

Operation of this pilot plant should yield information of value in preparing revised cost estimates and should determine the effectiveness of gas-purification methods developed in the laboratory.

APPENDIX. - BIBLIOGRAPHY OF PAPERS AND REPORTS PRESENTED AND PUBLISHED DURING 1948

PROCESSING, Coal-to-Oil Demonstration Plants, Louisiana, Mo.

1. HIRST, L. L., SKINNER, L. C., CLARKE, E. A., DOUGHERTY, R. W., and LEVINE, H. C. Estimated Cost of Producing Heavy Oil by the Hydrogenation of Coal. Bureau of Mines Rept. of Investigations 4413, November 1948, 53 pp.
2. HIRST, L. L., SKINNER, L. C., and DONATH, E. E. Improvements in Hydrogenation of coal. Pres. before Rocky Mountain Coal Mining Institute, Denver, Colo., June 22, 1948; to be published by the Bureau of Mines as Information Circular 7486.
3. SKINNER, L. C., DRESSLER, R. G., CHAFFEE, C. C., MILLER, S. G., and HIRST, L. L. The Thermal Efficiency of Coal Hydrogenation - Present and Future. To be published by Ind. and Eng. Chem.

RESEARCH AND DEVELOPMENT, Coal-to-Oil Laboratories and Pilot Plants, Bruceton and Pittsburgh, Pa.

1. ANDERSON, R. B., HALL, W. K., HEWLETT, H., and SELIGMAN, B. Studies of the Fischer-Tropsch Synthesis, II. Properties of Unreduced Cobalt Catalysts. Jour. Am. Chem. Soc., vol. 69, 1947, pp. 3114-3119.
2. ANDERSON, R. B., and HALL, W. K. Modifications of the Brunauer, Emmett, and Teller Equation II. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 1727-1734.
3. ANDERSON, R. B., HALL, W. K., HOFER, L. J. E. Studies of the Fischer-Tropsch Synthesis, IV. Properties of Reduced Cobalt Catalysts. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 2465-72.
4. BRINKLEY, S. R., Jr. Contact Times of Continuous-Flow Reaction Systems with Volume Change. Ind. Eng. Chem., vol. 40, 1948, pp. 303-307.
5. ELLIOTT, M. A., KANDINER, H. J., KALLENBERGER, R. E., HITESHUE, R. W., and STORCH, H. E. Hydrogenation of Bituminous Coal in a Continuous Experimental Plant. A Process Variable Study. Presented at 113th Meeting of the Am. Chem. Soc., Chicago, Ill., April 19-23, 1948.
6. FRIEDEL, R. A., ORCHIN, M., and REGGEL, L. Steric Hindrance and Short Wave-length Bands in the Ultraviolet Spectra of Some Naphthalene and Diphenyl Derivatives. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 199-204.
7. FRIEDEL, R. A., and SHARKEY, A. G., Jr. Comparison of Glow and Global Sources for Infrared Spectrometry. Rev. Sci. Instruments, vol. 19, 1947, p. 928.
8. GORDON, A. S. Pyrolysis of Methane Flowing Through a Porcelain Tube in the Region 1,000° C. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 395-401.
9. HOFER, L. J. E., and WELLER, S. The Nature of the Iron Compounds in Red and Yellow Sandstone. Science, vol. 106, 1947, p. 470.
10. HOFER, L. J. E., PICHLER, H., and MERKEL, H.: Chemical and Magnetochemical Study of the Iron Catalyst - with Foreword by Hofer, L. J. E., on Introduction to the Carbides of Iron and Their Physical and Chemical Properties; Federal Bureau of Mines Special Report, 1947. Bureau of Mines Tech. Paper 718, in press.
11. KANDINER, H. J. Sampling Lag and Purging Time in Mixing Vessels in Series. Chem. Eng. Prog., vol. 44, 1948, pp. 383-386.
12. LEVA, M., and GRUMMER, M. Pressure Drop Through Packed Tubes, Part II. Effect of Surface Roughness. Chem. Eng. Prog., vol. 43, 1947, pp. 633-638.

13. LEVA, M., and GRUMMER, M. Pressure Drop Through Packed Tubes, Part III. Prediction of Voids in Packed Tubes. Chem. Eng. Prog., vol. 43, 1947, pp. 713-718.
14. LEVA, M., and GRUMMER, M. Heat Transfer to Gases, Flowing in Turbulent Motion Through Packed Tubes, Part II. Ind. Eng. Chem., vol. 40, 1948, pp. 415-419.
15. LEVA, M., WEINTRAUB, M., GRUMMER, M., and CLARK, E. L. Cooling of Gases Through Packed Tubes. Ind. Eng. Chem., vol. 40, 1948, pp. 747-752.
16. LEVA, M., GRUMMER, M., WEINTRAUB, M., and POLLCHIK, M. Introduction to Fluidization. Chem. Eng. Prog., vol. 44, 1948, pp. 511-520.
17. LEVA, M., GRUMMER, M., WEINTRAUB, M., and POLLCHIK, M. Fluidization of Solid Non-Vesicular Particles. Chem. Eng. Prog., vol. 44, 1948, pp. 619-26.
18. LEVA, M., GRUMMER, M., WEINTRAUB, M., and STORCH, H. H. A study of Fluidization of an Iron Fischer-Tropsch Catalyst. Chem. Eng. Prog., vol. 44, 1948, pp. 707-716.
19. MCKINNEY, D. S., and FRIEDEL, R. A. Calibration Method for Infrared Prism Spectrometer. Jour. Optical Soc. America, vol. 38, 1948, pp. 222-225.
20. ORCHIN, M. Aromatic Cyclodehydrogenation, VI. Synthesis of Ring-Oxygen Compounds. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 495-497.
21. ORCHIN, M., and REGGEL, L. Aromatic Cyclodehydrogenation VII. Rearrangements in the Phenylanthracene Series. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 1245-1247.
22. ORCHIN, M., REGGEL, L., FRIEDEL, R. A., and WOOLFOLE, E. O. Aromatic Cyclodehydrogenation. Bureau of Mines Tech. Paper 708, 1948, 40 pp.
23. ORCHIN, M., and STORCH, H. E. Solvation and Hydrogenation of Coal. Ind. Eng. Chem., vol. 40, 1948, pp. 1385-1389.
24. PELIPETZ, M., KUHN, E. M., FRIEDMAN, S., and STORCH, H. H. Effect of Catalysts on Hydrogenolysis of Coal. Ind. Eng. Chem., vol. 40, 1948, pp. 1259-1264.
25. STORCH, H. H. Review of Development of Processes for Synthesis of Liquid Fuels by Hydrogenation of Carbon Monoxide. Chem. Eng. Prog., vol. 44, 1948, pp. 469-480.
26. SAVICH, T. R., PELIPETZ, M. G., BUDY, W. A., CLARK, E. L., and STORCH, H. H. Stripping of Coal Hydrogenation. Heavy Oil Slurry by Superheated Steam. Presented at 113th Meeting, Am. Chem. Soc., Chicago, Ill., Apr. 19-23, 1948.
27. WELLER, S., HOFER, L. J. E., and ANDERSON, R. B. The Role of Bulk Cobalt Carbide in the Fischer-Tropsch Synthesis. Jour. Am. Chem. Soc., vol. 70, 1948, pp. 799-801.
28. WENDER, I., and ORCHIN, M. Critical Review of Chemistry of OXO Synthesis for Production of Alcohols from Olefins, Carbon Monoxide, and Hydrogen; with Discussion of Reaction Mechanism for OXO and Related Syntheses. Bureau of Mines Rept. of Investigations 4270, June 1948, 26 pp.
29. WEINTRAUB, M., and LEVA, M. Pressure Drop in Packed Tubes - A Monogram. Chem. Eng. Prog., vol. 44, 1948, pp. 801-802.

RESEARCH AND DEVELOPMENT, Synthesis-Gas Laboratories and Pilot Plants, Morgantown, W. Va., and Gorgas, Ala.

1. ALBRIGHT, C. W., HOLDEN, J. H., SIMONS, H. P., and SCHEIDT, L. D. Pneumatic Feeder for Finely Divided Solids. (Submitted for publication in Chem. Eng.)
2. GRAHAM, H. G., and SCHEIDT, L. D. Methods of Producing Ultra-Clean Coal for Electrode Carbon in Germany. Bureau of Mines Inf. Circ. 7481, October 1948, 13 pp.

3. SANDS, A. E., WAINWRIGHT, H. W., and SCHMIDT, L. D. Purification of Synthesis Gas Produced from Solid Fuels (Specifications, Plant Processes, and Laboratory Controls). *Ind. Eng. Chem.*, vol. 40, No. 4, April 1948, pp. 607-620.
4. SCHMIDT, L. D., McGEE, J. P., and SLONE, M. C. A Pilot Plant for Gasifying Powdered Coal Entrained in Oxygen and Steam. *Chem. Eng. Prog.*, vol. 44, October 1948, pp. 737-744.