

# THE AMAZING PETROLEUM INDUSTRY

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# Chapter 1

## Introduction

Petroleum is probably the most important substance in the world today next to those which are necessary to sustain life itself. Much of the strategy of the present war is dictated by its presence or absence; without it airplanes, ships, warships, tanks and all other moving machinery would be helpless. To extract the last ounce of power locked up in its molecules, scientists have developed many ingenious methods of refining petroleum, that is, of purifying and improving it, as a result of which modern "high-octane" aviation fuels have been made possible. The importance of these in the modern world is self-evident, but the margin between a very good and an excellent gasoline may not be so generally appreciated. It is an established fact that a difference of only 13 points in octane number made possible the defeat of the Luftwaffe by the R.A.F. in the Fall of 1940. This difference, slight as it seems, is sufficient to give a plane the vital "edge" in altitude, rate of climb and maneuverability

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that spells the difference between defeat and victory. The extra power may also be translated into greater load capacity for bombs, freight or passengers. A glance at the figures given below will indicate the difference.

### 100 Octane vs. 87 Octane Gasoline in Airplane Performance \*

	87 Octane	100 Octane
Max. speed at 2,750 rpm	236 mph	260 mph
Altitude for max. speed	15,700 ft	17,300 ft
Cruising at 60% max. power at height of	192 mph 15,700 ft	211 mph 17,300 ft
Rate of climb at sea level	1,490 ft/min	2,180 ft/min
Time of climb to 6,500 ft	4.2 min	2.9 min
Time of climb to 13,000 ft	8.0 min	5.6 min
Service ceiling	31,800 ft	35,700 ft
Absolute ceiling	32,800 ft	36,700 ft

\* The Institution of Automotive Engineers, Australia; *The Modern Engineer*, July 20, 1941.

Non-technical people may be inclined to ask, What is this mystery about octane numbers, catalytic gasolines, cracking, and all the other odd terms that are constantly encountered whenever petroleum is mentioned? The following chapters are devoted to a simple explanation of these questions about petroleum and its products; of cracking and its importance in converting otherwise valueless substances into high-grade gasolines; of refining, which frees gasoline from foreign substances which interfere with its proper "performance"; and of numerous other phases of the oil industry.