

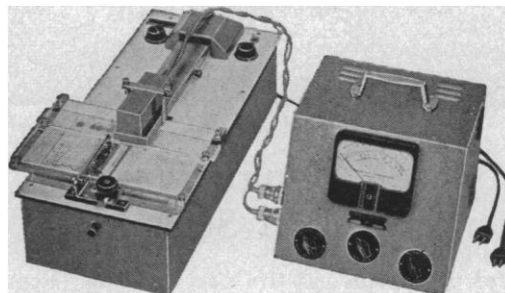
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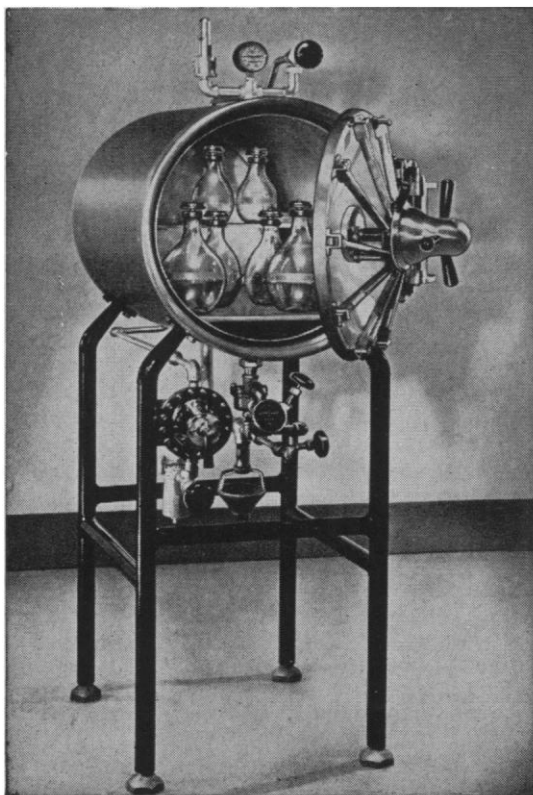


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wave potential of the first wave is 0.35 v and that of the second wave 0.68 v versus S.C.E. The diffusion current is directly proportional to the tungsten concentration, but the solutions more concentrated than about 10^{-3} molar exceed the solubility of the tungsten.

In the proposed method the sample is fused with sodium carbonate, leached with water, and filtered. The tungsten is complexed with tartrate and the solution acidified with hydrochloric acid. The percentage of tungsten is calculated from the diffusion-current constant obtained on standard tungsten solutions. Vanadium (whose wave surprisingly overlaps that of tungsten) is complexed with cinnamic acid, and iron is removed by the filtration. Molybdenum, tin, and antimony need to be removed if the molar concentration of any one greatly exceeds that of the tungsten. Any other ions present in the filtrate from the carbonate fusion are either not reduced in hydrochloric acid or their half-wave potentials are more negative than tungsten. Results on samples analyzed both polarographically and gravimetrically are in close agreement.

LAURA E. REICHEN

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Washington, D. C.*

Reference

1. LINGANE, J. J. *J. Am. Chem. Soc.* **71**, 943 (1949).

Received February 15, 1954.

Geology and Ground Water Resources of the Matanuska Valley Agricultural Area, Alaska

THE agricultural area of the Matanuska Valley lies on a wide valley floor, most of which is formed by glacial deposits. Nonglacial unconsolidated deposits include wind-blown material distributed generally over the agricultural area and slope deposits along the valley walls. Small bodies of perennially frozen ground (permafrost) are present in some bogs.

Till ("hardpan"), possibly of late Wisconsin (Mankato) age, occurs at the surface or beneath surficial outwash gravel deposits in a large part of the valley floor. In several widely separated localities the till is known to be underlain by older glacial gravel, and the presence of an older till beneath this gravel is suspected. Several types of outwash deposits, most of them formed during glacial recession in this area, can be differentiated. Associated with glaciofluvial deposits of existing streams are estuarine deposits of glacial silt. The topography developed on the unconsolidated deposits is due chiefly to glacial deposition, large-scale stagnation of ice, and trenching of glacial deposits by melt-water streams.

Most wells in the agricultural area obtain water from gravel. Supplies sufficient for domestic and farm use are generally available wherever the gravel is saturated. Only little is known of the quantities of water available. Till in this area is relatively impermeable; most wells in till obtain water from included thin sand

or gravel layers. Bedrock here appears to be relatively poor water-bearing material.

Recharge of ground water is chiefly from precipitation on the area, but parts of the area receive drainage from adjacent mountain slopes. Seasonal fluctuations of the water table of as much as several feet were observed during the period 1949-51.

Chemical analyses show that the ground water ranges from moderately hard to very hard but is otherwise satisfactory for general domestic and farm uses.

FRANK W. TRAINER

*U.S. Geological Survey
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Received February 15, 1954.

New Books

Curvature and Betti Numbers. K. Yano and S. Bochner. Princeton, N.J.: Princeton Univ. Press, 1953. 190 pp. \$3.00.

An Evaluation of Relativity Theory: After a Half-century. C. A. Muses. New York 3: S. Weiser, 1953. 48 pp. \$2.15.

The Achievement Motive. David C. McClelland *et al.* New York: Appleton-Century-Crofts, 1953. 384 pp. Illus. + plate. \$6.00.

Vegetation and Watershed Management. E. A. Colman. New York: Ronald Press, 1953. (Sponsored by The Conservation Foundation.) 412 pp. + plates + maps. \$7.00.

Microwave Theory and Techniques. Herbert J. Reich *et al.* New York-London: Van Nostrand, 1953. 901 pp. Illus. \$10.00.

The Polyporaceae of the United States, Alaska and Canada. Lee Oras Overholts, prepared for publication by Josiah L. Lowe. Ann Arbor, Mich.: Univ. Michigan Press; London: Oxford Univ. Press, 1953. 466 pp. + 132 plates. \$7.50.

Hydrocarbons from Petroleum. The fractionation, analysis, isolation, purification, and properties of petroleum hydrocarbons. An account of the work of the American Petroleum Institute Research Project 6. Frederick D. Rossini, Beveridge J. Mair, and Anton J. Streiff. New York: Reinhold, 1953. 556 pp. Illus. + charts. \$18.50.

Space Travel. An illustrated survey of its problems and prospects. Kenneth W. Gatland and Anthony M. Kunesch. New York: Philosophical Library, 1953. 205 pp. Illus. + plates. \$4.75.

The Zoological Record, Vol. 88. Records of zoological literature relating chiefly to 1951. G. Burder Stratton, Ed. London: Zoological Society, 1953. 19 sections.

Newton's Philosophy of Nature. Selections from his writings. H. S. Thayer, Ed. New York: Hafner, 1953. 207 pp. \$1.15.

Science and Man's Behavior. The contribution of phylobiology. Trigant Burrow; William E. Galt, Ed. New York: Philosophical Library, 1953. 564 pp. \$6.00.

Keeping and Breeding Aquarium Fishes. C. W. Emmens. New York: Academic Press, 1953. 202 pp. Illus. \$4.50.

Highway Research Board: Proceedings of the Thirty-Second Annual Meeting, Vol. 32. National Academy of Sciences-National Research Council Pub. 271. Fred Burggraf and Walter J. Miller, Eds. Washington, D.C.: Highway Research Board, NRC, 1953. 616 pp. Illus. \$8.50.

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- 11-15. American Physiological Soc., Atlantic City, N. J. (M. O. Lee, 2101 Constitution Ave., Washington 25, D. C.)
- 11-15. Soc. of Exploration Geophysicists, annual, St. Louis, Mo. (B. W. Sorge, c/o United Geophysical Co., Inc., P.O. Box M, Pasadena 15, Calif.)
- 12-13. Conf. on Diseases in Nature Transmissible from Animal to Man, 4th annual, College Station, Tex. (C. D. Leake, Univ. of Texas Medical Branch, Galveston.)
- 12-14. American Oil Chemists Soc., 45th annual, San Antonio, Tex. (J. S. Swearingen, Southwest Research Institute, San Antonio 6.)
- 12-14. International Cong. of Alpine Meteorology, 3rd, Davos, Switzerland. (W. Moriköfer, Observatoire Physico-Meteorologique, Davos.)
- 12-15. American Assoc. of Petroleum Geologists, St. Louis, Mo. (E. H. Powers, Southern Prod. Co., Box 670, Fort Worth, Tex.)
- 12-15. Assoc. of American Geographers, Bellevue-Stratford Hotel, Philadelphia, Pa.
- 12-16. Federation of American Societies for Experimental Biology, Atlantic City, N.J. (Miss Dorothy Briggs, 2101 Constitution Ave., Washington 25, D.C.)
- 12-17. International Cong. on Irrigation and Drainage, 2nd, Algiers, Algeria. (Association Française pour l'Etude des Irrigations et du Drainage, Boîte Postale 52, Grenoble, France.)
- 13-17. American Dermatological Association, White Sulphur Springs, W. Va. (J. L. Callaway, Duke Hospital, Durham, N. C.)
- 15-17. Assoc. of Southeastern Biologists, annual, Baton Rouge, La. (M. A. Gauden, Oak Ridge, Tenn.)
16. Seismological Soc. of America, annual, Seattle, Wash. (P. Byerly, 208 Bacon Hall, Univ. of California, Berkeley 4.)
- 16-17. Histochemical Soc., Atlantic City, N. J. (R. D. Lillie, National Institutes of Health, Bethesda, Md.)
- 18-22. American Assoc. for the Advancement of Science, Southwestern Division, Lubbock, Tex. (F. E. E. Germann, Dept. of Chemistry, Univ. of Colorado, Boulder.)
- 18-23. American Ceramic Soc., 56th annual, Chicago, Ill. (C. S. Pearce, 3727 Olentangy Blvd., Columbus 2, Ohio.)
- 19-20. Symposium on the Automatic Production of Electronic Equipment, San Francisco, Calif. (L. K. Lee, Engineering Div., Stanford Research Institute, Stanford, Calif.)
- 21-23. Southern Industrial Wastes Conf., Houston, Tex. (E. K. Hunt, American Cyanamid Co., Bound Brook, N.J.)
- 21-24. Cong. of La Sociedad de Internos y Becarios del Instituto Nacional de Cardiología de Mexico, 2nd, Acapulco, Mex. (J. S. Acevedo, Avenida Cuauhtemoc 300, Mexico, D. F.)
- 21-24. International Conf. on Electro-Deposition and Metal Finishing, 4th, London, Eng. (Institute of Metal Finishing, 32 Great Ormond St., London, W.C. 1.)
- 21-27. International Cong. of Prehistoric and Protohistoric Sciences, Madrid, Spain. (A. Beltran-Martinez, University, Zaragoza, Spain.)
- 21-23. International Cong. of Military Medicine and Pharmacy, 14th, Buenos Aires, Argentina. (Direccion General de Sanidad Militar, Pozos 2045, Buenos Aires.)
- 24-9. Liège International Fair, Liège, Belgium. (F. Campus, University of Liège.)