

cept of a Deltaic Coastal Plain; subsidence under load and the Gulf Coast geosyncline changes of Gulf Coast sediments in the direction of the dip and along the strike; and structural changes contemporaneous with deposition of sediments.

The manner in which the facts and theories discussed may be used by geologists in the search for oil.

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Why Crudes Differ in Value

Although crudes are all fundamentally made up of mixtures of hydrocarbons and are hence similar in this respect, the type of hydrocarbons and the relative proportions in which they are present can vary widely from crude to crude. This variation causes crudes to differ in value. This value is established by the refineries who use crudes as a raw material for the manufacture of the various finished products. Some crudes are in demand and are assigned a high value because substantial yields of good quality products can be made from them with little special processing, whereas, others are penalized because certain products are not present or are of such poor quality that special processing (which is usually expensive) is necessary to make these products saleable. In order to evaluate crude, a sample is assayed in the laboratory, whereby the yield and quality of the primary products are determined and these data are used in computing the value of the crude. Other factors, such as transportation costs to refinery centers and the ultimate consumers and competitive conditions, are also considered in arriving at the price paid for a crude at the well.

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Foreign Developments during 1939 and 1940

The oil industry has inevitably been affected by the present Great War, since it supplies the prime movers for striking power in the conflict. A unique feature of the business is that unlike other war supplying industries its rapid growth usually precedes major conflicts; and exploration and construction stagnate while they last. Time necessary for exploration and development of new resources and for construction of large new refining plants—together with heavy demand for metals at the time when these products are vitally needed elsewhere—all tend to slow down active development of new crude oil reserves during actual hostilities. In the present war and immediately preceding it the increased range of bombing planes, as well as the political uncertainties in large portions of the world, further served to reduce new work in the oil industry to a minimum except in the Western Hemisphere. However, even here in portions of South and Central Americas the social and political changes under way brought exploration for new reserves to a virtual standstill. Geologists and geophysicists were unavoidably affected in the foreign fields, resulting in a sharp increase in the domestic supplies in these two professional classifications.

A revolutionary effect of the war is the growing volume of synthetic hydrocarbons reaching the markets under the vital necessities of the Axis powers and to a lesser degree of Soviet Russia. Improved processes and quantity production will result in lowering costs and some synthetic hydrocarbons may prove to be competitive with corresponding crude oil derivatives within a rather narrow span of years, particularly in cases where long distances separate sources of supply from markets. The indicated developments may have a very considerable economic effect on the various phases of the oil industry.

Among principal producing countries of the world, outside of the U. S. A., none increased its production except Colombia where completion of a new pipe line allowed somewhat larger exports, production of this country increasing from 23,774,151 barrels in 1939 to 25,526,492 barrels during 1940, with the result that in 1940 production of the world, outside of the United States, declined to about 790,000,000 barrels (2,158,469 barrels per day) from 810,000,000 barrels (2,219,178 barrels per day) produced in the preceding year. More particularly dormant was the exploration work without any new really major regional or local discoveries. Such trend is likely to continue for the duration of the war and only the end of the conflict should bring the renaissance in all exploratory activities with a subsequent rapid expansion in the demand for qualified technicians.

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Laboratory and Field Observations of Effect of Acidizing Oil Reservoirs Composed of Sands