

by the regulating plates, *CC'*. It will be understood that in this construction no attempt is made to adjust the plates in width as speed increases; but the advantage of the application of this principle is secured by designing the plates for each particular boat for one speed only (which is its maximum speed), and the lifting force required at other speeds (between starting and maximum) is obtained by the automatic regulating device which gives the plates at all times such an angle as is necessary.

Strange as it may seem, the chief obstacle encountered in early experiments was not to make the hydroplanes rise, but to prevent them from rising too far, and it was as a means to this end that the surface follower, as a regulating device, was adopted. By its use the boat becomes practically a soaring machine and bears the same relation to an ordinary boat, in the water, as does a soaring bird to a balloon, in the air; and this relation holds, also, in respect to their skin friction areas. It also possesses the following advantages over a soaring machine in the air, i. e., it soars in, and its propelling force is exerted upon water, which is seven hundred times as dense as air, while the displacement of the hull, with its necessarily large frictional surface, is all carried in the rarer medium, air, and above the water, the surface of which can be used to effect the regulation of the inclination of the supporting hydroplanes.

Another special advantage of a submerged hydroplane construction is that it will operate without hindrance in water sufficiently rough to totally unfit a gliding boat.

The strength of development and success will depend, not upon disproving or defying any established law, but upon strict application of rational laws and careful attention to details.

A MOTOR PADDLE WHEEL FOR SMALL BOATS.

In the accompanying engravings we give a side elevation and plan view of a detachable stern paddle wheel designed for the propulsion of small boats, and perspective views of the apparatus mounted upon a boat.

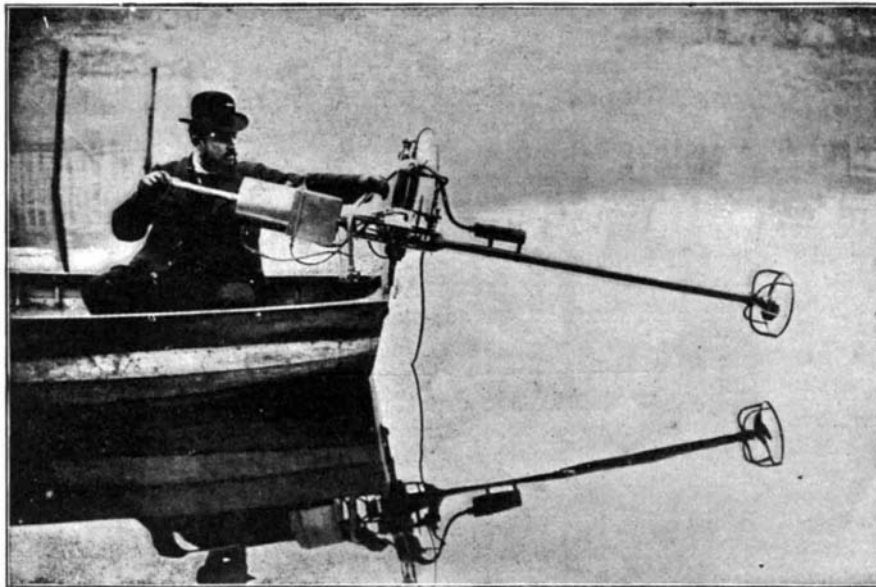
On examining the diagrams from left to right, we observe, at *A*, a two-cylinder de Dion-Bouton motor of 16 effective horse-power; at *B*, a clutch; at *C*, a speed reducer; at *D*, a reversing gear; and at *E* and *E'* sprocket chains connected with the paddle wheel *R*. This wheel consists of paddles inclined at an angle of 50 deg., small spaces being left, so that the stress is exerted upon a wider surface than if the paddle consisted of a single bow, as is usually the case. As the water is easily discharged, it creates no passive resistance, and thus a high efficiency is obtained. As this propeller is designed for Oceanica and has to be actuated by kerosene, the only fuel practical in that country, a special carbureter has been applied.

With this paddle wheel it is possible to carry from 18 to 20 tons of merchandise at a commercial speed of from 5 to 6 miles an hour with an output of fuel not exceeding 40 ounces per horse hour.—Translated from *L'Automobile* for *SCIENTIFIC AMERICAN*.

THE "MOTOGODILLE," A MOTOR DEVICE FOR PROPELLING SMALL BOATS.

BY THE PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

An interesting device in the way of applying a motor to small craft has been brought out in France. The apparatus has been designed to afford a very simple as well as inexpensive method of applying a small gasoline motor to boats. It is nothing more or less than a power oar and consists of a motor-driven propeller which is adapted to be placed on the boat; but contrary to other apparatus and motors which require to be specially built and installed in



THE MOTOGODILLE, OR MOTOR SCULL, APPLIED TO A SMALL BOAT.

the boat so as to form part of the latter, it forms an entirely separate mechanism which is fitted to the stern of the craft in a few minutes, and which permits the immediate conversion of any ordinary boat into a motor-driven craft without any change whatever in the boat itself. By applying a simple socket-piece to the stern with four screws or bolts, the propelling apparatus, which fits in the socket by means of a pin in about the same way as a steering oar, can be immediately installed. The new propeller

in case of a calm, and it can easily be stowed in the hold. As will be noticed the motor is mounted upright just over the main pivot which works in the boat. Back of the motor and fixed on the steering bar is a box with sliding cover for the battery and spark coil. Above it is a cylindrical gasoline tank.

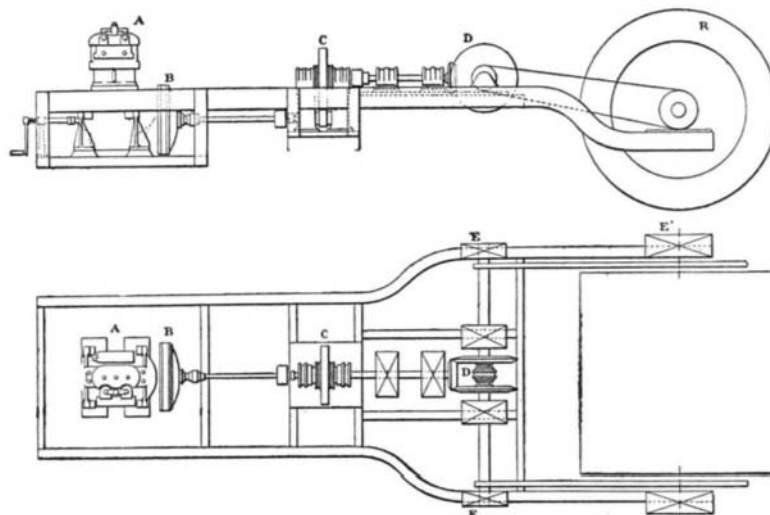
The Destruction of Flies.

The fly is doomed; the flat has gone forth, and its days are numbered. Doctors have recognized the fact that the house fly is not only a nuisance, but also a real danger, because it is the bearer of microbes and nastiness of all kinds. Fired with the spirit of enterprise, and wishing to do good to humanity at large, the *Matin*, of Paris, recently offered a prize to the discoverer of the most practical and efficacious means of destroying these insect pests, and thus eliminating one great source of the spread of epidemics.

A pamphlet entitled "*Delenda Musca*" has carried off the prize.

According to the writer of this essay, very few people are aware that the domestic fly lays its eggs in cesspools, drains, liquid manure, and dung heaps of all kinds. In these delectable media the *Musca domestica* deposits its oblong eggs, which are opened by the detachment of a narrow longitudinal band or strip—much in the same way as the blade of a knife is opened. The larvæ grow with surprising rapidity, attaining their full size, in summer, in eight days' time. One fly may give birth to millions of others, as it breeds continuously for several consecutive months (usually from May to October). Assuming that one specimen lays 200 eggs (containing an equal number of males and females) then, as will be seen from an easy calculation, in six months' time one hundred thousand million flies will be brought into the world to tease bald-headed men and the helpless in general.

After showing that it is useless to attack the full-grown insect, the author seeks some means of destroying it while it is in the period covered by the laying of the egg to the formation of the pupa—just when the insect is most vulnerable, and is found collected together in more or less considerable quantities. The greatest points of attention to this end are cesspools, muck heaps, drains, manure heaps, and the like. Arsenic and arsenical compounds should not be used for the destruction of flies' eggs and larvæ in open cesspools in country districts, where—too often, unfortunately—they are in underground or other communication with wells, watercourses, and springs, which might thus get poisoned. Recourse should be taken to some substance which not only dissolves in the liquid contained in the drain, but which will penetrate right into the heart of solid matter. This substance must be of a nature to withstand fermentations and all transformations experienced by the solids contained

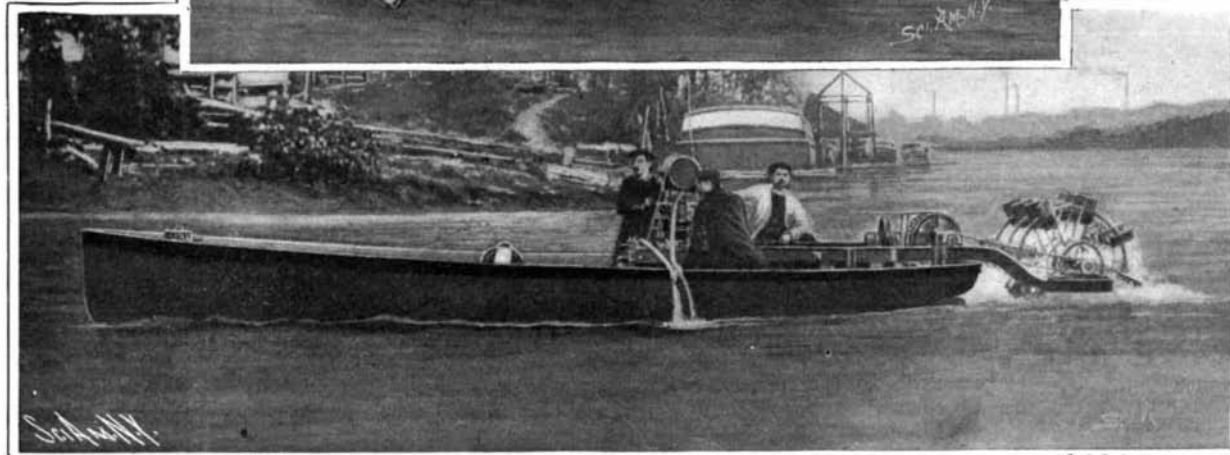
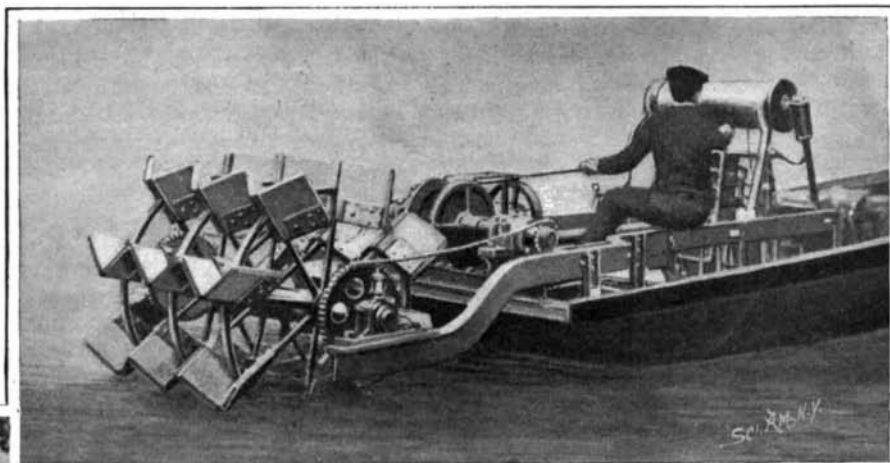


ELEVATION AND PLAN OF THE BUCHET MOTOR PADDLE WHEEL.

device, which is known as the "Motogodille," is of extra light, simple, and strong construction, and forms a single rigid piece having but a single contact with the boat. It serves to propel and steer the craft at the same time and also to change the speed. The socket and the support of the apparatus form a kind of universal joint which allows the pilot to raise the propeller

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THE BUCHET MOTOR PADDLE WHEEL SEEN FROM THE REAR.



SMALL BOAT ACTUATED BY THE BUCHET MOTOR PADDLE WHEEL.