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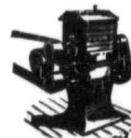


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Course in Gas Engineering

Continued from page 47

2. Uncertainty of the moment of ignition on account of variable compression.
3. Blowing by or leakage at the piston rings, and consequent reduction in the amount of compression.
4. Short life and consequent annoyance in replacing worn out or broken tubes.
5. The uncertainty of timing the ignition and the bother of starting the engine on account of having to heat the tube.

Prof. Hutton in his book on "The Gas Engine" places himself on record with regard to the hot tube as follows:—

"The time of ignition with the hot tube will depend upon:—

- "1. The length of the tube.
- "2. The size or volume of the passage leading to the tube.
- "3. The amount or degree of compression of the mixture by the piston.
- "4. The temperature of the tube; the hotter the tube the earlier the ignition, the cooler the tube the later.
- "5. The fact whether it was hotter near the open or the closed end; if heated near the open end the earlier the ignition.
- "6. The temperature of the mixing and ignition chambers.
- "7. The temperature of the jacket water outlet.
- "8. The speed of the engine.
- "9. The quality of the fuel and air admitted.
- "10. The pressure of the intake or suction stroke.
- "11. The governing action and the system of governing.
- "12. Leakage; at piston, at exhaust, past valves.
- "13. The state of the surfaces of the tube outside and in.
- "14. The location of the tube with respect to receiving and acting on new or fresh mixtures, or mixtures containing burnt gases."

Ignition by contact with a hot surface in the combustion chamber is illustrated in figure 3. This set of diagrams shows the series of operations which was placed in the Hornsby-Akroyd oil engine. Before starting the engine chamber C is brought to a temperature to that of very nearly red heat and this temperature is afterwards maintained by the combustion within the cylinder. During the suction stroke of the engine a jet if forced into C by means of a pump and striking the hot surface of the chamber, it is transformed into vapor. The cylinder of the engine, when the piston is at the end of the suction stroke, contains pure air while the chamber C is filled with oil vapor and the products of combustion left from the last cycle.

In the figure the oil is represented by small circles and the air

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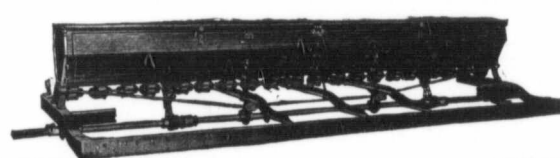


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