

Books of the Week

DIVING, CUTTING AND WELDING IN UNDERWATER SALVAGE OPERATIONS—Frank E. Thompson, Jr.—*Cornell Maritime*, 214 p., illus., \$2.

EUROPE, AN ATLAS OF HUMAN GEOGRAPHY—Marthe Rajchman—*Morrow*, 120 p., illus., \$2. The physical aspects of Europe, its resources, industries, populations, country characteristics, an aid to understanding present day news and future problems.

THE NAVAHO DOOR, an Introduction to

Navaho Life—Alexander H. Leighton and Dorothea C. Leighton—*Harvard Univ. Press*, 149 p., illus., \$4.

PSYCHOANALYSIS TODAY—Sandor Lorand, ed.—*International Univ. Press*, 404 p., \$6.

SOUL OF AMBER, the Background of Electrical Science—Alfred Still—*Murray Hill Books, Inc.*, 274 p., \$2.50.

THE TECHNOLOGICAL OUTLOOK IN PACKAGING—*American Management Assn.*, 39 p., paper, 75c, (Packaging Series No. 12).
Science News Letter, November 25, 1944

stability, increase the resistance to cracking at high temperatures, and oiliness or extreme pressure.

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Oils Behave Differently

► CRANKCASE oils having the same physical and chemical characteristics often behave so differently in an engine that mechanical laboratories now quite generally use internal combustion engines as laboratory tools to make performance tests, Norman C. Penfold of the Armour Research Foundation stated at the National Fuels and Lubricants meeting of the Society of Automotive Engineers.

The use of engines as a means of determining the performance of crankcase oils probably had its inception shortly after the advent of the internal combustion engine, he said, but only within the last 10 years have engines installed in mechanical laboratories had widespread application. Just as engines had been found to be the most satisfactory apparatus for rating gasolines, he continued, so engines have been found to be the most satisfactory apparatus for rating oils.

Both gasoline and diesel engines, of many different types, are used in testing laboratories. Production engines as test engines have a common fault, the speaker stated, which centers about the frequent production changes which alter the engine as a laboratory apparatus. Engines to be constructed for lubricant evaluations research work should have incorporated a larger amount of control and measurement apparatus, so that the vital engine features affecting the lubricant may be adjusted and measured.

Control of the flow rate of oil through the various circuits of the engine and measurement of the amount of heat absorbed in the more important portions of the circuit, he continued, should be helpful in obtaining greater reproducibility in engine test results and in understanding differences between engines and in making the engine a more valuable research tool.

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Many Europeans consider *corn* a fit food only for livestock.

More than 10% of the *coal* used in American homes is wasted, it is estimated, largely because of dirty and faulty furnaces.

ENGINEERING

Warning for Motorists

Passenger car owners are urged to take adequate precautions against the tendency of heavy-duty oils to loosen sludge deposits.

► PASSENGER car owners who frequently use different types or brands of oil with almost every oil addition or refill are faced with the potential danger of sudden loosening of soft sludges and deposits when heavy-duty oils are first added to dirty engines, Carl W. Georgi, technical director of the research laboratories of the Quaker State Oil Refining Corporation, told the Society of Automotive Engineers, meeting in Tulsa, Okla.

The sudden loosening action of heavy-duty oils on certain types of sludges involves a serious hazard if adequate precautions are not taken, Mr. Georgi stated. The loosening of considerable amounts of sludges in badly fouled engines can readily cause plugging of oil pump intakes and disruption of oil circulation. Serious engine damage can then

result if the condition is not noted soon enough.

He pointed out that heavy-duty oils will help keep clean engines in a clean condition for a maximum period of operation, but they are not intended to be used as cleaning or purging agents for dirty engines. The only thorough and safe means of cleaning a badly fouled engine is by disassembly and overhaul, he added.

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Highly Specialized

► LUBRICANTS of the years ahead will be carefully formulated and highly specialized, W. Andrew Wright, development engineer of the Sun Oil Company, told the meeting.

"While undoubtedly there will be still important techniques developed in the field of refining, much of the load will be borne by specialized addition agents," Mr. Wright remarked.

These specialized addition agents are chemical compounds not normally present in the refined oil which give the lubricant certain physical properties not possessed by the oil or improve upon those already present. By the use of addition agents, the life of the oil may be greatly extended, as well as the useful life and mechanical condition of the operating equipment, he stated.

Among the practical functions of these addition agents to be used in specialized lubricants are the control of the viscosity of lubricants, control of corrosion-causing properties through oxidation

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