# STUDEBAKER HAS 'U. S. AIR'

SOUTH BEND, Ind., March 21.—While there is no truth in the rumor that the United States Bureau of Standards has moved its offices to South Bend, Ind., there is a distinct "Washington accuracy" atmosphere about the extensive engineering offices of the Studebaker corporation. A recent informal inquiry showed that of 26 key engineers in Studebaker service no less than eight are former Bureau of Standards men.

Chief among these former bureau men is William S. James, who was associated with the governmental agency for 13 years and from 1911 to 1924 was in charge of the automotive power plant section of the bureau. James is now chief of the Studebaker research engineering department and has direct charge of research laboratories and Studebaker's $1,000,000 proving ground.

The other engineers of Studebaker's staff who were in Bureau of Standards' service are E. C. Newcomb, technical adviser to President A. R. Erskine, formerly technical adviser to bureau; J. A. C. Warner, assistant research enginéer, formerly chief of aeronautical instrument section of bureau; Stanwood W. Sparrow, research engineer, formerly in bureau automotive power plant section; Robert F. Kohr, laboratory engineer, formerly associate engineer of bureau; H. S. White, test superviser, formerly assistant mechanical engineer of bureau; Maurice A. Thorne, superintendent of proving ground, formerly assistant mechanical engineer in bureau, and Clyde R. Paton, laboratory engineer, formerly associate engineer of bureau.

The total time these eight men spent in the service of the United States Bureau of Standards amounts to 37 years. Their total time in engineering work amounts to 119 years.

These men are part of an organization of 578 technicians comprising the corporation's engineering department.



# PACKARD COMPANY EXPERT EXPLAINS TIRE CHANGING ART

Robert Atherton has "changed" so many automobile tires he hasn't any idea of the number. He thinks they probably would number several millions. A word on mounting tires from Atherton might therefore be considered as coming from a real authority. He is the foreman of the tire department at the factory of the Packard Motor Car company and has been with the company 13 years.

"Don't fight a tire," said Atherton, when asked for advice on changing tires. "At the same time when you lock it into place on the wheel or rim put some snap into it. Get everything set just right and then give it a quick sharp poke into place with the tire iron.

"One of the most important things in mounting a tire on a rim or disc wheel is a proper tire tool. Anyone who picks up a castoff pieces of a car spring for the job is just making work for himself. The tool should be one made for the job, about an inch wide, a small crook at one end and it shold be made of hard steel.

"When the tire goes on a disc wheel lean the wheel against your knees, put the tire outside of it with the valve at the top, let the wheel drop down slightly and at the same time the valve will go into place. Then the wheel can be dropped down and the tire goes on through its own weight. There is no reason for expending even enough effort in this operation to lift either tire or wheel from the ground.

"Place the joint of the lock ring opposite the valve stem and snap one end in place with the heel of the foot. The tire iron goes under the ring then, opposite the joint, while one knee or a foot holds down that part which has been set in place. After it is seen that the tire iron has enough—but not too much—bearing on the wheel rim, snap the lock rim into place. Repeat the operation on the loose end of the lock rim and the job is done.

"It is important to place the joint in the locking ring opposite the tire valve, and to turn the lock nut on the valve down tight. This nut pulls the spreader on the valve up tightly against the outer casing and spreads the head of the tire on both sides, thus locking both the tire and the lock rim more firmly to the wheel. With a tire thus locked it is impossible for the rim to come out of position unless the tire is completely deflated.

"With a long handle rim wrench acting as a lever and with the socket end anchored on one of the bolts, the wheel can be dropped off the hub with no effort. The spare wheel can be lowered in the same manner and each may be raised to their new position by reversing the process."

The actual changing of tires to the modern motorist is a novel experience. Tire service can be obtained as readily as gasoline and this fact together with one or two good spares serve to free the car owner of need for doing any work himself, except in rare emergencies. However, the ease with which a tire now can be changed has robbed even these rare emergencies of any real effort.

## Under The Hood

The kind of gasoline you buy should depend on the type of motor you have under the hood.

The idea is brought out, in a rather indirect way, Dr. George Granger Brown, professor of chemical engineering at the University of Michigan and director of research for the Natural Gasoline Association of America. His address, which was given before the Society of Automotive Engineers, is printed in two recent issues of the National Petroleum News.

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Dr. Brown reviews the relationship of the gasoline and automotive industries, and divides this into three periods.

Up to 1916, says Dr. Brown, gasoline was merely a by-product of the petroleum industry, and represented that part of the crude oil that was too volatile for Kerosene, which was more sorely needed. But it was fine for automotive engines.

During the war, the next period, gasoline came into so great a demand for the fighting forces that it became the major petroleum product and its volatility declined. The result was that automotive engineers had to design lower compression motors to accommodate the low volatility fuel.

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Since 1922, however, antiknock fuel has come along, and motors have been redesigned for its use.

Here comes the difficulty, however. Before this better fuel came in, motors had been designed to make the best of the poor wartime gasoline. The main tendency was to pre-heat the mixture with the exhaust gases.

And it's still being done. Therefore, it is important that motors with heated intake manifolds be fed the inferior kind of gasoline, rather than the anti-knock or highly volatile variety.

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Dr. Brown explains it this way: "After the motor has become warmed up it is possible to apply sufficient exhaust heat to the intake manifold so that satisfactory motor performance may be obtained when using fuels that are considerably less volatile than the minimum specified by the U. S. motor fuel specifications."

From this viewpoint, at least, poor fuel is good fuel for the heated type of motor.

But gasoline refiners now are providing a much better fuel, even outside the realm of the antiknock and "premium" gasolines. These are fuels of 'partial violatility."

Used in connection with heated-manifold motors, this fuel would be found too volatile and would even become gaseous before leaving the carburetor. The result would be so lean a mixture that it would not burn in the cylinders and would cause the engine to miss explosions.

German physicians recommend the inhalation of oxygen for three or four minutes as a preventive of sea-sickness.



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