

## CHEMISTRY

# Tomorrow's Gasoline

Petroleum chemists say triptane, a fuel which is not gasoline but another hydrocarbon, may give Allied planes great superiority over the Axis.

By JOHN A. MIRT

► A FEW YEARS ago, triptane, the world's most powerful "gasoline," was a laboratory curiosity. It was considered a fuel of great potentialities. But it cost \$3,600 a gallon to produce.

The coming of war spurred research and much was accomplished. The price was hammered down to \$40 per gallon, which was low relatively but not nearly low enough, even for our well-heeled army. And there the matter rested until an old man in a Chicago laboratory began testing and worrying and pacing the floor and staying awake nights. Toward dawn one day he got hold of a thread and the whole thing unraveled. The cost of making triptane came down to less than \$1 a gallon. Under mass-production methods, the cost will be less.

The discoverer was six-foot Prof. Vladimir N. Ipatieff, a man of 76 years, who knows as much about gasoline and oil chemistry as any man living. He was assisted by 28-year-old Dr. Vladimir Haensel. In addition to developing triptane, Professor Ipatieff was largely responsible for 100-octane gas, without which our war planes could not fight effectively. He did the major research in butadiene, basic ingredient of most synthetic rubber production. He has also taken oil field gases which once floated off as waste and compressed them into gasoline—thus helping immensely to conserve our petroleum resources.

Triptane is his greatest achievement. Fill the gas tank of an airplane with triptane and it could get up in the air from a much shorter runway. And once off the ground, it would go faster, climb higher, maneuver more easily and go farther than with any other fuel yet developed. Technically, triptane is not "a gasoline" but another hydrocarbon. Petroleum chemists say it will give our planes a 40 to 50 octane superiority over those of the enemy and Dr. Gustav Egloff, former president of the American Institute of Chemists, has said that with triptane in our tanks we would be able to shoot down German and Jap fliers "as if they were roosting pigeons."

When the war ends, these virtues of more miles to the gallon, from a smaller and more potent engine, will be handed along to the car owner, to make driving more pleasant and more economical.

Despite this and other achievements, triptane's genius, Professor Ipatieff, is virtually unknown to the people of this, his adopted country. Yet his story is written in the records of the great scientific institutions of the world, in the fields of both practical and abstract research. Robust as Professor Ipatieff is, his broad chest is scarcely wide enough to make room for all the decorations which have been awarded to him.

Vladimir Nikolaevich Ipatieff was born in Moscow 76 years ago, the son of an architect, descendant of a famous Russian family. It was on the Ipatieff estate that the first Romanoff, Michael, assumed the crown of Russia. And it was from the home of Professor Ipatieff's brother that the last of the Romanoffs were kidnaped and sent to their death.

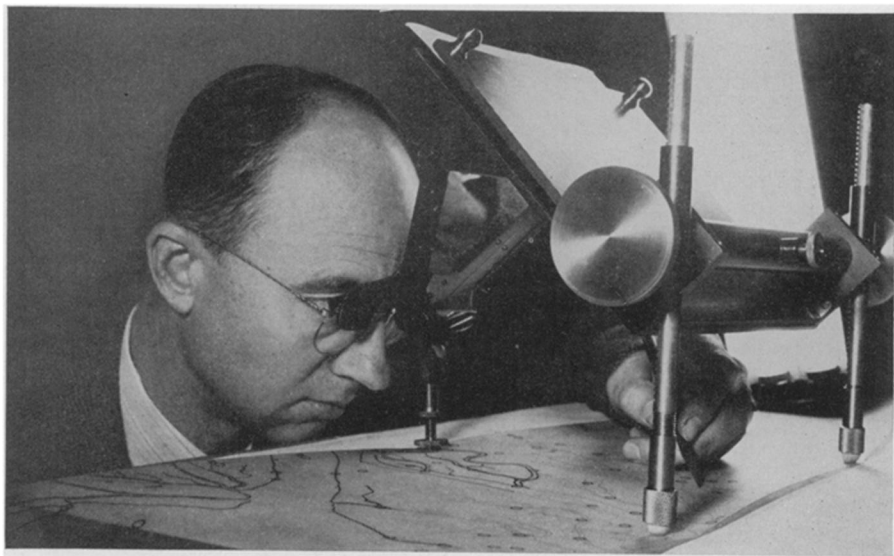
The young Vladimir, destined for a military career, went to Russia's West Point, was graduated a captain, but instead of going into the service remained

to teach chemistry to the young cadets. Fortunately the job left him plenty of time for research.

His career began with a failure. He was trying to make butadiene but he got something else, an aldehyde (which is intermediary between an acid and an alcohol). He couldn't understand it and was so concerned that he went back over the experiment until he had traced the outcome to the fact that he had used an iron tube instead of one of glass. The iron had acted as a catalytic agent, that is, it had influenced the result without being affected itself. Now catalysis was not new; for more than a hundred years, chemists had known about it. But Ipatieff put it to work and, following his example, so have thousands of other scientists with far-reaching results in our everyday life. It is today one of the most important tools at the command of modern chemistry.

This achievement won him wide recognition and honors which for any ordinary man would have been enough. But Ipatieff, having discovered the magic wrought by catalysis, wanted to find out more about it. He wanted, for example, to discover how catalysis functioned under pressure.

The only pressure tank available to the chemist in that year—1903—was one which had been invented in 1690. It pro-



**MERITORIOUS SERVICE**—James L. Buckmaster, a photogrammetric engineer of the Geological Survey, U. S. Department of the Interior, was awarded a salary promotion for the invention of this "sketchmaster."