

ENGINEERING

Hope To Extract More Oil

➤ MORE OIL from so-called exhausted petroleum wells is hoped to result from research on the mixing of oil and water under high pressure, the American Chemical Society was told by Prof. Ernst A. Hauser and A. S. Michaels of the Massachusetts Institute of Technology.

Secondary production of oil from wells from which the freer-flowing crude has been removed by pumping is always important but particularly so now with decreasing reserves and the increasing demands for petroleum products. Primary pumping takes from the oil-bearing sands about one-third of the crude they hold, it is estimated.

Another third can be recovered by various pressuring methods. In these, water, air, or natural gas taken from the oil are pumped down central wells to help the flow of the oil to the out-take wells. There are other methods also employed, but the amount still unrecovered is still too great.

The term underground oil pools, often used, is misleading. The crude under ground is largely held in the pores of rocks and sand. The movement of the oil from locations away from the well to replace the crude which the pumps have removed is

slow. Pressure behind it helps, but there is still much held in or clinging to the tiny pores of the sandstone that repels the water used in pressurizing. A way is now sought to reduce this repulsion. This would make it possible to displace and recover more oil from either abandoned or existing wells.

In the study reported before the meeting, a new machine, called a high pressure tensiometer, is being used. It enables scien-

tists to measure the mixing of oil and water at pressures and temperatures as great as those encountered in deep oil wells.

The tensiometer is a heavy stainless steel box with thick glass windows which is filled with water in which a drop of oil is suspended from the tip of a thin metal rod. The temperature of the contents can be raised up to 350 degrees Fahrenheit while pressures up to 10,000 pounds per square inch are applied. The mutual repulsion of the two liquids is calculated from the shape of the oil drop, the changes of which are recorded with a microscopic camera.

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Books of the Week

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CALCULATIONS OF QUANTITATIVE ANALYSIS—Philip W. West—*Macmillan*, 162 p., \$2.75. A textbook on the mathematics of chemistry.

CREATIVE CERAMICS: A Primitive Craft Becomes a Fine Art—Katherine Morris Lester—*Manual Arts Press*, 213 p., illus., \$3.75. A most attractive hobby or art described in detail and illustrated with excellent photographs.

GEM CUTTING—J. Daniel Willems—*Manual Arts Press*, 224 p., \$3.50. Details of the art for both amateurs and professional gem

cutters. The author is himself a hobbyist.

HOW FAMILIES USE THEIR INCOMES—U. S. Dept. of Agriculture—*Govt. Printing Office*, 64 p., illus., paper, 30 cents. The story, largely in graphs, of where that dollar went.

THE HUMAN BODY AND ITS FUNCTIONS: An Elementary Textbook of Physiology—C. H. Best and N. B. Taylor—*Holt*, Rev. ed., 500 p., illus., \$3.60. This new edition of a well-known text has been rewritten to include recent outstanding discoveries in the field. The presentation is planned to be less elementary.

JUNIOR ASTRONOMY CLUB'S GUIDE TO SUMMER OBSERVING—Donald Hirsch, Ed.—*Junior Astronomy Club, Hayden Planetarium*, 34 p., illus., paper, 35 cents. Useful information and hints for all amateur astronomers.

NEW WORLD OF SCIENCE—R. Will Burnett, Bernard Jaffe, and Herbert S. Zim—*Silver Burdett*, 504 p., illus., \$2.80. A dramatically written and abundantly illustrated high-school textbook intended to help students to think critically and use scientific methods as well as to provide them with a store of useful scientific facts.

POWER, MACHINES, AND PLENTY—Gloria Waldron and J. Frederic Dewhurst—*Public Affairs Committee*, 32 p., illus., paper, 20 cents. A primer of economics based on a book "America's Needs and Resources" published by Twentieth Century Fund.

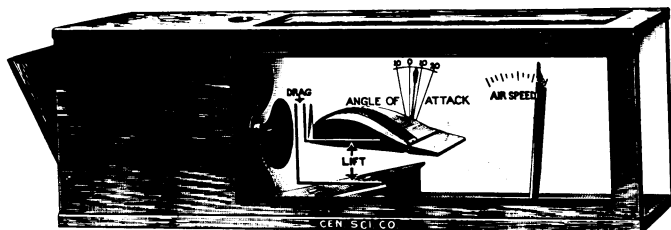
SECOND SESSION OF THE GENERAL CONFERENCE OF THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION, Mexico City, November 6-December 3, 1947—Report of U. S. Delegation With Selected Documents—*Govt. Printing Office*, 186 p., paper, 35 cents. Reporting the program of UNESCO.

SURVEY OF UNIVERSITY PATENT POLICIES: Preliminary Report—Archie M. Palmer—*National Research Council*, 170 p., \$1.50. Includes discussion of the relation of the patent policy to university research and the educational program.

WINGS AROUND THE WORLD: The Story of American International Air Transport—Burr W. Leyson—*Dutton*, 192 p., illus., \$3.00. Relating how our network of airlines was built up until now, according to the author, no point on earth is more than 60 hours distant by air transportation.

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