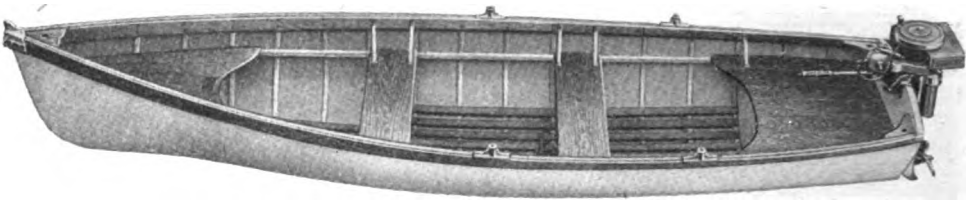
THE OUTBOARD MOTOR

When the master mind of the genius gives to the world a great invention, right in principle, though crude in construction as compared to the finished product many years hence; no one, not even the inventor himself has the visionary power to correctly predict how it may ultimately effect the destiny of men or nations when, in the future, its principle as a whole or some variation of it, forms an indispensable part of other great inventions.



MULLINS STEEL ROW BOAT OUTBOARD MOTOR ATTACHED.

Thus when Lenoir put out the first practical gas engine in 1860, and Dr. Otto produced the first modern engine of this kind in 1876 by making one to operate on the 4-cycle principle, as pointed out by the French engineer Beau de Rochas, little did they think that in

REAR VIEW OF MULLINS STEEL BOAT MADE EXPRESSLY FOR OUTBOARD MOTORS. NOTE WIDE STERN.

something like fifty years hence huge engines of destruction, operated by motors of the internal combustion type, would be playing an all-important part in the most titanic struggle the world has ever known: that horseless vehicles, driven by the same power, would be conveying people here, there and everywhere, on both land and water.

But it remained for a student to bring out the marvelous little engine known as the Outboard Motor—an adaption of the original scheme of the gas engine.

It happened in this wise: In 1903 when the motorcycle made its debut a certain young man, who was attending a law school in the East, bought one of the newfangled machines; but like all the early models of this tribe of conveyances, it gave its owner considerable trouble. Much disgusted, he determined to give the machine a thorough overhauling so as to find out all about its mechanical make-up, be able to put it in proper working order as well as to quickly correct any trouble that might thereafter occur.

Luckily this college man was a fisherman, spending his summers at the Lakes, and knew what it meant to row five or six miles to the fishing grounds in the morning, have a splendid day's outing, then row back to camp in the evening—dead tired, that's what!

So it was that while working on the motorcycle the thought occurred to him, "If this little motor will run this machine, why could it not be rigged up to a propeller and drive a row boat?"

The more he studied the matter the more he became convinced it would work, so he set himself to the task that was finally to give him considerable renown as a builder of outboard motors, and a benefactor to his fellow sportsmen.

For one, two,—yes three years, he worked on his cherished idea, and for as many years those who knew what he was doing were not backward in telling him he was crazy for tinkering away, and wasting, so much valuable time. Doubtless, however, these scoffers would have been very glad to have had the privilege of taking the first ride behind the new machine.

But he was not to be discouraged and have his efforts thwarted by the babbling of those following the line of least resistance. Came a day in the summer of 1906 when the motor was ready for its trial trip, and secured to the faithful old row boat, that had borne him so many times to his favorite fishing grounds,

A FULL LOAD IN A MULLINS STEEL ROW BOAT WITH OUTBOARD MOTOR ATTACHED.

it took only thirty-five minutes to make a five-mile trip with another boat of spectators towed behind.

While this trip was not as spectacular as Fulton's "Clermont" on the Hudson, in the summer of 1807, it nevertheless marked the beginning of a new era in the method of propelling row boats and other similar craft, just as surely as the successful performance of the "Clermont" was to revolutionize the method of ocean travel, — enthrone the steamboat, dethrone the sailboat.

Greatly pleased with the performance of the new motor, the inventor started the manufacture of his new engine, but people in general and engine builders in particular still gave him the laugh until, after several years of persistent effort, outdoor people began to realize what it meant to be able to convert practically any kind of small craft into a motorboat, and orders kept constantly increasing.

It was now his turn to laugh; the new motor was a success; he had convinced the class of people to whom it should appeal, that he was right; he had entered the threshold of success.

Eleven years have passed since the first outboard motor made its appearance, — eleven years of ceaseless toil and study, during which time the various makers of this type of motors have been striving to outdo each other in quality and uniqueness of production. As a result of this keen competition, such a refinement of design and simplicity of construction has been reached that, today, the outboard

THE RETURN OF A SUCCESSFUL FISHING TRIP WITH THE GRAY OUTBOARD MOTOR'S ASSISTANCE.

motor is one of the handiest, strongest, and most useful things of the outer's equipment.

Essentially, the typical outboard motor consists of a 2-cycle gasoline engine driving a propeller, the whole being secured to a suitable frame adapted to be quickly attached and detached, by means of large thumb-screws, to the stern of a row boat — any boat in fact within its capacity. Any one of ordinary physique can easily carry them in their canvas case, while a special box or trunk is procurable from the maker for shipping them from place to place. The average weight is around sixty pounds.

MISS BLANCHE MCBAIR OF HAMPTON, VA., OPERATES A GRAY OUTBOARD MOTOR WITH EASE.

If a boat has a pointed stern, it will be necessary to obtain a specially designed bracket, from the makers, which will allow the motor to be as easily attached as though it had a square stern. It also sometimes happens that certain lakes or streams have sloping bottoms, interfering greatly with landing at the water's edge by the propeller striking mud or rocks. This trouble may be overcome by attaching a "tilting" device to the stern of the boat, the motor being secured to this. Thus equipped, the motor may be tilted any desired amount — swung clear of the water if necessary — without molesting its fastenings.

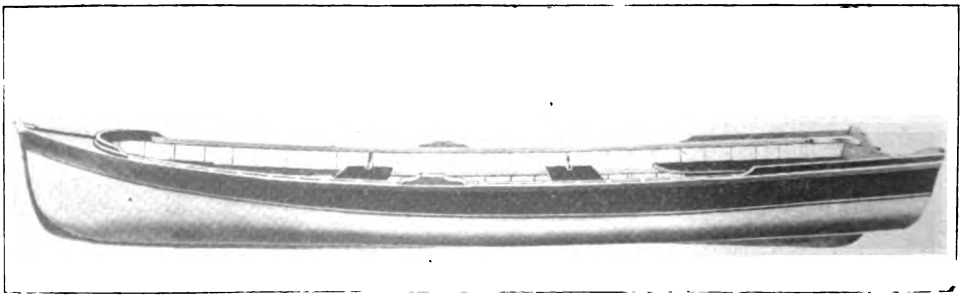
Ignition is made with either batteries or a magneto, the latter, of the built-in type, being almost universally used. A properly constructed magneto, so made that it is thoroughly protected from moisture, makes the ideal form of ignition.

A typical magneto for this type of motor is one built into, and forming part of, the fly wheel, where it is thoroughly insulated so no dampness can reach it, and also protected from injury of any kind.

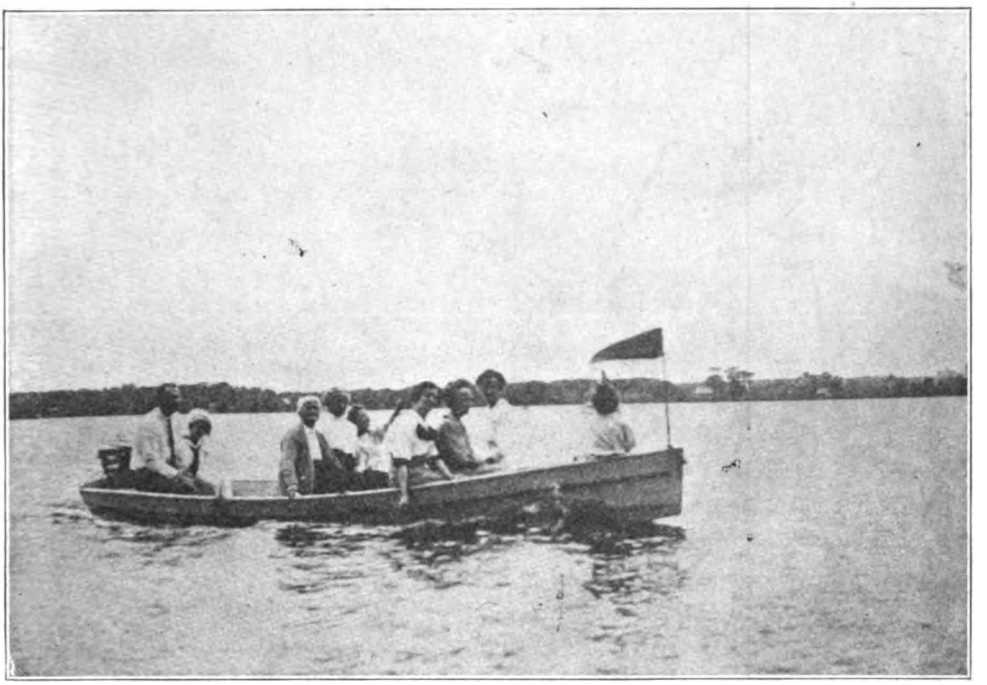
When batteries supply the ignition current, one may expect more or less trouble, as they seem prone to give out when one is farthest from supplies or when needed most.

The fuel tank is located near the fly wheel and holds, on an average, a little less than a gallon of gasoline — enough, ordinarily, for a four hours' continuous run. The lubricating oil is poured into the fuel tank, where it mixes with the gasoline and is drawn into the cylinder, when the engine is under way, lubricating certain of the moving parts. As it is important that the oil and gasoline should be mixed in the proper proportion, the removable screw-cap of the fuel tank has a measuring cup on the inside. Usually, six fillings of oil makes the correct amount for one tank of gasoline.

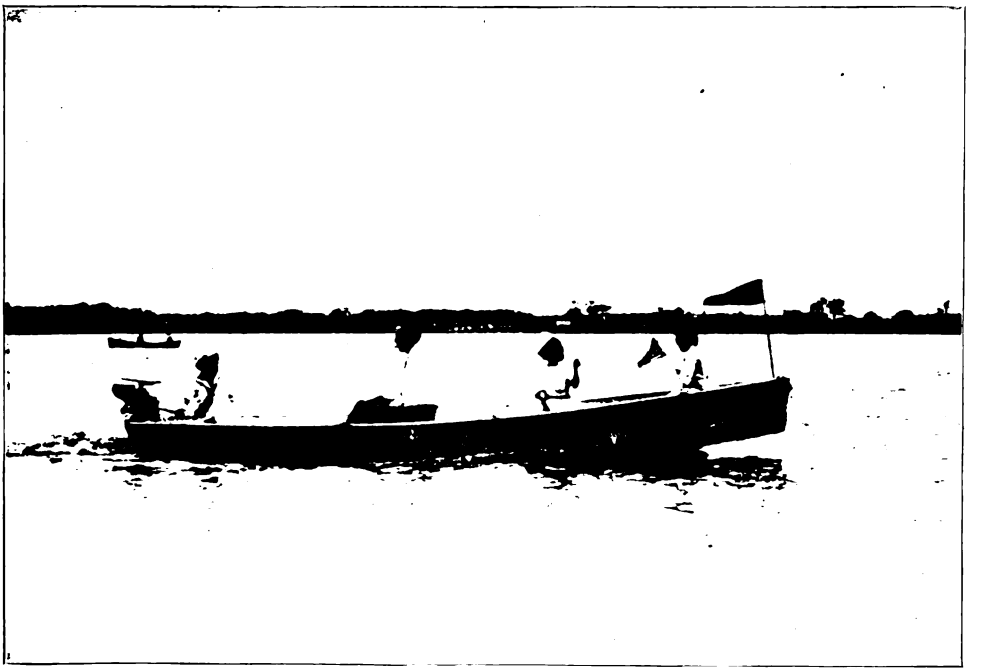
Motors operating on the 2-cycle principle are especially adapted to marine work, since there is an abundance of water for cooling. In these engines there is an explosion (power impulse) for each revolution of the fly wheel,



ROWBOAT TO WHICH ANY OUTBOARD MOTOR CAN BE ATTACHED.



COULD A LAUNCH BEAT THIS ROW BOAT WITH A TWO-CYLINDER KOBAN ATTACHED?



NORMAN DURRANT (6 YEARS OLD) OF PLAINFIELD, N. J., OWNS AND RUNS A 2 CYLINDER KOBAN.

THE TWO-CYLINDER KOBAN ON A FLAT BOTTOM ROW BOAT WITH TEN PASSENGERS.

which means quite a large amount of heat is generated; but this is very easily disposed of by a pump, operated by the engine, keeping an abundance of water circulating around the cylinder and cylinder head through the water jacket.

In principle, the 2-cycle engine is very easily understood, and has no complicated moving parts to get out of adjustment. This is largely the reason for the outboard motor giving so little trouble, even to those who are not at all familiar with motor operation. This does not mean, however, that 4-cycle engines are not adapted to this work; for some of the best twin-cylinder outboard motors are of the 4-cycle type.

For the average 2 h. p. motor the bore is about 2⅜ inches; stroke 2½ inches: 3½ h. p.. bore 3¼ inches; stroke 3 inches. The pistons and cylinders are made up in the best possible manner, a special mixture of soft, close-grained iron being used. These and other parts, where the fitting must be done to a nicety, are ground, reamed, polished, etc., to one-thousandth of an inch in accuracy. In fact all other parts,—bearings, connecting rod, crank shaft, crank case, etc.,—are also made from materials best suited to the work the part is required to perform; meaning, that these motors are very carefully and strongly made. If given reasonable care, any of them will last through many years of hard service.

The steering is accomplished by a tiller operating either a rudder or the propeller. The direction of the boat is also sometimes controlled by small ropes running along the sides of the craft and connecting with the steering mechanism. By this method one may sit anywhere in the boat and have it under perfect control.

These motors are very flexible, giving a number of different speeds, driving the boat backward as well as forward. The carburetor is of the mixing valve type, thoroughly reliable in operation, and automatic in action.

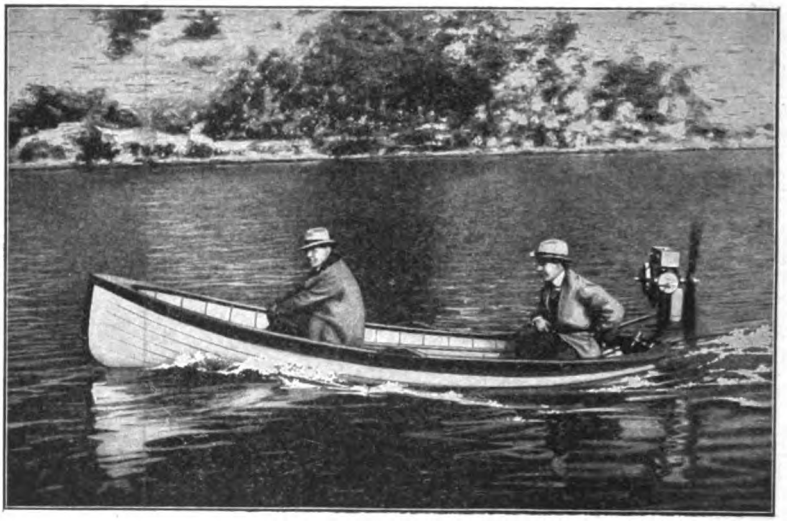
TAKING THE CAMP OUTFIT IN ONE LOAD WHEN THE EVINRUDE IS ATTACHED.

FISHING IS A PLEASURE WITH AN EVINRUDE ATTACHED TO STERN OF ROW BOAT.

Different makes of motors employ different means of regulating the speed. In some this is effected by moving the timing lever—changing the speed of the motor; in others reversible propeller blades are used. The pitch of the blades is changed by raising or lowering the tiller handle; thus enabling the boat to be driven at different speeds, as well as either backward or forward, without changing the engine speed.

As a precautionary measure, some makers secure the propeller wheel with a brass pin, or its equivalent, said pins sheering off should the blades strike any solid obstruction that would

THIS NORTH WOODS BIG GAME HUNTER LETS THE EVINRUDE DO THE WORK ON HIS TRIPS.



THE AEROTHRUST ATTACHED TO A ROW BOAT.

break the propeller were the propeller wheel compelled to revolve, thus preventing any considerable injury to the blades.

The speed at which these motors will drive a boat depends of course, upon many things —the power of the motor, size of the boat, its weight, shape, etc.,—but a 2 h. p. outboard will drive an ordinary flat boat in the neighborhood of seven miles per hour; a canoe at nearly ten miles per hour.

It is well to note that one maker of this type of motor dispenses with the propeller entirely, the boat being propelled by a fan driven at high speed. This motor is also used for driving ice boats and similar craft, within its capacity.

Still another maker puts out an electric outboard motor. It clamps to the boat in the usual manner, but has the engine replaced with an electric motor. Power is supplied from two storage batteries giving 6 volts and 120 amperes each.

Thus it would seem that the sportsman of today is living in an age in which specialties for the outdoor people are the rule, rather than the exception: there was certainly never a time when the lover of the out-of-doors had the privilege of buying so many things

A WINTER SPORT WITH THE AEROTHRUST MOTOR.

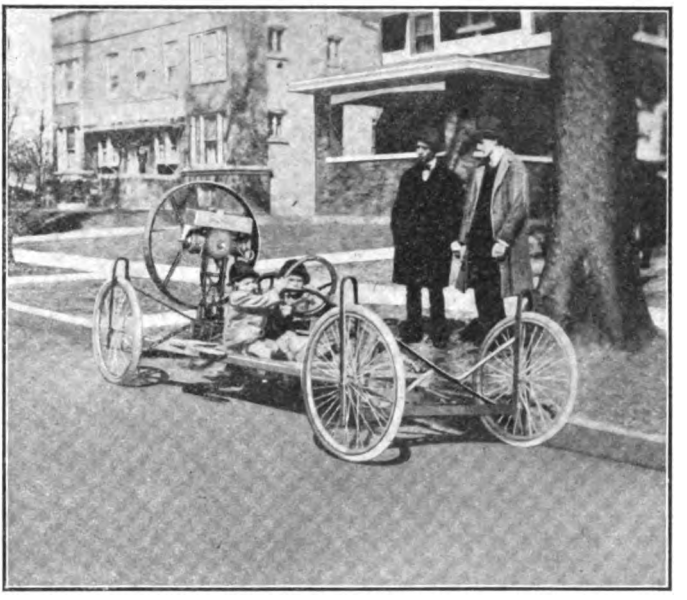
which add comfort and pleasure to any outing. For, after loading all the luggage into the boat, instead of dreading the toilsome row across the lake or up the river to camp, the modern outer clamps an Outboard Motor to the craft and is off in a jiffy with nothing more tiresome to do than guide the boat and drink in the gorgeous scenes that beset him on every side. If portages must be made, it is only the work of a few minutes to detach the motor; then after boat and all is carried across, the little motor is again put in place, the boat is soon under way, and when camp is reached there are no aching arms from a long toilsome row. Here, the motor will furnish current enough to run an electric light off the magneto, and we predict that in a very short time they will be able to run a number of lights, giving the entire camp the best possible illumination.

In permanent camps the outboard motor is frequently used for operating wood saws, lathes, grindstones, etc.; for the professional guide quickly adopted this type of motor when he saw what a time and muscle saver it was when transporting parties, and supplies, to and from their camps.

Likewise, professional trappers were also quick to adopt it, as they found they could tend a greater number of traps, and do it better, with the little motor driving their boat than with the "armstrong" system of rowing; fishermen have also enlisted its services because it meant a better time and bigger catches, by enabling them to cover more fishing territory with less fatigue.

Thus has the outboard motor contributed a wealth of pleasure and comfort to a multitude of real outdoor people, and will throughout the coming years, continue to be a very necessary part of the equipment of all those desiring a maximum amount of pleasure from their outings.

The Koban Motor Co., The Caille Perfection Motor Co., The Evinrude Motor Co., The Wisconsin Machinery & Mfg. Co., The Lockwood-Ash Motor Co., The Waterman Co., The Aerothrust Engine Co., The Gray Motor Co., The Cullen Motor Co., and the Joymotor Mfg. Co., make a splendid list of Outboard Motors; while the Brooks Mfg. Co., The F. H. Darrow Steel Boat Co., Dan Kidney & Sons, the W. H. Mullins Co., The King Folding Canvas Boat Co., The Oldtown Canoe Co., The Kennebec Canoe Co., and the E. M. White Co., make a very fine line of row boats and canoes that may be converted into motor boats by the use of the outboard motor.



ANOTHER USE FOR THE AEROTHRUST ENGINE. OUT FOR A SPIN IN THE SUBURBS.

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A TRAP LINE OUTING.

Being a barber by profession it naturally compels me to be housed up, and as I am an admirer of Nature's beauty along the rivers and streams, an outing is enjoyed by me as much as anyone. So whenever the opportunity presents itself, it's off to the woods with me.