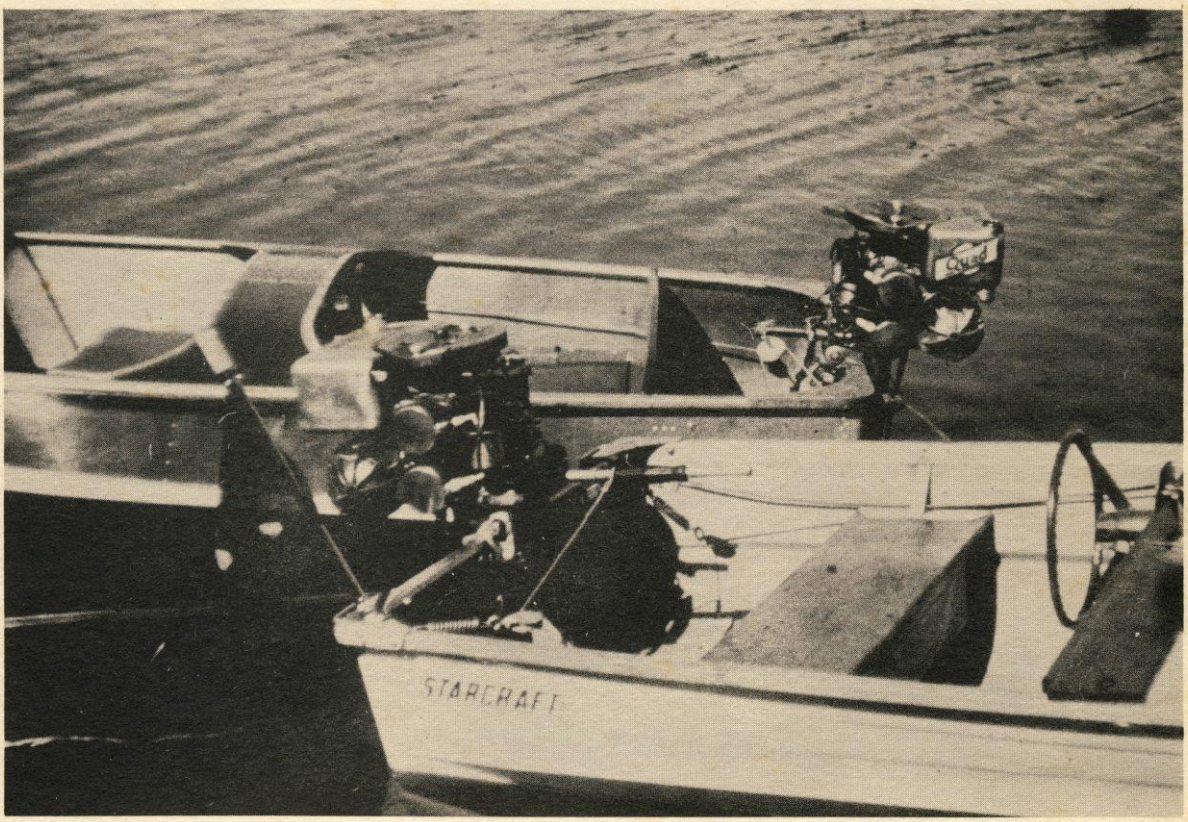
The ANTIQUE OUTBOARDER



1928 ELTO QUADS AT MOON LAKE IN EAU CLAIRE, WISCONSIN
The result of about 100 hours of work is a brand-new 18 hp. motor. It's a little noisy, but its 27 mph. speed matches that of the newer, less-experienced motors.

VOLUME 1 NUMBER 1 JANUARY 1966

The Antique Outboard Motor Club

The Antique Outboard Motor Club

CONTENTS

Club Officers:

D. R. Reinhartsen	President and Editor
C. R. Owen	Vice-President and Test Editor
J. C. Harrison	Treasurer and Technical Advisor
C. R. Reinhartsen	Treasurer
R. A. Hawie	Curator
W. J. Webb	Historian
J. F. Johnston	Restoration Advisor

THE EDITOR'S CORNER

D. R. Reinhartsen

The Editor's Corner in The Antique Outboarder, Vol. 1, No. 1 begins appropriately with a heartfelt thanks to those who have given their time and talents to the Club. Several deserve special thanks: The Kiekhaefer Corporation, makers of Mercury Outboards, who have made a substantial contribution to help us get started financially, John Harrison, Richard Hawie, Frank Johnston, Chris Owen, Jim Smith and W. J. Webb, all of whom deserve special credit for saying they would help by contributing articles. George Ralph, of the Antique Outboard Motor Club of America deserves thanks too, for if he hadn't begun what we are taking over, we would have had no starting point.

The help and encouragement that I have received assures me that I have been joined in this venture by a very fine group of people. Though I have only met a few of the members, every one of them has been tops. As I have had such wonderful times when I have been with other members, I feel that it would be a good idea to publish a membership list, so that when the opportunity arises, members can get together and talk about their favorite subject. That list is forthcoming.

One question that has been frequently asked of me is "What about conventions and meetings?" It would surely be fun to have them, but I believe that this is something which must wait several years until the membership grows large enough for good attendance. As the members are located all over the continent, distance becomes another problem. Until we can have a convention, let's just contact other members and get together with each other whenever the opportunity arises.

Another frequently asked question concerns prices for the motors we buy. Is a 1923 Johnson really worth $1000.00? My answer to this is: I have never paid more than $25.00 for any of the motors which I have collected, and I know of no one in the club who has paid more than $100.00. A short story illustrates the reason: A year ago, I paid $22.50 for a '28 Elto Quad. Chris Owen paid $10.00 for the identical motor, only his was in much better condition. You can still get the motor you want at a reasonable price, so there is no sense in paying too much. Those two Quads incidentally, are the ones appearing on the cover.

This matter of price comes up often enough to devote an article to it. Would you send in a note telling what you have paid for some of the motors in your collection and possibly some anecdotes about how you got them? I will use your comments as a basis for an article on prices and publish it in a forthcoming issue.

Speaking of finance, the Club is in this sort of shape: We have had an income as of December 1st of $377.60, $232.60 of which came from donations. We have had an outgo of $133.78 which went largely for printing and postage. A more detailed accounting is sent to John Harrison at the end of each month, and is available to anyone who requests it.

One big problem that all of us have is obtaining parts for our antiques. To help solve the problem, we are compiling a comprehensive list of parts suppliers which will be distributed to the members, and are going to inauguarate a parts-hunting service which will work in the following way: On learning that a member needs a part, the description of this part will be entered on a parts wanted list which will be sent to all parts suppliers and members, every other month. When a part becomes available, the member will be notified. This procedure will save everyone a lot of time, and I believe make parts hunting a lot easier.

We have been attempting to obtain decals of the new Club emblem but as they are quite expensive, we have been "going slow". This has paid offf, as John Harrison has found a Vinyl Applique which will do the trick. John will make these available to the club in a few months.

The response to the motor registration file which I have started has been rather slow. This file will be a convenience for all of us once it is established. How about sending the registration forms in with your next note to the Club?

Be sure to get the March issue of Popular Mechanics, as it will have an article about old outboards in general and our Club in particular. I'm sure that if they received many letters of appreciation they would consider another article.

It has been pointed out that the letter sent to Antique Outboard Motor Club of America members contained a paragraph about each of the members of the organizing committee but me. I would like to amend this oversight with the following: I am 27 years of age, have two children and a very tolerant wife. I have been interested in boats and motors for many years and love to work with my hands. I like to work with my mind also, for I will shortly receive an advanced degree in Electrical Engineering. Shortly the Club and I will move to Texas where more time can be devoted to boating, rebuilding motors, and expanding the Club.

As a final thought, I would like to predict the Club's future for the next five years. I think 1966, the centennial year of outboarding, will be the year in which the Club becomes established. It will be a year in which all of us must devote a lot of time to the task of making the Club known. From there on, the Club can only grow, because we have started at the right time, and because our group has a lot of enthusiasm. I need your help on this project - I need people to ask their local outboard and boat dealer to tack up our flyer - I need people to contribute to this magazine, and I need people to find others who will join our club. If you have suggestions, or ideas for the club, or wish to lend a hand or a pen, won't you let us know?

Vicissitudes of a History Writer

or

Nobody Knows the Trouble I've Had

W. J. Webb

So you have been retired for nearly a year -- and you are still a long way from getting around to the 38 year accumulation of things you have not been able to do - and suddenly, one of the big boating magazines ask you to write a History of Outboard Motors. Well, outboards have been your life for 38 years - and you think that your memory is as good as ever - so you say "sure" - and you think "this will be duck soup - I will just write it off the top of my head - I will finish it before Christmas, easy" -- and then the fun begins.

Way back in the twenties, Mrs. Ole Evinrude, under whose friendly wing I entered the Outboard Industry, had told me that I ought to begin to collect some historical data, that some day our company might foster the compilation of a really accurate history, and that we ought to be ready for it when the time came. And so, from time to time, over the years, I began building what I thought was a fairly good file of historical material. Thinks I, with this file and YOUR REMARKABLE MEMORY, lets go!

In 1929, Finn Irgens, still Outboard Marine's Vice President for Research and Engineering, and I had written a sort of history on Outboards which had appeared in the S.A.E. Journal. So I started with that. Shortly after that, my conscience took over. Better check your facts .. some of that 1929 opus was more hearsay than documented fact .. apparently reliable hearsay .. but still hearsay. Take that mention of the Motogodille for instance .. a visting French Engineer talked about that .. lets see if there is any written material anywhere. Where to look? Easy, the Public Library .. Milwaukee has a good one...

Thus began a chase which was to consume nearly 800 hours of research work, included in which were several trips to the Public and Scientific Libraries in Detroit and Chicago as well as Milwaukee, the writing of many hundreds of letters to helpful people on every continent in the world, except Africa, and dozens of interviews and long distance phone calls.

Lets see just what was involved in running down the story of the Motogodille. First I checked the U.S. Patent files, and drew a blank. Then I chanced to run across a mention and a picture in RUDDER of the Motogodille on a step hydroplane taken at Monaco in 1907. By this time, I had come to the conclusion that the best sources of historical information were the advertising and editorial columns in Marine, Scientific, and engineering periodicals. However, the Motogodille inventor, M. Gabriel Trouche, didn't have much in the way of advertising or Public Relations counsel because there was next to nothing printed about what was a very substantial contribution to the Marine Industry.

A fellow must have a little luck once in a while, and on one of my lucky days, Gerry Ahlers, President of Outboard Marine Ltd. of Bruges, Belgium put me in touch with one Lucien Neret of Paris, France. M. Neret proved to be one of my best sources of information, not only on the Motogodille, but on all other French marine engine developments as well. A month or so after we began corresponding, M. Neret procured and sent me several original pictures of M. Trouche and his single and twin outboards, one of them being the original of the autographed patent picture showing M. Trouche and his first outboard engine. Before he was through, M. Neret had completely filled me in on the Trouche-Motogodille story.

But it wasn't all that easy, especially the nineteenth century builders. Yes, there were plenty of men who built successful outboards from 1890 on. An American, Reece, patented the first outboard device in 1866. A Frenchman, Trouve, built a successful electric outboard in 1880. Frank Allen of New York was apparently the first one in the world, certainly in America, to advertise and go into production on an outboard device, The Allen Electric Oar. As nearly as I can ascertain, the first Inboard-Outboard contraption was the Lautonautile built in France in 1898. This was gasoline powered and looked a great deal like the Murray-Tregurtha barge power unit of today. There were numerous others.

For the most part, information on the early outboards was developed through painstaking page-by-page reading of old magazines. Early in the game I was sure that there must be an easy way to dig out this ancient history. So I tried to check only those items which carried an index that related to some phase of the boat or motor business. This worked all right, but not well enough. Accidentally, I found several items that were either misindexed or else not indexed at all. So before I was through I had paged through every available issue of every old marine, scientific and engineering magazine in every library that I visited. This included Scientific American back to 1840 - yes 1840. My eyes got tired. The dust of a hundred years got in my allergic nose, but I loved it. The only trouble is that periodical files are not complete. Most do not go back further than 50 years. And that isn't far enough.

Scientific American proved to be the best source on ancient developments. British Engineering was excellent. Rudder, Boating, MoTor Boating, Power Boating, Yachting, Saturday Evening Post, Popular Mechanics are among the older magazine whose advertising and editorial files gave up much valuable information. As yet I haven't learned too much from European magazines, outside of the British. Apparently most of the continental publications of the late 19th and early 20th centuries are off the market and have been for years. Two wars could account for that.

But while magazine ads turned out to be the most prolific source, I did mighty well with correspondents in Italy, England, Spain, Germany, and the Scandinavian countries. Senór Horacio A. Valente of Burnos Aires, Argentine became so interested in the project that he wanted to send me one of his motors, the Yumpa, to try out. Curators of museums all over the world were glad to help when they could.

Here in America, I had both good and bad luck. The members of the Antique Outboard Club, as might be expected, were most helpful. The only trouble was that I was able to contact only a few, as I did not have their addresses.

Incidentally, I received some beautiful pictures of current Japanese motors, as well as a couple from the thirties. Watch out for the Japanese. They are building some mighty good-looking stuff. I well remember the first Japanese made outboard I ever saw. This was an absolutely perfect copy of our 1926 Elto rudder steered Service Twin. Our Pacific Coast representative told us that a Californian had imported 12 of these motors in 1927, every one of them was identical to every other one, even to carrying the same serial number. They all had identical dents in the gas tank, the same mars on the decals, the same casting marks, etc. We bought one and found it to be a beautiful piece of workmanship - outside. Inside it was terrible and couldn't run under its own power until we power lapped it with jewelers rouge and oil for several hours. Meanwhile we exported quite a number of our motors to Japan every year, right up to World War II.

But the greatest disappointment came from my failure to come up with an authentic documentation on steam. My French engineer friend assured me that he had seen a steam outboard on the Seine. Napoleon III is supposed to have used a steam outboard contraption around 1870. I simply haven't been able to run down more than hearsay on an early steam outboard. There have been a number of steamers built in late years. Jerry Heermans of Tigard, Oregon built one using old Johnson outboard parts that is said to talk. The U.S. Engineers fostered an experimental steam outboard that looks like a dandy - 1400 psi steam pressure, among other things. But they do not regard it as successful as yet. Does anyone have any real,accurate, for-sure dope on a steam outboard produced prior to say 1915? I would sure be glad to hear about it.

All told, I had a barrel of fun doing the History. It covered some 266 pages of manuscript and included pictures of some 300 motors. I met, through correspondence, hundreds of wonderful people. I learned what really marvelous places our libraries are. I am not through yet, for while I have a quite complete story on the American contributions to the art, I am sure that I haven't more than half-covered the European scene. That will have to wait until I can get over there and spend the necessary hours checking such periodicals as are not available here. I will see you later.

NOTES FROM THE CLUB CURATOR

R. A. Hawie

Allow me to introduce myself: My name is Richard A. Hawie, "A" to distinguish me from my son Richard C. Hawie, who at age eleven is more wrapped up in boats and motors than I am. He and his friends spend all summer long discussing the merits of one motor over another. If they tell you that the boat that just went by had an Evinrude 90-S on it, you had better believe it.

We are a boating family. I spent the first 11 summers of my childhood on the shore of Long Island Sound, and since 1939 have summered on the shores of Lake Zoar, a man-made power lake about 9 miles long, twenty miles north of Bridgeport. Through the years I have had a 14' Wolverine strip built boat, a 11' Tonka Craft hydroplane, an 11 1/2' Barbour Rocket, a 14' Barbour Utility, a Class M Jacoby Hydroplane; and presently a 16' row boat, an Evinrude Sport 16 Inboard-Outboard, and a 13' DeSilva C-D Racing Runabout. I also have two Flowers Hydroplanes, but they are part of the antique collection; I have never wet them.

I have also owned and run a 2 1/2 HP, 5 Hp and 16 HP Johnson, and Evinrude Speeditwin and Mercury's Mark 50, 30H and K67. These motors were all purchased as "using" motors long before my collection started, although the Speeditwin was the beginning of the collection. From my collection, I have been successful in running Caille models 79 and tractor C, Johnson SR, S45, VR50, Elto Racing C and Super A and Lockwood Model 72T.

I guess you would call me a collector; I have about 100 motors, and when you get that many the collection becomes a pure number and motors lose their identity. Most of the motors are pre-1936 although I have some which are newer; you see, I had originally set 1936, the year Johnson merged with OMC, or vice versa depending on whom you talk to, as the cut-off point of my collection, but as it has grown, and my knowledge increased, I have widened my field considerably.

I have been fortunate enough to acquire a collect of Rudder magazines from 1897 to present! It is quite fascinating to read magazines written before man flew.

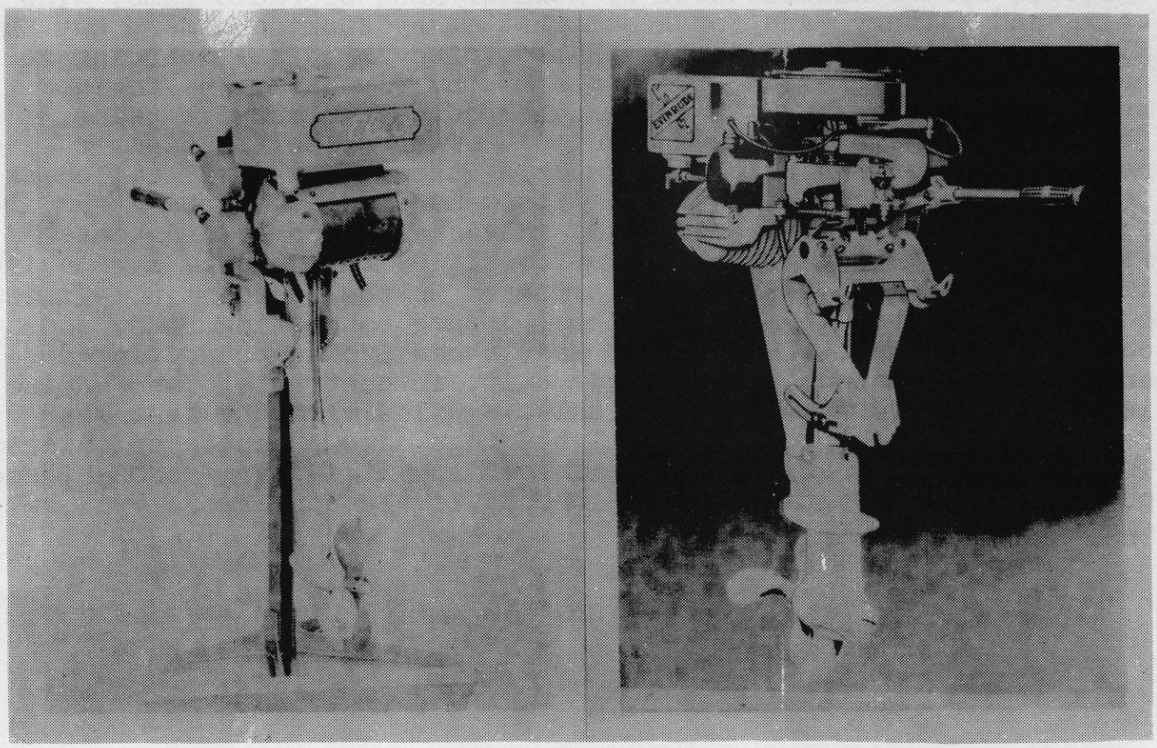
I also have Yachting magazine in the mid-thirties and MoTor Boating from 1912 to 1936. A dealer who was retiring sold me all the old service manuals he had and these include some rare ones. I also have 1000' or so of old movie film taken in the late 20's and early 30's of boat racing in the East, including the early Albany-New York Marathons.

Well, I have introduced myself and told you about parts of my collection. None of us who are writing for The Antique Outboarder are professional writers, and I am sure we are all feeling for the proper approach. I suspect that The Antique Outboarder will in part become an open round table discussion as we all overlap into each other's spheres of interest and knowledge.

For those who might be interested, I'd also suggest that they be on the lookout for old boats, especially the old racing hydroplanes; they are small and don't take too much room, and there aren't many left, as most are snapped up by the local hot rods and end up driftwood. Last time I was at Mystic Seaport the only outboard they had in their large small-boat collection was an unrestored Hickman Sea Sled; so old boats are a rare item that you may wish to consider for your collections.

As a final thought, winter is one of the best times to find old motors, especially if you have to deal with outboard dealers, as they aren't usually busy and have time to look for what you want; you won't find many dealers with a 1930 Johnson VR50, but some of the older dealers still have a few parts for older motors. In winter you can get them to look for that coil for a 1930 Speeditwin that they got stuck with when the guy who ordered it never came back.

I will try next time to explain how I got most of my motors, perhaps discuss a few of the unusual ones, and tell where to look for serial and model numbers. If you have ever tried to find a serial number on an old grease-covered motor stuck in the back of someone's unlit garage, you will find that it is nice to know where to start to look.



The 1928 Elto Quad, and the 1929 Evinrude Speeditwin.

LAKE TEST OF THE 1928 ELTO SERVICE QUAD AND THE EVINRUDE SPEEDITWIN

Christopher R. Owen
Test Editor

The purpose of this series of articles is to give a great deal of information about various motors, and to pass on to the reader the experience of operating these exciting outboards of the past. In this article, I have chosen to compare two motors, the 1928 Evinrude Speeditwin, and the 1928 Elto Quad, of 16 and 18 hp respectively. They are chosen for their similarity in size, output and vintage.

THE ELTO QUAD

The year 1928 was one of fast-changing design in outboard motors - all kinds of designs were tried, with some manufacturers clinging to the old techniques, while others took the plunge into the new. The Elto Quad was a hybrid of new and old designs, as it had features and parts which were common to the earlier Eltos, but also had the distinction of being the first four-cylinder outboard on the market. Probably the most interesting feature of the Elto is that it is direct reversing - that is, if you want to go astern, the direction of crankshaft rotation is reversed. This is made possible by a clever and unique timer mechanism actuated by a connecting rod from an eccentric on the flywheel. This timer is a good example of the ingenuity of Ole Evinrude. It is so clever, and so unique that an article in a later issue will be devoted to it alone. Ole wanted to make sure that his motors had a hot spark when starting, so the Eltos were also equipped with a battery ignition system manufactured by Atwater-Kent of radio fame. The coils and battery made for a somewhat messy looking motor, but the Eltos start easily and that's what counted in 1928. Starting is accomplished by grasping two knobs on the flywheel, one in each hand, and giving the flywheel a quick counter-clockwise twist, "bumping it against the compression". Those knobs incidently, are responsible for the knickname Knuckle-Buster, for until callouses develop, each twist takes off a little more skin. Carburetors are automotive type, with spring-disc valves actuated by crankcase vacuum. In keeping with the service title, the Quad is a relatively slow turning engine (3800 RPM) compared to the Speeditwin. It is equipped with bronze main bearings, bronze connecting rods, and cast-iron pistons. (Later 1928 models had Lynite connecting rods and aluminum pistons). Its lower unit, in contrast to the engine is beautifully streamlined and this, coupled with the fast gear ratio, high pitch prop, and ball bearings make it quite efficient. The Quad is far from a racing machine, but it is large enough, and powerful enough to tap out some pretty lively performance, as we shall see.

THE SPEEDITWIN

The Speeditwin, in contrast, has a more orthodox engine design and incorporates a great number of newer features, including rope starting and magneto ignition. (However, the motor will not reverse.) Unlike the Quad, it has aluminum pistons and 3-port induction - that is one reason why it achieves 4500 RPM compared to the Quad's 3800. This was quite an RPM for 1928 and it needed some special features to back it up. These features come in the form of ball main bearings and roller connecting rod bearings, as well as quite unrestricted exhaust manifolding. The lower unit does not have the streamlined appearance of the Quad and seems to be much larger and less efficient mechanically. One would imagine that if an Evinrude power head were attached to an Elto lower unit, the result would have been a fast outboard indeed. The general quality of the Speeditwin seems to be very high. It would be interesting to find out which was conceived first, the Speeditwin or the Quad.*

APPEARANCES:

The Quad has a massive, "mean", appearance and looks quite sharp with its polished cylinder heads and flywheel, while the Speeditwin has a lower, wider look and appears somewhat clumsy from the rear. From the front and side however, the Speeditwin looks flashy by any standards.

OPERATION:

The Quad and the Speeditwin were tested on a 11'9" Starcraft Sea Scamp boat, with remote controls mounted in front of the stern seat, and standard marine speedometer. The boat is overpowered by 4 hp with the Speeditwin and 6 hp with the Quad.

The Quad's gas valve is conventionally (and inconveniently) located back near the hot muffler, as are that of the Speeditwin. The Quad's knuckle buster starting, in spite of the fact that it is obsolete, is easy to use and starts the motor on the first or second twist (if you are lucky). If you have an ornery Elto however, wear gloves, or wrap the appropriate knuckles with tape. The Quad is very smooth in idling and can be slowed to a snail's pace. When getting the boat into a plane, I had considerable trouble: The motor has quite enough power to plane the boat off, but when power is first applied, the boat and motor tilt to such an angle that the upper carburetor is above the level of the gas in the tank. Thus, until the boat planes off, the top carburetor is starved for gas. The only way to avoid this is to make sure the tank is full, for then the motor will not alternately gun itself and cut out as the top carburetor fills and empties. The torque curve is smooth and strong, but there is not really a blast-off effect on acceleration. This I believe is due to the heavy flywheel and to the carb system.

* What about that Jim Webb? Editor.

An unusual characteristic of the Quad is that there seems to be no clear cut top rpm. It is sort of a guessing game as to where the fastest point for the timer lever is. I do not have the original muffler on either motor, so I cannot testify as the the "stock" sound level of the motors. I can say however, that the level of noise was high. The Quad has sort of a whine-drone associated with opposed design, as well as a considerable amount of 'static" from the timer and intake valves. It steers well, but has a slight tendency to cavitate on coming out of a turn. Cavitation is not serious however, as excess RPM's are limited by the unique timer mechanism. This, incidentally, is one of the handy features that made it possible for Jim Webb to make the first boat jump in history using a Quad. On slowing down, the motor tends to kind of snuff a couple of times, but it is not annoying. Reversal of the Quad is achieved by cutting out the ignition for a few seconds, till the motor has almost stopped, then cutting it in again at just the right instant. This takes some practice, but profficiency is eventually achieved. Reverse is fine when idling backwards, but if any speed is attempted the motor kicks up because it is not equipped with a reverse latch. Another problem is that the motor does not cool in reverse, so that it cannot be used in this manner for long periods of time. The biggest objection to the Quad is that of economy. The "hot shot" battery is expensive and it is exhausted in a (calculated) 18 hours of full speed running*. Also Also, as most Quad owners have found, this motor is one heck of a gas hog. You'll find that the level in the tank drops like there was a 1/2" hole in the bottom. But performance is good, the motor is convenient to handle, and I found its operation quite to my liking.

The Speeditwin has a wide, unbaffled gas tank that sloshes in the slightest swell, making fueling difficult and annoying. Fortunately this need not be done as often as with the Quad. The motor starts easily on the first or second pull of the rope and, though it is not really needed, there is a convenient forward locking device to prevent the motor from tipping up when the rope is pulled. Idling is quite poor compared to the Quad, and the motor backfires often when slowed down past a certain point. The acceleration of this motor is much greater than the Quad. This is especially true at lower RPM's, but it remains strong all the way up to 4500 RPM. Using the Speeditwin, the speedometer reads a maximum of 29 MPH vs. 28 MPH for the Quad. With the partially open muffler, the noise level is terrific. The exhaust note is a high stacatto from the rear and in the front there is a great deal

* 1 amp drain from a 6 volt battery at full RPM's.

of carb noise from the 3-port intake system. I found that an additional one or two miles per hour could be added to the speed if the air horn was removed and the carb richened up slightly. However, there is then a mist in front of the carburetor which gets the motor quite oily. The motor steers well and I could not make it cavitate on a turn. Unlike the Quad, this motor will wind way up if the motor is released from traction. The biggest objection to the Speeditwin is its roughness at low speed, and its generally high idle speed. This is however, characteristic of three-port induction. The Quad, of course, has alternate firing, so it is smoother at low RPM.

I find both of the motors exciting to run and two of the favorites in my collection. If the question ever came up, "Which would you have bought if you were living back then?", I couldn't really say. I might have purchased a Johnson, Lockwood, or Caille if I had a chance to run them. I can say however, that to me these motors are a lot more fun to use than the new motors.

EVINRUDE SPEEDITWIN SPECIFICATIONS

Original price	$210.00
HP at RPM	16 at 4500 RPM
Engine	Opposed twin
Bore stroke	2 3/4" x 2 1/2"
Displacement	29.9 Cubic inches
Induction system	3 port
Prop.	3 blade 10" x 14"
Gear ratio	20:14
Advertised weight	85 lb.
Test Weight	104 lb.
Best times speed	29 MPH
Top RPM reached	4750
Slowest speed est.	5 MPH

ELTO QUAD SPECIFICATIONS

Original price	$275.00
HP at RPM	18 at 3800
Engine	Opposed four
Bore x stroke	2 1/2" x 2"
Displacement	39.9 cubic inches
Induction system	Spring disc (two twin disc carbs)
Prop.	2 blades
Gear ratio	3/2
Advertised weight	88 lb.
Test weight	97 lb.
Test timed speed	28 MPH
Top RPM reached	3900
Slowest speed est.	2 MPH

MOTOR OPERATION AND REPAIR

John C. Harrison

In this section, we hope to solve problems that you might have with your motor. If you have a tough one, send it in, I'd like to take a crack at it.

1. The flywheel nut on my 1928 Elto Quad keeps comming loose, no matter how tight I get it. Is there any way to prevent this?

   The fly wheel nut problem is indeed sometimes a maddening one to conquer, but it can be done by doing three things. The first is lapping the fly wheel to the crank shaft so that it is a perfect fit. This is done with valve grinding compound with a coarse grade to start with, if the fit is very bad, and ending up with fine. Usually the fine is all that is necessary to true the two surfaces.

   The second is making a key which fits tightly in the fly wheel and the shaft. This usually requires a step key one way or the other as usually one or the other of the receiving parts, that is the fly wheel or the shaft, is "wallowed out". The opening should be trued up and a step key made to fit tightly. One must be careful that the key does not "bottom" in the fly wheel. This keeps the fly wheel from seating properly.

   The third thing to do is to make a nut which fits the threads on the crank shaft tightly. This is usually a lathe job as the threads on the crank shaft are probably undersize by now. A thread fit in which the nut can barely be turned finger tight or possibly by a light wrench job is necessary in these tough cases. I guarantee you that doing these three items will solve the problem.

2. Is there any way to prevent aluminum gas tanks with hair-line cracks from leaking?

   As to fatigue cracks in gas tanks, the best solution is as follows: Grind out the cracks to approximately 1/8". Be sure you go past the end of the crack with your grinding and make a nice radius at the end of your grind out. Then these cracks are filled with aluminum by a real craftsman with a heli-arc torch. This is about the only certain way this job can be done. I have tried to use fiberglas and other plastics, which work for a short time, but always in the end, vibration will work the gas and oil between the fiberglas and the metal and here comes the leak again.

3. My 1931 Cailles runs fine at high and low speeds, but on rapid opening of the throttle seems to get such a rich mixture that it almost floods out. What could be the cause of this?

As to the flooding on your 1931 Caille - this is one that is tought to diagnose without seeing the exact situation, but my comments are as follows. The old single jet carburetor has some problems in transition from idling to high speed. This is pointed up by the fact that all modern carburetors have a low speed system built into them apart from the high speed system. Nevertheless, for so-called experts like ourselves, a well tuned single jet carburetor will work almost as well. The problem you name sounds to me as if your float level is too high. I believe that you have a Tillotson carburetor on that job with a metal float.

I suggest that you look into it and bend the lever on the float so that the gas level is approximately 1/8" lower than it is now. This may change your needle valve settings somewhat. I do believe that at least, if not correct it, it will improve the condition you describe.

4. I have gone through several sets of shaft and bearings in the lower unit of my 1928 Evinrude Speeditwin. Would it help to have the shaft hardened? I am using Lubriplate No. 105 grease.

On tearing up your lower units that you mention, my comments are as follows: The shafts do not need to be hardened at all. It is very important that the thrust bearing and the pinion bearing be in excellent condition. I usually put in new rollers when I rebuild a unit unless, of course, they show no pitting at all in either the rollers or the races. Perhaps even more important is the seating of the gears. As you will remember from your mechanical courses, bevel gears are in two sections of two cones, the apexes of which should meet exactly, and this is quite often tough to arrange. Bevel gears should be set as close as they can be and still evidence no binding of any kind whatsoever. This usually requires a gear lash of something in the order of .005 - .010", with some of the older badly worn gears the lash is, of course, more excessive. As a matter of service maintenance, keeping good grease in the case is of utmost importance and most of my Evinrude units have to be filled every time they are run, particularly the old style beautifully streamlined 1931 Evinrude units. This holds, as you know, a very, very small quantity of grease.

As to type of grease, I too have been using Lubriplate 105 lately, however, I would use some of the more viscose old graphite grease if I could find them. Actually I doubt that this would be much of a problem to do, that to find the old graphite grease, but I just have never set my mind to it. These older graphite greases will stay in the case better than the 105 Lubriplate.

5. How much can I get away with in the way of excessive clearance in the main bearings of an outboard?

Your question about main bearing clearances is an excellent one and one which is highly critical in getting a good running motor. The Johnson manual indicates that a 1" diameter main journal should have a clearance of .0035" for upper and lower journals. This is the clearance they give. They do not give any limits. It has been my experience that clearance of as much as .008 can be run successfully but this is, I would say, an absolute maximum and is not too desirable. A good way to check upper journal clearance is to grasp the fly wheel and the fly wheel nut and pull it back and forth rapidly. If you can feel a real clatter you know that the clearance is excessive. With .0035" to .005", you can feel almost no clatter at all.

Lower journals are much less of a problem since they are much better lubricated than the upper journal. The clearances, of course, are critical because of lose of crank case pressure with excessive clearances. The result is, of course, hard starting. While I am on the subject, anything less than .0035, say .0025" will seize and this is, of course, very discouraging after you have built up a motor because the thing has to come completely to pieces. There is no such thing as "running-in" a once seized main journal.

6. I notice you always say "Replace the rings when rebuilding an engine". If I clean out the lands, and make sure the ring is free, won't this be just as good?

About new piston rings, it has been my experience that new rings in a deglazed cylinder make a like-new set up. Probably I do this because I happen to have new rings for most everything that I have picked up in my lots of obsolete stuff of one kind or another.

A deglazing hone is almost a must for our hobby. This straightens the cylinder a little and roughens it so that new rings will seat quickly and properly. It is important that rings be as free as is possible and that the ring fill the grove as nearly as is possible. This is more important on racing engines and reduces a rather nebulous phenomenon called "fing flutter." In this case a vibration is set up in the piston ring and it moves away from the piston wall to the bottom of the groove and back to the cylinder wall in a high frequency oscillation. This, of course, allows excessive "blow-by".

MOTORS FOR SALE

1920 Evinrude 2 hp. Motor No. A111096

Contact: Dr. Walter B. Damm
761 Cortez Avenue
Largo, Florida 33540

1938 Evinrude Speedifour 33.4 hp. Very good condition.

Contact: John Tuttle
Tuttle Insurance Agency
Box 322
Vermillion, Ohio

Old Wisconsin. No serial Nos. Available. May have diamond studded steering handle or uranium pistons. A bargain at only $500, Any buyers? If so, hop in your Rolls-Royce and See:

Delmar Bormann
Box 178
Corsica, South Dakota

One each:

a) 5 Cylinder Radial Cross Model 563 Serial 3821.
b) Front cylinder Evinrude single Model A113311.
c) 1932 Evinrude Speedifour, Excellent shape.
d) Elto Lightweight Motor No. 90643.
e) All chrome Clark troller, mint condition.
f) Model AL-35 Johnson Serial 78504.
g) Front single cylinder Evinrude 1915-1918 vintage.
h) Unknown make front cylinder single, Bosch magneto, all brass lower unit.

Contact: Ron Reynolds
1401 N.E. Boat Street
Seattle, Washington 98105

1911 Evinrude Serial 5511. Good working order and clean. Only $500. (Not much for a really clean motor.)

Contact: D. C. Bailey
128 N. E. Marine Drive
Portland 11, Oregon

1938 Elto Ace 1.8 hp. Serial 4256-03968, 1.8 hp.

Contact: D. L. Peters
399 N. E. 8th Street
Boca Raton, Florida

1919 Evinrude A101948 single cyliner.

Contact: William A. Battenfield
2606 Buckner Lane S. E.
Washington, D. C. 20031

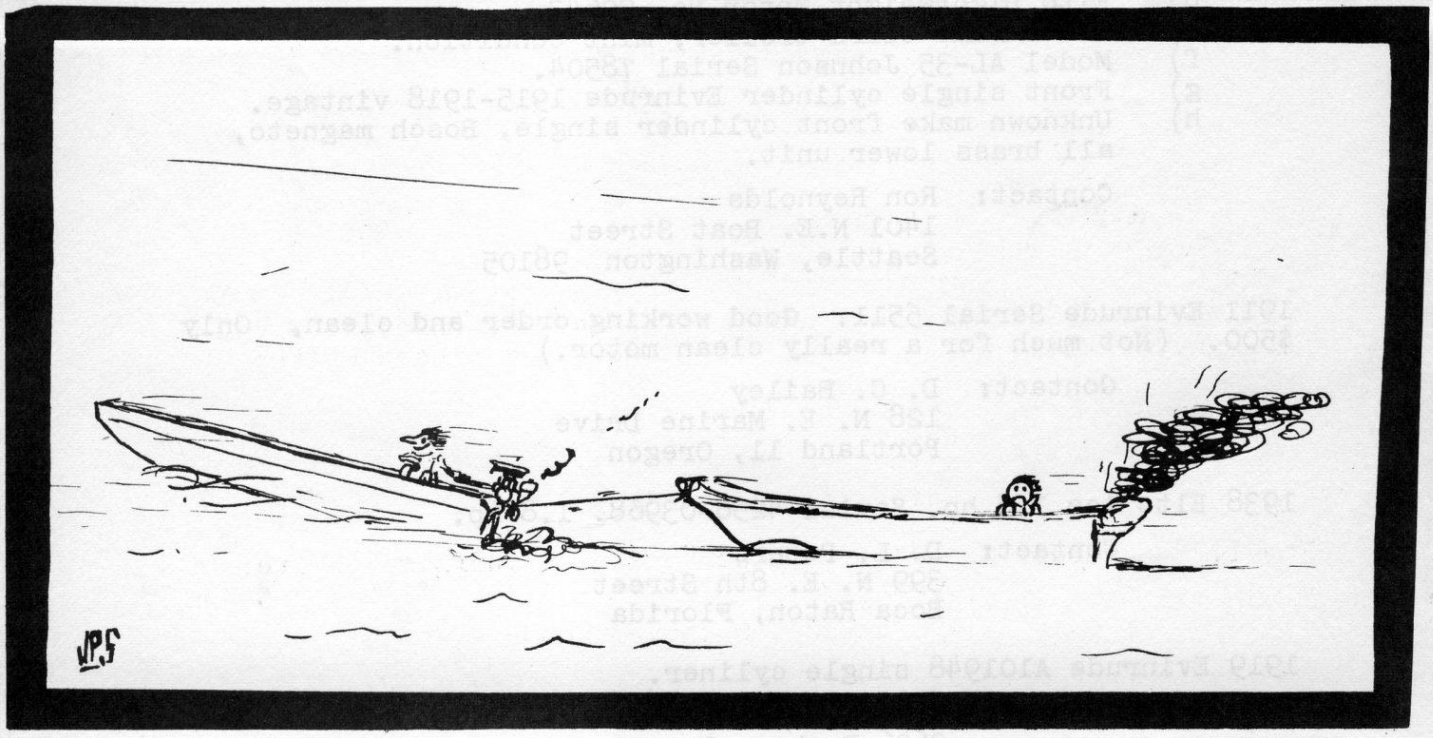
Motors for Sale cont.

1914 2 hp. Evinrude.

Contact: Mrs. Floyd Littell
204 Bellefontaine
Champaign, Illinois 61821

1926 Elto light twin Outboard motor, complete with manual, tools and original box. $100. "As is, where is, subject to prior sale."

Contact: K. N. Banthin
21131 South 20th Avenue
Broadview, Illinois



MOTORS WANTED

Johnson Single, Johnson K-50, Caille Liberty Drive, Evinrude all electric, Lockwood Chief, Lockwood Ace, Elto or Evinrude ½ Hp, Elto or Evinrude Fast-twin, Bendix air cooled single, Lauson four cycle, Early Evinrude single with twist reverse and Sears Motorgo are wanted by:

John Hunt
239 Main Street
Sanford, Maine
04073

Old Evinrude and Caille motors, in particular Evinrude Foldlight, Evinrude Electric troller, Evinrude Midget Racer, as well as an Evinrude Streamflow bicycle. If you know where any are, contact:

Booth's Electric
21 Otter Creek Place
Cortland, New York

Large motors of vintage 1925 to 1940. Preferably Caille, Lockwood, Cross, or Elto. If you know where one is contact:

Kit Owen
Route #3
Eau Claire, Wisconsin
54701

P A R T S W A N T E D

For 1928 Evinrude Fastwin 6 hp: Points and condenser. If you have any of these parts or know where some are please write:

James Wm. Huff
Box 118
Huff Ryle Road
Union, Kentucky 41091

For 1928 Evinrude Speedtwin: Lower unit and muffler. Write:

Kit Owen
c/o Antique Outboard Motor Club

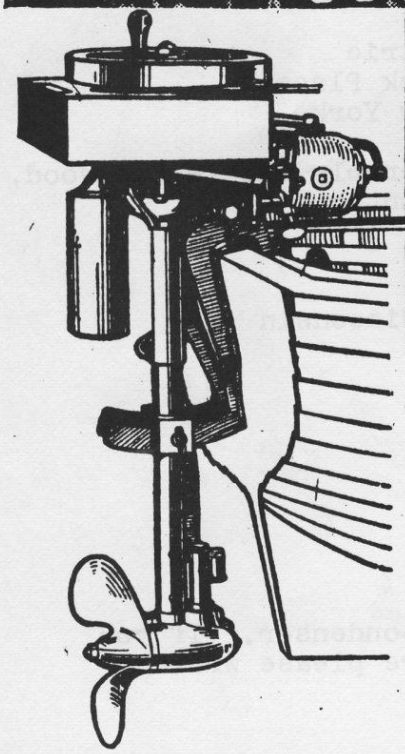
For 1928 Elto Speedster: Left hand cylinder and piston as viewed facing the carburetor.

Contact: Larry Ward
2460 Riverside Drive
Beloit, Wisconsin 53511

Flat Johnson Gaskets #11-26.

Contact: Lester W. Stevenson, Jr.
4713 Dunberry Lane
Minneapolis, Minn. 55424

Your Southern Trip A Double Pleasure



THE soft bright mornings of the South; the goodly warmth of the mid-day sun; the evenings, not too cool: Sweet memories all, of last year's Southern trip.

This year instead of merely gazing at the cool smooth waters of the river or the bay, why not really enjoy them?

Why not skim over the waves listening to their playful splash against a boat?

To row would spoil the harmony of the scene. Why row at all?

Why not take any row boat; even a rented one and hang a portable, detachable motor over the stern?

It will purr and drive the row boat for you at an 8-10 mile an hour pace.

A HALF turn of the fly wheel starts THIS motor.

A lady's motor in its ease of operation: A man's strong aid in its marvelous power and endurance.

It carries like a satchel as it weighs but fifty pounds.

It will fit any row boat and make it a motor boat in just thirty seconds.

WHY NOT PUT ONE IN YOUR TRUNK WHEN YOU GO SOUTH?

Send for Beautifully Illustrated Catalog

EVINRUDE DETACHABLE, PORTABLE ROW BOAT MOTOR

EVINRUDE MOTOR CO.. 400 Water Street. MILWAUKEE. WIS.

November 27, 1912

3 Great Motors

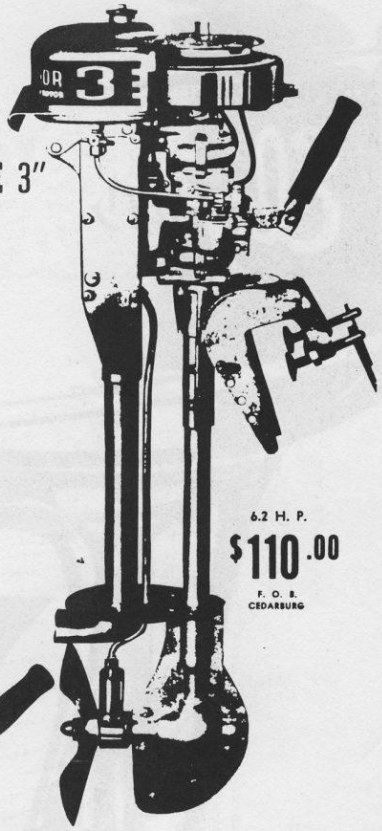
TO PLEASE EVERY CUSTOMER

and the Greatest of all motors THOR "ALTERNATE 3"

the 1939 THOR Line . . .

. . . with more "Buy Appeal" in surging power, sensational smoothness, greater dependability — thrilling performance that stacks up new Sales Records and Higher Profits.

The new THOR Line, with 3 Great Motors, covers the needs of every type of customer, in a wide range of utility and price. A wealth of new features in design, construction and operation place THOR OUTBOARD MOTORS far in the lead. New attractiveness in appearance, new ease in handling and operation, new power, and stamina, provide the greatest value of the year in Outboards.

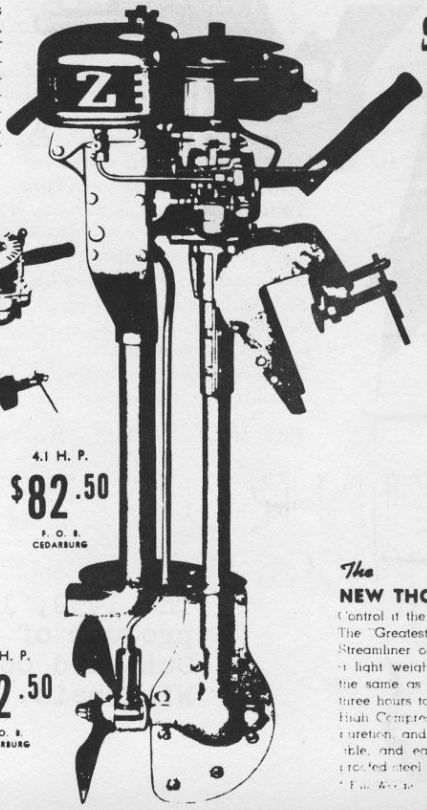


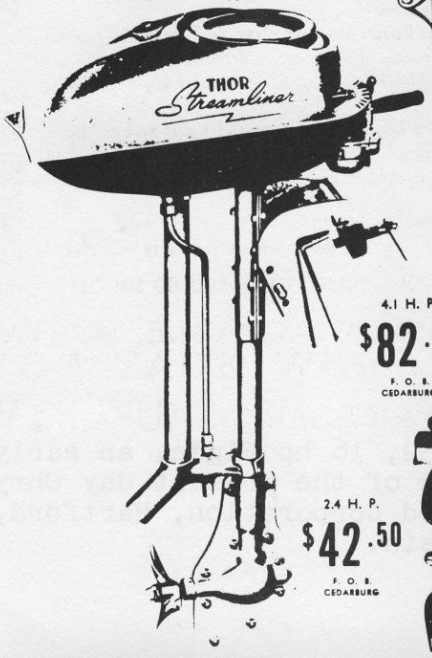
6.2 H. P.
$110.00
F. O. B. CEDARBURG

The NEW THOR "ALTERNATE 3"

The ONLY 3 Cylinder Outboard. The ONLY Outboard with "overlapping torque".

A new and sensational design in Outboard Motors, the "ALTERNATE 3" offers the advantage of 3 overlapping POWER IMPULSES PER REVOLUTION — that gives a smoothness you've never before experienced, enough speed to hydroplane your boat — and fuel efficiency. A brilliant new motor, built for the fisherman who wants something better. Of sturdy construction rust-proofed throughout. Motor is of 2 port, High compression type, with Automotive Type Carburetion and "Hot Spark" Magneto. A fast starter, Dynamometer rated 6.2 H. P., capable of running 1½ hours on a gallon of gas at full throttle. An ideal Motor for heavier boats, with an abundance of speed and "pick-up".





4.1 H. P.
$82.50
F. O. B. CEDARBURG

2.4 H. P.
$42.50
F. O. B. CEDARBURG

The NEW THOR "Alternate 2"

Here is a new Alternate Firing High Compression "Two" that gives you extra performance, extra speed, sturdiness and strength. Typical of all 1939 THOR MOTORS, it is Hand Throttled, easier starting, faster, more durable in its steel construction than other motors of similar cost. Semi-weedless propeller. Dynamometer rated at 4.1 H. P. Runs 2 hours on a gallon of gas.

5000 Miles without trouble proves the unusual Dependability of THOR Outboards.

The NEW THOR "*Streamliner*" SINGLE

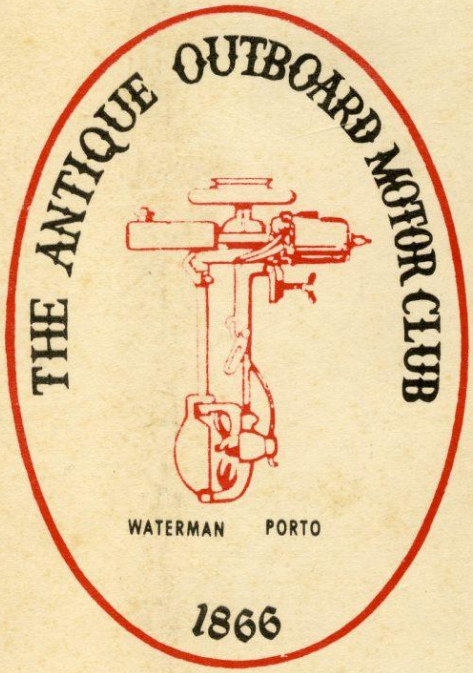
Control it the same as your car — with the throttle. The "Greatest of low priced Singles", the new THOR Streamliner offers an amazing amount of power for a light weight motor. Rated on the Dynamometer the same as automobile motors, at 2.4 H. P. Runs three hours to a gallon. * Semi weedless propeller. High Compression motor, has Automotive Type Carburetion, and Hand Throttle. Easy starting, dependable, and easy to operate. Sturdily built of rust proofed steel to stand hard use.

* Full Automatic Propeller Available

KIEKHAEFER CORPORATION

CEDARBURG — WISCONSIN

The 1952, 16 hp Elgin, an early product of the present day Chrysler Outboard Corporation, Hartford, Wisconsin.


THE ANTIQUE OUTBOARD MOTOR CLUB
WATERMAN PORTO
1866