SPECIFIC GRAVITIES OF THE TWO GENERAL CLASSES OF LOW-BOILING HYDROCARBONS RECOVERED.

It should be noted that although there seems to be no characteristic difference between the percentage results for distillation cuts at 150° C. obtained from runs at 500° and at 600° C., there were considerable differences among the physical and chemical properties of products obtained in the same quantity at the temperatures mentioned. This detail may be observed by comparing the figures for specific gravity. The magnitudes of the differences are indicated in Table 21.

The obvious inference is that the "gasolines" formed at 600° C. contain aromatic compounds, as in no other way is the combination of high specific gravity and low boiling point explainable. The actual isolation of benzene and toluene from these distillates and their identification by chemical reactions was brought about to furnish absolute assurance that their formation had been accomplished.

As far as the general features of the gasoline are concerned, it possesses the characteristic odor of cracked reaction products, but may be freed readily from the greater part of this odor by treatment

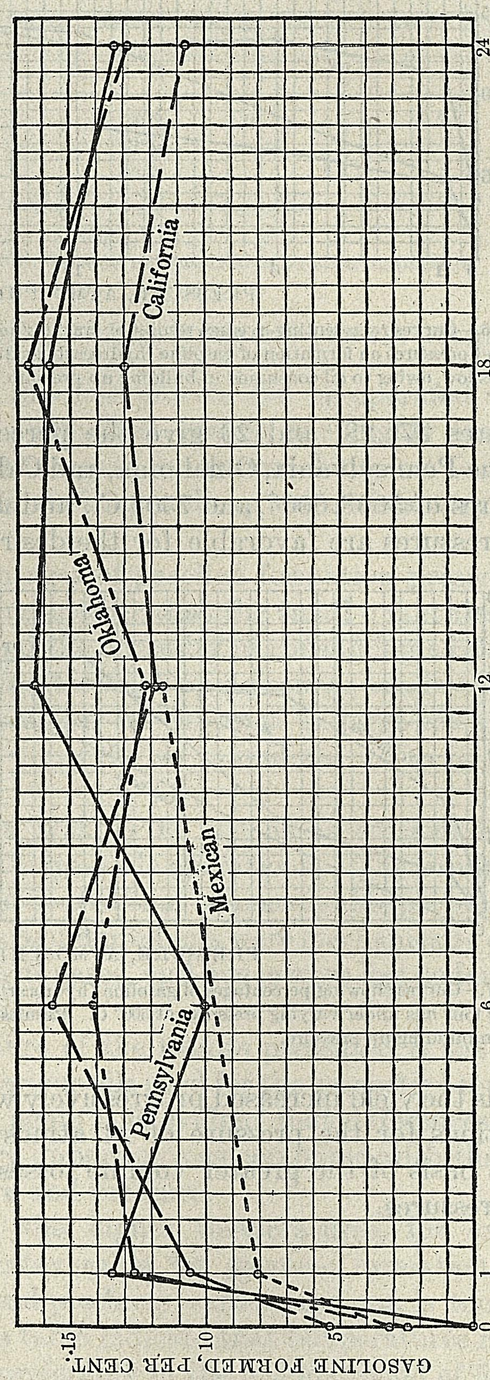

FIGURE 28.—Curves showing percentages of gasoline (hydrocarbons distilling up to 150° C.) formed from cracking four oils under varying pressures at 600° C. Results for higher pressures low, owing to oil consumed in building up pressure.

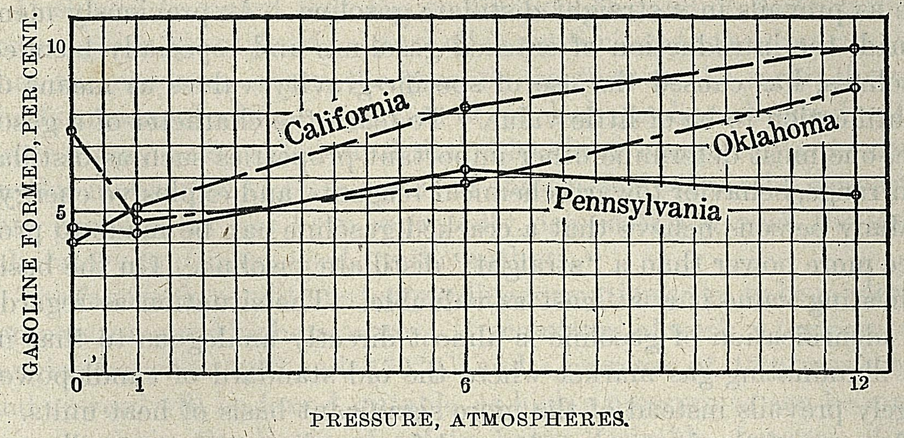

FIGURE 29.—Curves showing percentages of gasoline (hydrocarbons distilling up to 150° C.) formed from cracking three oils under varying pressures at 750° C. Results for higher pressures low, owing to oil consumed in building up pressures.

with sulphuric acid. The effect of pressure on the relative proportions of unsaturated products formed has already received comment. Table 21 showing the data mentioned follows.

TABLE 21.—*Differences in specific gravity of cuts up to 150° C. from oils cracked at like pressures, and temperatures of 600° and 500° C. (Showing differences between gasoline and aromatic hydrocarbons.)*

Pressure.	Difference in specific gravity in oil from—			
	Pennsylvania.	Oklahoma.	California.	Mexico.
Atmosphere. (a)	0.009	.....	.....	.....
1	.032	0.046	0.043	0.046
6	.042	.081	.051	.....
12	.070	.061	.056	.032
18	.086	.....	.....	.....
24	.088	.111	.053	.....

a Vacuum.

PROPERTIES OF CRACKED GASOLINE.

As regards the general properties of hydrocarbons, the properties of a gasoline may be largely predicted if its method of production is known. The presence of olefins does not introduce much change in physical properties, but olefin formation, which is bound to occur to some degree when cracked gasoline is produced, is invariably accompanied by the formation of aromatic hydrocarbons, and these increase the specific gravity.

Table 79 (p. 212) shows the relative boiling points and specific gravities of these various hydrocarbons. The data mentioned indicate that one should not expect the same gravity in a cracked gaso-