; rev. in Coal Age. vol. 53, No. 3, March 1948. pp. 67-69.
- 372. YOUNG, W. H., AND ANDERSON, R. L. Bituminous Haulage Marked by Locomotive and Conveyor Rise. Coal Age, vol. 52, January 1947, pp. 78-82.
- 373. ———. Haulage at Bituminous-Coal Strip-Mines. Mechanization, vol. 12, No. 8, August 1948, pp. 78-80.
- 374. Trucking Bituminous Coal and Lignite. Mechanization, vol. 11, No. 4, April 1947, p. 160.

E. MINE SAFETY

BULLETIN

375. FATZINGER, R. W. Safety Practices in Dredging and Hydraulic Mining. Bull. 470, 1948, 76 pp. 25 cents.

HANDBOOK

376. Bureau of Mines. Federal Mine Safety Code for Bituminous-Coal and Lignite Mines of the United States, July 24, 1946. Handbook, 1946, 84 pp. 25 cents.

MINERS' CIRCULARS

- 377. Bureau of Mines. Explanation of Tentative Inspection Standards for Anthracite Mines. Miners' Circ. 46, 1945, 118 pp. 15 cents.
- Miscellaneous Accidents in Bituminous-Coal Mines. Coal-Mine Accident-Prevention Course-Section 7. Miners' Circ. 60, 1947, 85 pp. 25 cents.
- 379. HARRINGTON, D., AND FENE, W. J. Barricading as a Life-Saving Measure Following Mine Fires and Explosions, Revised December 1946. Miners' Circ. 42, 1948, 80 pp. 25 cents.

CODE OF FEDERAL REGULATIONS

- 380. Bureau of Mines. Federal Mine Safety Code for Bituminous-Coal and Lignite Mines of the United States. Code of Federal Regulations 32, part 304. Federal Register, vol. 11, part 8, 1946, pp. 9017-9028, approved July 24, 1946.
- Respiratory Protective Apparatus; Tests for Permissibility: Fees-Self-Contained Breathing Apparatus. Part 11, Code of Federal Regulations. 1949 ed., Title 30, ch. 1, subch. B, pp. 12-22, incl.
- Respiratory Protective Apparatus; Tests for Permissibility; Fees-Supplied-Air Respirators. Part 12, Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. B, pp. 22-37, incl.
- for Permissibility: Fees—Gas Masks. Part 13. Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. B, pp. 37-46, incl.
- for Permissibility; Fees-Filter-Type Dust. Fume and Mist Respirators. Part 14. Code of Federal Regulations, 1949 ed., Title 30, ch. 1, subch. B, pp. 46-53, incl.
- Respiratory Protective Apparatus; Tests 385. for Permissibility: Fees—Nonemergency Gas Respirators (Chemical Cartridge Respirator). Part 14a. Code of Federal Regulations, 1949 ed., Title 30. ch. 1, subch. B, pp. 53-59, incl.

INFORMATION CIRCULARS

386. Bureau of Mines. Safety Standards for Anthracite Mines, Revision of I. C. 7282. I. C. 7449, 1948, 59

387. FORBES, J. J., AND SLOMAN, H. J. Control of Roof and Prevention of Accidents From Falls of

Rock and Coal. I. C. 7461, 1948, 8 pp.

388. HARRINGTON, D., EAST, J. H., JR., AND WARNCKE, R. G. Safety in the Mining Industry. I. C. 7485. 1949, 157 pp.

389. LOOK, A. D., VAN FLEET, L. A., AND WALKER, S. M. Hazards of Entering Old Mine Workings. I. C.

7479, 1948, 18 pp.

390. MAIZE, E. R., AND BERRY, J. V. A Plan for Training Mine Officials in Rescue Organization and Disaster Prevention. I. C. 7353, 1946, 13 pp.

391. McCleary, E. H., Schrecengost, H. A., Clarkson. ALFRED, AND GILL, H. R. Safety Achievements of the Continental Mine, Continental-Archbald Coal Co., Scranton, Lackawanna County, Pa. I. C. 7468, 1948.

392. MILLER, A. U., AND LINKOUS, C. E. Safety Record of Mine No. 7, Island Creek Coal Co., Holden, Logan

County, W. Va. I. C. 7365, 1946, 8 pp.

393. MOYER, F. T., SCHUSTER, J. H., DAVIS, J. I., AND ELSNER, E. K. The National Safety Competitions of 1944-47. I. C. 7545, 1949, 81 pp.

394. SLOMAN, H. J. Psychological Aspects of Accident Prevention. I. C. 7460, 1948, 10 pp. 7 Trans. 35th Nat. Safety Cong., 1947, vol. 8, pp. 9-13

395. WARNCKE, R. G. Observations of Safety Practices and Conditions in Japanese Coal Mines. I. C. 7542. 1949. 38 pp.: Proc. Coal Mine Insp. Inst. America, 1948. pp. 72–88.

396. WARNCKE, R. G., AND WALKER, S. M. Some outstanding Safety Records in the Mining and Allied Industries. I. C. 7482, 1948, 24 pp.

OTHER PUBLICATIONS

- 397. Adams, W. W. More Coal Mined in 1944 With Fewer Accidents. Coal Age, vol. 50, February 1945, pp. 107-108.
- 398. Ankeny, M. J. Procedures of Bureau of Mines Under Federal Mine Safety Code for Bituminous-Coal and Lignite Mines. Abs. in Coal Age, vol. 51, December 1946, p. 132. Pres. at meeting of the Illinois Mining Institute.
- 399. Artz, R. T. Safety With Continuous Mining. Coal Age, vol. 54. November 1949, pp. 54-95.

400. Ash, S. H. Safety in Mining. Min. Cong. Jour.,

vol. 33, No. 2. February 1947, pp. 35-38. Disc. of "Procedures of the Bureau of Mines Under the Federal Mine Safety Code for Bituminous-Coal and Lignite Mines in the United by M. J. Ankeny. Proc. Kentucky Min.

Inst., 1946-48, pp. 15-17. 402. BOYD, JAMES. Improving Our Safety Record. Proc. 24th Annual Conf. Lake Superior Mines Safety Council, 1948, pp. 22-27.

403. FORBES, J. J. Presentation of Award to Pennsylvania Department of Mines. Proc. 39th Convention, Mine Insp. Inst. America, 1949, pp. 111-112.

404. — What the Bureau of Mines Does for Mine Safety. Trans. 36th Nat. Safety Cong., 1948, vol. 8,

pp. 3-8; vol. 18, pp. 4-9.

405, FORRES, J. J., AND ASH, S. H. What's New in Mining Safety. Trans. Am. Inst. Min. and Met. Eng., Min. Branch, 1949, vol. 184, pp. 349-357; Min. Eng., Mining Trans. Sec., Tech. Pub. 2663, vol. 1, No. 10, October 1949, pp. 349-357.

406. GROVE, G. W. Important Phases in Preventing Accidents From Falls of Roof. Trans. 36th Nat. Safety Cong., 1948, vol. 8, pp. 20-24; Review, Coal Age, vol. 53, No. 12, December 1948, pp. 170-173.