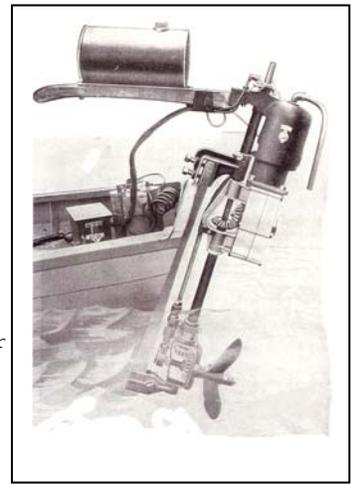


# *The ROWBOAT MOTOR JOURNAL*

*Official NEWSLETTER of the Southern Ontario Rowboat Motor Chapter*

**VOLUME 1, ISSUE 1, AUGUST 2008**



**Illustration featuring a 1912 Evinrude Detachable – but where's the cooling water stream?  
Maybe the towboat is using a Waterman Porto to pull this young lady. Note the lack of decals on this motor.**

## Welcome Aboard!

Hello everyone. It gives me great pleasure to be writing this column, and to announce that we've been granted charter status to stand alongside all the other chapters that make up the whole of the Antique Outboard Motor Club. Please allow me to welcome one and all to the inaugural edition of the official newsletter of the Southern Ontario Rowboat Motor Chapter, "*The Rowboat Motor Journal*".

The reasoning behind the concept of this project can be debated 'till the cows come home, but it could be said that if you've gotten involved enough to have read this far, chances are you agree with at least part of the method behind the madness. Let me state for the record that the only agenda behind the establishment of a chapter that primarily focuses on rowboat motors is to provide a vehicle with which to continually promote the machines from the earliest days of marine motor manufacturing. In a time where it seems that the classic motor is becoming increasingly popular within the Antique Outboard Motor Club, especially with those who are new to the hobby and/or the club, the Chapter is intended to provide the rowboat motor group with a presence and voice in the evolving world of old iron collection, as well as create and encourage an active assembly of enthusiasts who choose to recognize and specialize in promoting the importance and relevance of the detachable rowboat motor under the umbrella of the AOMCI.

The whole thing started with some informal discussions between myself and other AOMCI members who collect, repair, rebuild, restore, and (the main thing) enjoy running and using the real antiques, or what are more commonly referred to as "detachable rowboat motors". Without going through every nut and bolt of the process, here is more or less what happened. From discussions were hatched ideas, then ideas evolved into possible concepts, then the best-looking concept became a proposal, which in turn managed to cause a considerable amount of debate, and finally, here we are, soon to be listed as an official AOMCI chapter with an

official name. The last thing to be done was to commence with some grass-roots level promotion and see just how well this new chapter concept might be received.

The initial response has been gratifying to say the least. At this writing, its been less than 24 hours after receiving the official okey-dokey on the charter application, and already there are 40 names on the mailing list. For reasons of convenience, the Chapter is based in southern Ontario, Canada, but our aim is to become a chapter that is truly without borders. USA members represent the states of California, Connecticut, Florida, Indiana, Michigan, New Jersey, Ohio, and Wisconsin, and European AOMCI'ers are in the mix also. From one perspective (mine, 'cuz nobody has had an opportunity to give me theirs yet), it appeared that the good people who have already expressed their interest in becoming part of this project are quite eager to be involved in something innovative as far as the "normal" AOMCI Chapter operation is concerned. Who knows where this might end up, but it can be said we're off to a good start.

What are some plans for this chapter? Well of course, we'll try to have some meets here and there, but obviously the logistics will prevent everyone from attending. Or will they? Perhaps with some imaginative use of modern technology it may be possible to coordinate some type of events such as a virtual wet meet where members in all corners of the globe can record or document the operation of their favorite antique motor(s) and we can put some sort of photographic record together that would serve to preserve the combined efforts. Of course, I'm always open to suggestions if somebody has more ideas.

It's a bit of a paradox, I suppose, but we're going to endeavour to use the most modern means available to us to maintain contact among those of us who enjoy the oldest of the outboard motor species. There is a web page in the works that would provide services for our members. First of all, it would be used as the Internet home base for chapter communications, inasmuch as the plan is to post an electronic copy of the official

chapter publication (*The Rowboat Motor Journal*) online. The newsletter would be available at all times for those who wish to review or download it (email distribution of the newsletter as a PDF document is another option). Relying on electronic transmission for communication within the Chapter will help save time, labour, trees and money. If there are cases where some people simply don't have access to the internet or a computer, perhaps they can make friends with somebody in the chapter who is willing to make an effort to help them stay in the loop.

Second of all, there is also a Rowboat Motor Discussion Board in the works which would be accessible to all SORMC members. It would be of similar format to the discussion boards seen on many popular web pages, and is intended to be used as a method of supplying information that pertains to the topic of rowboat motors only. From what I've been told, many members might enjoy using this sort of tool if its employed properly, so we're looking into helping them out in that regard.

Thirdly, there will be links provided that will allow the site visitor to have direct access to whatever rowboat motor related sites that we can find. There are some AOMCI members who have already done a lot of ground-work to make photographs available online, so we'll be looking into exploiting... excuse me, I meant to say exploring the work they've already done. Jack Craib has built an excellent website, with countless photographs and scans that are of very high resolution and quality featuring many rare and beautiful rowboat motors. The web address for Jacks rowboat motor site is [www.caille.8m.com/rowboat/](http://www.caille.8m.com/rowboat/). Jason Harrison has had a terrific website running for a few years, you can go scout though that one at [www.rowboatmotors.com](http://www.rowboatmotors.com). Thus, one can see that there is already quite a bit of information out there on the web that relates to the motors we favor.

Currently, there are no monetary dues to pay, so I won't be trying to collect any. All it will cost you is to the time it takes to have fun and enjoy collecting, working on and, best of all, running antique rowboat motors. You need to have a sense of humour, as the

current Chapter leader is somewhat of a twisted individual. There may be some work involved, inasmuch that if the Newsletter is going to become a going concern and make a mark as any sort of legitimate publication in order to realize its potential to make genuine contributions to all members, it means that we need input from as many of those members as possible. I might write a lot of stuff that gets published; that in itself doesn't mean that I actually know anything, but there is a LOT of useful rowboat related knowledge out there in the AOMCI. Its important that we record and save this knowledge in order to spread it around to those who seek to learn, as well pass it along to those who follow after us. That's the reason for establishing a newsletter; to give like-minded collectors a simple way to keep in contact and exchange ideas and information. The newsletter is a big part of this chapter, so I can't stress this part enough; **PLEASE GIVE ME SOME IDEAS OF WHAT YOU WOULD PREFER TO SEE APPEARING IN IT!!!!** If we put something really good together and folks seem to be in favour of it, we can submit some of our RMJ pieces to the "Antique Outboarder" for the AOMC Editor to consider for publication in the national magazine.

Some may wonder "how does one define just what exactly a rowboat motor is"? Well I'm glad you asked, and here's but one standard that typically may be used to define the differences between RBM's and non-RBM's. Although opinions may vary from one person to another, the following criteria can be used as an origin point to define and/or describe what constitutes a motor as falling into the category of "rowboat motor".

**The standard used to define the term "rowboat motor" within the Southern Ontario Rowboat Motor Chapter shall be as follows;**

1. Any motorized device, be it powered by fossil fuels, electricity, or any other form of energy, and regardless of country of origin, that is manufactured during the period of 1892 to 1920 with the intent that it be installed on a boat transom for the

purpose of providing a motorized method of propelling the boat;

2. Any motor manufactured during the period of 1920-1931 and is constructed primarily of cast iron and brass/bronze foundry castings, does not utilize a rope as the primary means of starting, and/or adheres to a "recognizable" detachable rowboat motor configuration as described in the following paragraph;

Engines powered by gasoline may be of designs that consist of primarily upward (i.e. early Waterman Porto's) or forward-facing cylinders (i.e. Evinrude Detachable Rowboat Motors) or opposed twins (i.e. Aerothrust or Koban), but in some rare cases (1912 Waterman) would also feature a rearward-pointing cylinder. Due in part to their simple design and the fact that Caille was building Liberty Drive motors prior to 1920, all Liberty Drive Cailles (Singles and Twins) as well as all other similarly constructed motors would be considered as a rowboat motor, so long as they were built prior to the year of 1932, since 1931 is the last documented year of Caille Liberty Single production. Method of starting motor would primarily be by means of a starter knob, hand-crank or simply by rolling or spinning the flywheel by hand. Extremely unusual cases may involve rewind starting (i.e. Caille Rowboat Motor with optional recoil, a very rare factory accessory).

**What ISN'T Considered To Be A Rowboat Motor?**

Although a particular year can't necessarily be relied on as a hard and fast cut-off point, the year 1920 can be used as a benchmark because of what happened in the outboard manufacturing industry during 1921. Sweeping changes came about with the arrival of the Johnson Light Twin Waterbugs and Elto Ruddertwins. These motors were revolutionary because of their utilization of lightweight aluminum alloys and implementation of thin-wall casting techniques not previously used in the manufacture of detachable rowboat motors. These new outboards were of

much lighter overall weight and were capable of running at higher RPM ranges than any rowboat motor ever was. These advances represent a clear departure from "typical" rowboat motor design, and as such separate the early Johnson's and Elto's from the recognizable rowboat motor configuration. The Johnson motors also brought the use of starter ropes into vogue, and this again represents a major advance in the industry. The later arrival of the 1923 Evinrude Sportwin and 1925 Lockwood-Ash model 52-T rudder-steered twins also represented a point at which those companies deviated from the design of the fundamental rowboat motor arrangement of cast-iron and bronze construction and moved to keep up with the competition in building motors out of lighter weight materials; these, along with the Caille Pennant models, were normally always rope-start motors; thus, these motors would not be considered as falling into the category of "Rowboat Motor".

Hopefully this answers more questions than not. The suggested guideline isn't perfect, but it is as informative and inclusive as possible, and was derived through having many long conversations with a wide cross section of club members experienced in this type of matter. As always, your actual mileage may vary, no warranty expressed or implied, do not fold, bend, spindle or mutilate, not to be taken with alcohol, use of profanities will not be tolerated, void where prohibited by law.

In the end, the overall goal is to continue to promote the importance of rowboat motors, from not only a historical standpoint but from the viewpoint of technological beginnings and advances in the industry, as well as observing and remembering the important role that detachable rowboat motors and their successors have filled while making it easier to work and play on the water over the course of many generations. Ultimately, we hope that not only current rowboat motor lovers will participate, but that future AOMCI members will be encouraged to come aboard to learn about rowboat motors and to experience the joys that these motors provide to their caretakers. Remember, its not about us; its about the motors and their place in history.

### About "The RBM Journal"

The Rowboat Motor Journal was created in order to provide rowboat motor-related information to any and all interested parties, as well as be used as a means of communication between collectors of the early motors that form the foundation of the marine outboard engine industry as well as the original building blocks upon which our hobby is based. Intended for bi-monthly publication, it is a non-profit enterprise with all information (technical or otherwise) procured, verified within reason for accuracy, and assembled strictly through the work of volunteers.

To that end, participating members are encouraged to share their expertise and understanding so as to assist in the future preservation of not only the motors themselves, but the knowledge there-of. Members may be solicited by the Editor to assist with providing in-sight with respect to restoration techniques, part reproduction, shop practices, motor information and any other pertinent exchange of data, up to and including publication of donated pictures or images, detailed accounts of current restoration projects, recent "new" old motor discoveries or acquisitions, or pictorial demonstration(s) of rowboat motors on display or in actual use.

This publication is intended for free and unencumbered distribution to Antique Outboard Motor Club members as well as interested members of the public who may not yet be affiliated with the AOMCI. Although operated in cooperation with AOMCI, and intended to foster a working relationship with the National Club and the official AOMCI quarterly magazine "*The Antique Outboarder*", the RMJ is a wholly independent operation pledging to function within the confines of the AOMCI By-Laws, but is not to be confused as working under the direction of the Executive Council of the AOMCI in any way, shape or form.

The Editor of the Rowboat Motor Journal and its contributors assume no responsibility whatsoever for any incident or injury that may arise from any use of information (in whole or in part) presented within the contents of this publication.

### Why Do We Collect?

This is a question that really has no right or wrong answer. Everyone has different tastes or preferences. What appeals to some will turn off others completely. This is true regardless of what is being collected, whether its motors, stamps or coins, artifacts, Beanie Babies, whatever. Humans have basically been collectors of "stuff" since the dawn of time. Regardless of which platform forms the basis of a collection, there have always been those who will wonder why an individual feels drawn to any particular item or group of items; again, there are as many answers to this as there are individuals inhabiting this planet. Certain collections may provide some degree of personal comfort; they may consist of items that commemorate a significant person, place, thing or event. Maybe the pieces of a collection recognize milestones in a given area of the collectors' choice, or preserve and protect items that represent a noteworthy part of history or are great works of art. Perhaps they are things that were once owned or cherished by someone we love. Some collect as an investment for the future, seeing an opportunity to enjoy certain things right now then liquidate them down the road when they are ready to dispense with them, hopefully reaping a financial benefit. Some individuals are known to simply crave "anything that they can carry home and store", but I'm sure that nobody who collects old motors would ever fall into that category. Whatever the reasoning for an individual choosing to focus or not focus, there is one statement that can probably be applied to all collectors; when it comes right down to it, what matters most is that the people enjoy what they are involved in from a collection point of view. Some of that enjoyment includes reaching out and forming a bond with others who like to indulge in the same pleasures, which not only serves to provide some reassurance that one is not entirely insane for having developed their particular personal preference, but can also help develop new friendships, personal educations, and broaden the knowledge base to draw from when one needs collection-specific information or assistance. If one is fortunate, this also helps

expand the size of the net they can cast while attempting to increase the size of their collection or put them in the position of attaining additional exposure to the types of items that they prefer to acquire, or even point the way to enjoying different facets of their collection or hobby.

As time goes on, perhaps my own tastes in collecting will evolve beyond what they already have. I cut my teeth on motors of the late 40's and early-to-mid 50's. Immersion into the hobby led me back in time to the antique motors that marked the very beginnings of the outboard motor industry in North America, and developing a predilection and respect for the motors of this era has been the end result. One could say that I have a deeper reverence for the motors that were built in the 1900 to 1930 time frame, but that doesn't mean all others are forsaken, as my collection of mid-50's Mercury motors can attest. My belief is that all motors deserve to be preserved in their own way; what drives me to focus on rowboat motors is the perception that as time goes by, newer collectors seem reticent or disinterested in becoming involved with the very motors upon which the AOMCI was based, which IMHO is a mistake, but fixable if we put our collective heads together and work toward promoting the enjoyment that can be experienced through working on and running these relics of yesteryear, while educating our potential AOMCI successors in the process.

### Why Create A Chapter And Newsletter Devoted To Rowboat Motors?

The main reason is to create a vehicle that allows rowboat motor enthusiasts to band together and share information as they see fit in order to ensure that the visibility of the rowboat motor does not recede within the ranks of the AOMCI. As such, a greater degree of freedom is desired with respect to the exchange and publication of information that is rowboat-motor related, and thus "*The Rowboat Motor Journal*" is being assembled and distributed as an entity that is meant to be independent of (but not intended to compete with) the publication of "*The Antique Outboarder*".

### Rowboat Motor List

It may be nearly impossible to compile a complete list of all rowboat motors, but one has to start somewhere. Using Jason Harrison's Rowboat Motor Website as a reference, the following North American-built motors would be considered as meeting the criteria describing a detachable rowboat motor;

- Allen    Admiral    Aerothrust    Air Drive    American    Amphion    Anderson    Arrow    Blakely
- Brooks    Burroughs    Burtray    Caille    Campbell    Clay    Columbian    Crescent    Cullen
- Cunard    Cyclone    Detroit    Emmons    Evinrude    Featherweight    Federal    Ferro    Gierholtt
- Gilmore    Glide-A-Way    Gopher    Gray Gearless    Henninger    Hiawatha    Hi-Speed
- Independence    Jewel    Joymotor    Koban    Lockwood-Ash    Michigan    Miller    Motorgo
- Motorow    National    Neptune    Niagara    Nichoalds    No-Row    Northwestern    Nymph    Racine
- Ro-No-More    Salisbury    Spinaway    St. Lawrence    Strelinger    Submerged Electric    Sunbeam    Sweet
- Valley    Viking    Waterman    Walnut    Water Sprite    Wilco    Wilcox-McKim    Wisconsin    Wright

Known European-built motors considered to be rowboat motors may include (but not be limited to) such names as Alka, Archimedes, De Giorgi, Effzett, Hasse, Knight, Lutetia, Motogodille, Penta, Svalan and Tip-Top motors. It 's worth noting that several European brand motors continued to be built in a rowboat motor type of configuration after North American manufacturers considered the design to be outdated.



1919 Aerothrust giving its proud owner a ride at the 2007 Constantine Super Meet

## What Should One Do with A Newly Acquired Motor? (Rowboat Motor Beginners Guide)

Often when acquiring a new piece to add to our collections, especially if it's the first rowboat motor added to the collection, the first inclination is to see if the engine will start. This may seem like a good idea, but one mustn't forget that in most cases spare rowboat motor parts aren't easy to find, so its best to invest a little bit of time performing your due diligence in order to make sure that trying to start the motor won't do more harm than good. Just because it isn't seized up doesn't necessarily mean that it is fit to run. Here is a rough checklist of suggested areas of concern that should be inspected and verified prior to trying to run a motor. Yeah I know, you're excited as heck that you've got it and you want to find out if it will fire up for you, but a little patience now will go a long way toward making sure you preserve your new prize instead of hurting it. Remember, you don't know for sure where it's been or how well it has or hasn't been taken care of. In this issue, we'll cover possible powerhead problems.

### Powerhead Basics

OK, you've got your new toy, and maybe it's real obvious if anything is wrong or parts are broken or missing, but let's go through this exercise for the sake of argument. We'll start by making a checklist of the areas that should be verified for overall fitness.

1. Verify that motor isn't stuck or lacking oil.
2. Flywheel fits tightly to crankshaft.
3. Crankshaft bearing fit.
4. Compression tests – cylinder and crankcase.
5. Noises in reciprocating assembly.
6. Piston ring freedom
7. Condition of cylinder, inside and out

Assuming it's not stuck, checking for a healthy compression bounce is usually the very first thing everybody does when inspecting a motor. Sounds logical, and its a good starting point, but there are a few reasons why you may want to hold off doing this test until other checks are completed, and those reasons are mainly flywheel related.

Try gripping the flywheel on the edge and see if you can rock it from side to side at all. This can tell you right away if the flywheel nut is loose or if something else is amiss at the top end of the crankshaft. It is not uncommon to find RBM's with damaged flywheels and/or crankshafts, and if your motor already has been damaged, continuing to crank it over can exacerbate any pre-existing condition. The main reason for damage in these critical parts often has its root cause encapsulated in one short sentence; *the flywheel nut came loose*. If you inspect the fly-wheel hub and find a crack or break in the keyway region, you can bet that the motor was run with the flywheel nut not properly tightened or an improperly fitted key. Now for the double whammy in the bad news department; flywheel damage in the key slot usually translates into damage to the crankshaft keyway as well, but if everything looks like its good and tight, you don't need to worry about this part for now. Let's just pretend that the flywheel nut is tightened properly and the flywheel taper matches the crank like it should; thus, any discernible sideways movement can more likely be attributed to the overall fitness of the crankcase bearings.

Rowboat motors almost exclusively used plain bearings of brass, bronze or lead babbitt to support the crankshaft, and there are no seals around the crankshaft journals; thus, if the bearing fit is not snug, the crankshaft can wobble and superfluous air can enter the crankcase or fuel can escape from the pressurized crankcase chamber. Neither

condition will help your motor run at its best, so if the bearings are sloppy, plan on doing a fairly complete powerhead rebuild that includes new bearings and possible crankshaft grinding. At the very least, finding a wobble condition present makes it necessary to take the time to disassemble and measure the critical components to verify what the clearances actually might be. My personal rule of thumb is that upper bearing to crankshaft clearances of .005" or greater usually means that it's new bearing time. New bearings should have a clearance of 0.0015" to .002" max. If you want to cut corners on your bearings, sometimes you can get away with lower bearing clearances that are a little looser than .005", but it does mean that more fuel mix will escape around the crankshaft and then down the driveshaft to the lower unit. And if you're going to install one new bearing anyway, it doesn't take that much more work to do both of them. Once the side-play of the crankshaft has been checked, you can graduate to verifying compression.

Measuring compression readings on a RBM can be tricky because of the spark plug threads that were used; early motors were tapped to accept spark plugs with one-half (1/2) inch pipe threads, others use a 7/8" plug with 18 tpi (threads per inch). It would be rare to find a compression tester that can accommodate a 1/2 inch pipe thread spark plug hole unless you've made yourself an adapter of some sort, so it may very well be that an estimated compression reading is as good as you can get here. Suffice it to say that you should need to put considerable effort into pulling the flywheel through compression with the spark plug in. Once it's decided that the cylinder compression is good, pay some attention to the poppet valve; if it "snorts" while you bounce the flywheel back and forth firmly against piston compression, this is a good sign that the crankcase compression is at least good enough to give the engine a chance of being

operational. If at first this test does not yield a positive result, fear not, for lack of a good snort may be attributed to the poppet valve itself. Try pushing upwards on the valve stem; the valve should lift off the seat with mere finger pressure. If it won't, the spring tension may be excessive, the stem may be bent, or it could just need a shot of penetrating oil and working up and down manually to free up a binding condition. Occasionally, a sticky poppet valve is merely caused by a film of oil in between the valve face and its seat.

While you're playing with the flywheel and checking the compression, try to listen for any loud clicking or clunking that may come from the interior of the crankcase. Any audible noises may point to a sloppy connecting rod or wrist pin fit, neither of which is a good thing. At the same time, try to spin the flywheel with the spark plug out and the poppet valve on the carb held up off its seat; there should not be any tight spots in the reciprocating assembly rotation. If there is a tight spot that requires extra effort to help the motor turn over, it may be simple like a lack of oil but it might be something worse, such as a bent connecting rod or crankshaft or improperly installed wrist pin. If pouring the oil to it doesn't get rid of the tight spot, you'd best be doing some disassembly work before you go much further.

You will want to take a hard look at a very critical part of your engine; the cylinder. Rowboat motors are typically built using all cast iron components in the combustion chamber; specifically the piston, rings and cylinder itself. If left sitting in the same position for a protracted period of time without being moved, the rings can begin to adhere to the cylinder wall and/or to the piston ring lands, particularly if there is a lack of storage lubricant present. Also, carbon deposits that harden over time can cause the ring(s) to stick in the groove(s). Rowboat motor piston rings are usually

much wider than those used in their more modern successors, so there is more surface area available on each ring that can get rusty and stick to the bore. There are rowboat motors that use but a single wide piston ring, such as Evinrudes built from 1909-1912, which use a one-half inch (1/2 inch) wide ring; other rowboat motors may have a single groove but use two rings stacked together, although this situation is almost always considered to be evidence that the motor has been re-conditioned at some point during its life. It's common to see piston ring widths of one-quarter inch or more in engines from this era. Whatever motor you have, it's worth taking the time to unbolt the exhaust manifold from the motor and have a look-see through the ports. You can check the rings for the sticky condition by pushing on them with a piece of wood or stiff plastic through the exhaust port openings. If the rings move and bounce back, you're probably good to go; if they move into the groove and don't spring back, they may be sticky or broken; the ring not moving at all means something is gummed up, corroded, or the ring-to-land clearance is incorrect and needs a more in-depth look. While you're at it, shine a light in the spark plug hole while observing the cylinder wall condition through the exhaust ports, or vice versa, it doesn't really matter. What you want to be able to check is if there is any evidence of rust, score marks or pitting on the cylinder walls or piston. Signs of rust or pitting means there was moisture allowed to collect in the cylinder at some point; it could have been a combination of condensation creeping in coupled with a lack of proper oiling prior to storage, but it might also be due to water seeping in through a cracked cylinder wall.

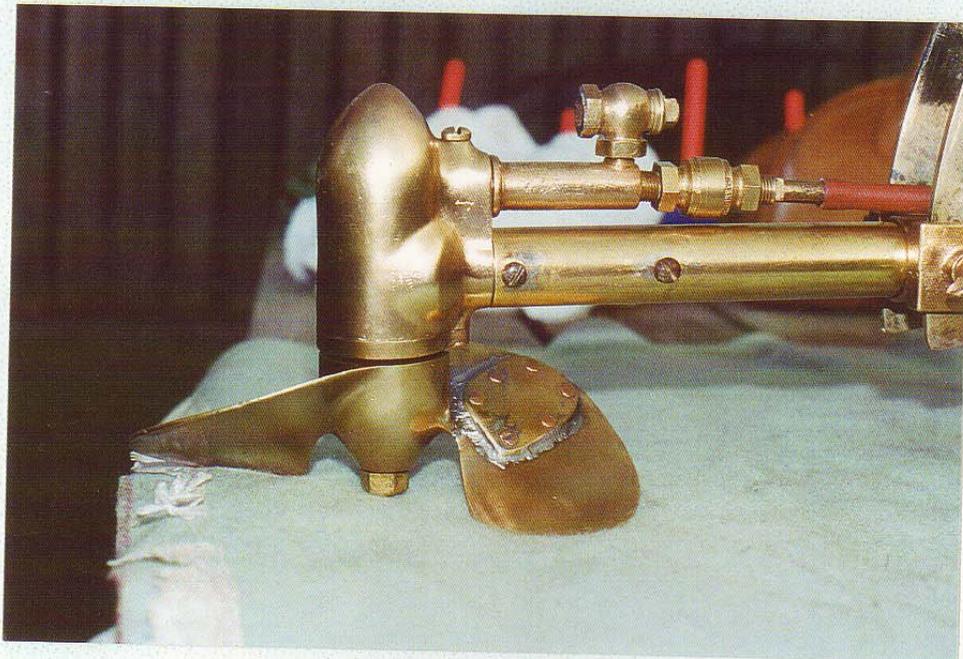
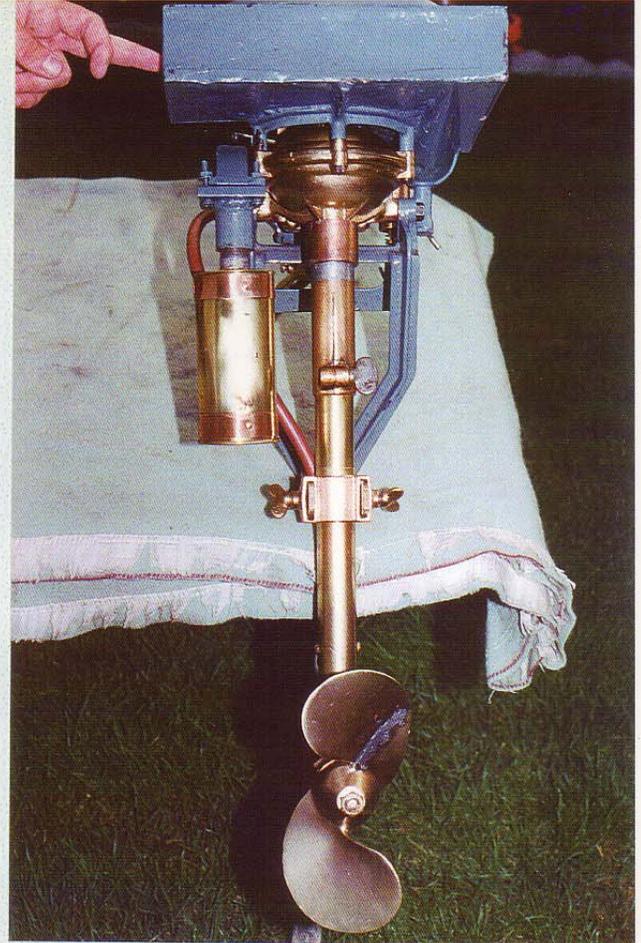
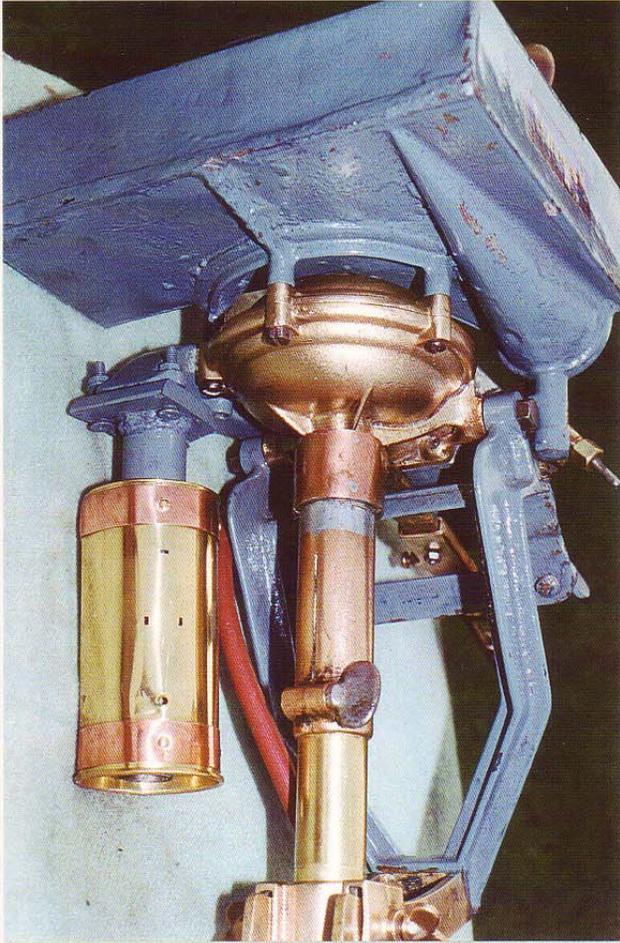
Scoring is another matter, and is typically caused by overheating, lack of lubrication, or some sort of foreign matter (i.e. hard piece of carbon or piece of spark plug electrode or insulator)

getting loose in the combustion chamber and then wedging in between the piston or rings and the cylinder wall; it could also mean a broken piston ring or the wrist pin working its way out of the bore. Scoring from broken rings normally shows up as narrow lines close together, as it's the broken ends that do the damage, and since the rings are usually pinned in place to prevent their rotation, the broken edges keep traveling over the same section of cylinder. (To be truthful, I've rarely seen broken rings do this in a rowboat motor but I have heard about it, and so thought it worth mentioning. Personal experience indicates that it's far more likely to break rings while working on them as opposed to them breaking while the engine is running). Scoring from the wrist pin will show up as furrows dug into the top or bottom of the cylinder wall, and gravity normally dictates that the damage will be most severe on the bottom. Scoring due to lack of lubrication or overheating may show up as severe scratches or drag marks on the cylinder walls and piston skirt. Either way, if you see any scoring anywhere in there, you ought to consider tearing the powerhead down further to investigate before you run it. It may be true that what's done is done, and it may be possible that somebody has remedied the problem before you got the motor, but it's imperative that you make absolutely sure.

Have a look on the exterior of the water jacket area, particularly underneath the spark plug, on the cylinder underside, and around the casting core openings; if water was allowed to collect in the water jacket and freeze, it may have caused a fracture in the outer wall, and the afore-mentioned areas are the most probable regions that will display the damage. Salt water motors will present you with their own special problems (rusted out areas), so you'll want to check that out too.

Next issue - the rest of the powerhead components.

*The Back Page*  
*Featuring rowboat Motors of interest*



**1910 Evinrude Detachable Rowboat Motor - Serial # 705**  
**It has a few issues, but nothing that can't be saved.**