

THE EVOLUTION OF THE HYDROPLANE.

The uninitiated frequently confuse the hydroplane with the hydro-aeroplane, the former being a very fast type of motor boat designed to skim the surface of the water, and the latter being, of course, an aeroplane designed for the purpose of alighting on and rising from the water.

As it is necessary for any hydro-aeroplane to acquire its flying speed by driving over the water before it can ascend into the air, the ability to skim the surface of the water—thereby reducing the resistance to motion, and so increasing the speed—is a matter of very great importance.

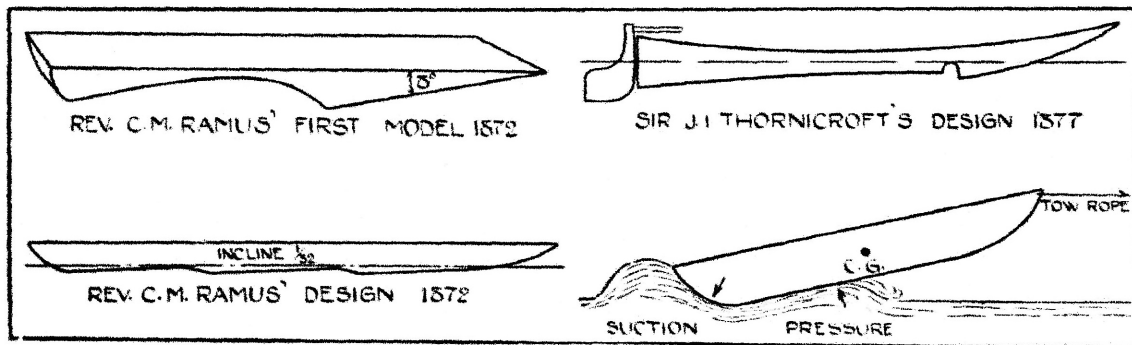
It may be interesting, therefore, to refer quite briefly to the evolution of the hydroplane as a type of boat; for some, at least, of

middle of the boat, where the aft part of the bottom of the boat suddenly commenced on a higher level.

The fore and aft portions of the bottom of the boat thus served as two inclined planes when the boat was in motion, and these tended to lift the boat out of the water on a level keel.

Those who have witnessed modern motor-boat races are very well aware that most of the fast motor boats of the present day have flat bottoms without a step, and it is a characteristic feature of the races that most of these boats go round the course with their bows clear out of the water.

The absence of a step is due to the regulations prohibiting its use in most races that are for motor boats proper, and not for hydro-



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Sketches illustrating the original design for a hydroplane invented by Ramus in 1872. Sir John Thornycroft's design of 1877 is shown, also a diagram illustrating the forces that tend to tip up the bows of a boat that has a round stern.

the boats that have been designed for use on hydro-aeroplanes have been intended to belong to this class of water-craft.

The inventor of the hydroplane was a clergyman, by name the Rev. C. M. Ramus, who in 1872 held the living of Playden, near Rye, in Sussex. In that year he wrote a letter to the Admiralty informing them of certain experiments he had made, which led him to suggest a radical departure from the orthodox design of ships.

The Director of Naval Construction accorded him an interview, and subsequently issued an official memorandum relating to the matter. The hydroplane was described as a ship "formed by two wedge-shaped bodies, one abaft the other."

The essential feature in Mr. Ramus's boat was the presence of what is commonly known as the "step." The bottom of the boat was flat, but constructed on two levels, that is to say the fore part of the bottom of the boat ended abruptly somewhere about the

planes as such. The restriction doubtless originated through the peculiar character of the early hydroplanes, which did not have the sea-going qualities of motor boats, although they were fast enough to win races in smoother waters. Nowadays, however, the hydroplane boat has been developed on much the same lines as the ordinary motor boat.

It is to Sir John Thornycroft that the earlier work in connection with the development of the hydroplane boat is due, but Sir John Thornycroft was also extremely interested in the idea from the time it was put forward by Ramus in 1872. In 1877 Sir John designed his first hydroplane, the outline of which is shown in one of the accompanying sketches.

There is also shown a sketch illustrating the general principle on which a boat, and especially a boat with a rounded stern, has its bows raised out of the water even when towed from a point above and in front of the centre of gravity.