

CARBON IN MOTOR CAUSES MANY ILLS

Difficult to Detect and Deposits Will Form Despite Utmost Care—Rem- edies to Minimize the Trouble

By WILLIAM H. STEWART, Jr.,
President of the Stewart Automobile School.

Carbon is one of the worst ailments of the engine. Its presence is not suspected and the evils which follow are attributed to many other than the real causes. The motor seems to be sluggish, does not respond readily to the throttle, particularly on a hill, and the driver blames the gasoline, the carburetor, the cooling system, even the manufacturer. He cranks the motor over to try the compression. He finds it weak. Before long the engine begins to miss explosions and he blames the coil or the spark plugs. He opens the switch after a long run and the engine refuses to stop. Then he remembers that he heard a distinct knock which he thought might be a loose bearing, but now he knows there is something wrong inside or the engine wouldn't overheat so badly after careful handling. So he condemns the car and asks his friends what the trouble is that so many ills can occur to one engine at one time.

"Carbon" is the answer. It gets under the exhaust valves and gums up the piston rings, so that the motor loses compression. It short-circuits the spark plugs, and the engine misses explosions. It accumulates in masses in the head of the cylinder, gets red hot, and fires the mixture before the proper time. This causes knocking, which is especially pronounced on a hill. When the switch is opened the motor keeps on running as if it were not using the electric spark at all.

There are many causes of carbon, and one must be on his guard against all of them. The usual trouble is too much oil, but the wrong grade of oil will cause carbon, as will a poor grade.

Too rich a mixture from the carburetor is another cause. If the piston rings are badly worn oil will be drawn up into the combustion chamber on the suction stroke, resulting in more carbon.

The remedy is to avoid the causes given above, and also keep the ignition properly timed. Drive with advanced spark as much as possible. Be sure that a hot spark is delivered to each spark plug through an efficient ignition system. See that all the plugs are clean and properly adjusted. If a multiple point spark plug is used, see that all the points are equally spaced. Use oil made by a manufacturer of established reputation, and use the oil he recommends for your car. See that the oil level is correct, and that mixture from the carburetor is right. If red or yellow flame is shown at compression cocks the mixture is too rich.

In spite of the best care, carbon will persist in forming. To help keep this down inject a small quantity of kerosene in each cylinder once a week. Have the motor hot when it is poured

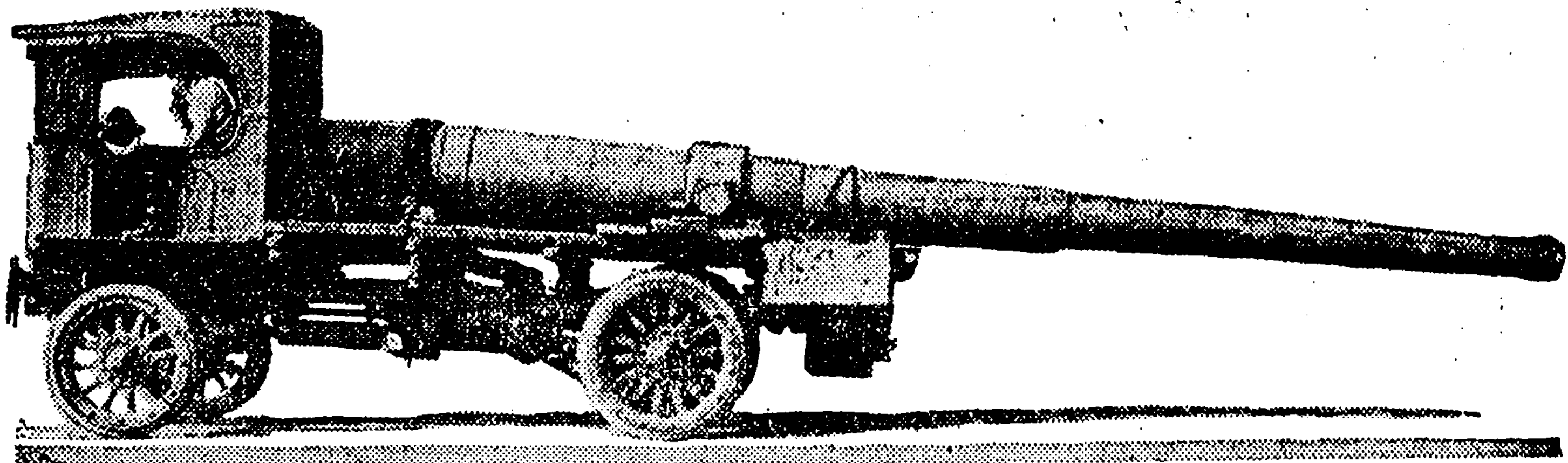
in so that the kerosene will vaporize. Close the compression cocks and crank the engine over a few times, either by hand or self-starter. This compresses the vapor and forces it into the carbon. The effect of the kerosene vapor acting all night is to soften the carbon so that some of it will be ejected when the motor is again started.

If such precautions have not been taken and the cylinders are found to be carbonized, the deposits may be too thick to be affected by kerosene alone. The old method was to use scrapers, which were inserted through the valve openings. The carbon was scraped off, but fell in masses on the head of the piston. Unless blown out it was carried into the muffler. If not thoroughly removed ridges of carbon were left, which became red hot and caused pre-ignition, just the same. The best method, aside from removing the cylinder head and positive scraping, is to have the cylinders burned out with oxygen. This can only be done when special apparatus is available.

Carbon does not form on the cylinder walls, but mostly in the combustion chamber, therefore the piston is placed at top centre of compression when all the valves are closed. The valve cap is removed and the oxygen fed through a special appliance regulated by a gauge. The oxygen jet must not be held too long in one place. It must be moved about to avoid burning the metal in any particular spot. There is no danger of injury to motor parts when intelligently done, and the process is quick and efficient, dismantling of the motor being unnecessary.

Urge Return-Loads System Here.

In marked contrast to the reports of progressive action by many Eastern cities in organizing the return-loads truck system on a workable basis, was the statement at the truck owners' conference last week that New York City had been backward in recognizing its commercial benefits. Roy D. Chapin, Chairman of the Highways Transport Committee, said that the plan was well established in Connecticut, with bureaus in all of the leading cities, where arrangements for return loads could be quickly made. A motor truck owner who has been transporting goods from Springfield, Mass., to this city, said that he frequently endeavored, without success, to obtain goods for delivery anywhere on his return journey. The subject of more energetic action on the part of New York has been taken up by Mr. Chapin with the Merchants' Association. "Philadelphia," said Mr. Chapin, "had shown a very progressive spirit in adopting the return-loads system."



MOTOR TRUCK SPEEDING UP WAR WORK.

Four 28-foot guns, each weighing ten tons, readily hauled seven miles to new Pacific Coast station over sandy roads on five-ton Garford truck. Five hours were required for each gun, the transportation formerly having taken four days.