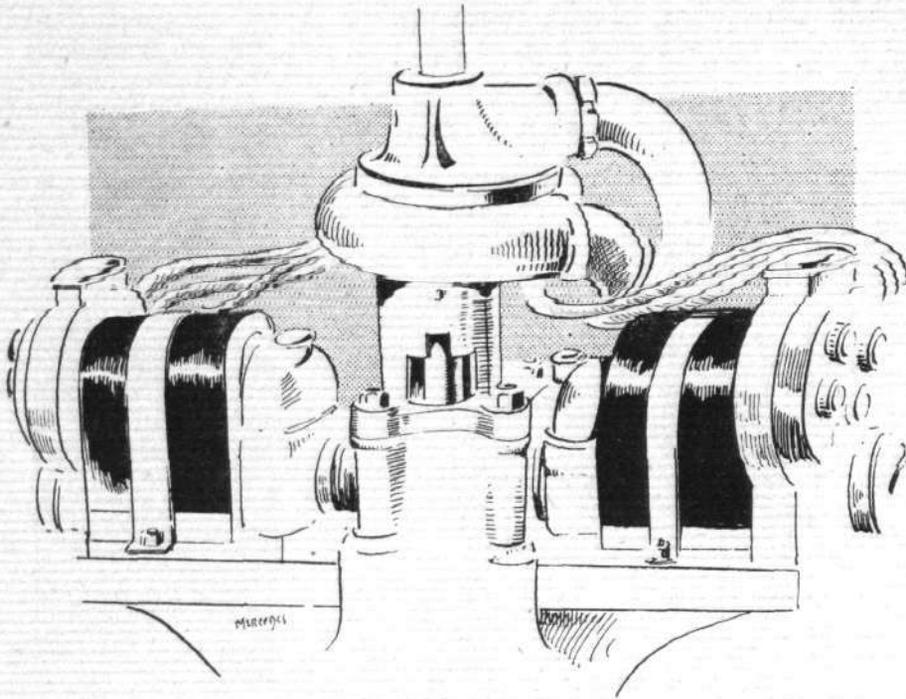


Solidity of construction is indeed the most striking characteristic, the base-chamber of the larger model in particular being a massive aluminium two-piece casting.



Arrangement of the centrifugal pump and the two magnetos on the Mercedes engines.

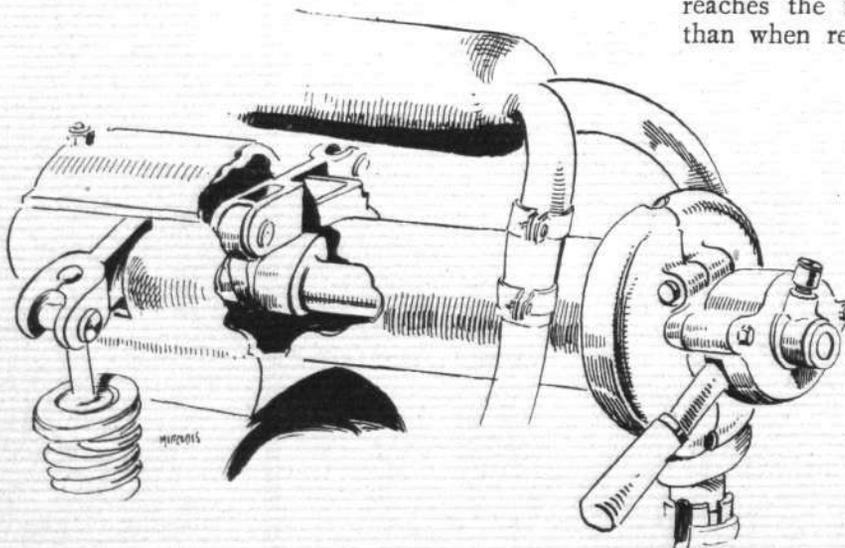
This has no doubt been found necessary in order to provide sufficient stiffness or rigidity, the overall length of the crankshaft being considerable. In this model, rated at 160 h.p., the cylinders are mounted separately, and there would, therefore, it goes almost without saying, be a bearing for the crankshaft between each crankthrow, or seven in all. Though, of course, such an object or quality cannot be revealed merely by inspection, it is certain that balance has received the most careful thought and skill, since this is a most important factor making for reliability as well as propeller efficiency. So far as one

pression device employed as a means of facilitating starting, nor indeed in the use of two magnetos for the ignition, and two carburettors for the supply of combustible mixture, and these are the only essential points wherein the present Mercedes engine differs visibly from the normal six-cylinder motor car engine.

In the case of the smaller of the two models, which is rated at 128 h.p. at 1,400 r.p.m., ordinary motor car practice is, if possible, even more closely adhered to, since in this instance the cylinders are cast in pairs, and there is apparently no half-compression device. Except in these respects, however, and, of course, that of size, the two engines appear practically identical, so that the following notes will apply to both. Apparently of cast-iron, the cylinders are cast in one with their water jacket, and have no evidence of being abnormally light. The camshaft, as we have said, lies above the cylinder heads, and is driven by a vertical shaft from the rear end of the crankshaft. On either side of the vertical shaft is a Bosch magneto with the contact-breaker box facing outwards, the armature spindles presumably being driven from the one worm or bevel on the said shaft, though, as the latter is enclosed, it is not possible to speak definitely on this point without closer inspection.

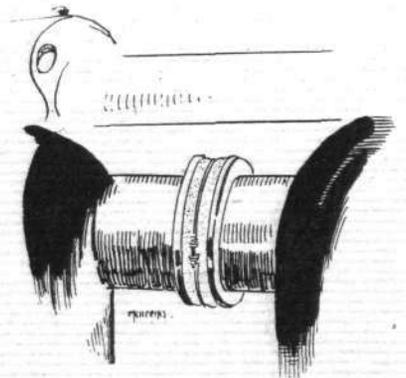
The h.t. leads are taken to two sets of plugs, these being situated on opposite sides of the cylinders.

Above the magneto driving gear on the vertical shaft is a horizontal centrifugal pump for circulating the cooling water, which, as mounted in the aeroplane, is contained in a tank suspended some distance above the engine. A point to notice and which may be adversely criticised in connection with the circulation is that the cylinders are in series: that is to say, the water is led first to one cylinder—the rear—thence to the next and so on, and thus the temperature of the water by the time it reaches the foremost cylinder is considerably higher than when reaching the first; or, in other words, the cylinders are unequally cooled. In actual practice, probably, this is no great drawback, since the differ-



The overhead valve gear on the 160 h.p. Mercedes engine, drawn more or less diagrammatically.

can see there is not a feature of the engine but what, even if not usual, is at least common even in car practice. There is nothing new, of course, in casting the cylinders separately, neither is there anything out of the ordinary in overhead valve gear and valves, nor in the half-com-



Sketch showing the water connection between adjacent cylinders of the 160 h.p. Mercedes engine.

ence may be just counteracted by the difference in cooling resulting from the slip stream of the propeller and the forward motion of the machine as a whole, since in this case it is the front cylinder that receives most of the benefit, those in rear a decreased cooling effect