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SOME CHEMICAL ASPECTS OF THE ORIGIN OF PETROLEUM¹

By Professor S. C. LIND

DIRECTOR OF THE SCHOOL OF CHEMISTRY, UNIVERSITY OF MINNESOTA

THE continuing abundance of the natural supply of liquid hydrocarbons in the form of petroleum is the modern version of the "widow's cruse" magnified to a twentieth-century scale. Little less miraculous than its abundance is the remarkable chemical complexity of the liquid mixture found in nature. No one knows the total list of hydrocarbons that compose petroleum. An old and, as it now appears, unjust charge against the petroleum industry was that it did not make sufficient efforts to learn the complete catalogue of the constituents of petroleum, multiple and variable though they were known to be.

For the past several years the American Petroleum Institute has concerned itself with the identification of the chemical constituents of certain commercial fractions of petroleum. The work has been ably con-

ducted by Dr. E. W. Washburn, of the Bureau of Standards, and his associates. The researches which are still in progress continue to add to the evidence of the astounding complexity of even a single commercial fraction of petroleum. Several hundred fractions were obtained before the identification of a single chemical individual became possible. One of their recent achievements² is the proof that further fractionation is still proceeding when difference of boiling point becomes so slight (less than 0.01° C.) that it fails as a guide, while difference in index of refraction still detects progressing fractionation.

The synthesis of liquid hydrocarbons from a single gaseous member by certain methods which will be discussed later has also produced very complex mixtures. This was to be expected from the theory of the mechanism developed before the actual complexity

¹ Address of the vice-president and retiring chairman of Section C—Chemistry, American Association for the Advancement of Science, Cleveland, December 30, 1930.

² *Bull. Amer. Petroleum Inst.*, Vol. XI, No. 53, p. 7, Sept. 12, 1930.

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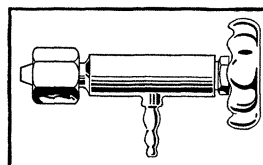
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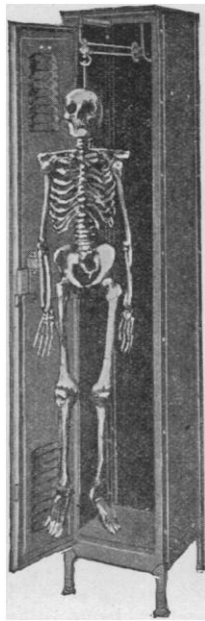
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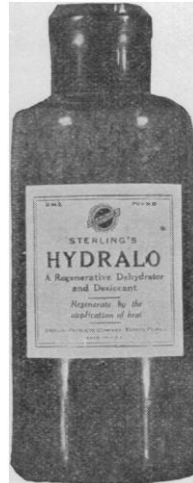
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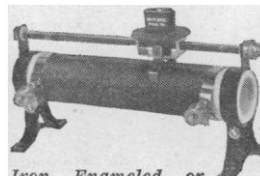
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