OUTBOARDS

INBOARDS

JUNE 1953
25c

BOAT SPORT

ANC

SPEEDTESTING YOUR BOAT AND MOTOR

THE RACING SPARK PLUG

DICK NEAL–MISSOURI MOTORBOAT MAGICIAN

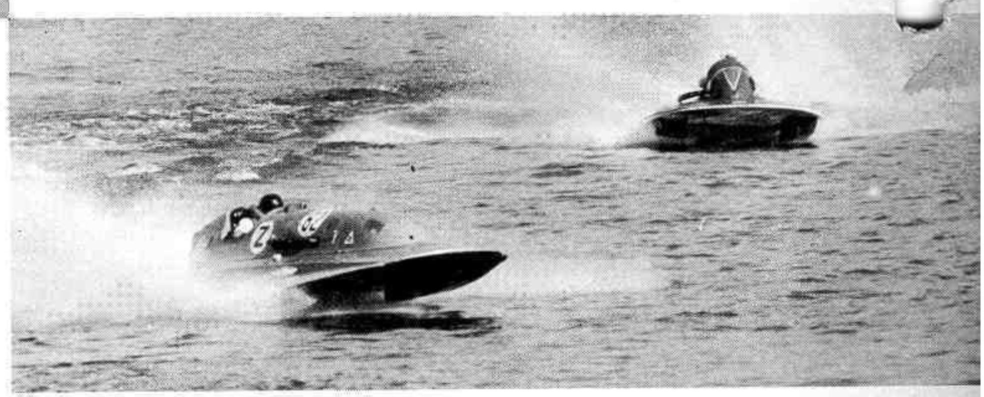
HOW TO RUN A REGATTA

(Right) Signor Verga wins the 2nd heat and the World's 450 kg. Championship at Lake Milan, Italy. The boats in this class bear a close resemblance to American 266 cubic inch speedboats, but in most instances the power plants are of a considerably smaller displacement. (Photos on this page from Speroni)

VERGA WINS WORLD CHAMPIONSHIP

By Paolo Speroni

(Above) Verga is congratulated as he arrives in the pits at end of 18.6 mile distance wins.



(Right) Verga in Z-62 moves fast around the outside of a competitor and illustrates the fine cornering characteristics of the Abbate.

LATE IN 1952, on a beautiful artificial lake in Milan, Italy, Europe's leading racers of the large 450 Kilogram Class battled for the coveted title of World Champion. Drivers of three nations were represented by seven cleanly designed, three-point hydroplanes.

The course over which the events were competed measures less than a mile to a circuit so that peak speed was sacrificed in the interest of quick pick-up and fine handling characteristics.

In the first 20-lap heat, Verga of Italy, in an Alfa Romeo, won at an average speed of 67.896 m.p.h. with Von Mayemburg of Germany in a Jaguar powered hydroplane finishing second and Sestini of Italy in a full race Ford finishing third. Shapira of Italy with a 2½ litre Ferrari, Selva and Polli both of Italy and both driving B.P.M.s, a special marine conversion made by Cisitalia, and the lone French representative, Delacour, also driving a B.P.M., completed the first heat field.

In the second heat Italian Verga again took the measure of the field with Polli and Delacour finishing second and third, giving Verga in the Alfa Romeo a perfect score and a clean-cut victory for the world's speedboating title. In final point standing Polli of Italy was second, Delacour of France, third, and Von Mayemburg of Germany fourth.

The winner's boat was built by the Abbate Yards at Lake Como, Italy, speedboat specialists. The power plant is the famous type 159 Alfa Romeo, the same motor with which Argentina's Fangio won the 1951 World Championship for Formula I Grand Prix racers. The motor is an eight cylinder, 1500 c.c. job which with twin superchargers develops 420 h.p. and an unofficial speed of over 140 m.p.h.

Verga has expressed a very definite hope that the various European class speedboats will conform with American classes so that the Europeans will be able to compete in American championships without modifying or building special equipment.

In a later report, I will discuss the International Speedboating Congress held at Brussels, Belgium, and outline the possibilities of wide spread European entries in American speedboat contests. (End)

This Month's Cover Story

A GOOD TITLE for this month's cover might be "A Merc at Work"—and what a job this powerful new 1953 Mercury Mark 40 is doing to shove a family runabout completely out of the water!

The Mark 40 (25 h.p. and up), Kiekhaefer's new version of its well-known Mercury Thunderbolt model, is a big alternate firing quad, with automatic rewind starter, squeeze-grip safety throttle and remote fuel tank. Aside from its uses for stock utility racing and fast pleasure outboarding in general, the Mark 40 is also particularly well adapted for use on outboard cruisers.

The boat, momentarily airborne, is Switzer-Craft's new Shooting Star, a 14' all-mahogany runabout, with 76" beam, whose deep seats hold six passengers comfortably. The lines and structural features are patterned after the Bullet and Baby Bullet models, stock utility runabouts in the Switzer line which serve as the proving ground for new ideas before they are incorporated into the family models. The Shooting Star was introduced at the Chicago National Boat Show this year. Cover photo was taken this winter at Cypress Gardens, Fla.

The story of the Switzer-Craft organization of McHenry, Ill., is the story of the recent tremendous growth of outboarding itself. Always an outboard family, the Switzers spent vacations on the waters of Pistakee Lake. In 1945 Pop Switzer and son Bob built their own family runabout at home. The next year son David came back from air duty in the Navy and became interested in improving the original model. This started his career as a boat designer. Pop, seeing that here was a field of interest to both his sons, organized the firm, and to make it a complete family undertaking, Mom found herself handling the office and the scheduling of shipments. In 1950 the first stock utility racer was built, and that same year Bob won the Torch Lake Marathon as well as a good number of closed course events. From then on Bob handled all the test driving of models and raced them in many National events. Last year he won the Albany-New York DU class, the A.P.B.A. DU National Championship, and set a new DU world's record for one-mile straight-away—all in the same Bullet hull.

Merc engines are, of course, a familiar sight on the transoms of boats everywhere in the stock utility racing classes, and it was a similar powerful Mercury, of the same four-cylinder-in-line construction that pushed Bob Switzer to his DU triple-win performance in 1952. You can be sure that in all his winter testing work down in Florida Bob has been figuring out just how he'll make his new big Merc work for him in '53. (End)

BOAT SPORT

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SPEEDTESTING YOUR BOAT AND MOTOR

Directions for Speedtesting Could Fill An Encyclopedia . . . Here Are Some of the Specific Examples To Show You the Procedure . . .

By Hank Wieand Bowman

Al Zolko of LaGrangeville, N. Y., has his Class F Evinrude balanced neatly. Zolko has already proved his set-up savvy by winning the Class F in the '51 Albany-New York Outboard Marathon.

IF YOU ASK any veteran outboard racer how he manages to maintain a high percentage of front or near the front of the pack finishes, he will doubtless say, "The single most important thing is to keep your motor running and your boat right side up." That much even the most secretive of all shingle pushers is willing to admit. But how to get the most out of your outfit, assuming you have the skill and the know-how to keep the fin underneath where it belongs and the prop revolving, is something else again.

BOAT SPORT, to date, has been and will continue to be the source of many hop-up and refinement hints, which, if carefully followed, will add those ultra important r.p.m.'s to your motor's performance. But to take full advantage of your potential added r.p.m.'s in terms of increased speed, careful and methodical testing and record keeping are essential.

Let's forget for the moment elaborate shop equipment. While a dynamometer is handy, you can get along without it. But you can't get along without exhaustive tests. You can know everything about your motor's power and still not make it produce for you in terms of speed if you fail to link it up with the proper propeller or location of propeller in connection with the boat's planing surface.

Keep in mind, too, that your boat designer created a boat to perform with a standard weight and riding position. Unless you are fortunate enough to be the perfect composite of these two that the designer had in mind, you may find it advantageous to modify slightly that stock hull design.

Now to get down to facts. Speed testing is divided into two basic parts: one, bench or tank testing the engine alone, and, two, speed testing with engine installed.

If the class in which you are engaged permits the use of special racing fuel blends, the simplest and most efficient way to test these is with the engine in a test tank. A tachometer is a must for your bench testing. In testing fuels, make careful notations of your fuel formulas and try each formula which holds promise in turn, checking the tachometer readings carefully.

Most outboard motor manufacturers build a special test wheel for use with various models of that manufacturer's engine. These wheels are designed to put a load on the motor closely resembling that encountered under customary boat operating conditions. The wheels take several forms: multi-bladed propellers, paddle wheels or friction discs. Just so the test wheel fairly closely simulates underway load conditions, any wheel that will fit your motor will do the job, for comparative performance is what you are after. For example, a

Three Raveau boats powered by Merc 25's are shown rounding a buoy in a racing event sponsored by the Stock Outboard Racing Association of Long Island at Desoris Pond, Glen Cove, N. Y. Note the variance in the handling characteristics of the three runabouts, due in all probability to variation in engine cock. Tony Rodrigues, Jamaica, in "Hi-Mabel" is pictured in the photo riding as nearly perfect as possible.

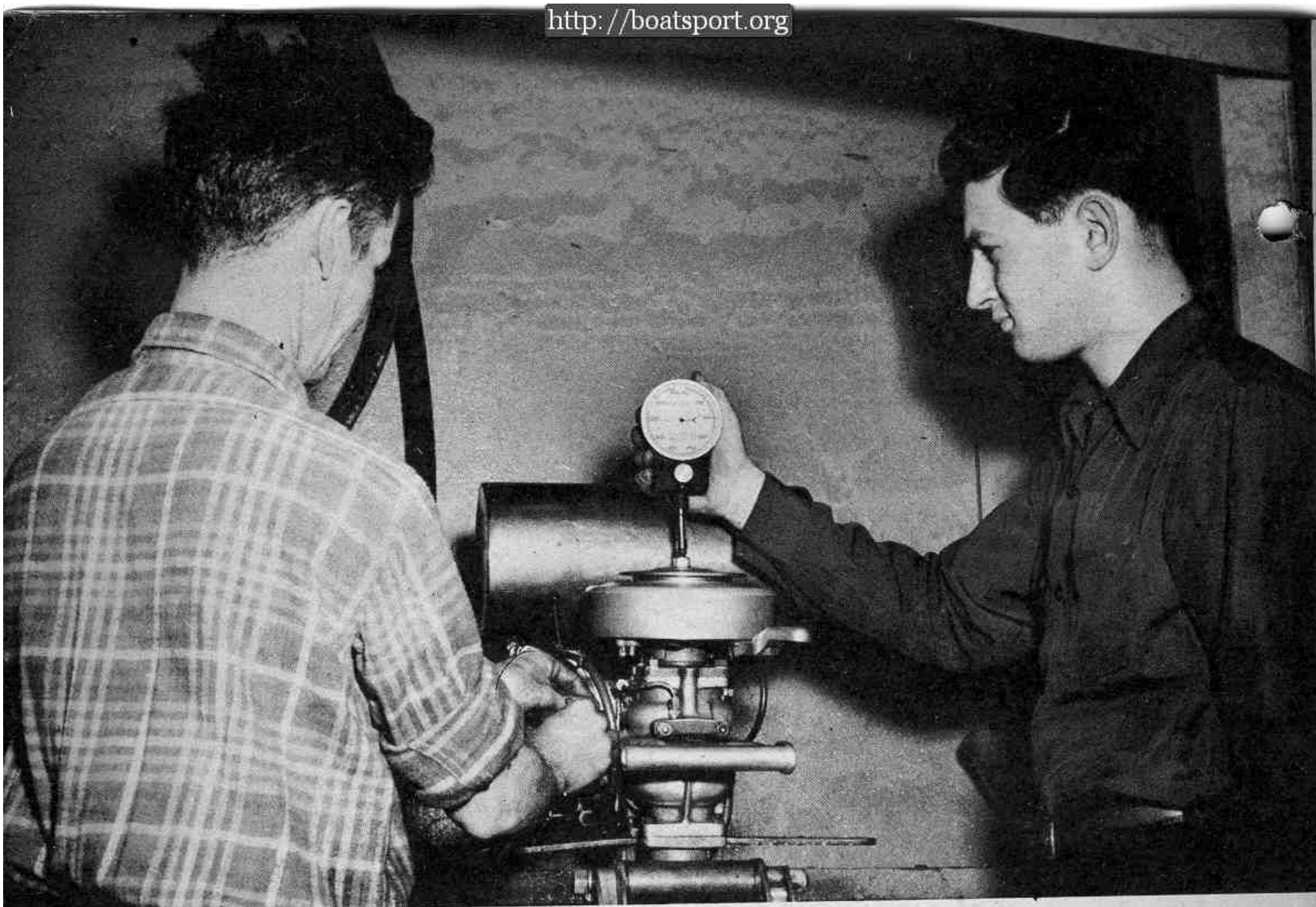
Chart (Right). Since many of our readers have written to us with questions concerning transom height and propellor sizes for Mercury outboard motors, we are offering this chart which will serve as a very good standard beginning point in testing. The propeller sizes listed are given for both standard Quicksilver unit and the short model Quicksilver unit. A 1953 model Quicksilver unit has been released by Kiekhaefer Aeromarine Motors, Inc.; the gear case housing is ¼" longer than former units but no other information is available to date. Figures in the chart are for stock motor set up with gasoline and oil fuel. Owners planning alcohol conversions in most instances will find ½" added propeller pitch a good starting point. Factory recommendations call for engine angle of approximately 1° to 2° between the bottom of a runabout on the line from the afterplane to the propeller shaft and from the foreplane or sponsons on a hydro and the prop shaft. This is positive angle, i.e., "kicked out."

straight methanol alcohol, castor, benzol blend can generally be expected to offer about a 10% increase in r.p.m. over high test gasoline. Thus it would not matter whether your test wheel permitted 3500 r.p.m. with gasoline and showed somewhere in the neighborhood of 3,850 r.p.m. with a blended fuel, or if the test wheel presented lesser resistance and permitted your engine to wind 4,000 r.p.m. and the alcohol blend boosted this to 4,400. Evidence of the increase is what you are after.

If in recording a half dozen different fuel formulas, your records show that formula #5 produces the greatest boost and you plan to check only six formulas, then naturally #5 would be your selection. BUT, your first go around is merely that. You have not reached as yet any firmly established conclusion. For example, nitro-methane present in one of the fuels which did not perform (*See Over*)

CHART

	Prop	Transom Height Std. Q. S. Unit	Transom Height Short Q. S. Unit
Class A Mercury Engine Model KG-4			
Runabout			
Kaminc	6 x 8	15 -15½	
Johnson	6½ x 7½	15 -15¼	
Conv. Hydro			
Johnson	6¾ x 7¾		
	6¾ x 8¼	15 -15⅜	13 -13⅜
Kaminc	6¼ x 8	15½-16	13½-16
3 point Hydro			
Michigan	6¾ x 8		
Michigan	6¾ x 8½	15¼-15¾	13¼-13¾
Class B Mercury Engine Model KG-7			
Runabout			
Kaminc	6¼ x 9	15⅛-15⅝	13⅛-13⅝
Johnson	6¾ x 8½	15¼-16	13¾-14
Conv. Hydro			
Johnson	7 x 9	15¼-15½	13¼-13½
3 point Hydro			
Kaminc	6½ x 10	15½-16	13½-14
Michigan	7 x 9½	15¼-15½	13¼-13½
Michigan	6¾ x 9 (very short course)	15¼-15½	13¼-13½
Class D Mercury Engine Model KG-9			
Runabout			
Kaminc	7 x 12	15⅜-15¾	
Johnson	8 x 11½	15 -15½	
Conv. Hydro			
Johnson	8¼ x 12		
	8¼ x 12½	15¼-16	
3 point Hydro			
Kaminc	7½ x 14	16 -16¾	13 -13¾
Michigan	8½ x 13	16 -16½	13 -13½



(*Continued from preceding page*)
as well as #5 cannot be chalked off dogmatically as no good. The same for any other additive, for you have just begun your test tank checking. You know that #5 performs best with your present carburetor set-up and your present compression ratio.

But strangely some of the fuel additives which appear to be duds at 12:1 compression ratio and higher may really show you excellent results at a compression ratio of 10:1 or even lower. Remember that if you can find a fuel formula which functions better in a low compression ratio range, this will give you in all probability easier starting and greater dependability and hence should be your choice.

Right here let's establish a firm rule in testing. Make only one change at a time. Test and record completely for this change before moving on to the next. This holds true whether you are doing your speed checking in the test tank or underway speedtesting your boat.

The number of various combinations of fuels, propellers, engine angles, compression ratios and personalized pet little hop-up tricks are incalculable. In the speed business it's foolish of you to make any changes or alterations and stick by them on pure assumption alone. It's hard to determine the difference of a mile or two per hour on your boat when the boat is in motion just by guess work. If you do it just by guess work, a new pet idea which may not be worth anything and even cost you speed may be clung to and bring poor results.

When you plan to have your block ground, to put in a new set of piston rings, don't guess whether the grind did you any good. Let your engine peak out in a tank and run a tach check on it before disassembling it. After the grind and ring job, check it out again and you'll know for sure whether your money was well spent or not.

Is there, for example, any advantage in an outboard engine with an integral rotary valve such as the Johnson KR in squaring up the rotar holes and polishing them? My own notebook indicates as much as 150 r.p.m. gain from this operation alone and that is not guessing but on the basis of tachometer reading comparison.

All of your fuel testing, however, cannot be accomplished in the shop. Fuel formulas vary in their efficiency, dependent upon humidity, temperature and altitude. While you may learn a great deal about fuels and even select one formula which for your purposes, under conditions of temperature, humidity and altitude existent in your shop, is best, you will doubtless find that with an identical motor-propeller-boat set-up the operating r.p.m. will vary on a hot dry day from your clocking on a damp hot day, or on a damp cold day or any other combination you expect to run into. So to reach perfection in fuel selection, you would have to vary these formulas for the various weather conditions and altitudes you plan to encounter during the racing season. Some drivers carry three and more different fuel mixtures with them. But naturally this is really getting it down fine and for the one formula driver, a carburetor adjustment and perhaps a different plug selection will give satisfactory performance.

In boat testing, the ideal situation is to have a testing area in protected waters, with some form of permanent markers which will permit you to do your comparison checks with a stop watch. Two instruments are really necessary for underway checking: a stop watch and water speedometer. Once in the water you will no longer be interested in r.p.m.'s except perhaps out of sheer curiosity. Remember r.p.m. is not to be confused with speed. Put on a propeller of small diameter, low pitch and small blade area and your r.p.m.'s will automatically increase. But—this does not necessarily mean, and probably won't mean, that you are going any faster. The stop watch alone would be the only instrument you would require if your sole consideration was in peak speed.

If races were conducted strictly on a straightaway basis with plenty of distance before the start of the timing zone, peak speed alone would be all you would be after. But since you will drive a variety of courses during any season of racing, the length of the course to be run and the type of layout of the course will determine your set-up.

Test Log (Right) Taken from Class A hydroplane testing log. A glance at the results would indicate that propellor No. 6 would be ideal for long course purposes and that No. 4 or 5 would be most suited to short-course work with almost a toss-up in decision between the two as No. 4 presented slightly faster acceleration and less cavitation out of the corners and a slightly slower top speed. A combination of stop watch and water speedometer were required for these tests. Prop No. 3, obviously, to be of value for the outfit on which it was tested, must be recut, repitched or both, with great precision.

(Left) The use of a hand tachometer for tank testing is illustrated here. The true value of a tachometer is in tank testing, not for speedboat testing under the best of conditions.

Test Log (Right) Illustrates testing problem of obtaining proper transom height and engine angle for an altered foreplane of a boat with one propeller only. The fifth test on shimming indicates apparent best transom height for 2" engine angle. Final test listed here illustrates just the beginning of an infinite number of checks necessary with just one propeller as engine cock is altered ½".

Test Log April 7, 1953

Weather Condition
No wind—72°—dry

Water Condition
Slight ripple

Acceleration tests from turn at 25 m.p.h. to 45 m.p.h.

Transom shimmed ½"+1/16"
Engine cock 2¼" from negative 0

Prop No. 1 20.5 seconds to maximum 44+
Prop No. 2 19.2 seconds to 45
Prop No. 3 26 seconds to maximum 43
Prop No. 4 10.6 seconds to 45 (maximum 46.5)
Prop No. 5 12 seconds to 45 (maximum 47)
Prop No. 6 17.4 seconds to 45 (maximum 48+)

Test Log April 8, 1953

Weather Condition
Slight wind—65°—damp
Overcast

Water Condition
Mild chop

Peak Speed Test for altered foreplane (⅛"+)
Tests with Oakland Johnson 7¾" x 11¾"

Transom Height	Engine Angle	Run 1	Run 2	Average
½"+1/16"	2"	1m. 17.2	1m. 25s	1m. 21.1s
½"+⅛"	2"	1m. 27	1m. 38.2	1m. 32.6s
½"	2"	1m. 14	1m. 23.5	1m. 18.8s
¼"+⅛"	2"	1m. 14	1m. 18.6	1m. 16.3s
¼"+1/16"	2"	1m. 12.6	1m. 18	1m. 15.3s
¼"+⅛"+1/16"	2"	1m. 14	1m. 20.2	1m. 17.1s
¼"+1/16"	2½"	1m. 12	1m. 18	1m. 15s

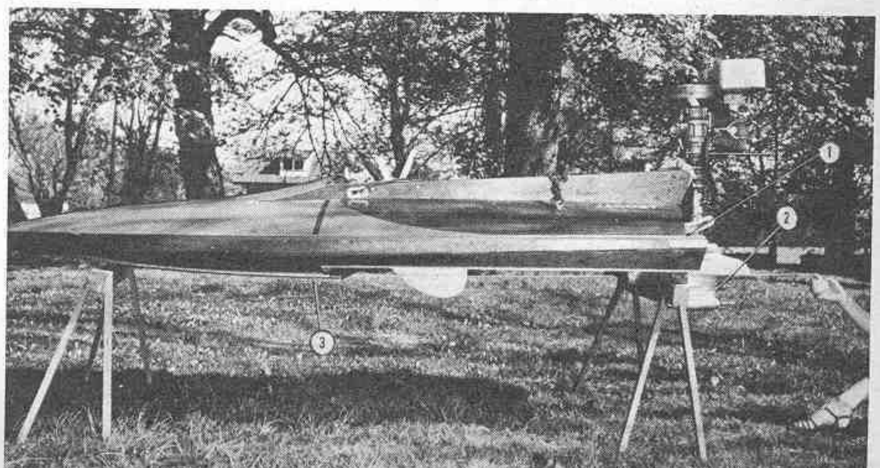
A short course with tight turns will call for a prop, motor tilt and transom height combination that will give rapid acceleration and a minimum of slippage in the turns. A water speedometer would be necessary to judge the comparative acceleration of different set-ups and the comparative loss of speed in the corners.

By contrast, if the course is a great, looping 2½ mile oval, you will want a set-up which will closely approximate that for the mile straightaway. A course with single buoy turns again presents a somewhat different problem than one with two or three buoy turns.

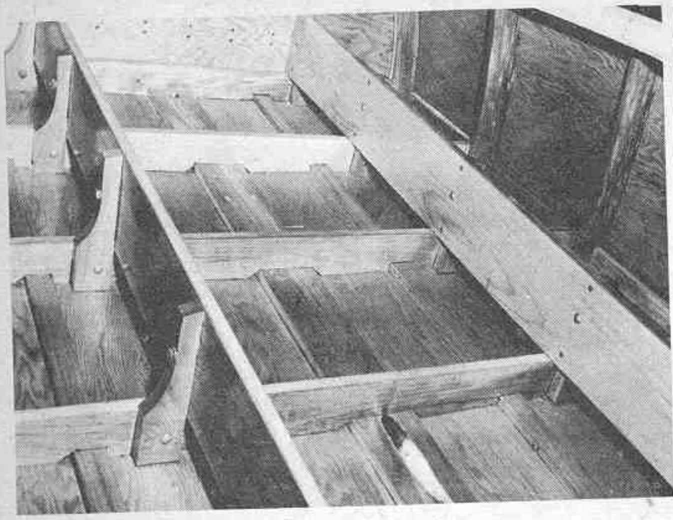
Here again get out your notebook and start recording. Here are some of the specific tests you can record. An analysis of your records should then prove advantageous to you at your next regatta. If you are going into this racing business with hopes of really being out in front frequently, you might as well realize immediately that you must play around with propellers. And this can get to be an expensive bit of fooling. As a starting point begin with the propeller recommended by the motor manufacturer for your motor and type of boat.

To prove to yourself that this speed testing business is important, first take your outfit out on the measured course and with a stop watch in hand and throttle wide open, snap the watch when passing the first buoy and stop it the moment you pass the second marker. Then return to (*Turn to Page* 25)

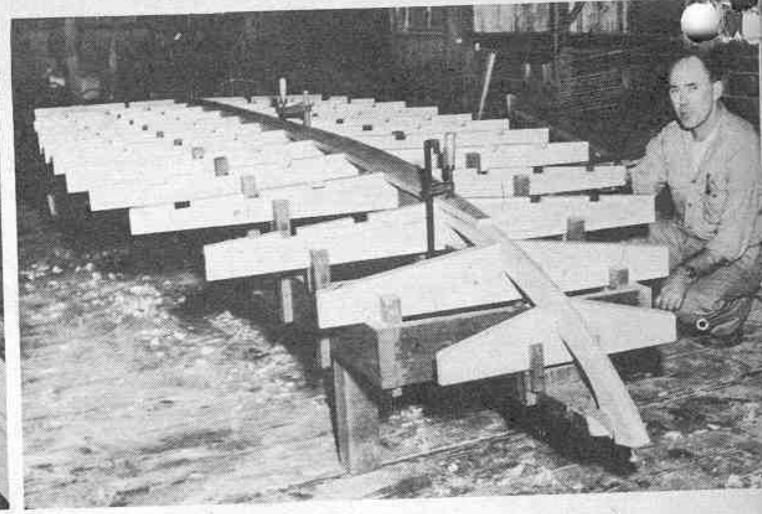
(Below) This picture illustrates the Class A racing motor on a conventional hydro being set up for engine cock. A good starting point for the novice driver is a parallel line between cavitation (1) and foreplane of hydro (3). Set-up is shown with adjustments made at (1) on frog brackets that offer slight positive angle for lighter riding. Hull made by "Pop" Jacoby.



(Below) An important feature inside the hull of a Fred Wickens' boat is the strong and accurate seating of the motor stringers as pictured here.



(Below) Fred Wickens, builder of "Top," and new Cracker Box he's building the same as original "Top." Note the stem piece bolted to keel in this photo.



WHAT MADE "TOP" SPIN?

Builder Fred Wickens and Owner-driver Danford Campbell Offer Sound Pointers For Top Cracker Box Performance . . .

By Bob Ruskauff

"TOP" is the Cracker Box runabout Fred Wickens built in 1948 for Jack Chittey. Jack failed to win a race with it, then sold "Top" to Danford Campbell of Long Beach, Calif.

Danford, a thorough-going fellow, drove the boat to victory at San Diego the first time out, in October, 1951. He has stayed "on top" with "Top" most of the time since then and in 1952 won the National Championship on Salton Sea.

What happened to cause "Top" for two seasons suddenly to become a consistently high performer in a strictly one-design class of inboard racing boats? From a purely objective (i.e. spectator's) point of view, the Cracker Box is one of the most interesting classes in speedboat racing because of the exceptionally evenly matched competition.

How could one (a) build a boat in some class to identical plans, have it fare poorly, then (b) have a new owner take it and start walloping the competition right off the bat? Especially a new owner who had had his own share of tough luck with a previous boat.

At this point, let's bear in mind two hyphenated words just used: one-design and thorough-going. They are really the gist of this article and might offer some valuable compass points for any driver in any class.

As gleaned, they might help a backyard builder and a beginning driver and, possibly, a few who have been operating by rule of thumb for years.

Let's face it. "Top" was built from original plans for the Cracker Boxes, which allow for the hull a tolerance not to exceed one inch from the Number 4 station all the way aft. The engine used may be full-race but cannot exceed 267 cubic inch displacement. Plans used were those for which you can write to the American Power Boat Association, 700 Canton Ave., Detroit. Or you can get the same from companies, advertising in this magazine, which sell plans, or plans with kits.

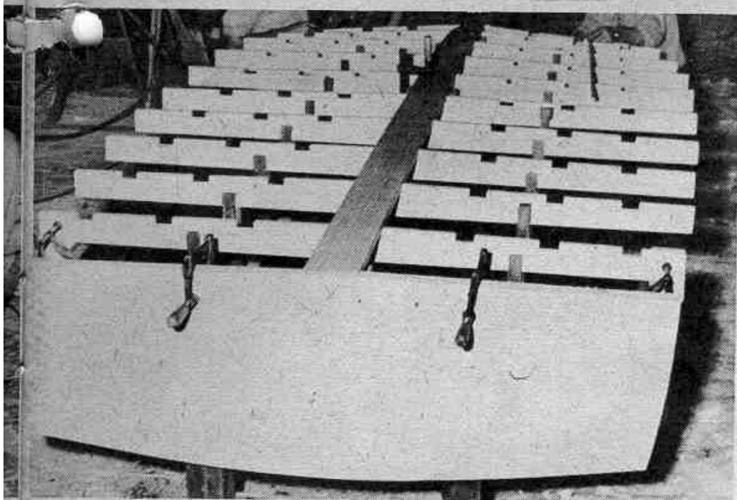
If you want to win on a horse race you seldom talk to the horse. It helps though to know the owner, the jockey or the trainer. Maybe they've a trick or two. On that basis, then with boats find and talk to the builder.

Wickens was neck-deep in work at his Inglewood, Calif. boat shop. He was four hulls behind, building seven 17-foot, sea-going runabouts which were nothing more than blown-up Cracker Boxes set, though, to house engines such as Cads, big Chryslers, and do fast ocean duty.

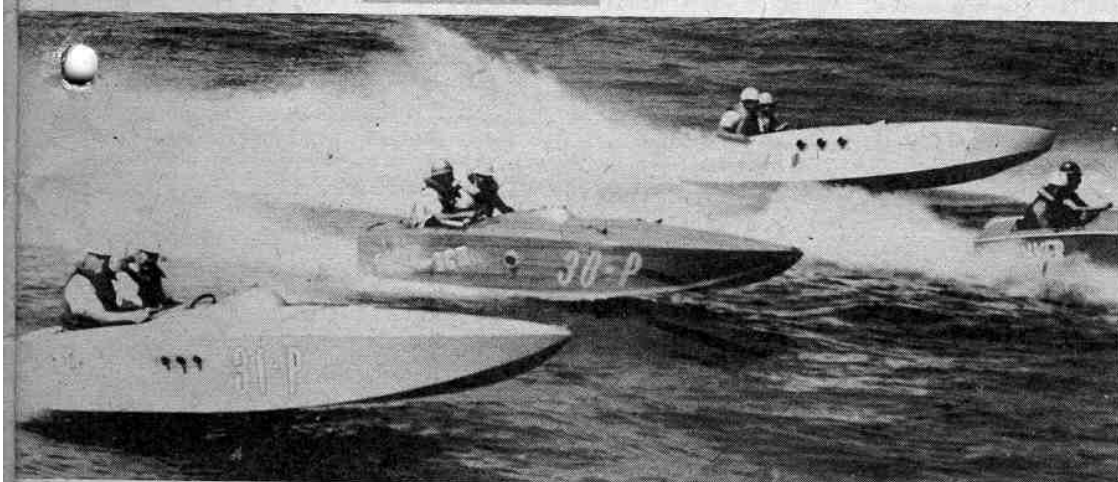
Wickens had built the hull of "Top," also that of Ralph Phillips' "Drag'n Behind," which at this writing still holds the competition record (60.484 m.p.h. made on Salton Sea, Nov. 8, 1949), and several other Cracker Boxes. For that matter, he has been building outstanding racing outboard and inboard hydroplanes and runabouts for some 20 years. Longer, in fact. Fred Wickens, born Jan. 21, 1906 near Kingston, Ontario, Canada, built his first (row) boat at the age of 13. He and two chums used it on the Saskatchewan, a big river so swift-running that every time the trio went fishing they landed a mile or so down stream. Eventually the hull drifted so far the lads didn't bother to row it back against the terrific current. That temporarily ended Fred's boat building career.

Moving to California in 1925, Fred tried the roofing business awhile, then in 1932 seriously started building boats. First, outboards: for such drivers as Dr. Wayne (Big Doc) Ingalls, Wally Francisco, Bill and Genetta Schuyler, Fred Mulkey, Irv. Debbold, et al. Inboards began in 1939 with "Hot Saturday," a 135; then "Suds," a really going 135 cubic incher. Morlan Visel's first "Hurricane" was (*Turn to Page* 26)

(Below) View from transom. Frame is ready for battens, which must be seated with complete precision. (All photos on this page by Bob Ruskauff.)



(Above) smooth-riding Cracker Box Champ "Top" in action during Western regatta.

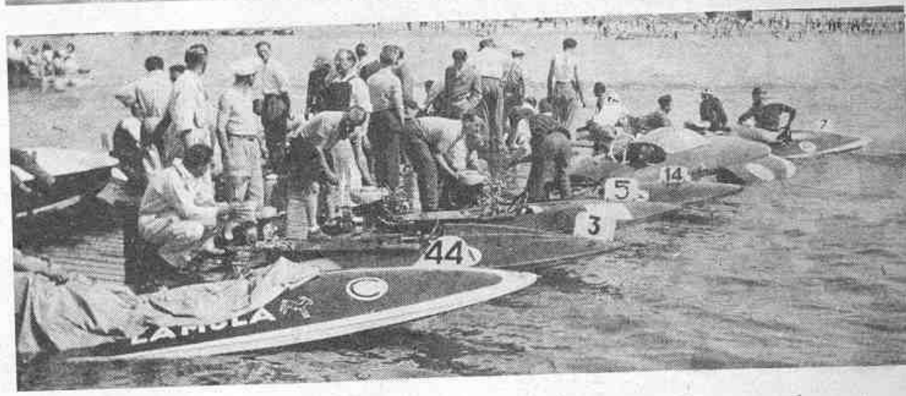


(Left) "Top" on the inside as Crackers come up for start of a race run on West Coast.

(Below) Builder Fred Wickens says that "If a finished hull looks right it will run right."

(Right) Leon Rousset, the French champion, was one of the many European racers who achieved fame in a Jacoby designed hull.

(Right) A section of the pits at Milan, Italy. Class letters are painted on decks of boats, while racing numbers appear on upright white board.

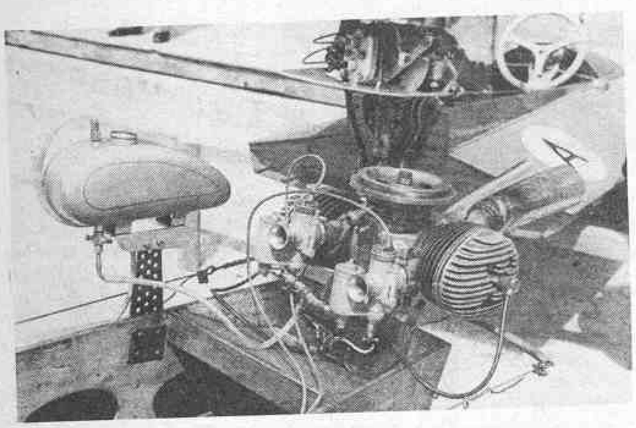


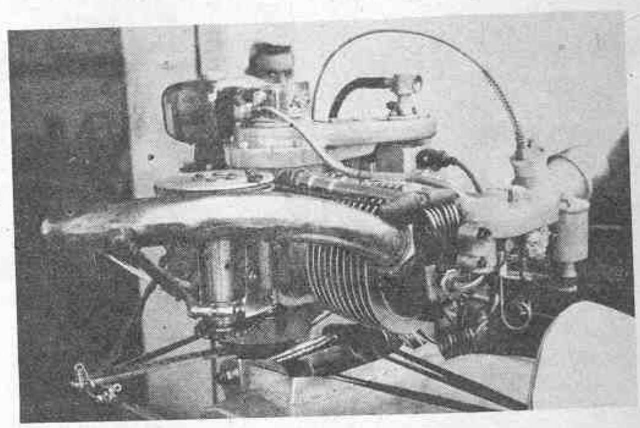
(Below, left) The motorcycle conversion used in Class A by Francesco Toselli. Note the unusual location of the fuel tank, and the large exhaust stacks. In this class we find the American Johnsons, such as the one in the background, competing against unfamiliar makes of engines turned out by such Europeans as Arto, Guzzi and Osculati.

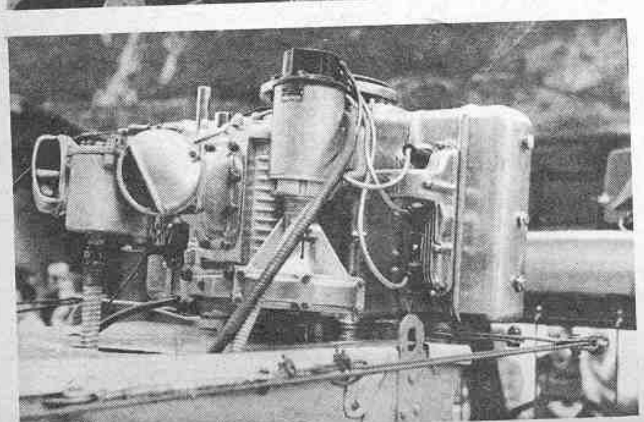
(Bottom, left) Close-up of the Soriano-Leto X showing the overhead camshaft, supercharger, dual carburetor and Scintilla Vertex magneto of the type used on so many American 135, 225 and 266 class inboards. For coming season the Letos have built a four-cylinder, double overhead camshaft supercharged version of their original Spanish model.

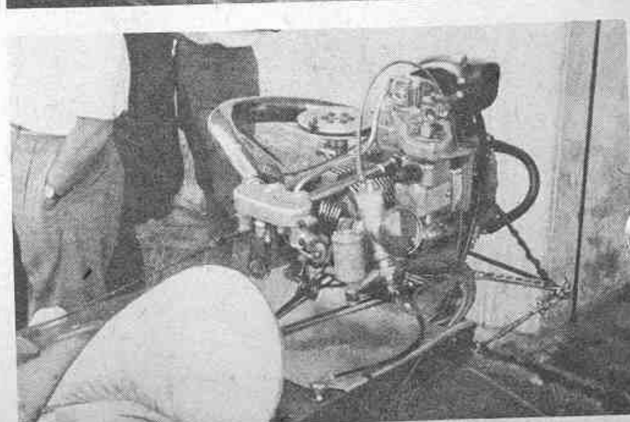
(Below, right) Details of the thirty cubic inch motor raced by Carlo Pagliano. It is a one-cylinder overhead valve JAP racing motorcycle engine. He can use either of two lower units, depending upon the racing conditions. One is conventional and the other similar to the fast tractor units turned out by Louis Baumann of Texas for Free-For-Alls in the U.S.A.

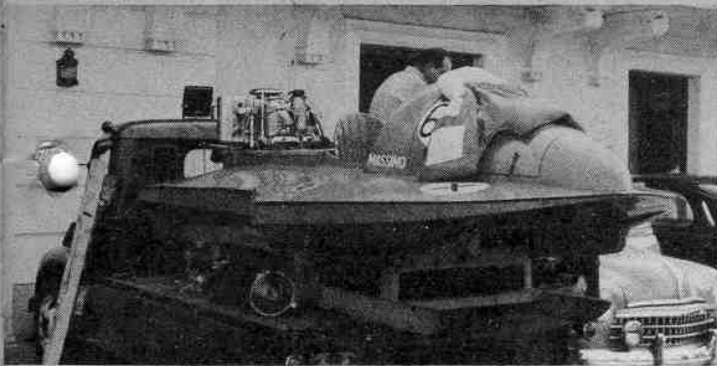
(Bottom, right) Another view of the Pagliano JAP. He won the '52 European Class C championship in Belgium against 16 starters. In competition on a small course (nine-tenths of a mile), he has run 54 m.p.h. with top speed estimated at close to 70 m.p.h. at 8,000 r.p.m. At Luino, Italy, his time was faster than the big supercharged X jobs.











(Top, left) The four-point X boat built by the Leto brothers of Milan. Total weight about 500 lbs., it is transported by a truck and launched by crane. Like many X outfits it is powered by a privately built, modernized version of the old Spanish six-cylinder Soriano. It has 2 coaxial, counter-rotating propellers, one pusher and one tractor.

(Above, left) After 14 years, still the fastest outboard in the whole world. Jean Dupuy of Paris, with his Soriano-Dupuy on a conventional Jacoby hydro, set the record for Class X in time trials on the Seine River in May of 1939. His speed of 79.04 m.p.h., though threatened many times by other racers, has never been beaten here or in Europe.

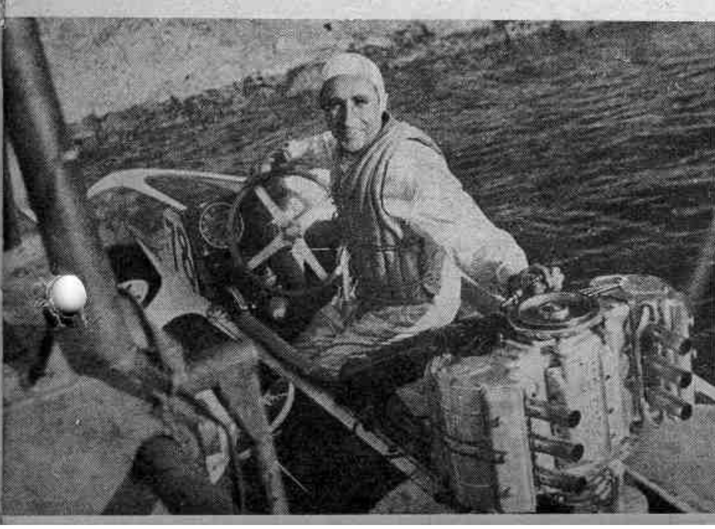
(Top, right) Typical European conventional C hydro driven by Emilio Osculati. Present world's record in this class was set in '51 by Gunnar Faley in trials near Stockholm, Sweden, at average speed of 66.98 m.p.h., driving a much souped Johnson on a 100 lb. 3-pointer. Same day he set the class A record at 53.48 m.p.h. with a 45 pound conventional.

(Above, right) Rear view of Dupuy in his Soriano-Dupuy. Could this be the answer to the outboard three-point prop rider? The unique lower unit on this boat had gears completely above water. Prop is about 3 ft. back on end of shaft which enters water at an angle and spins in thin tube, braced by vertical web like inboard strut.

OUTBOARDS IN EUROPE ... ANYTHING GOES!

By Paul Sawyer

(Below) Carlo Casalini with the fabulous 100 horsepower Soriano-Romani X. It is hard to believe that this power could be increased but in addition to the new Leto motor the 1953 speed events might also see a new V-6 double overhead X motor with a two stage super-charger designed by the world famous engineer, Aldo Celli, the race car expert.



IT ALL STARTED, at least in my time, with the legendary Helen Hentschel. She was one of the pioneers of outboard racing in the colorful days of the late 1920's, driving her C hydro against all comers. Following her lead came other feminine stars such as Genevieve Atwood in her screaming class B Caille with its tractor lower unit, and Sue Mahoney, winner of the Eastern Amateur Championship in A hydro in 1931. And Alice Hallowell of Long Island, Mildred Hickey of Massachusetts, Loretta Turnbull of California and Ruth Herring of Texas. It would be obviously impossible to recall all the great feminine names through the years, and unfair to select any one from the long and growing list. But the 1952 roster of record holders includes Marilyn Donaldson in JU, Evelyn Sarossy in BU and Eleanor Shakeshaft in class M hydro.

But Helen showed her pioneer spirit in still another way. The year 1928 saw

(*Turn to Page* 28)

This month BOAT SPORT in the second article of this series covers basic class specs of the Cracker Box Inboard, the Class B Stock Hydroplane and Class A Outboard Racing Hydroplane . . . .

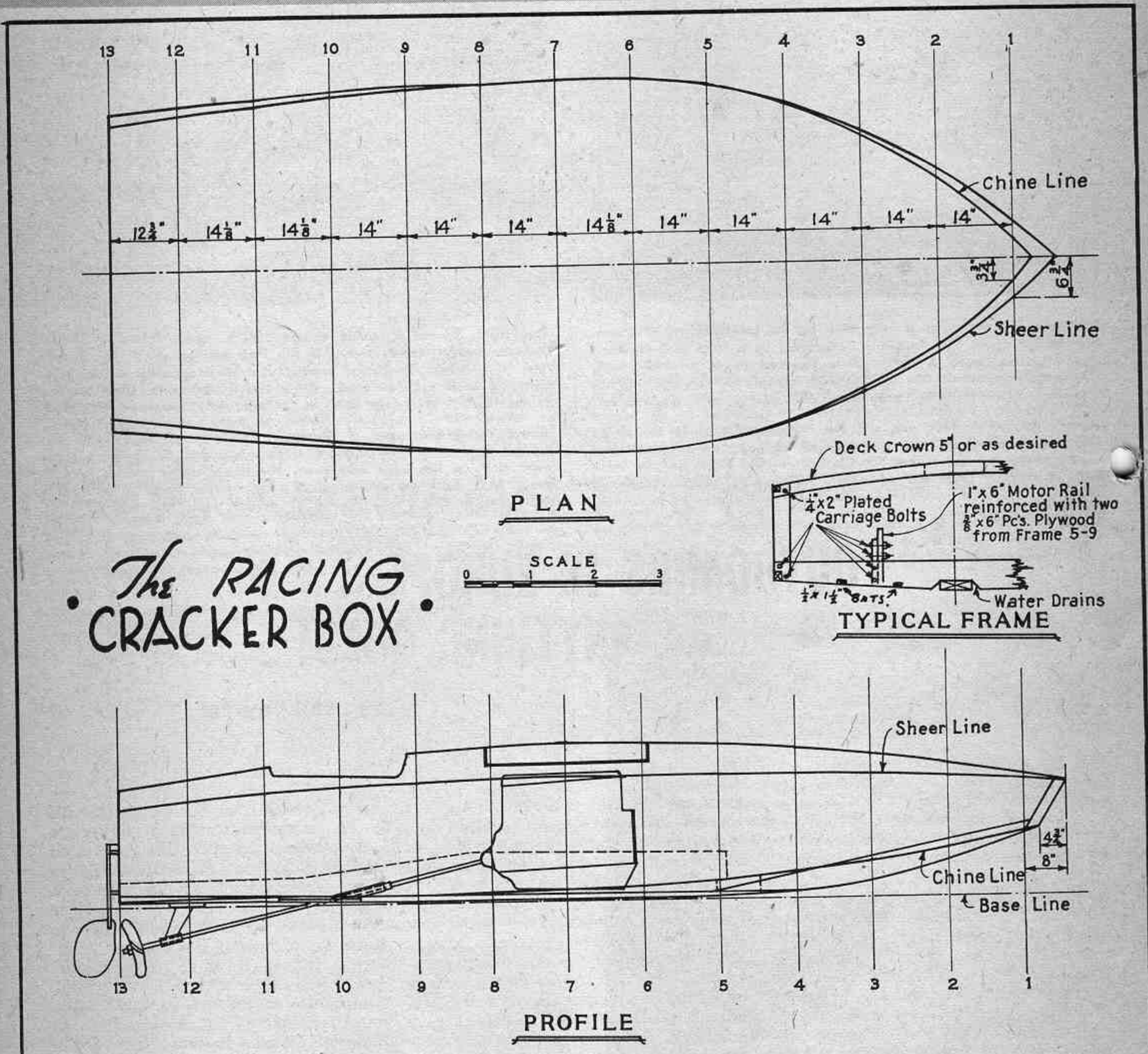
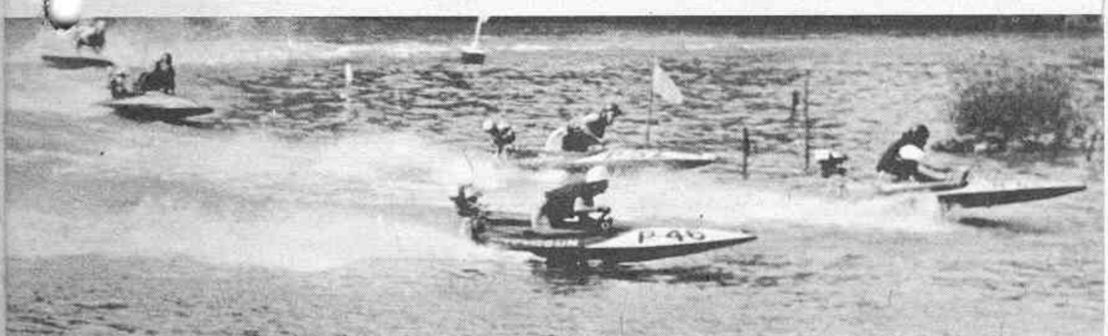


TABLE OF OFFSETS														
INCHES & EIGHTHS OF INCHES TO OUTSIDE OF PLANKING														
		1	2	3	4	5	6	7	8	9	10	11	12	13
HALF BREADTHS	CHINE	3-6	15-0	22-7	29-0	32-6	34-0	34-0	33-6	33-5	32-2	31-1	29-7	28-6
	SHEER	6-6	16-4	23-6	29-3	33-0	34-0	34-0	33-6	32-6	31-3	29-7	28-1	26-1
HEIGHTS FROM BASE	KEEL	11-4	6-6	3-0	1-0	0-2	0-0	0-1	0-2	0-3	0-3	0-5	0-6	0-7
	CHINE	11-7	9-2	6-7	5-0	3-4	2-4	1-7	1-5	1-3	1-3	1-7	2-0	2-1
	SHEER	21-1	22-1	22-5	22-7	22-7	22-6	22-5	22-4	22-0	21-3	20-3	19-0	17-5

KNOW YOUR SPEEDBOAT CLASS

Cracker Box drawing and table of offsets reproduced by the courtesy of the A.P.B.A.

(Left) Start of the Class B stock hydroplane event at the 1952 N.O.A. Nationals, Dallas, Texas.



(Left). The tiny 14 c.i. Class A speedboats are strictly designed for racing. They can do over 50 m.p.h. in 1-mile straightaway. Class A racing hulls also used for the Class B stock hydroplane speedboat racing events.

CRACKER BOX CLASS

(Rules established by A.P.B.A.)

THIS INBOARD RACING CLASS has no restriction on amateur or professional status but does impose a minimum age of 16 years for driver and/or crew member. Cracker Boxes are raced with two persons on board except by majority vote of drivers at any given regatta.

Hull: Minimum length, 13'6" from bow to transom and maximum, 15'6". Cockpit must be located between stations 9 to 12 (see official A.P.B.A. drawings reproduced here) with the engine mounted forward of the cockpit. The bottom is not permitted to have either longitudinal or transverse steps, nor a relieved chine line or concavity. The hull must be constructed of wood frames covered with a plywood skin not less than ¼" thick.

Engine: One or more motors may be used but the total maximum displacement shall not exceed 276 c.i. and the cost of the power plant installed and including all extras, including cost of any extra labor for modifications, shall not exceed $1250.00. The motor or motors are further restricted to two valves per cylinder and one carburetor venturi to each two cylinders. Motors shall be equipped with an efficient starter and ignition may be either battery or magneto. Overhead valves are permitted only if the motor was so equipped originally. Changes in parts or accessories are permitted if parts substituted may be purchased by other Cracker Box owners at the same price. V-drives or gear boxes are not permitted. Rudder assembly, shaft angle and size are optional.

Fuel is restricted to regularly available automotive, marine or aviation quality fuel. Special racing blends, alcohol and nitro compounds are prohibited except for the one-mile trials.

For additional information on this class, write A.P.B.A. Technical Committee members, Clyde Randall, 704 East Garfield Ave., Glendale 5, Calif.; Harry Colt, 3347 Tenaya Avenue, Lynwood, Calif., or A. H. Nichols 315 Artesia Lane, Long Beach 5, Calif.

CLASS B STOCK OUTBOARD

(Rules established by A.P.B.A. and N.O.A.)

To be eligible to race in A.P.B.A. Class B Stock Hydroplane or its N.O.A. counterpart, Division III, B Hydroplanes, drivers must be 14 years of age minimum under the rules of both sanctioning groups.

Weight restrictions, A.P.B.A.: The hydroplanes for this class must weigh a minimum of 100 lbs. and an over-all weight of 265 lbs., this over-all weight

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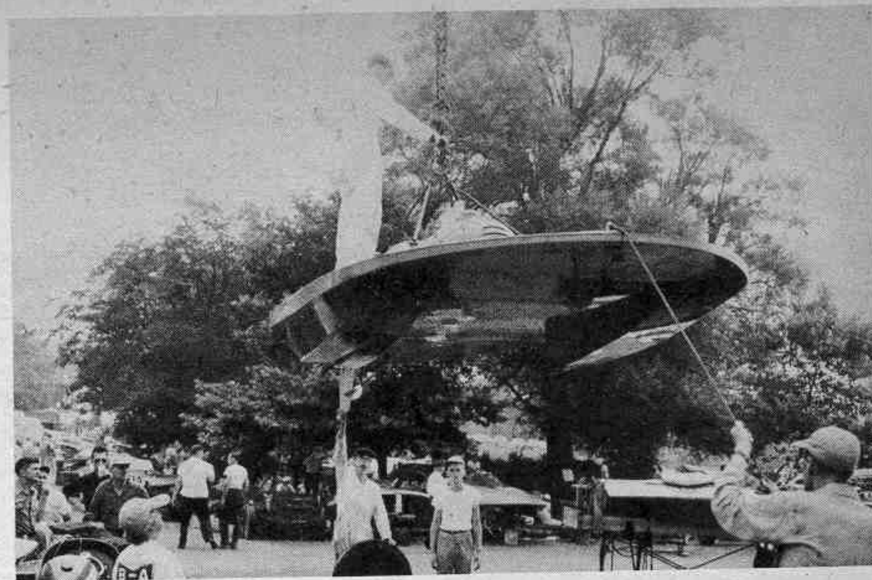
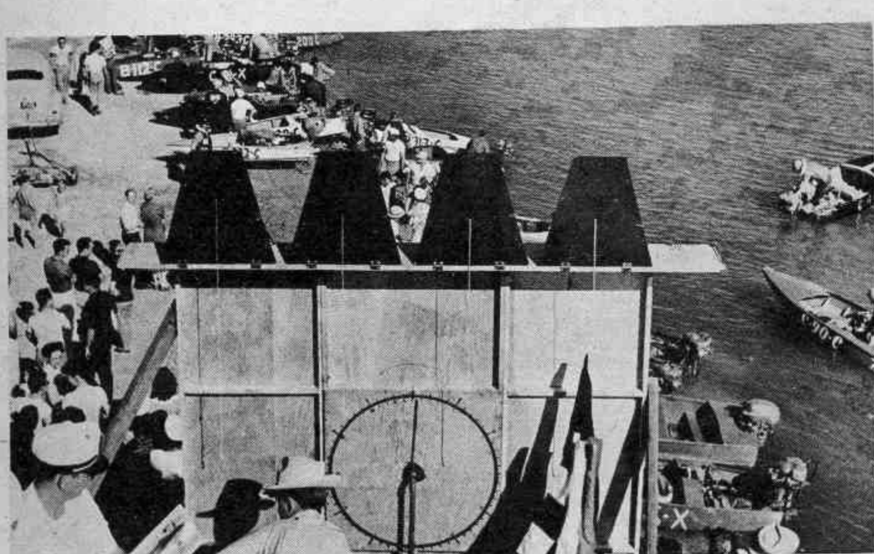
THIS IS A TRIPLE THREAT BUSINESS THAT MEANS PLEASING SPONSORS, SPECTATORS AND DRIVERS



(Above) A crane service in the pits is a "must" for any well-organized inboard regatta. Be sure the crane operator is experienced since manhandling can cause a great deal of costly damage and lost time.

(Right) George Churchill of Oregon, rides his Calkins Craft, an E stock runabout, toward finish line. He took race in straight heats with speed of 36.058 in fastest heat.



(Above) While floats are preferable, launchings from the beach can be satisfactory as shown here. These are the walk-in pits at Needles Point Landing as seen during 1952 Colorado River Marathon.

BY BLAKE GILPIN

(Below) One of Canada's outstanding 225 c.i. hydros is "Flirty Miss." Justin Cook helms the fast riding craft at a Buffalo, N. Y. regatta during the 1952 racing season.

HOW TO RUN A REGATTA

IF YOU SHOULD happen to look in the dictionary, you would find—undoubtedly to your great surprise—that a regatta is "a rowing or sailing race." Now you know and I know and anybody else who reads BOAT SPORT magazine knows, that's a lot of malarkey. A regatta is the roar of unmuffled motors, the strangely pleasant smell of castor and alcohol and the boom of starting guns. It's the hubbub in the pits and the bellow of the p.a. system. It's nowheres near as quiet and calm sounding as a "rowing or sailing race." Obviously, what this country needs are more regattas so that the world and the editors of Noah Webster's dictionary would know the score.

Any club or group of speedboating enthusiasts can run a regatta. The only basic requirement would be the availability of a reasonable body of water on which to run it. Having the intent and the water, the next thing the club must decide is to sanction or not to sanction. Back to Mr. Webster again, a sanction is a "solemn or ceremonious ratification." This is not quite so much malarkey, though a sanction isn't really as frightening and awe-inspiring as it sounds.

A sanction by one of our two governing bodies, A.P.B.A. or N.O.A., is necessary in order to score points for the competitors toward national high-point titles. It is also necessary, too, if you are interested in speed records, because, of course, national recognition can only be granted to records established on an approved, surveyed course, conducted by approved officials, rules and regulations. The official rule books of both governing bodies give detailed information on how to conduct sanctioned regattas. To repeat these instructions would be rather redundant. What we are more immediately concerned with here is how a small club can run an *unsanctioned* regatta, for the love and fun of racing, and without the complications and expense of sanctions.

In order to have money for purse or prizes and other expenses, it usually behooves the small club to find a sponsor to foot the bill for a regatta. A sponsor may be an individual promoter hoping to make a buck, a civic group, such as a Lions Club or veterans' organization, also hoping to make a buck, or a local newspaper which could pay the tariff out of the kindness of its heart for civic promotion and publicity. The sum you ask of the sponsor will be dependent upon what the traffic will bear, the purse you plan to pay and the expenses on your regatta budget. Incidentally, it's best to ask a lump sum just as though you were booking a show, which you are.

In order to sell a potential sponsor, you must have assurance of a field of boats large enough to make interesting competition to the unprejudiced eyes of the public. The date is an important point on this angle. As a sanction guarantees you an exclusive date in your district, you must be equally as careful in selecting an open date without the guarantee of a sanction, in order not to divide potential competition to the detriment of all regattas concerned. Give a skimpy show and your chances for a repeat performance are gone.

There are several ways a sponsor can make money on the event. He could charge admission, charge parking, sell tags and refreshments and put out a booster program in which the advertising will repay his outlay. In addition to the prescribed sum for the regatta, the sponsor should also be responsible for providing pits of a minimum specified footage (figuring about 5' per expected boat); (*Turn To Page* 34)

Dick Neal was racing out of Bay City, Michigan, when this photograph was taken in 1930. He'd already won more than 20 races in Florida that year. Boat is a Century Hurricane. This old, step-bottomed 14 ft. creation would be jokingly referred to today as a "runaplane" or "hydrobout." Engine is Class D, dual carburetor Johnson 30 horsepower.

AS A NOVICE in boat racing, I am one of those guys who is ever-inquisitive and always excited at the prospect of a race or sitting around with the hot stove boys and discussing the various merits of racing motors and boats. One of my outstanding teachers on the ins-and-outs of boat racing is Dick Neal. Dick, to the uninitiated, is an old-time boat racer and builder of fast boats and motors. To the veteran, Dick was known as one of the toughest guys in the business to brush off in a heat. Dick Neal was a pro who really made a going business of outboard racing.

His history in the boat racing world is a colorful one, with a meager beginning in Bay City, Michigan, where he became interested in the game way back in 1927. He tells of his first experience in boat racing as growing out of a ride in a faster-than-usual boat. In the late Twenties a manufacturer of light-weight boats would travel around and give people free rides (with a 7½ horse Johnson) to encourage them to buy boats. At that time a 20 m.p.h. ride was a real thrill and the builders who could design a 20 miler were successful. Dick bought an outboard outfit, as did many of his friends, and out of this grew friendly competition and the organization of a local racing club.

Dick was on a dairy farm with his folks at the time and his boat racing was merely a hobby. But never satisfied, he began to tinker with the motors to get those extra few miles an hour out of his outfit. And so it went, mixing dairying and boating, until his parents died and Dick went to work for the Century Boat Co., as boating was his real interest.

While at Century, Dick helped design new boats and raced them all over the country. Motor upkeep was not much of a problem as motor manufacturers were eager to have racing drivers use their motors and furnished free parts. Dick used to work on the motors and boats, refining to gain the maximum speed out of each and as a consequence became well known as a winning race driver and a savvy man with a file and grinder.

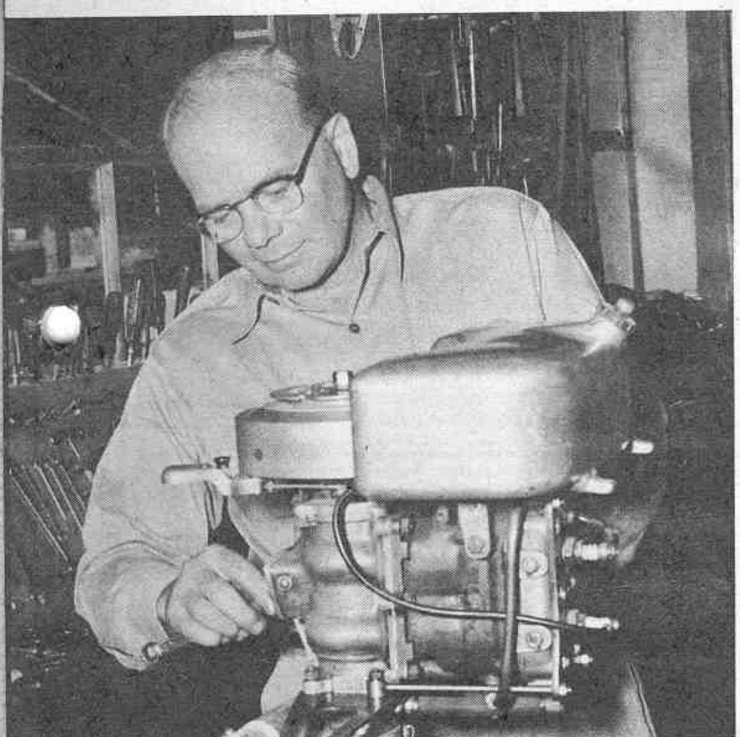
He won literally hundreds of medals and trophies, including a 14th century silver bowl presented to him by the President of Ecuador in 1930. He set 17 N.O.A. (the old N.O.A., later to merge with the A.P.B.A.) records and has certificates of records from Belgium. Few people know that a world's record is not valid unless recognized by the International Boating Federation with headquarters in Brussels, Belgium. His "D" racing class record still stands today.

Dick got started in the boat building

(*Turn to Page* 30)

(Below) Here you see Dick Neal in 1936, rigging up the bowdoin cable on his Class C Neal hydroplane. Note that the Class C 1936 powerhead is identical with the PR 65's one finds in competition today. Dick's history in the boat racing world is a colorful one. He first became interested in the game way back in the year 1927.

By 1939 Dick Neal was rated as a past master at racing. He is shown here in a Class C Neal boat moving by competitor on inside.



DICK NEAL

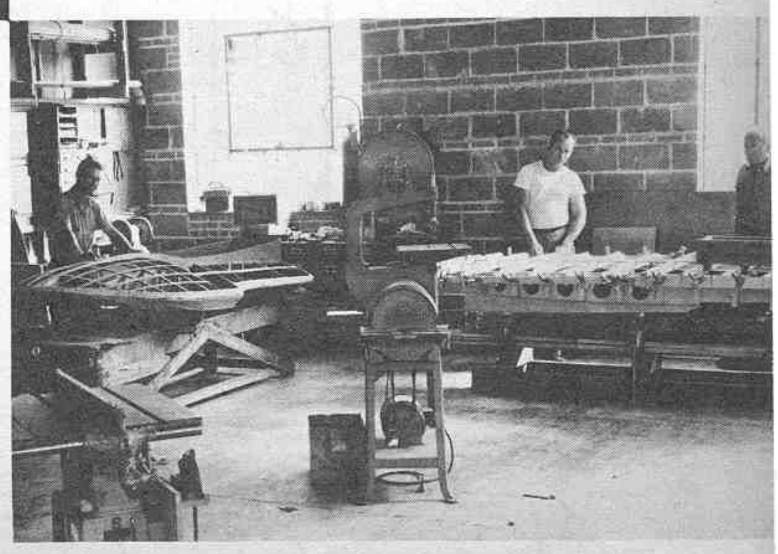
MISSOURI MOTORBOAT MAGICIAN

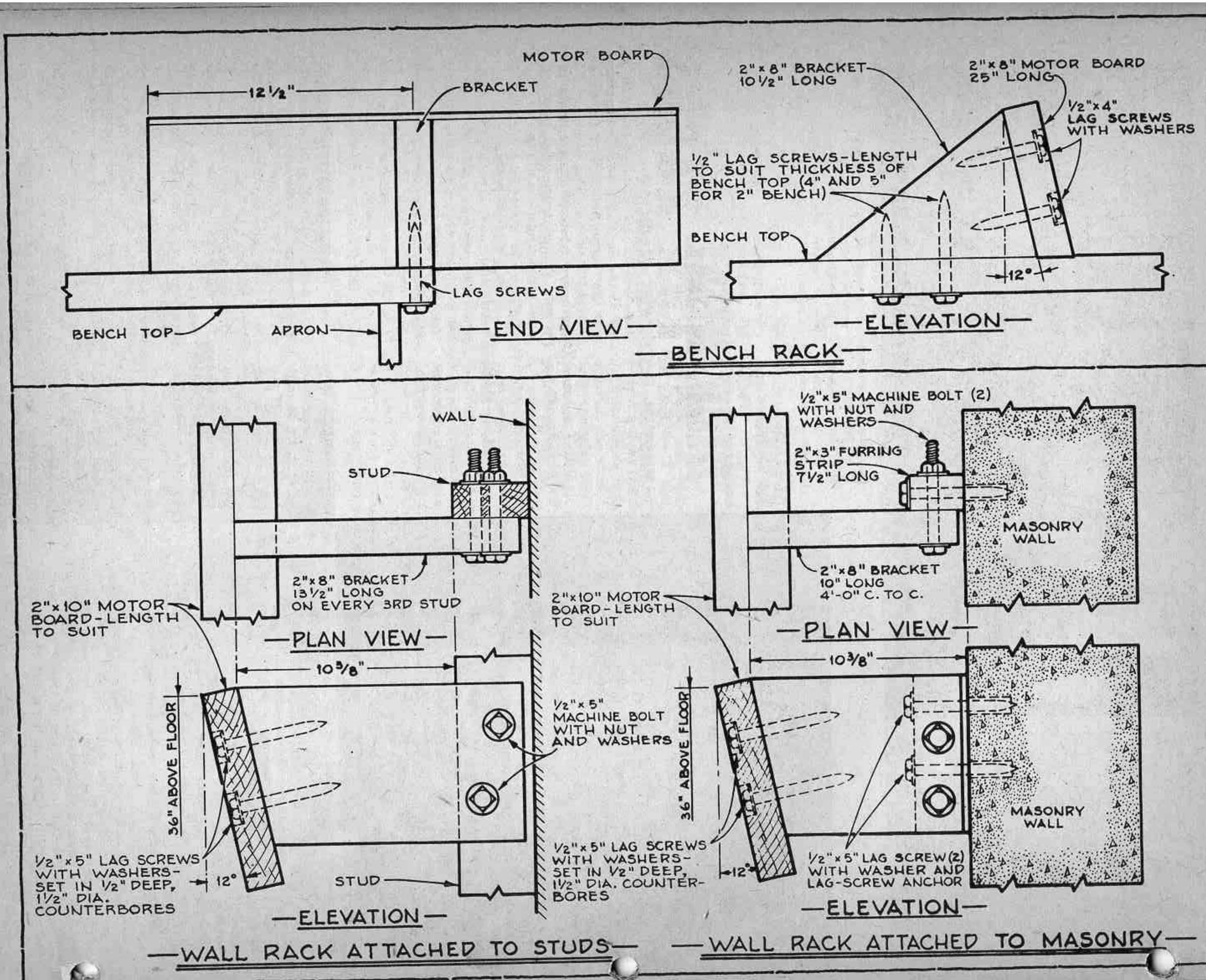
This Veteran's Know-how Has Been Responsible For A Large Share Of The County's Outboard Racing Records . . . .

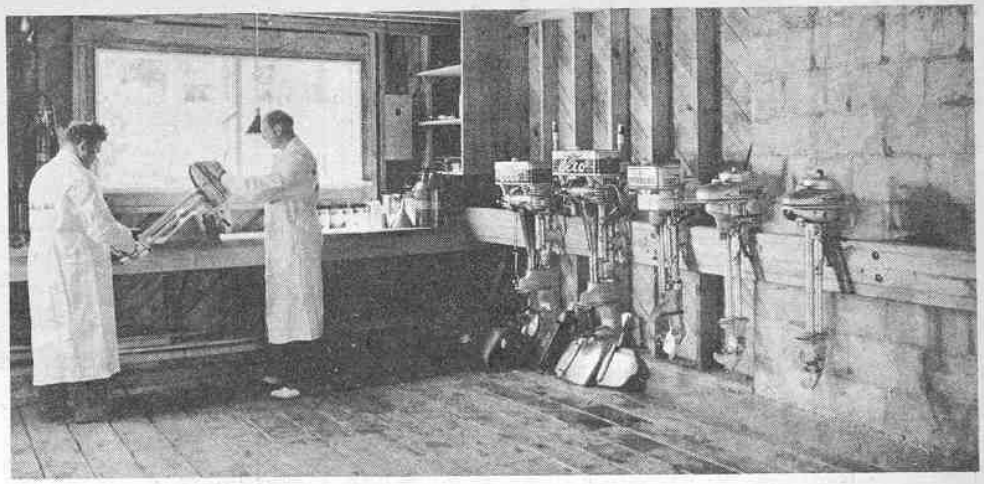
BY M. F. HAUSERMAN, JR.

(Above) Dick Neal puts the final touches on a racing Class A racing powerhead. Note the sturdily designed steering bar which places no strain on case or housing and which also incorporates the much-needed supports for a cylinder catch bar.

(Right) Homer Branson, in white T-shirt, is head of the Neal boat shop and is shown here with an F hydro on the jib. At the left of this well-equipped boat shop is a new three-point hydro design ready for decking. (All the photos on these two pages are reproduced by courtesy of the veteran racer, Dick Neal)




MOTOR BOARD
BRACKET
12 1/2"
LAG SCREWS
BENCH TOP
APRON
—END VIEW—
2"x8" BRACKET 10 1/2" LONG
2"x8" MOTOR BOARD 25" LONG
1/2"x4" LAG SCREWS WITH WASHERS
1/2" LAG SCREWS-LENGTH TO SUIT THICKNESS OF BENCH TOP (4" AND 5" FOR 2" BENCH)
BENCH TOP
12°
—ELEVATION—
—BENCH RACK—
WALL
STUD
2"x8" BRACKET 13 1/2" LONG ON EVERY 3RD STUD
2"x10" MOTOR BOARD-LENGTH TO SUIT
—PLAN VIEW—
10 3/8"
36" ABOVE FLOOR
1/2"x5" MACHINE BOLT WITH NUT AND WASHERS
1/2"x5" LAG SCREWS WITH WASHERS-SET IN 1/2" DEEP, 1 1/2" DIA. COUNTERBORES
12°
STUD
—ELEVATION—
—WALL RACK ATTACHED TO STUDS—
1/2"x5" MACHINE BOLT (2) WITH NUT AND WASHERS
2"x3" FURRING STRIP 7 1/2" LONG
MASONRY WALL
2"x8" BRACKET 10" LONG 4'-0" C. TO C.
2"x10" MOTOR BOARD-LENGTH TO SUIT
—PLAN VIEW—
10 3/8"
36" ABOVE FLOOR
MASONRY WALL
1/2"x5" LAG SCREWS WITH WASHERS-SET IN 1/2" DEEP, 1 1/2" DIA. COUNTERBORES
12°
1/2"x5" LAG SCREW (2) WITH WASHER AND LAG-SCREW ANCHOR
—ELEVATION—
—WALL RACK ATTACHED TO MASONRY—



(Right) Ralph Evinrude, assisted by a mechanic, looks over a motor in a Florida test workshop. Note other motors on rack, awaiting the rigorous testing they will have to undergo for speed, durability, fuels, etc.

HOW TO BUILD YOUR OWN MOTOR RACKS

By John G. Kingdon

EVERY OWNER of an outboard is familiar with the inexpensive motor stands that are sold at all marine supply stores. Made of metal, they are light in weight and fine for holding motors when not in use. If they have wheels, they simplify the task of moving motors from place to place—as long as the terrain isn't too rough. In other words, they are perfect when employed as they were intended to be.

But if you are going to store more than one motor in your shop, the cost of buying several stands is pretty stiff. And if you are going to do a lot of tearing down, overhauling, and rebuilding of motors, using a stand as a repair rack is far from ideal. The stand is just too tipsy and frail to take it when you have to tug at a recalcitrant bolt or bang away at an obstinately stuck pin.

Faced with these inadequacies, operators of professional repair shops usually make their own motor racks. Most of these racks are tributes to the ingenuity and talent of their builders. Two of the best types are illustrated in the accompanying photograph, which shows the interior of an Evinrude repair shop in Florida.

The motor rack on the workbench is used during overhaul jobs. Since it is securely bolted to the bench, it provides a firm foundation for the motor that's being worked over. The motor can be clamped to either the front half of the rack, which overhangs the front of the bench, or the rear half, which is set on the bench. The former position is used when it is desirable to have the motor vertical or nearly vertical and the latter position is employed when it is most convenient to have the motor horizontal.

To duplicate the bench rack, all you need are four lag screws and a 2" x 8" plank. Order the latter with its faces and edges dressed. It will then measure approximately 1⅝" x 7½".

For the motor board, cut a 25" length from the plank. Plane or saw one edge to a 12° bevel. When set on the bench, the board will then assume an angle approximating that of the transom of a boat. The bracket is also cut from the plank. The end that butts against the motor board must be sawed off at a 12° angle. Saw the other end off so a triangle is formed that matches the motor board in height and measures 10½" along the base.

Secure the bracket to the bench with two ½" lag screws, boring lead holes for them and driving them up through the bench top into the bracket. If the bench top is about 2" thick, one lag screw should be 4" and the other 5" long. Use longer lags if the bench top is thicker than 2" and shorter ones if it is thinner. Washers under the heads of the lags will prevent them from biting into the wood.

Put the motor board in place against the bracket. About 11½" of the board should extend in front of the workbench. Temporarily secure the board to the bracket with a couple of nails, then bore and counterbore for two ½" x 4" lag screws. The counterbores should be ½" deep and 1½" in diameter. Finish the rack by putting a washer on each lag and driving the lags home.

The other rack is used for storage and display. It runs along one wall of the shop and can be made to accommodate any number of motors merely by varying its length. Two details of this rack appear on the drawing that accompanies this article. One detail depicts the method of attaching it to wooden studs and the other shows how to attach it to a masonry wall.

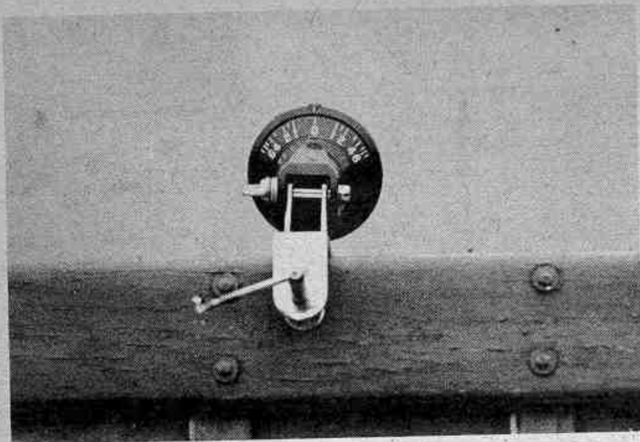
A 2" x 10" plank is used for the motor board. This is bolted to 2" x 8" brackets. On a wooden wall, where the standard spacing of studs is 16" center to center, one bracket is bolted to every third stud. On a masonry wall, the brackets are bolted to 2" x 3" furring strips that are secured to the wall with lag screws driven into lag-screw anchors or expansion plugs.

Order the lumber with its faces and edges dressed. The 2" x 10" plank will then measure approximately 1⅝" x 9½", the 2" x 8" brackets will be about 1⅝" x 7½", and the 2" x 3" furring strips will be about 1⅝" x 2⅝".

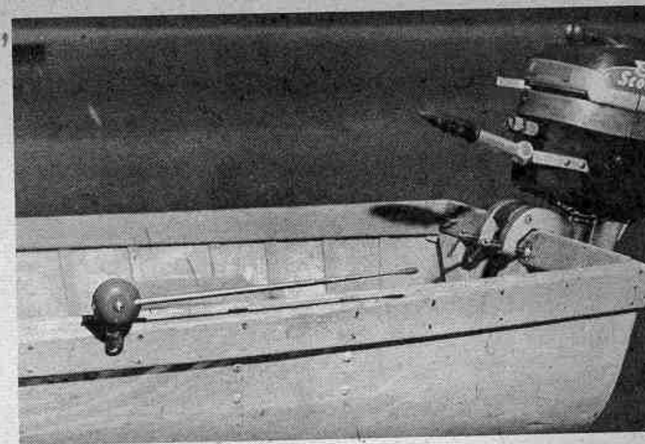
Each bracket on a wooden stud is 13½" long. Cut one end off at a 12° angle as shown and clamp bracket and stud together. Note that the bracket should stick out 10⅜" in front of the stud and that its top should be 36" above the shop floor. Bore holes for two ½" x 5" machine bolts and install them, placing washers under the heads and the nuts.

The furring strips on the masonry wall are installed 4'-0" center to center. Using a ¾" star drill, chip two holes in the masonry at each furring-strip location to take ½" lag-screw anchors. Bore

(*Turn to Page* 34)



(Above) Inboard view of a Pelmor Troll-a-Meter clamped onto gunwale of boat. Dial, calibrated on both sides for either port or starboard installation, gives trolling speed to 8 m.p.h. in any kind of water.



(Above) Troll-a-Meter wand in non-use position—also swings inboard with dial face down. For use, telescoping sections of wand are extended and tear-drop tip is straight down in water (also see text).

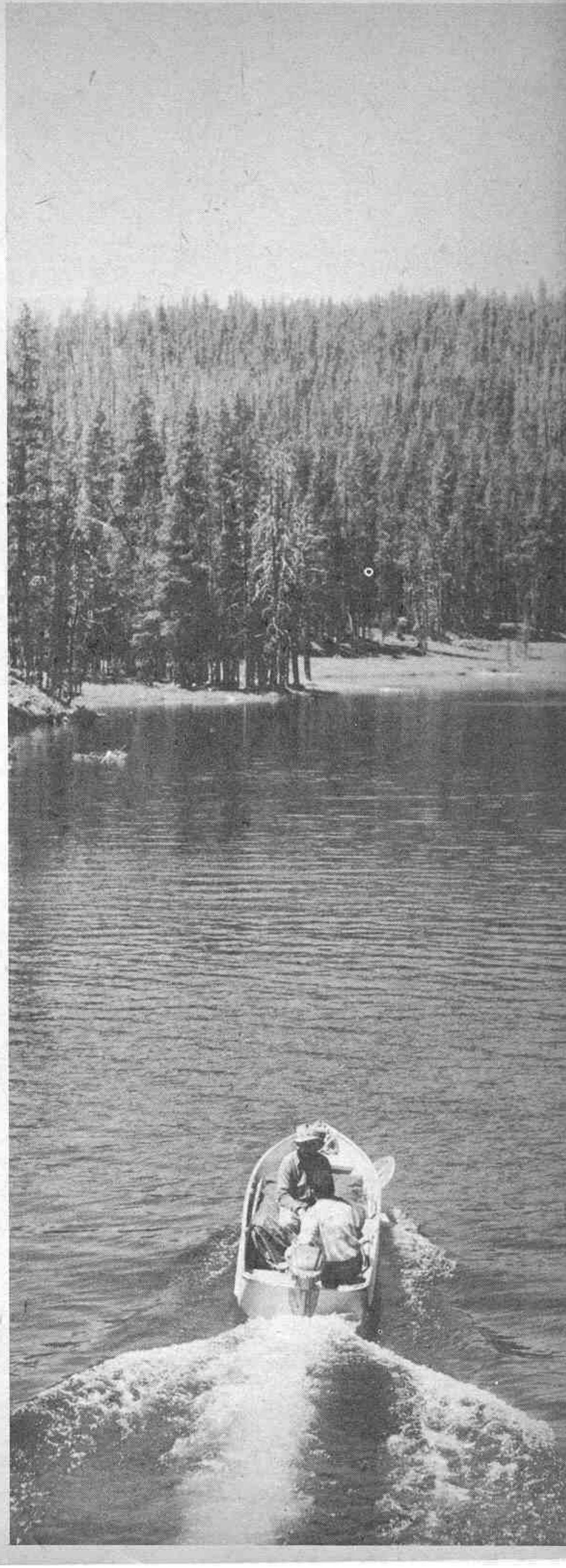
(Below) OBC Executive Director Guy Hughes and TV star Mary Hartline, Queen of Boating at Chicago show, with model launching ramp exhibit for outboards. For booklet giving details, produced in cooperation with Socony-Vacuum Oil Co., write OBC at the address given in text.

OUTDOORS WITH THE OUTBOARDS

By Richard Van Benschoten

One U.S. Family in Every Twenty Will Be an Outboard Family in '53 . . .

(Above) New 18' Aristo Craft cruiser has monocoque or stressed skin construction with full longitudinal mahogany stringers; sleeps three. Bracket where Mercury Mark 40 is mounted gives extra space in cockpit.



MORE PEOPLE WILL get outdoors with the outboards this season than ever before in history. By conservative estimate, there will be 3,500,000 outboard motors in use in 1953, or 70% of the estimated total of 5,000,000 pleasure boats of all kinds in the United States. Another way of looking at it, particularly since outboarding is fast becoming the number one American family way of outdoor fun, is that at least one family in every twenty will be an outboard family in one way or another before the summer is out. Figure it anyway you want, this is a modest appraisal of the tremendous spread of a truly major American outdoor sport. One more figure and we'll drop the role of statistician: Since 1939 the number of outboards in use has increased by almost 400%.

So, what are we waiting for? Spring has arrived, and hard on its heels came the endless stretch of outboarding pleasure in all its phases. Get that motor out of mothballs! Or break out the new one and get ready to give it a trial run. The same with your (*Turn to Page* 31)

(Above) Outboard days are here again! Any lake is easily accessible to owners of light boats such as Penn Yan's 12' Cartop (T/M Reg.).

(Right) Much of America's beauty is locked in the solitary stretches of her upland rivers and lakes, to which outboarding offers the key.

(Above) Lewis Morphy underway in his Johnson PR-65 Willis Comet, "Shooting Star," which he drove to the 1952 West Coast High Point C Racing Runabout title. He was 1947 Hearst Champion and High Point West Coast C Service Runabout driver in 1948; High Point C Racing Runabout driver in 1949, and winner of many other events in the U.S.

(Right) Boots Kaye Morphy at the wheel of her Jacoby M hydro, "Miss Shooting Star." Boots was Pacific Coast Champion, 1949 to 1952; Southern California Champion, 1949 to 1951; Hearst Champion, 1947, 1948, 1949, 1952; West Coast High Point Champion, 1948 to 1951; winner of Cooper All-American Trophy, 1949 to 1951; third in finals at the Nationals, Florida, and third at Tennessee Nationals, 1951.

WEST COAST SHOOTING STARS

Sharpshooter And Stunt Girl Make Up A Prominent California Speedboating Team

BOOTS KAYE left Mosury, Ohio, in 1940 for Hollywood, California. She went to work in a variety act with Sharpshooter Lewis Morphy, who divided his time between pistols and rifles as a stunt and specialty man for the movies.

Lewis soon found a spot for Boots Kaye in pictures as a double and stunt girl. Aside from his interest in sharpshooting, Lewis' hobby had been outboard motorboat racing in which he had first competed in Florida in 1929. When he took up C Service Outboard Runabout competition in 1942 on the West Coast, Boots became his mechanic—and married the guy so he would take her instructions in the pits.

Their young daughter was born in 1946 and as a kind of a belated birth present, Lewis bought Boots a midget outboard motor from Lester Missell of Wickenburg, Arizona. Boots is quick to credit Don Whitfield for motor advice and Pop Jacoby for her racing hulls. With Lewis as instructor and doing the motor work, the tiny West Coast stunt girl has established an enviable record.

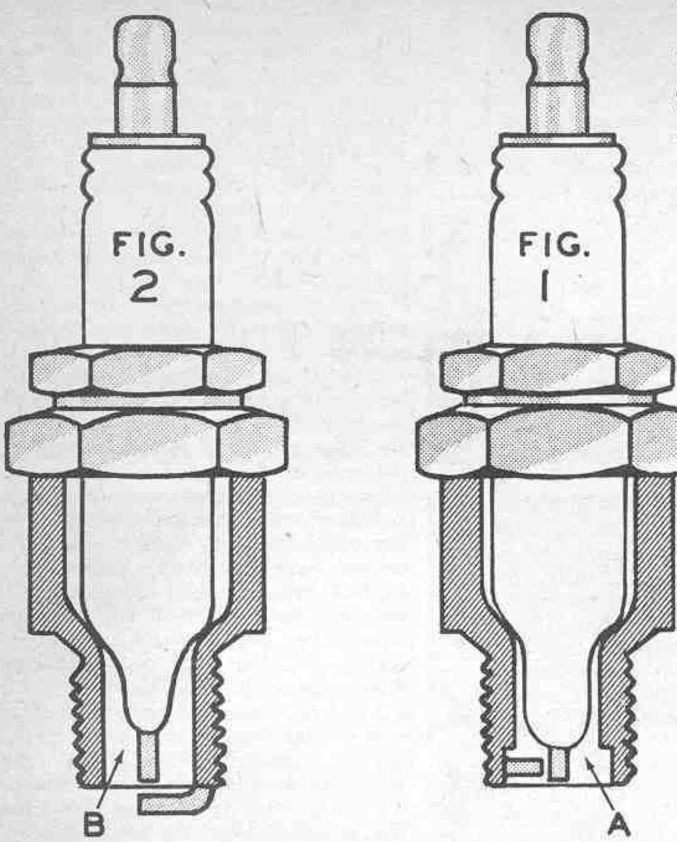
Four straight years, 1949, '50, '51 and '52, Boots won the Pacific Coast Midget championship. Her first championship, however, came in 1947 with only a year's experience behind her when she took the Hearst Midget Hydro trophy and then repeated in '48, '50 and '52. Boots also held the West Coast High Point Midget Hydro championship for four years straight from 1948 through 1951. In 1950 she and Lewis trailered East and she finished a solid third in the Nationals at Lake Alfred, Fla. In 1951, she again placed third in the Nationals at Knoxville, Tenn.

The fact that Boot's name hasn't appeared in the record books since early 1952 isn't too much of a surprise because she's taken out a brief holiday for the new Morphy child, expected about the time this issue goes to press.

Boots and Lew plan to compete on the Grapefruit Circuit this winter and their future plans call for their children to join them and make a four-boat racing team. Termite, who is now six, will get her first crack at a midget in four years' time. Her biggest ambition is to beat her mother.

Lewis, who drives both a C Service Runabout and a C Racing Runabout has shot his Willis Comet into first place at plenty of Western events. To prove that he's no slouch at the wheel and every bit as handy with a hand throttle as he is with a trigger, Lew copped the Hearst C Service Runabout championship in 1947, was the 1948 High Point West Coast C Service Runabout driver. In 1949 he was West Coast High Point C Racing Runabout driver and repeated his high point tally in 1952.

These two Shooting Stars have added a lot of color to racing events and West Coast drivers had better look to their laurels when the children grow up and there are four Shooting Stars! (End)



Cross section views of spark plugs. Fig. 1 is cold racing plug. Fig. 2 is a hotter, non-racing plug. Note greater length of insulator in hotter plug; also greater reach of ceramic insulator into cylinder chamber. There is lesser gas volume in cooler plug at (A) than is found in hotter plug at (B).

THE RACING SPARK PLUG

SPARK PLUG SELECTION AND THE FACTORS INFLUENCING EFFICIENCY OF OUTBOARD AND INBOARD MOTORS . . . .

WHETHER YOUR RACING ENGINE is two-cycle or four-cycle, one basic thing is expected of the spark plug: at a precise instant in the engine cycle, the plug must produce a sufficiently powerful spark to ignite the fuel mixture in a cylinder and transfer the chemical energy of the fuel into heat and work. But many drivers—and usually these are the ones who wind up in the D.N.F. columns or way back in the rear—view a spark plug like a gasket and a nut and bolt, simply as something to fill the hole in the end of the cylinder.

Perhaps it will come as a surprise to these drivers to realize that an entire science has evolved around spark plugs and the selection of a proper plug for a given set of conditions is highly important to the overall functioning of the engine.

With its higher compression ratio, more severe temperature and higher r.p.m., a racing engine demands more of a spark plug than a normal engine. As most drivers have already realized, a different prop and different engine tuning is required for different length races, varying water and atmospheric conditions. These same factors should also be reflected in the selection of a spark plug. To this add the variations in compression ratio and in types of fuel and you realize that there are a considerable number of factors involved in the proper plug choice.

Fuels containing a high alcohol content creat different plug problems from straight high-test gasoline, and fuel-oil mixtures used in two-stroke engines add still another variable.

Before discussing these variables, let us consider the spark plug itself. It is made up of two principal parts: the metal shell that screws into the female threads of the cylinder holds one electrode in place; the other main component is the ceramic insulator in which is built another electrode. We are not overly concerned with the manufacturers' construction problems, other than to realize that the center electrode must be so constructed that there is no leakage of fuel or exhaust gas through this core or electrical leakage between the metal of the electrode and the porcelain of the insulator. Different expansion rates make such a seal an intricate problem for the manufacturers.

Another problem is also created by the heat and is one which more directly reflects on the racing driver's selection. If the electrodes are too cool during operation, oil and carbon will collect on them, eventually short circuiting the plug. If the electrodes run too hot, the electrodes themselves are subject to very rapid deterioration and piston burning may result.

A final component in the mating of cylinder and plug is the gasket. The gasket must fit well but it cannot fit too tightly or the threads and the plug body become strained and the plug may loosen. Too loose a gasket fit can create a deterioration of the thermal conductivity in the inner part of the plug and cause overheating and naturally looseness of the gasket can also cause compression loss.

One quick warning on gaskets is enough: to be on the safe side, use a new gasket, tighten the plug finger tight and then with a wrench, add ¾ of a turn and the proper bond between plug and cylinder will result.

The selection of the type of plug is usually referred to as a choice between hotter and cooler plug ranges. This is also referred to as range in order of hardness. As a racing plug increases its ability to stand constantly higher heats, the gas volume in the mouth of the plug decreases. From a standpoint of comparison of insulation, the hotter the plug, the greater the length of the insulator. The reason for this is that the larger insulator retains more heat and transfers heat to the water-cooled cylinder head less rapidly.

In that speedboat racing engines are of such a great variety, this article cannot make specific recommendations by code designation of definite plugs for any given circumstance. However, it is recommended that after the reader realizes the various factors that may affect plug choice, *(Turn To Page 24)*

that he carry a full range of recommended plugs for his specific type of motor.

Weather is one of the first factors to be considered. Carburetors and ignition adjustments certainly should be altered if, for example, during early morning tests a day is rainy and damp and during the afternoon of the actual race events, the weather changes to hot and dry. The difference will be a shift from a hotter type plug used during the cooler, damp weather to a colder plug for the hot and drier conditions.

For the outboarder planning to enter a marathon event during which the engine may be expected to run at peak for a long sustained period, a cooler plug should be selected as contrasted to a racing event on a short type course in which the engine may be expected to be decelerated in the turns, which will permit oil and carbon deposits to form on the plugs.

With an inboard on closed course racing where deceleration occurs in the corners, this momentary throttle shut down results in less fuel mixture entering the cylinders and momentary depression results in the combustion chamber. This depression can cause oil to seep through the piston rings and the resultant possibility of carbon deposits and plug fouling.

Carbon is an electrical conductor and carbon deposits create short circuits so that the carboned plug, instead of sparking as expected, diverts the electrical impulse through a secondary circuit.

The ideal plug is the one that under a given set of competition conditions maintains a sufficiently high temperature to insure the burning of all carbon. This temperature, according to plug manufacturers is about 500 deg. C. at the ends of the electrodes.

If after a test run a driver checks his plugs under a magnifying glass and detects a grey, metal deposit shaped like a tiny, microscopic pearl on the electrodes or on the insulator, regardless of how well the engine may have been performing during tests, the plugs are wrong and definite damage to the motor will occur after any extended continued operation. The grey metal deposit means that the ignition was too advanced and that a slight burning of the piston has already occurred. This grey deposit is the telltale sign of a too hot plug and a colder plug should be selected. It is quite possible, too, that too advanced ignition timing is taking place and an ignition adjustment is called for.

When a driver alters the compression ratio of his engine and raises that compression ratio, an increase in efficiency output may be expected. Drivers may have noted that with this compression ratio increase, the temperature of the engine's exhaust gasses becomes relatively cooler. This is explained by the fact that greater engine output is due to more heat being converted into energy and thus proportionately less heat passes unused from exhaust headers.

Don't be fooled, however, by the presumed implication that the engine now runs cooler and a hotter plug can be used, because this is not the case. Although a greater mount of heat converted into energy in the engine's combustion chamber leads to lower temperature, the gas temperature in the combustion chamber itself and the heat on the plugs and pistons (and in the case of four-cycle engines, on the valves), becomes increasingly higher as the amount of heat being converted to energy grows greater. It should be understood from this that in general the higher the compression ratio under which an engine is operated, the colder the plug required.

Another influence on plug selection is the amount ignition timing is advanced in degrees measured by the angular movement of the crankshaft or in the length of the stroke. The reason for this is that the more advanced the ignition (i.e., firing prior to top dead center) the longer the period of contact there is between flames in the combustion chamber and the plugs and pistons. So remember that if ignition time is advanced, a colder plug is called for.

In that all speed boat engines are water cooled, let it be understood that when you contrast the combustion chamber temperature at the plug electrodes of approximately 500 deg. C. to the actual water temperature of the body of water on which you are racing, you can realize that the difference in that water temperature has little or no appreciable influence on the temperature of the spark plug. Water-in temperature at the water scoop can be disregarded.

Certain confusion arises in the use of alcohol fuels. High alcohol content in fuels allows for the use of higher compression ratios. Alcohol has a high vaporization heat and the engine and to a lesser degree, the plugs, remain cooler. However, the self-ignition temperatures of alcohol fuels are considerably lower than with gasoline mixtures. So there is a tendency for self-ignition to take place in spite of the higher knock resistance of alcohol. Since the higher compression ratios lead to greater combustion chamber temperatures, the use of alcohol fuels call for cooler plugs than those used with the hydrocarbon fuels, i.e., gasoline and benzol. Naturally, too, as piston rings wear, plugs tend to become more readily fouled. Don't be persuaded that because one cylinder seems to require a certain heat range plug that all cylinders will require this same plug. A slight warping of the cylinder or a slight difference in piston fit or a variance in piston or cylinder head contouring can call for a different plug.

The only final method to select from among the recommended range for your engine is to inspect your plugs and inspect them frequently. Remember that a chalky white colored insulator or tiny pearl-shaped grey beads on electrodes or insulator indicate a too hot plug. A plug that is too cool will show a sooty appearance on the insulator. The proper plug for your engine at a given time is one that has been running with a warm, chocolatey brown color.

Checking for the proper plug can best be made by stopping your motor as quickly as possible after a high speed run. Any prolonged slow speed running will tend to give the plug an appearance of having been run colder than is actually the case.

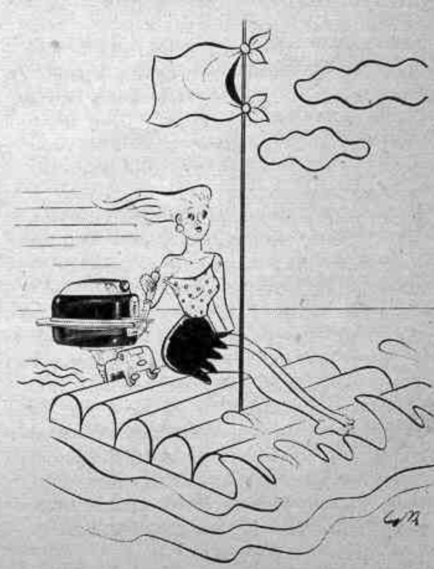
Remember that the height of the barometer is directly proportionate to the heat range you select for your plug. A high barometer, which is an indication of fair, dry weather conditions or thinner air encountered when racing in mountainous water, calls for the colder plug.

Clean your plugs frequently in a lacquer thinner or acetone. We do not recommend sand blasting as even a moderate amount of sand blasting chips the polished face of the insulator and wears away the electrodes.

Carry a can of carbon tetrachloride to dry plugs that may have become damp or wet by exposure to rain, spray or inadvertently dropped overboard. Remember however, that carbon tetrachloride can deposit a thin layer of carbon on the plug. This, however, is seldom sufficient to cause shorting.

Finally, it is quite possible that for ease of starting on a cold or damp day, you may want to insert a hot range plug, run your motor briefly to warm it up, then switch to a colder range plug for actual testing. To be on the safe side, it is usually best to start with the coldest plug recommended for your motor so as not to run the chance of burning a piston.

Remember, too, that there is a difference between two-cycle and four-cycle plugs. If you are running a stock utility outboard in which the recommended plugs are J6J through J9J, be sure to get plugs with the letter designator at both ends of the number since the second J is a designator of the two-cycle type of plug. The racing motor outboard plugs by Champion are designated with a prefix letter R. However, Blue Crown and other manufacturers make excellent racing plugs. For final recommendation for your particular motor, write directly to the manufacturers if in doubt. (End)



SPEEDTESTING YOUR BOAT AND MOTOR

(*Continued from Page 7*)

the pits and put a ½" shim to jack your motor higher on the transom. Remember, I don't say this will make you go faster, or slower, because this will vary with each outfit, but a ½" shim, believe me, is extreme and will make a great difference. But just to be sure that you are absolutely right, go out and give it a try. Compare your two elapsed times and unless I'm ready for a restraining gown, you'll see a definite difference between the two clocked times.

Now to begin your actual testing. Since wind and current, or a combination of both, will have their effect, make all of your test runs in two directions and use an average of the two speeds. Adjust your needle valve and spark setting, make a record of the positions and then don't touch them again for we want the engine working under the same set of conditions with the only variation being that one change each run. Make your first run with the engine at your standard transom height, which unless it has already been altered will probably be 15", as this is the standard transom height recommended by the Outboard Boating Club of America and generally adhered to by most boat builders.

Make this first run and record your findings and average time for a run in both directions. The stop watch is all you'll need for this. Next, you will require a group of speed or jack-up shims ranging in thickness from 1/32" to ½". On the second run, use the ½" shim. On the third run, use a ¼" shim. If the ½" shim has given you a lesser elapsed time for the distance covered, then try the ½" shim with 1/32" added. On the next run try the ¼" shim, with ⅛", 1/16" and 1/32" added. Whichever set up indicates the shorter elapsed time shows that you are proceeding in the proper direction shim-wise—at least for the water conditions prevailing.

In that relation you will find that your boat will perform on smooth water fastest when it is jacked up as high as possible without cavitating—i.e., without the propeller slipping and the motor winding without gaining in speed. In rougher water where the boat bounces more you'll find the tendency toward cavitation is greater and you cannot jack the engine as high. The purpose of this jacking is simply to bring the propeller closer to the surface of the water, since the density of the water increases in relationship with greater depth; the closer the propeller is to the surface, the faster it will turn. Your object is to make the propeller turn as fast as possible with as little slippage or, in essence, as little cavitation as possible.

A word of warning here. Conditions in a race, unless you are fortunate enough to be the one boat in the pack to be out in front, are generally less smooth than during testing. It is nearly impossible to keep some element of guess work

(*See Over*)

Veteran ace Tommy Ingalls let's her out in "Lil Doc," No. C-75. Johnny lives in Los Angeles, Cal.

(*Continued from Preceding Page*)

out of your final set-up. If in pre-race testing you find your motor functions most efficiently with three 1/16" shims, chances are in the race itself on the same identical water on which you tested, your boat will handle more efficiently with one of the 1/16" shims removed.

Generally you will find that greater speed will be achieved by jacking the motor above the standard transom height. However, if no improvement is noted and cavitation occurs as you jack the motor higher, you then must cut away part of the transom so as to give it a lesser height.

So far you have learned a little something about your propeller only. How does the boat turn? Does it tend to ride with the foreplane (on a conventional hydro) barely touching the water or does the nose tend to dig in and the boat have a feeling that if given its head, fish-tailing would result. These characteristics on both runabouts and many types of hydroplanes are caused by the angle of attack of the propeller.

The exceptionally skillful driver can get away with driving his boat in an extremely light condition, that is with the motor jacked high and with the motor angle cocked out, because with his skill he'll probably be out in front of the pack where the going isn't as rough and he'll know how to handle his boat through the corners. It is well to remember, however, that while to a point you will get greater speed out of your boat by riding it light and cocking your engine angle outward, the boat will become flighty in handling, tend to take off over waves and be more prone to being airborne on an upwind leg of the course. It will also be constantly in danger of a back flip, and will tend to skid and porpoise broadly in the corners.

The nose-heavy boat, with the engine cocked too far under, is even more dangerous and has no advantage, for it tends to present the greatest wetted surface and will, unless very carefully driven, incline to snaking or barrel-rolling.

Somewhere in between these two extremes is the ideal, that happy medium of engine tilt that gives just a bit in overall boat speed in favor of better handling, both on straightaways and in the corners. How to find this is again a matter of testing and sometimes is a dual job of driver checking water speedometer and feel of the boat, with a shore observer who knows, giving his observations on the boat's appearance moving over the water.

The three-pointer in particular, while generally conceded to be faster than the conventional on smooth water, is more prone to becoming airborne than the conventional hydro and has an even more delicate balance point in proper shimming and engine cock. Some very savvy drivers have licked this tendency of the three-pointers to climb, cavitate or stand upright on the upwind stretch by modifying the cockpit to give it an added foot or even more in length so that the driver's weight can, in an emergency, be pushed farther forward to bring the nose down.

Handling the three-pointer is distinctly a problem of getting to know the feel of the boat by testing. Many conventional hydro veterans have given up the three-pointer without offering it a fair trial. A few three-pointer drivers have built a form of "spoiler" or the reverse of an aircraft wing surface on the bow of their boats. Usually these are removable and are used only on windy days and rough water where the nose may be expected to climb.

While on the subject of three-pointers —all too frequently three-pointers have been known to nose into a wave, trip and end-over-end both motor and driver. Close observation will indicate that this usually occurs on the downwind leg of a course when the three-pointer loses its tendency to be airborne and the drivers fail to move to the rear of the cockpit to keep the nose up. Experimentation and testing with the three-pointer under varying wind conditions is the only sure way to determine where best to ride in your cockpit. But regardless of the three-point design, you can be sure that a different position will be called for on the upwind and downwind legs.

Remember, too, that an engine cock that is ideal for a propeller of one given blade area, diameter and pitch may be all wrong for another propeller. And since no one propeller will do the proper job for you under all water conditions and course conditions, you better know in advance by testing which prop to use when and what engine angle is called for.

Regarding engine angle, a ruler carried in your tool kit with a set of figures in inches and fractions for engine tilt with various propellers will save you a tremendous amount of duplication in testing. Some drivers put scribe marks on the guide-sleds or frog brackets used to secure the driveshaft housing in various positions. However, the simpler way is to scratch on each propeller hub a figure which will represent the number of inches and fractions out from the transom where your housing should be.

Observe the propellers that are being used by the boats in your class which perform well. Observe the propellors carefully because it is quite possible that the owners have altered the manufacturer's pitch dimension or even changed the blade area in some experimentations of his own. If you find a propeller, for example, with ½" more diameter that performs slightly better than a smaller wheel and yet your motor seems to be laboring, that it when real propeller experimentation begins. You can grind off 1/16" in diameter (i.e., 1/32" from each blade tip) for it isn't regular practice for the propeller manufacturer to sell as standard products props in 1/16" variations. Of course if this reduction in diameter fails to do the trick, the prop is shot and before you get done with your propeller experimentation, you may go through quite a few in order to hit the ideal.

To win races you can't take a motor and a boat out of a crate and expect to get maximum performance. Granted, with a good design in the boat and a proper motor to meet that design, you have a good solid basis on which to work. But no one can give you textbook charts or directions on just how to set up your boat and motor because the biggest variable would be your own weight and your driving style. No doubt about it that testing is a lot of work, but remember it is also at least 50% of the fun. (End)

WHAT MADE "TOP" SPIN? (*Continued from Page* 8)

Fred's next. She was a 135 pegged in the Miami Herald as 'the only hurricane to hit Florida which didn't do some damage," except to its rivals. There was later Visel's Gold Cupper, "Hurricane IV." One of his latest jobs is Howard Johansen's "Mix Master." This is the sensational 266-Cubic inch hydro which on Dec. 29 (1952) turned 122.039 m.p.h. at Miami, to top "Guess Who's" then new 121.703 m.p.h. record. At this writing, there is some question as to A.P.B.A. approval of the "Mix Master" record, per the inboard competition qualifying rule.

"Yes," said Fred Wickens, "you need a hull to win races. But, (and I refer to your own BOAT SPORT yarn on Doc Novotny) you also need a team. Leading that team is the driver. Largely because he is one of the most thorough-going (remember the word?) in the game, I think Danny Campbell is a great driver. But if Dan weren't one of the most exacting of drivers *before a race*, he might still be trying to win his first one."

Now, for the moment, let's get back to the hull, and the building of "Top."

"We looked at the blue print," said the builder, "for chances at improvements that wouldn't break the rules. Okay. So there was a '2x6', jutting down from the bow to Station 5, where your Cracker begins to pound. This was but 1 ⅝" wide, so it had a poor attaching surface.

"Now there's nothing in the rule about what you do with your bow, forward of Station 4. Well, we laminated a stem, running from the bow back to Station 3, then curved the keel from there the rest of the way around. To avoid splitting, we used oak and birch plywood.

"All right. The rules say the length overall must be not less than 13½ feet or over 15½ feet. We took a happy medium and made it 14 feet, just enough to put a nice curve on the bow.

"Remembering the one inch plus-or-minus tolerance, we figured it this way: generally, for lightness' sake (for strength's sake, compensate by laminating), the idea would be to go to the minus side on the 1" tolerance allowed. However, we felt the Crackers, per the basic blue prints, were too wide at the beam for the width of the transom, so

(*Turn to Page* 28)

INSIDE STORY OF RACING FUELS

By Ted Powell **PART III**

Editor's note: **In our last two issues, BOAT SPORT's fuel expert has offered a revealing analysis of the various properties of methanol, ethanol, benzol, acetone, aviation gasoline, nitro-benzol and nitro-methane. In this article Mr. Powell completes his analysis of racing fuel components. In future issues BOAT SPORT will offer the reader a series of informative articles about actual fuel blends for use in various types of speedboat engines.**

DI-ETHYL ETHER

Sulphuric or ethyl ether is a highly volatile, extremely inflammable and rather explosive fuel with a very low octane rating of *minus* 40 octanes. It has a surprisingly high octane blending number and doesn't lower hydrocarbon-blend octanes too severely, even in relatively high percentages of up to 30 or 40%. On the other hand, the writer found that even as little as 1% ethyl ether added to V.H.O. hydrocarbon fuels resulted in some detonation ping which required a slight spark retard.

Some of the more complex and less volatile ethers such as di-isopropyl and divinyl ether possess unusually high octane ratings of from 100 to 115 octanes, with even higher octane blending numbers, but all possess low latent and specific heats since they have a low oxygen content and closely resemble the hydrocarbons in their general properties.

Sulphuric ether has a very high volatility, a very low B.P. of 94 deg., a very high R.V.P. of about 20 lbs., a very high evaporation rate, a very low latent heat of only 151 BTU/lb., and a specific heat higher than acetone's. Obviously, such a "dry" fuel is patently worthless as a major racing fuel component, in spite of some hot-rodder's "big fish" stories to the contrary. However, since ether has very low flash and ignition points, and an extremely wide combustible A.F. ratio range of from 1.7/1 to 48/1, or 4 to 8 times that of most other liquid fuels, it has been used in small percentages as an easy-starting fraction in many alky racing fuels. The Germans used 1% and the Italians up to 10%. Although ether has a low liquid specific heat, it has a high gaseous specific heat, lower thermal conductivities than most of the other special fuels, and a low liquid viscosity about 17% lower than acetones.

The writer found that even the hi-octane ethers kill acceleration and hi-RPM performance, even in very small percentages. Too much of the highly volatile ether in an alky blend may not only hurt performance seriously, but also cause vaporlock troubles in the fuel system. The ethers have high solvent powers and will mix readily with most of the other special fuels, providing the water soluble types (alcohols, ketones and esters) are not too wet. Because of their high solvent powers, ethers can cause solvent damage similar to the alcohols. If blended in, ethers should be obtained in the clean technical grades free of peroxides and aldehydes and with an organic acid content below .05%.

CASTOR OIL, HALOWAX, KEROSENE

These special upper-lubes have been used in small amounts in four-cycle racing fuels as combination super charger seals, top-cylinder lubes, exhaust valve anti-erosion agents and T.E.L. deposit evacuants.

Castor oil, like a lot of other old-time items, has been living off an old rep for a long time. It is rather passe in modern four-cycle racing since the new polar fatty-acid and complex-soap detergent chemical "platers," and the new synthetic colloidial graphite and molybdenum disulfide mechanical platers hopelessly outclass it in lubricant powers, as probably do some of the new synthetic silicone and flouro-hydrocarbon engine oils. Its advantages in racing lie in its ready solubility in alcohols since it is itself a sort of a complex fatty alcohol, and in its clean-burning characteristics.

Thus, the two-cycle fraternity cling to it. Its big disadvantage is its chemical instability, tendency to oxidize, polymerize, gum up and form organic acids (turn rancid). It has a very high liquid viscosity almost 1000 times that of ethanol and will tend to thicken up alky blends even in very small percentages. If used, it should be obtained in the more expensive "crystal" or AA grades to reduce fuel system and engine corrosion.

The Italians used halowax (a chlorinated hydrocarbon (*Turn to Page* 30)

WHAT MADE "TOP" SPIN? *(Continued from Page 26)*

we increased to the 1" tolerance on each side at the transom and pulled them in 1" at the midship beam. This likewise removed the somewhat 'punkin' seed shape and improved the raceboat appearance. We also cut down the freeboard by about an inch, to approximately 21".

"Actually, that's about it. There are really two other basic things to remember. When taking off your blue print, fare your boat full size (they do that with the biggest of ships y'know). Somebody rightly said, boat building is 25% engineering and 75% art work.

"When doing the work, be precise. Especially important points are, outside, setting your fore and aft decking strips to your ribs and, inside, correct seating of your motor stringers.

"Of course," said this hull builder, "when you are all finished you still have to work out the combination. There's your driver's and other weight distribution. We, for an instance, used two batteries to compensate for torque, setting both in the right half of the stern corner; later we also seated the motor further aft. The rules for this class boat hold the under surface so flat from transom forward that when the boats bounce and come down, the propeller torque throws them on the left chine. With direct drive from these big engines you've got to use a pretty big prop (around 12 x 17, or even larger).

"Most of the bugs you'll uncover in trying out will usually resolve from the rudder, wrong propeller or wrong fin—but whatever they are the idea is you have to test to discover the flaws and then know enough to make the right changes. It isn't always easy."

Of course, being a builder, Wickens is no especially ardent advocate of the one-design classes. With complete restrictions he thinks any one-design class will die. Therefore, he believes there should be periodical changes ("Well, maybe not too great"), to give any such class new life.

That is pretty generally your hull designers' natural viewpoint. The past year's history somewhat bears it out. The Crackers in 1953, for instance, have a changed fuel rule. Gasoline must be used in all competition, but for mile trials, anything goes. Also, to go with the changing (sic) times, motor cost allowable has been upped from $750.00 to $1250.00. Hull cost has never had a limitation.

Wickens would like to have the well-integrated Cracker Box Association make some more changes:

"I'd like to see them allow the freeboard to be lowered still more, for lightness and to decrease wind drag. They should also allow a little more V worked in the bottom forward (for coming down off a bounce) to reduce slap and torque and the 'midships pulled in yet a little more. For safety's sake, at the present speeds, I'd like to see them add some sort of non-trip or relief chine. We've already tested boats in the class at over 75 m.p.h."

So there we are. There could have been very little in the way of any secret in building the "Top."

Greatest feature of the boat is her fine riding qualities. The great factor in this, as both Wickens and Campbell point out, is the fact that (and this follows the original plan) she has a perfect 7/8" curvature, or rocker, from amidships (or low point) of the bottom, to the transom. A perfectly flat bottom would create too much water friction. A slight "hook" toward the stern would tend to force the bow down.

Yet there is another interesting factor in the combination of things which made "Top" a champion.

This is the driver and his race "combo", which importantly also features crew and co-rider Bill Sibson.

Bear in mind that Campbell for two seasons raced "Miss Fire" in some 10 Cracker Box races and never took home a cup. It was about the same quota that Chittey had with "Top," or less.

Why this apparently strange re-arrangement? Was the boat changed? In no especial elements. Does Campbell drive better now? Yes, probably, but Campbell has come forth with an underlying reason for this:

Between the time of owning "Miss Fire" and "Top" some two months elapsed on the beach. Campbell got to thinking of the "little things" that had often hurt his chances in a race. What was the real problem?

It came back to him: last-minute rush. A nervous guy anyway, it didn't help to go out for a heat, come back and find that a can of fuel had been forgotten. Or, and worse (a lot of inboard drivers can remember such), the battery hadn't been charged and so went dead.

So Danford sat down with a pencil and figured some 135 things that should be considered before going to a race.

From that moment he has worked by a "Be-prepared" schedule. About three days ahead of any race it tells him to: charge batteries, buy alcohol and oil, seal engine, wrap prop, check wheel bearings and (if going out of town), get reservations, etc.

Two days ahead he refers to the list, checks everything that can be fastened or tightened, short of going into the motor. On leaving he checks the list to be sure he's got everything a driver should have along, all the way from a funnel, tool boxes, a spare prop and rags, to money and membership cards.

Both the big and little things, all of them, count.

Campbell drives a boat that's good. When he drives these days, he goes prepared. It has paid. On the way to the championship he earned nine firsts, two seconds and a fourth place in a rugged class.

So it was really the little but all important things that have made "Top" spin. (End)

OUTBOARDS IN EUROPE

(Continued from Page 11)

her load her outfit on a ship and sail for races in Germany, to become one of the great forerunners of the invasion of continental Europe by our outboarders. Not long after she returned with her story, the Turnbull family took their Sunkist Kids from Los Angeles to Italy, and were followed to that country by Phil Ellsworth from Duke University with his hot 4-60 powered "Blue Devil."

By the mid 1930's the French champion, Jean Dupuy, had developed his powerful Soriano-Dupuy Class X motors to such an extent that he challenged the world to come to Paris and compete with him for the famous Spreckels Trophy in an "International Harmsworth" for the limited classes. Each country was allowed to enter three boats, either outboard or inboard weighing less than 350 kilograms (770 lbs.) and the race was run on a 3 kilometer (1.86 miles) course on the Seine River in the heart of Paris. Narrow river, high straight stone seawalls on both sides, a curving dog-leg course passing under ten low bridge spans per lap, with single buoys at each end. And the winner was the driver who covered the greatest distance in two hours!

A tough challenge, but it was accepted in 1935 by Stan Dollar of San Francisco, since then winner of the Harmsworth Trophy in Detroit with his "Skip-along," and last year's Gold Cup winner with Stanley Sayres' "Slo-Mo-Shun IV." He drove a little white hydroplane powered by a supercharged Offenhauser midget racing car motor.

In 1936 Fred Jacoby and Bud Davie crossed the ocean, and in 1937 I made the trip along with Freddie Nickell and Marshall Eldredge. We drove two Draper X's and an Evinrude X against outboards and inboards from France, Italy, Greece and Sweden.

America was well represented and our boats were superior in the sprints. In 1937 we won all the orthodox heat races at Herblay, near Paris. But the French with their great Class X outboards won the Spreckels Trophy three years straight.

Today the Italians seem to have a slight edge in the overall outboard racing picture, but are constantly challenged by such individual stars as Paul Schiller, the perennial X champion from Switzerland, Trenque and Rouleau of France, and Claesson, Ericksson, Selemark and Faley of Sweden.

But when discussing their races we must remember that there is mass production of motors and boats only in America. Realizing this, the U.I.M. (Union of International Motorboating) rules are simple: (a) There are no restrictions of any kind on hulls. (b) There are no restrictions on motors except piston displacement.

Their most popular classes correspond in size to our A's, C's and X's, but they could be better described as AX, CX and XX. In Italy the registrations show 30 A's, 18 C's and 14 X's.

And by rules—anything goes! (End)

KNOW YOUR SPEEDBOAT CLASS *(Continued from Page 13)*

to include hull weight and the weight of the driver in regular racing clothes, but not including life preserver, crash helmet or removable knee pads.

Weight restrictions, N.O.A.: No hull weight restriction but an overall weight of hull and driver is set at 260 lbs. Overall weight shall include boat weight, the weight of the driver in regular racing togs worn during the race, including life preserver, crash helmet, knee pads or any other paraphernalia worn during the race.

Motor restrictions (applicable to both A.P.B.A. and N.O.A.):

Motors must be over 15 c.i. piston displacement and may be as large as 20 c.i.

Modifications: Spray shields and protective cowlings may be removed.

Weight such as solder, lead or copper may be added to flywheel for balancing but no metal may be removed from flywheels.

Material may be removed for balancing of revolving or reciprocating parts other than flywheels provided minimum weights and specifications as specified in manufacturer's motor spec sheets are maintained. Internal passages in powerheads may be polished or bevelled provided such alterations do not bring measurements above or below those provided on manufacturers' motor specification sheets.

No substitution of components such as lower units, carburetors, magnetos will be permitted unless they are furnished by a manufacturer as a replacement or a modification for that particular model engine.

External underwater parts may be polished provided contour or specified measurement of the parts are not changed from those shown on the manufacturers' specification sheets.

Additional A. P. B. A. regulations: Mufflers, expansion chambers or other exhaust system components must remain as furnished by the manufacturer. Cut outs must be kept closed. Exhaust relief holes may not be added or those existing may not be enlarged. Muffler covers and exhaust relief plates must be in place and must be secured.

Up to .020" oversize on the cylinder bore dimension is permitted if the manufacturer furnishes oversize or unfinished pistons as a stock replacement. Chrome plating is not permitted.

Additional N.O.A. regulations: Open exhausts will be permitted at option of the sponsor and when so permitted, specially built exhaust adapters may be used.

Up to .025" oversize permitted on cylinder bore dimensions if manufacturer furnishes oversize or unfinished pistons as a stock replacement. Chroming of cylinder walls is prohibited.

Note: Under 1953 A.P.B.A. rules, engines accepted as stock engines may be used for competition in racing classes. Competition of stock engines against smaller racing engines will not be permitted but this year for the first time, Class B stock engines may race in Class B racing events in which case, the stock engines may be modified by use of racing fuel and in other respects in accordance with racing motors of that class. Which in essence opens up a whole new field to the Class B stock motor owner who may now modify his engine in compliance with Class B racing engines for competition at all A.P.B.A. Class B outboard racing events.

CLASS A RACING OUTBOARD HYDROPLANES

No one under the age of 12 is permitted to race Class A by either sanctioning body.

Weight restrictions: A.P.B.A. imposes a minimum hull weight of 100 lbs. and a minimum overall weight of 250 lbs. The overall weight includes the weight of the boat and the weight of the driver in regular racing clothes but not including life preserver, crash helmet or knee pads.

N.O.A. imposes an overall weight of 260 lbs. for the class. This overall weight includes the weight of the boat and the weight of the driver in regular racing togs worn during a race, including life preserver, crash helmet or other paraphenalia worn during a race.

Motor restrictions (applicable to both A.P.B.A. and N.O.A.):

The motors shall be of a piston displacement of 7½ to 14 cubic inches. Complete specification sheets for the Class A racing motor may be obtained from either A.P.B.A. or N.O.A.

In general the motors used in this class are the KR model alternate firing Johnsons, although under the new rules of the A.P.B.A. Class A stock motors may race with the racing motors. Since the last factory built Johnson KR racing motor was produced in 1939 and long since sold, it is not probable that a new owner will obtain a completely unmodified factory standard Class A racing motor. Permissable modifications include the substitution of any American-made carburetor and any modifications are permitted to the substituted carburetor or existing carburetor except that no change in place of attachment of the carburetor to the motor is permitted.

Ball bearings may be used to replace roller bearings or bushings in top and bottom of the crankcase but no material may be added to the inside of the crankcase or the passages opening onto the crankcase so as to decrease the cubic area of the case. Crankshafts may be bevelled and balanced.

Chrome plating of cylinders is permitted and cylinders may be bored and/or honed to a maximum of .025" over stock as shown on engine specification sheets.

Interchange of parts made by one manufacturer for those made by another is approved if the parts interchanged meet specifications. Material may be removed or added provided dimensions of modified parts are kept within the limits as specified in the motor specification sheets.

Ports may be added and material may be removed from ports but no material may be added to existing ports.

A ball bearing may be used to replace the top bronze bushing in the lower unit of the A motor.

In general, motors may be rebuilt or modernized, using later motor parts or replacement parts currently readily available.

Any fuel that does not exist as a gas at usual atmospheric temperature and pressure may be used and larger i.d. fuel lines substituted for this purpose.

Only the standard specified gear reduction is permitted in the lower unit although cavitation plates may be removed and refinement of lower unit contouring within the minimum set by the specifications is permitted.

Mufflers may be removed, water lines and cooling system altered and auxiliary lubricating devices may be added.

(End)

In Our Next Issue

Richard Van Benschoten brings you late news from Alaska and elsewhere in "Outdoors with the Outboards."

DICK NEAL *(Continued from Page 16)*

business when he became dissatisfied with the boats he was racing for Century. Sure, these hulls were good, but Dick thought he could make a faster design, and he did.

About the time Century was folding up, during the depression, the sales manager of that company talked Dick into going into the motor and boat building business with him. They chose Kansas City because boats and motors were new there. It wasn't long until Dick's fellow boat racers were after him to build faster boats and motors. Old timers like Jack and Tom Cooper, Gar Wood, Geo. Martin, Jack Woods, Malcolm Pope and Joel Thorne were Dick's racing buddies and many of them came to Dick for a hot motor or new boat design.

On one occasion Gar Wood built two of the first three-point hydros. They weren't very stable and were difficult to turn. Dick rebuilt them for competition and that is how the Neal three-point outboard hydro was born. His three-point served as a model for many others that were built later by other outboard hydro designers.

In the Neal spic-and-span shop, Homer Branson, with Dick since 1935, builds the famous Neal hydroplanes and is always tinkering with new designs—constantly trying to improve.

While Dick was building his business, he continued to race. This was a form of advertising and also brought in money which was very scarce in those times. Dick made boat racing a money making game, while today it is a rarity for a driver's purse even to cover his expenses. If you fellows think that you keep busy at a race with one or two outfits, Dick used to race in A,B,C,D,E and F classes, and at that time they were running three 5 mile heats in each class! Probably the only time he had a chance to sit down was when he paddled into the dock.

He says, "If you ran enough classes and kept right side up, professional racing paid. I used to make $100 a week when I raced steady and $100 was really $100 in those days."

What's Dick's real first love?—building up hot motors. Yes, all through the years he's built up fine motors of all makes in all classes. What makes a motor run fast? Dick says, "There's no magic formula—no secrets. If all the parts are perfectly balanced and aligned, fit properly and if the compression is right and the cylinders are two or three years old and well run-in, a motor will run fast. But 50% of how fast a motor runs is props, the driver and set-up. All in all, it takes lots of pains, hard work and hard driving to win."

What keeps pushing the records up? "Recent higher speeds in boats are due to refinements in boats, props and lower units. We're still using the same powerheads that we ran back in the early '30s and we knew the tricks of how to make them go even then."

Dick gave up professional racing in 1948 after 21 years of throttle squeezing. Racing is still his first love and his old customers keep coming back again and again to have him do their motor work. Dick always takes time out from his busy days to do this work himself. His time is taken up more and more with his pleasure boats and Martin motor business, with a repair shop and boat showroom located in the residential district of Kansas City. He's a successful businessman now, drives a powder blue Cadillac, and if you see him and his charming wife around the pits at a boat race, you know they are there because they love racing. Racing has given the Missouri Motor Magician a going business but he has contributed plenty to the sport. (End)

INSIDE STORY OF RACING FUELS *(Continued from Page 27)*

synthetic wax and oil family) in some of their methanol blends as a more stable substitute for castor oil. The Germans used 1% pure kerosene in their pre-war methanol blends. However, acetone, benzol or ether must be present in the blend to get the heavy hydrocarbon to blend in with the balky methanol.

The writer prefers to use the regular light detergent top-cylinder fuel lubes in four-cycle power plants. Regardless of what fuel lube is used in four-cycle racing engines, the smallest possible amounts should be blended in (from 1/5 oz. per gal. to 1%), since some lubricants may slow ignition and combustion, foul plugs and produce hard carbon in the engine. This does not apply to 2-strokers, of course, where up to 30% lube oil may be used with the fuel blend.

T.E.L. & T.A.L.

These two metallic-organic compounds are the two most effective and practical hydrocarbon-fuel anti-knocks so far uncovered. Some two or three dozen others are known but are impractical for various reasons as high cost, gumming, fuel precipitant, corrosion, engine fouling and engine abrasion. Anti-knocks prevent fuel detonation under excessive compression pressures by preventing the formation of explosive, intermediate-product peroxides.

Since methanol, benzol and acetone all have near-zero, zero or negative lead susceptibility, depending upon the type of knock test, but have fairly good blend lead response, Tetra Ethyl Lead doping of such fuels is rather futile unless considerable amounts of aviation gasoline are present. This largely explains the typical methanol-benzol-aviation-gasoline-acetone blends used during the past 10 or 15 years. It also indicates the possibility that anti-knocks may exist which may work with non-hydrocarbon fuels and allow considerable HP boosts. Nitromethane, for instance, which is highly effective in alky blends, works partly as an igniter and partly as an anti-knock.

U.S. racing men had resorted to massive lead doping of up to 25 c.c. per gal. and heavy benzol concentrations of up to 50% between 1924-34 in an attempt to control fuel knock and pre-ignition in their increasingly higher compression and RPM engines. This brought on a vicious circle of engine overheating and fouling troubles till it was gradually realized that the basic problem was one of internal temperature control rather than textbook octanes, and the swing back to the alky fuels began in the mid-1930's. Wartime Axis and Allied military research experts found that in going beyond 10 c.c./gal. with lead doping, promptly resulted in high flame temperatures, overheated engines, eroded and cracked exhaust valves, fouled and missing spark plugs, engine lead contamination and crankcase oil sludging. They first set an upper limit of 6 c.c./gal. and then had to reduce this to 4.6 c.c. to reduce engine maintenance troubles. A 10 c.c./gal. limit should not be exceeded in four-cycle racing engines, unless the racing man is looking for serious engine, ignition and lube oil troubles.

T.E.L. fluid is usually blended in with some bromine compounds, kerosene and light oil, amino-diphenol stabilizer and an indentification dye. The light oil and dibromide act as engine anti-corrosives and lead evacuants, and the stabilizer acts to inhibit lead precipitation and gumming in the fuel system, especially in the presence of moisture and various impurities. Fuels high in sulphur content and certain types of detergent upperlube oils cannot be used with lead-doped fuels since they can cause lead precipitation.

WATER

Water is hydrogen hydroxide and an already "burned" compound, hence it is classed as an additive rather than a fuel. However, physicists have found that as in the case of most chemical reactions, it is difficult to ignite perfectly dry gases and about 1½% to 2% moisture present speeds up ignition and combustion. Apparently the water is decomposed into H and OH ions within the intense heat and pressure of a spark gap and advancing flame front to take part in the intricate ignition and combustion chain reactions to speed them up. Hence water is actually "burned" in small percentages in a piston engine by first being decomposed and then burned back into water vapor and exhaust gases. This largely explains an engine's noticeably improved performance on water compared to a bench test.

Water has a B.P. of 212 deg. and a R.V.P. of about 1.2 lbs., hence it is fairly volatile. It has a rather high liquid density of 1.0 or about 20% higher than benzol, although a very low vapor density only ½ to ⅓ that of most of the fuels. Its latent heat is remarkably high at 971 BTU/lb., which is the highest known of any liquid. Water's latent and specific heats are nearly double that of methanol and its liquid thermal conductivity are nearly triple that of methanol. Obviously, such unusual thermal properties make water an excellent internal coolant for piston engines.

Although water is a fairly good solvent, it is practically insoluble in the ethers and hydrocarbons, and only partly soluble in the nitrohydrocarbons. Aviation gasoline will dissolve about .007%; 60-40% gasoline-benzol about .02%; benzol about .05%; nitrobenzol a fraction of 1%; 80-20% gasoline-ethanol about 1%; ether about 1.3%; nitromethane about 2% and the lighter alcohols, esters and ketones are completely miscible with it in all proportions. Obviously then, alky blends containing non-water soluble components can cause considerable fuel separation troubles with sudden changes in atmospheric temperature and humidity. Water content in alky blends also presents a fuel system and engine corrosion problem if sulphur, chlorine, acetals, aldehydes, organic acids or air are present in the fuel.

Military planes have used up to 25 to 40% water and water-alky injection in their blown mills for battle-emergency and heavy bomb-load take-off conditions. This allowed higher temporary manifold boost pressures and 10-20% more temporary HP via the internal coolant and V.E. boost method. However, the heavy water cargo load with little or no fuel mileage increase, and the high boost pressures in the blower system made this rather impractical for cruising conditions. Water injection is also rather futile in a piston engine unless the C.R. or blower pressure is boosted up to compensate for the coolant water's pressure lowering action. Too much water injection is also futile in an unblown engine set up for water injection by having its compression ratio boosted, because of excessive fuel dilution in the A.F. charge, a gradual drop-off in V.E., and an excessive reduction in flame temperatures and combustion speed, with a consequent drop-off in HP output. Also troubles with plug wetting and engine corrosion may result. All in all, the writer regards water injection in racing as a bit of left-handed sassafras since the water can be so much more simply introduced right into the blend itself via alky-acetone blending. (*Editorial note: End of third article. In future issues* BOAT SPORT *will deal with actual fuel blends for various types of speedboat engines.*)

OUTDOORS WITH THE OUTBOARDS (*Continued from Page* 21)

boat, whether it's new, old or has just had a face-lifting. There's health and pleasure for young and old alike outdoors with the outboards—and for young and old together, too.

BOAT SHOW SIDELIGHTS

Some brief boat show reminiscences: show-goers were thankful they didn't have to wait in long lines or make reservations hours ahead to get to see the outboard cruisers, as was the case with the larger inboards; typical reaction was this remark overhead in the inboard section—"Maybe we can get on this one, it's only $9,500."

Wandering around the booths, we ran into the exhibit of the Draw-Tite Co. of Belleville, Michigan, who specialize in just one product—custom built trailer hitches. There is a special hitch for every make and model of automobile from 1946 up to the present that attaches with only one hole drilled through the frame for a bolt. Eighteen different makes are provided for, from Fords up to Cadillacs (yes, even Caddy owners tow outboards around behind 'em on trailers).

Then, on the other end of the hitch, we talked with the Matco trailer people (Milwaukee Automotive Trades, Milwaukee, Wis.) and found out that in addition to their regular line they have axle assemblies and frames available for building up your own trailer—especially for double-decker racers or two-on-the-side hydro rigs.

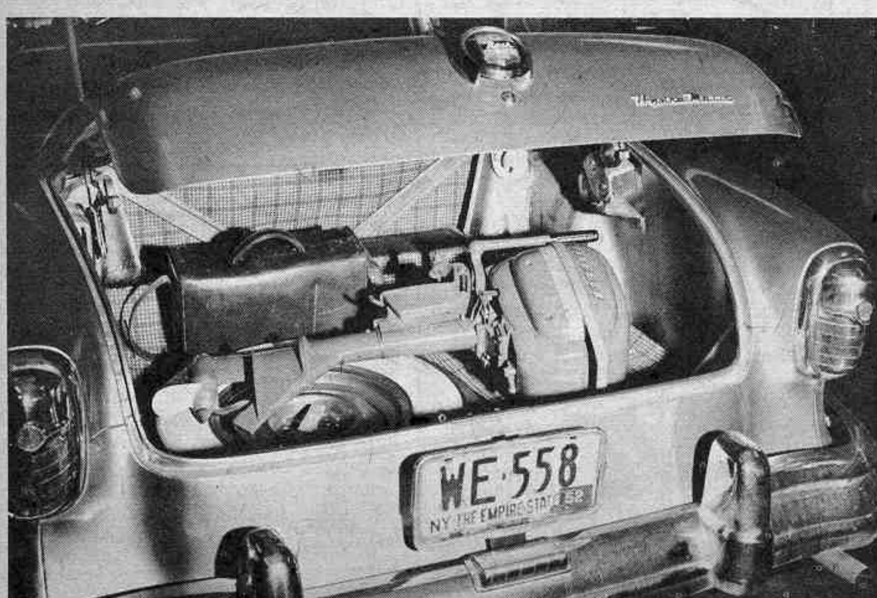
Along the racing line, and of special interest to young sons of drivers—if not to dad himself in a lot of cases—was the toy kit boat assembly of General Marine's V-10 Speedliner stock runabout. The model kit is made by McManus Novelty of Fitchburg, Mass.

During show week happened to meet W. B. Meredith of Honolulu, who turned out to be one of our subscribers. He said he was replacing all the screws in his family runabout with bolts and lock washers. Seems there is little if any sheltered water in his part of Oahu and the terrific beating a boat takes anywhere offshore works the screws loose before long.

FISHING

Sitting in on a round-stove discussion of fishing last winter, someone mentioned hearing of a water speedometer invented by a man out in the state of Washington. Looked into this further and found out the man is Robert R. Moore of Spokane and his invention is called the Troll-a-Meter, which tells the speed of your outboard up to 8 m.p.h. regardless of water conditions. (See photo captions in this section for how it works.) The big advantage in knowing your exact trolling speed is so that you can duplicate the lure-depth at which you got the first strike, because that's where the fish are—at least, that's where one *was*. Of course, the faster your trolling speed, the nearer the surface the lure rides; and conversely, the slower the speed, the farther down the lure sinks. Fishing for big deep-water rainbow in Curlew Lake, about 150 miles north of Spokane, Mr. Moore proved the efficacy of maintaining a constant trolling speed. With his first experimental model attached to his boat, he was getting fish when other boats, trolling at random, were getting

(*Continued on Page* 33)



(Above) One of the largest and most enthusiastic groups of outboard motor users are commercial fishermen. Sturdy, outboard-powered boats like this bring in five billion pounds of fish every year. Motor is a 25 horsepower Evinrude equipped with gearshift.

(Left) Sis shows kid brother how to outboard in the Missouri-Arkansas Bull Shoals Lake. Motor is a Johnson 5 horsepower — the boat is a Lone Star 12-foot aluminum craft.

(Left) Proper storage when transporting outboard motor by car will prevent damage to motor and car. Most modern cars have ample space in trunk to carry all size engines. Evinrude 15 and 25 hp. models have separate gas tanks for easy stowing and handling.

OUTDOORS WITH THE OUTBOARDS *(Continued from Page 31)*

none or, at most, a first strike only and no repeats. He has gone into business with his old fishing partner, Dr. Ray Pellow, under the name of Pelmor Trolling Meter Co. The address, for those interested in further details, is 1307 W. Frederick, Spokane 12, Washington.

OUTBOARD MOVIES

For showing at meetings of your boat club, rod and gun club, civic groups, Boy Scout Troops or even Cub Scout Pack (don't think the kids aren't interested, too!) there are many good films available, most of which can be borrowed without charge for private club showings in full color and sound for 16 mm. projectors.

Kiekhaefer Aeromarine Corp., Fond du Lac, Wis, and the Film Library of Socony-Vacuum Oil Co., 26 Broadway, New York, N. Y., have movies of the Albany-New York Marathon, one of the most popular competitive outboard boating events in the country. Socony has the '49 and '50 race, and Kiekhaefer the '50.

Johnson Motors, Waukegan, Ill.: 6 films, including two taken by Father Bernard Hubbard, famed Arctic explorer, in Alaska, and a 40-minute film of a family vacation at Kentucky Lake.

Gulf Oil Company Public Relations Dept., 17 Battery Place, New York, N.Y., has a film of the whole field of motorboat racing during the '51 season.

Century Boat Co., Manistee, Mich., has 8-minute color film of water skiing.

READER ROUNDUP

Had several letters wanting to know what kind of boat was shown on page 11 (upper right corner) of February issue of BOAT SPORT, the one with pretty blonde driving with Johnson remote controls. Dick Parker, Jr., of Kinston, N. C., was one of them, and he added "Am only interested in boat, not blonde." Well, the boat was the 14′ Thomboy made by Thompson Brothers Boat Mfg. Co., Peshtigo, Wis., and Cortland, N. Y. For those whose interest may be just the opposite of Mr. Parker's, all we can say is that Thompson tells us the only blonde included as standard equipment on the new Thomboy is the blonde mahogany used in the center deck panels.

Frank E. Knight, who lives on Big Pine Key, near Key West, Florida, has written a nice long interesting letter regarding outboarding in that region. Fishermen, he says, go out in outboards quite regularly as far as sixty miles into the Gulf, around the Dry Tortugas. He also mentions the rougher waters on the open ocean side and recalls the first outboard crossing to Cuba, made in 1947 by Capt. Bob Ikerd of Islamorada alone in his 14′7″ skiff, and the first round trip made over the approximately ninety-mile one-way run of open sea by Rube Allyn of St. Petersburg, last year.

(See Over)

Classified Advertising

Use this directory for prompt response. Rate 20c per word ($3.00 minimum). CASH WITH ORDER. 5% discount for three or more insertions to direct advertiser. Copy should be on one side of the sheet and typewritten, if possible. Schedule of closing dates for classified advertising as follows:

Issue	*Closing Date*	*Issue*	*Closing Date*
Feb.	Oct. 14	Aug.	Apr. 14
April	Dec. 14	Oct.	June 14
June	Feb. 14	Dec.	Aug. 14

Make remittance payable to BOAT SPORT, Classified Advertising Dept., 215 Fourth Ave., New York 3, N. Y.

FOR SALE

FOR SALE—Used and rebuilt marine motors, 2 to 550 H.P. gasoline and diesel. Complete stock list of popular models. Write for FREE Catalog 170 covering conversion equipment, propellers, reverse gears, fittings, and supplies of all kinds. STOKES MARINE SUPPLY, Dept. BS, Coldwater, Mich.

STEERING WHEELS, windshield brackets, from $7.95. Attractive polished fittings. "Waterskis," aquaplanes, prefabricated boat kits—Complete. Skiffs $32.00, runabouts $97.00. Guaranteed satisfaction. Bargains galore. Hundreds accessories. Folder free. Marine, Box 681F, Mendota, Minn.

JACOBY FLYAWAY Hydros, Steerers, Throttles, Helmets, Life Jackets, Fins, Speedometers, Propellers, Racing Accessories. Fred Jacoby Boat Works, North Bergen, N. J.

1939 EVINRUDE SPEEDITWIN. $150.00 Strictly stock utility. Excellent. Pass APBA. 1931 Super "C" lower Unit. Perfect. $50.00 Charlie Olsen, Box 91, Antigo, Wisc.

FOR SALE—One Johnson racing motor KR (class A). Just completely built by Maddox, all new parts on a proven and seasoned block. New Lower unit, two new wheels, new case and bearings, new crank, rods, ready to go. Sell for $300.00. Write—R. E. Brainard, 306 Main Street, Cedar Falls, Iowa.

ONE 1800 H.P. Allison V-1710-109 engine. New, crated, free of corrosion and complete with papers. $500.00. James Harp, 18009 Ponciana, Cleveland 11, Ohio.

FOR SALE—Hydropane "135". Hallett Hull, slightly used. 130 Horse Power. Will trade for pleasure boat, car or whatever? Payton Nash Co., 1515 Swift Ave., North Kansas City, Missouri.

JOHNSON PR 50. Sleeved Rotary and Guaranteed Chrome by Jones, New Condition, $325. Write to Hallock, Aquebogue, N. Y.

TREASURE CLUB

TREASURE CLUB — Limited memberships — Members participate in voyages, treasures, club activities, and etc. Club now has large exploring and salvage ship—also a new and proven invention (waterscope). Memberships only $10.00—Treasure map and information free. Guy Underwater Exploration Club, No. 1 Ouellette Avenue, Windsor, Ontario, Canada.

HOW TO RUN A REGATTA

(Continued from page 15)

a starting stand or float to hold officials and clock, dressing and toilet facilities for the drivers, adequate parking space for drivers' cars and trailers (snow-fenced if possible to protect drivers' equipment), a public address system, drinking water in the pits, firefighting equipment, an ambualnce and a doctor.

All these details should be specified in a letter of agreement or contract between your club and the sponsoring group. Also be sure to specify the when and where of the payment of the sponsoring fee!

On your part, you will guarantee the sponsor an adequate field of boats, course markers, race equipment such as flags, starting clock, cannon and officials. You can ask the sponsor to supply some judges, if you wish, in case he has some people he wants to honor by the title, but for a smooth-running regatta you better hire experienced race officials: pit steward, starter, scorers, timer (he can double as clockman) and a committee to set up the course. The word "hire" is used advisedly. Though their pay can be nominal, probably no more than expenses, being "paid" officials somehow seems to bring out more conscientiousness and earnestness than is sometimes evidenced by volunteer workers.

Your contract will further specify the number of heats, starting time and testing time (usually after noon on Sundays so as not to conflict with church services). To make a good show, limit your classes to those in which you have the largest number of competitors. No sense in scheduling F hydro heats, for instance, if you have no F's in your club. Better to give more heats (and more chances at the purse).

Once you've worked out the details with the sponsor, get your notices out to the drivers in your club and any other clubs in your region who will be interested. The notice should include date, place, sponsor and sponsoring club, number of heats for what classes, any restrictions you are imposing or regulations under which you are operating, length of course, time of heats or at least time of first one, purse or prizes and a deadline for filing entries, with a fine for late entries.

This latter is not just a move to get a couple of extra bucks in the coffers. It's important to force in entries early so you'll know if you have an adequate field or if you have to get on the phone and round up some more boats. It's also important so you can give your sponsor some help with the publicity for the event.

In order to stir up public enthusiasm, the sponsor will want to give the local newspapers a batch of stories on the forthcoming regatta. Your club can be a tremendous aid here by supplying stories on the drivers who will compete, their past successes, descriptions of their rigs, any human interest stuff you can think of and, of course, pictures. Naturally you won't want to doom your future races by false advertising, so get your entries in early and you'll know whom to boom.

You will also need advance entries to help the sponsor compile his program. The program should include full names, boat numbers, and home-town listings. Also a description of the boats and motors of the various classes competing. The more information you can give your spectators, the more understanding and enjoyment they will have in the competition.

Make sure the sponsor provides a first-rate public address system. You can't expect the general public to know much about the sport. It's important to have a good p.a. system so you can tell them what's going on. Get an announcer who is very well versed so he can describe the boats and motors, give some history on the competing drivers and explain the conduct of the races. Starting clocks and the business of circling for the start is very confusing to the uninitiated and should be thoroughly covered by the announcer. Then the public can share the tension and excitement of that last minute before the race —which is, of course, terrifically important in promoting interest in the regatta.

It also helps the public to enjoy and understand the races if the clock is placed so that it can be seen by the audience. If this can't be worked out physically, then fix up a double-faced clock. Sharing the suspense of that last minute takes the mystery out of what seems otherwise to be disorganized meanderings by the competitors and the equally confusing false starts.

And last, but most important, the conduct of the race itself. Keep it moving fast, with no great waits between heats. Run it off with showmanship and who knows, maybe speedboating regattas will make the dictionary yet! (End)

OUTDOORS WITH THE OUTBOARDS

(Continued from Preceding Page)

Ikerd did it in a little over nine hours; Allyn went over with two companions in seven hours, and came back alone in five hours and forty-five minutes. This brings up what John C. Scott, of Miami, was telling us at the show. He plans to try to beat this record to Havana and back in one of his 18' Scottie-Craft outboard cruisers.

So long, now—be with you next issue. (End)

HOW TO BUILD MOTOR RACKS

(Continued from Page 19)

each furring strip and fasten it to the wall with ½" x 5" lags driven into the lag-screw anchors. Be sure to place washers under the heads of the lags.

Following the procedure given above for attaching brackets to studs, secure brackets to the furring strips.

Temporarily fasten the motor board to each bracket with a couple of nails, bore and counterbore two holes at each joint for ½" x 5" lag screws, and drive the lags in place over washers. (End)

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Missouri River Marathon. Won 1st in Class B and Class D-1, Class D-2.

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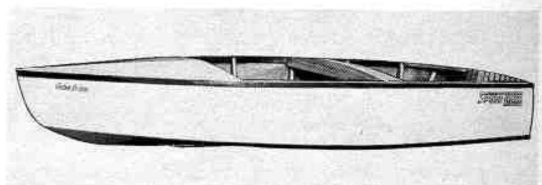
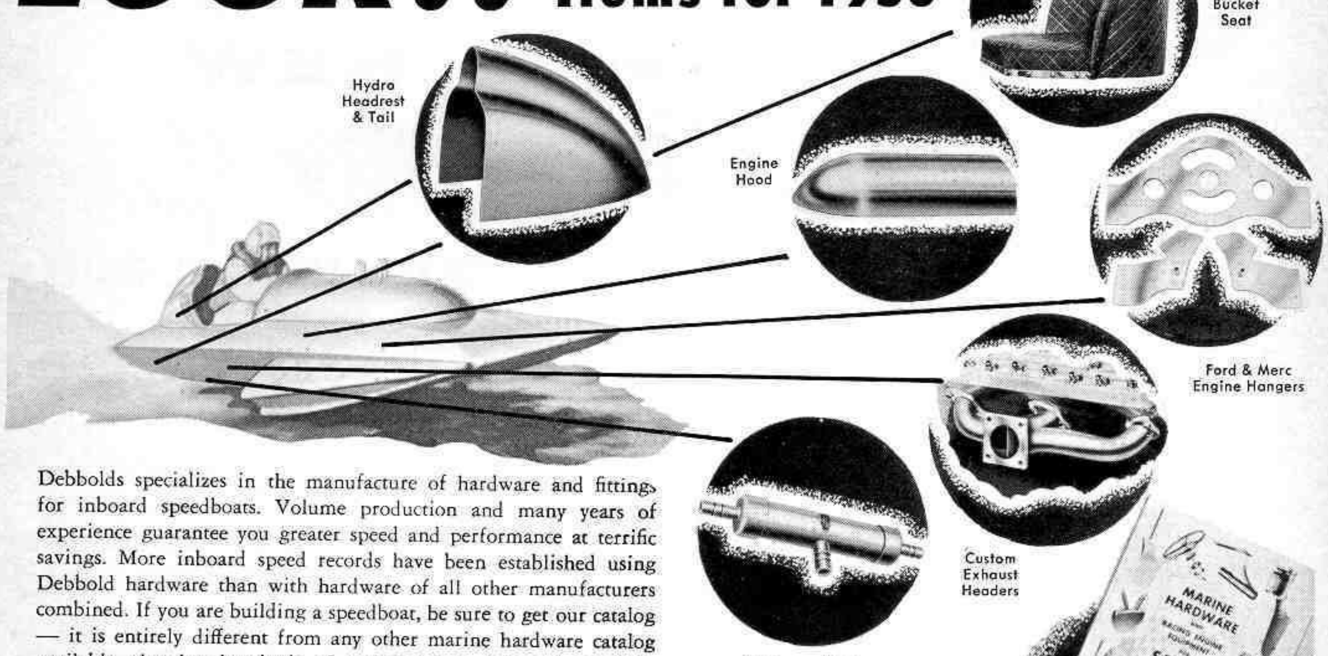


LOOK!! All These New Items for 1953



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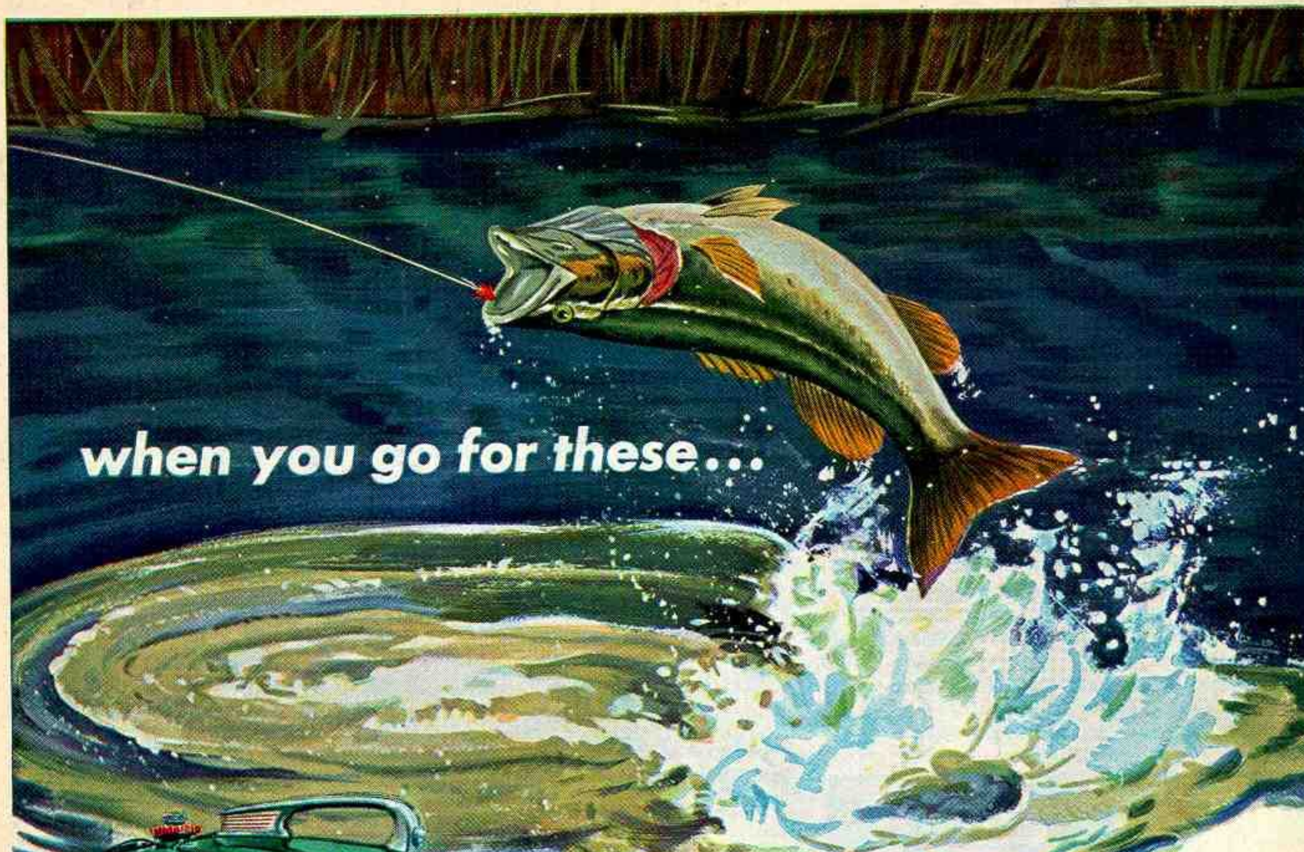

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