

MANUFACTURE OF GASOLINE AND BENZENE-TOLUENE FROM PETROLEUM AND OTHER HYDROCARBONS.

By W. F. RITTMAN, C. B. DUTTON, and E. W. DEAN.

PART I.—THE CRACKING OF OILS; PRINCIPLES INVOLVED AND METHODS OF TREATING RECOVERED PRODUCTS.

NOMENCLATURE USED IN THIS REPORT.

In this report the ending *ene* has been used throughout, except in the bibliography and in quotations from the writings of previous investigators, for all aromatic hydrocarbons, as, for instance, benzene, toluene, xylene. The ending *ol*, though largely used in technical description, is not correctly applicable to these hydrocarbons, and should be used to designate the impure mixtures of commerce, as distinguished from pure chemical compounds.

PRESENT STATUS OF PETROLEUM-REFINING INDUSTRY.

Although petroleum is widely distributed, being found in many parts of the world, and although information as to its occurrence and general characteristics seems to have existed from very early times, our knowledge of the chemical nature of this substance has been acquired largely within the past 40 years. Within this period a voluminous literature has accumulated, which records work as painstaking as has ever been undertaken in the whole field of chemistry, such as that of C. M. Warren, F. H. Storer, S. P. Sadtler, S. F. Peckham, and C. F. Mabery. Despite this fact, the commercial method of treating crude petroleum for the purpose of procuring marketable products is, in the main, essentially empirical. Much knowledge has been acquired as to methods of separating from crude petroleum such products as are desirable commercially, but little has been done to attain the maximum recovery of such products.

INCREASE IN PRODUCTION AND CONSUMPTION OF PETROLEUM PRODUCTS.

It is well known that the important chemical constituents of petroleum are carbon and hydrogen, with a small percentage of oxygen, and widely different proportions of nitrogen and sulphur. The