

absolutely, and draws in a fresh charge between it and the cylinder-head proper. It returns with the working piston in the subsequent period, but travels slightly further in the same time, and thus re-establishes the combustion-chamber for the next explosion. The gases are simultaneously compressed, and automatically enter the combustion-chamber through an atmospheric-valve. The induction-valve proper, in the cylinder-head, is also atmospheric. The new charge does not come in contact with the exhaust, it will be noticed.

Although a very clever idea, such an engine would need extensive trial to be proved effective, for it makes great demands on some of the moving parts. The false head or piston accomplishes a full stroke in about one-third of a half revolution of the crank-shaft, or about three times as fast as the piston proper. It is operated by links and rods which must be strong enough to take the reaction of the explosion pressure and light enough to enable the head to travel at the speed mentioned. Also the mixture must enter the cylinder at three times the normal speed. The link motion, too, is extensive, and the leverages necessary to produce the velocity are the opposite to what would be best suited to give the greatest rigidity under load.

**Gobron.**

Stationary vertical 8-cyl. radial engine arranged with the cylinders in pairs, so that the formation is that of an X instead of an eight-pointed star. Each cylinder has two pistons working in opposite directions, but coupled to the same crank-shaft after the usual Gobron practice. An innovation in this design, however, is the use of a special cam-plate for operating the valves through inclined rock-shafts instead of push-rods. The engine is fitted with two magnetos, and the arrangement is such that it can run as a 4-cyl. engine in emergency. The cylinders are made of cast iron, and have brass water-jackets; the crank chamber and the casing for the outside connecting-rods belonging to the extra pistons, is made of aluminium. A great feature is made of the fact that this engine may be used with any standard radiator, and will operate under ordinary flying conditions without getting overheated. This engine was shown on the Breguet stand, and it is interesting to know that some of the new Breguet aeroplanes will in all probability have Gobron engines. Messrs. Gobron have also sold a number of these engines to different experimenters, and one is coming to England, where, of course, there is already a Gobron agency.



**MONACO FLIGHT COMPETITION.**—General view, taken from above Monaco, of the "Course" for the aeroplanes, which have to start from the new quay at Monaco, fly over the entrance of the harbour (centre of picture), from which point the official timing takes place on the outward flight, and again on the return flight, after having rounded Cap Martin, seen in the distance. To the left of the harbour, in the centre of the photograph, will be noticed Monte Carlo Casino Tir des Pigeons, &c., in front of which the motor boat races take place annually.