

"PIONEER"

Special Combination Offer



High-grade 2-H.P. outboard motor and complete knock-down boat built especially for the motor, a roomy boat that will run on an even keel and not like the ordinary row boat with the bow in the air. Complete outfit,

\$75.00

Write today for full particulars regarding boat and engine. Our 1914 catalog showing many other models mailed upon request.

PIONEER BOAT & PATTERN CO.
Wharf No. 44 Bay City, Michigan

Roosevelt and the EVINRUDE IN South America

WHEN Colonel Roosevelt went to South America he realized that traveling upon the shallow rivers is slow work when one relies upon the natives and their paddles. He, therefore, took with him an Evinrude Detachable Rowboat Motor.

Read this letter from his chief of equipment:
New York, May 10, 1914.
The Evinrude Motor Co., 64 Curdland St., City.
So pleased to your country regarding the efficiency of the Evinrude Motor you furnished the Roosevelt South American expedition. I am very glad to state that it proved very effective, particularly in having it used against the south moving rivers in the stretch of Brazil. We used the motor during the entire expedition, though it was frequently out in all sorts of tropical rains, our motor never failed us. The Evinrude was a great convenience.
Keep this record. ANTHONY F. ILLIA,
In Charge of Equipment, Roosevelt South American Expedition.

The Evinrude with its built-in Reversible Magneto, which will operate even when completely submerged, insured Colonel Roosevelt against the perils of dangerous waters, wherein the "dying" of an ordinary motor would have been disastrous. The Evinrude attaches to any rowboat in less than a minute, is perfectly portable, extremely powerful and is built by the latest manufacturers of rowboat motors in the world.
Officially adopted by fifteen governments
EVINRUDE MOTOR COMPANY, 141 T STREET MILWAUKEE, WIS.
Catalog gratis

WISCONSIN MACHINERY & MFG. CO., Milwaukee, Wis. GENTLEMEN: I AM TIRED OF ROWING (Sign Here)

DON'T GO ROWING GO FERROWING



It Gets You There and Brings You Back

That's the most desirable feature of any rowboat motor—reliability. Pretty paint and nice fits may attract you, but they don't last.

By a FERRO you get a perfect little engine and built by an organization big for its motors. The FERRO is not the outcome of many years of experience search in the marine engine field. It is the product of other rowboat motors with the best, such as the Bosch Reversible Water-pump Shock-proof and Waterproof Spark-ignition carburetor. Simple and sturdy construction in operation, and most reliable of every claim. If you are in the market for a rowboat motor, you will find our dealer propositioned most remunerative. Check coupon if you're interested.

For Your Vacation STRELINGER PORTABLE BOAT-DRIVE

Takes Your Boat Anywhere You Can Row It
Had you thought of the fun you can get out of a boat-drive—a portable marine engine? It doesn't cost much. A Strelinger, row boat size, costs so little it's practically sold for a song. To be sure, you have to sing U. S. Treasury notes, but so few—so few.

The biggest improvement in marine motors—overcoming the defects in other motors which prohibit their use in shallow water or weedy channels.

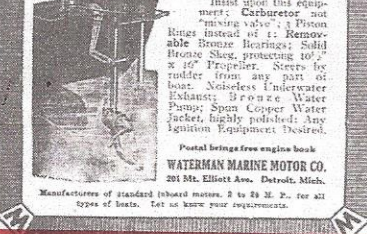
Other boat motors have always required one to three feet of water under the boat—the Strelinger needs only six inches to keep the boat afloat. A friend of mine says a Strelinger can run in a dry dock.

Guaranteed for Five Years
Direct Driven No Gears
The propeller shaft is direct driven from the engine.



WATERMAN PORTO MOTOR

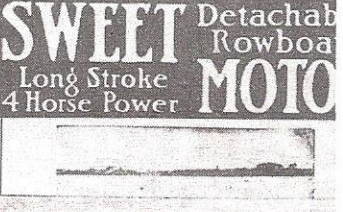
Makes any boat a motorboat. Buy direct from factory—freight prepaid—and keep agent's profit.
THIS is the original outboard motor. 9 years' successful use—more than 25,000 of them driving rowboats, skiffs, tenders and other small boats 7 miles an hour. Fits any shaped stern, attached or removed in a jiffy. Simple, compact, economical in upkeep. **GUARANTEED FOR LIFE.** Gives most power for the price, most power for the weight.
1914 MODEL, 3 H. P. WEIGHT, 50 LBS.



Insist upon this equipment: Carburetor not mixing valve; Piston Rings instead of 12 Removable Bronze Bearings; Solid Bronze Skag, protecting 10" x 1/2" Propeller. Screws by rudder from any part of boat. Noiseless Underwater Exhaust; Bronze Water Pump; Span Copper Water Jacket, highly polished. Any quality equipment desired. Postal brings free engine book. **WATERMAN MARINE MOTOR CO., 201 Mt. Elliott Ave., Detroit, Mich.** Manufacturers of standard inboard motors, 2 to 25 H. P., for all types of boats. Let us know your requirements.



MILLER ROW BOAT MOTOR
are built for continuous service. They can be clamped to any fresh or salt water, and capacity 2 H.P. parts have been checked through the right for high efficiency, maximum absolute satisfaction in exclusive features make the Miller is given a seal of Each Motor is guaranteed for one year before shipment. Price \$100.00.



SWEET Detachable Rowboat MOTOR
Long Stroke 4 Horse Power

The Long Happy Life of THE PHENOMENAL OUTBOARD MOTOR

Part One: Origin of the Species by Charles D. Strang

LA ROWBOAT MOTOR \$54.75

Direct from Factory to User

Ready to Ship to You To-day

Right now is the time to enjoy the sport of motor boating, with this powerful little engine. Write or wire us today—our experts—inside of 24 hours, your LA Rowboat Motor will be on the way to you, ready for instant service on lake, river or bay. Hundreds of Lakewood-Kelco owners have told us how good they are with this new model. Many more are ordering from day to day. Every one sold under our ready free trial offer, which protects you against the slightest possibility of dissatisfaction. Could any but a reliable motor be sold under this plan?

One Size—One Style—One Price

See if you can beat this anywhere for serviceability, warranty and price. Lighter than many other motors—easy to carry. Lighter than many other motors—easy to carry. Lighter than many other motors—easy to carry. Lighter than many other motors—easy to carry. Lighter than many other motors—easy to carry.

6 H.P. 2 Cylinder with complete boat fittings \$89.50

Portable CAILLE Boat Motor

Reliable Dealers Wanted

The Caille line proves very attractive for dealers, because it includes not only the standard line, but also the Caille Portable Boat Motor—the engine advertising campaign starting this month. It is our aim to make Caille motors as well known as Ford cars or Lincoln buses. Consequently, we need good, reliable dealers everywhere, to handle the heavy sales that are bound to result. Get in on the ground floor, before it's too late. Send for our latest agency proposition book—a postal brings it.

CAILLE PERFECTION MOTOR CO., 1421 Caille St., Detroit, Mich.

A French outboard, the Motogodille, appeared in 1902. Built by the Paris-based Couche and Company, the motor used no gears but simply fastened the propeller to a long, slanted driveshaft, much like the Portable Electric of 1896. With a single cylinder engine of 1½ horsepower, the 35-pound Motogodille was pivoted at the boat stern to permit tilting and steering. A second model produced 2½ horsepower and weighed 90 pounds. Although it received little public acceptance, the Motogodille remained on the market for a decade or more.

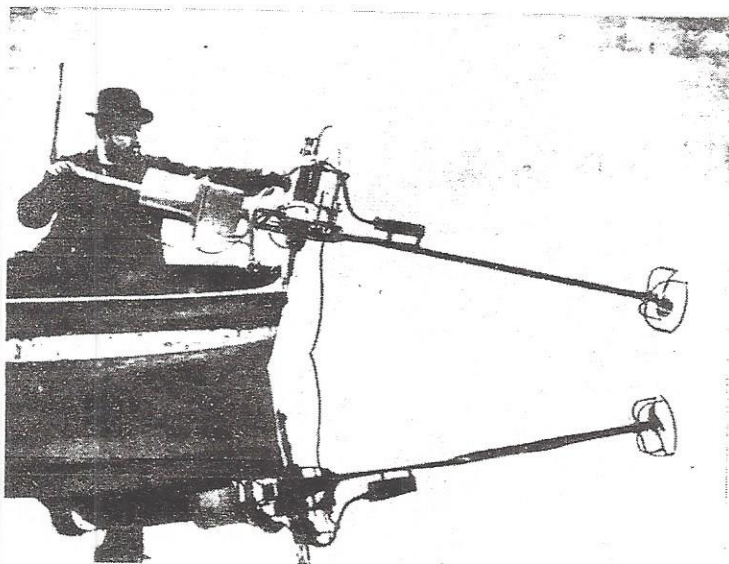
Besides these accounts, many other efforts were made to evolve a substitute for the odious oars. The internal combustion engine was a new and exciting development in the late 19th century, the need for an outboard was strong, and we will never know whether some "backyard" experimenter first assembled a model for his own use without commercial ambition. Pinpointing a single inventor for the outboard motor is an improbable feat.

THE WATERMAN: FIRST BUSINESS SUCCESS

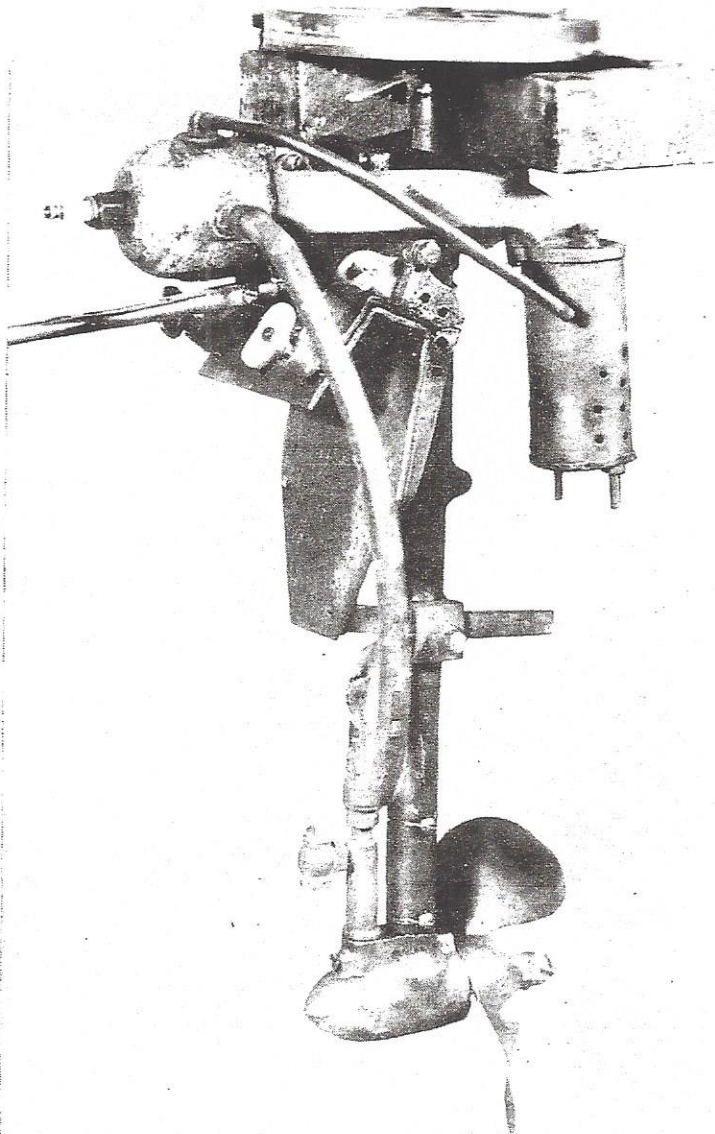
More important were those efforts which put practical, low-cost outboard motors into the hands of the public, or in other words, those efforts which achieved commercial success. Here the story is well documented.

In 1905 Yale law student Cameron B. Waterman applied for a patent on a device he called an "outboard motor"—and so coined the name which has become universal. In that year he had assembled an outboard from available components, using an air-cooled Curtis motorcycle engine to turn a chain-driven propeller. The spray flew and, aided by George Thrall and Oliver Barthel, he followed with a shaft-driven, air-cooled model (of which 25 were sold in 1906). Continued improvement resulted in a water-cooled, two-cycle, single-cylinder outboard of 2 horsepower for 1907.

Unlike today's outboards, the Waterman used a horizontal crankshaft which required bevel gears to turn a vertical driveshaft. Another pair of exposed gears—below the waterline—drove the propeller shaft. The whole machine pivoted for steering and a fuel tank was mounted on



The spidery Motogodille appeared in France in 1902 to take this bearded boatman larking on the Seine. Several versions of the motor remained on the market ten years or more.



Ole Evinrude's first 1909 outboard represented 62 pounds of hand-machined parts which sold for \$62. This 1½-hp engine set the standard for the form of all the outboards to come.

the long tiller handle, undoubtedly providing inertia to reduce vibration at the pilot's hand!

Crude as it was, 3000 Waterman Porto outboards were sold during 1907, establishing the engine as the first volume-produced outboard motor. The "detachable" was on its way.

Promoting his engine, Waterman wrote accounts of his cruising adventures with a Porto for *Motor Boating* and, as early as January 1908, placed advertising in this magazine.

The Waterman Company prospered with sales of 6000 engines in 1909 and accumulated sales of 30,000 units by 1915. In 1917 Cameron Waterman sold his company to the Arrow Motor and Marine Company, a New York firm, for \$20,000. Arrow manufactured the Waterman engine until 1921.

So ended the first successful effort to provide outboard motors for the boating public.

Spending World War I in the U.S. Signal Corps, Cameron Waterman re-entered civilian life to become a manufacturer of tools, dies and precision instruments. He enjoyed, in addition, a successful law career. In 1956, at 79, having seen the infant industry grow to greatness, Waterman died.

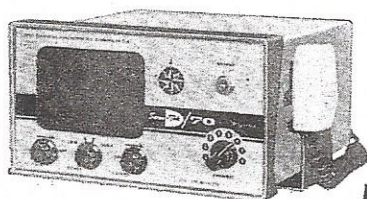
(Continued on page 76)

it's **EASY** to make
a 72 watt 8 channel
radiotelephone to sell
for less than \$300, but...

not with these
quality features:

- Instant-Talk—no annoying warm-up delays.
- Zero standby current—normal reception consumes less than 1/10 ampere.
- Weather-shielded cabinet and panel with mylar/vinyl coatings over aluminum.
- Higher "talk-power" — unique Zener-regulated modulator for 100% modulation.
- Zener-regulated voltages. Volume does not change with battery voltage or engine speed.
- Reversible horizontal or vertical mounting.
- Simplified single-tap tuning.
- Weather-shielded speaker — mylar cone, not paper.
- Control shafts of nickel-plated brass, not plated steel.

new POWERFUL, SEAWORTHY



Servo-Tek
70

HAS THEM ALL

— AND MORE!

- "High-Low" power switch—high power when necessary, low power to improve short range communications and reduce current consumption.
- Remote Speaker — easily installed with external terminal strip provided.
- Modular construction — simplified servicing.
- Self-contained solid-state power supply; no vibrators or dynamotors.
- Internal chassis of chromate treated aluminum.
- Crystal sockets with silver-plated contacts.

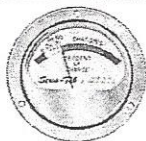
Measures only 6½" high x 11½" wide x 12½" long. Weight only 16 lbs. Supplied complete with microphone, mounting bracket, power disconnect plug, and crystals for 2182 KC and 2638 KC (4 crystals).

TOTAL PRICE 12 VOLTS, ONLY \$297

MODEL 70B, 8-CHANNELS PLUS BROADCAST—\$317

Both models available for 24 or 32 volts—\$40.00 additional.

Through your dealer or direct. Send for fully descriptive information on this and other fine radiotelephone models and marine products.



**BAT'RY
CHECKER**

Play it safe—know your battery condition! A quality instrument available for all popular battery voltages at only **\$ 17.50**

**SERVO-
CHARGER**



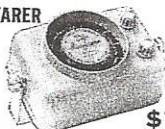
Install it—forget it. Keep batteries in top condition—automatically. Will not overcharge batteries; can be left unattended for months in any temperature! Models for 12, 24, or 32 volts.

ICE BOX CONVERSION KIT



Say goodbye to messy, expensive ice. Convert your ice box to modern battery-powered electric refrigeration. Models available for 12, 24, 32, or 115-volt d-c. Also 115-volt a-c.

SEAFARER



\$129

First economically priced, quality dual-range depth indicator ever offered. Switch from 0-60 feet to 0-60 fathoms. Operates from internal battery or ship supplies of 12, 24, or 32 volts.



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Florida • 2945 Gulf-to-Bay Boulevard, Clearwater

OUTBOARD MOTOR CONTINUED FROM PAGE 34

ENTER EVINRUDE

Working alone in his Milwaukee pattern shop, young Ole Evinrude independently developed and produced an outboard motor in 1909. Ten hand-built engines, weighing 62 pounds and priced at \$62, sold immediately. Developing 1½ horsepower at 1000 rpm, this single cylinder engine was arranged in what was to become the standard form for outboard motors—vertical crankshaft, horizontal cylinder, two-cycle, water-cooled, underwater gears in a sealed case to drive a horizontal propeller shaft, and steering obtained by swiveling the propeller. A rectangular gas tank atop the engine and aft of the flywheel set the style for the next forty years.

The enthusiastic reception prompted formation of the Evinrude Detachable Rowboat Motor Company during 1909 in Milwaukee, Wisconsin—a state which would become the world center for outboard manufacturing. Ole Evinrude handled design and manufacturing; his wife, Bess, managed the office and sales; a friend, Chris Meyer, invested \$5000 in the venture. Evinrude prospered and the company soon moved into larger quarters. Boatmen had accepted the "detachable" as a welcome improvement over oars.

His wife's ill health caused Evinrude to leave the business in 1913, selling out to Meyer (reported price: \$150,000) and agreeing not to manufacture outboards for five years. Meyer continued to produce engines under the Evinrude name.

If brief, Ole Evinrude's first venture in outboard manufacturing had been successful. He would return later to secure his position in history as the first of a handful of giants who would guide the industry to its present stature.

IN CAME THE COMPETITORS

Spurred by the reception given the Waterman and Evinrude motors, new aspirants rushed into the field and by 1915 there were 45 companies building "detachables" with varying success. Mostly single-cylinder, two-cycle engines of 8 to 10 cubic inches of piston displacement, the motors had advertised outputs of 1 to 3 horsepower. Cast iron and bronze construction meant that weights of 60 to 80 pounds were not uncommon.

Lost to yesteryear are their names—Wright, Sweet, Racine, Strelinger, Wilcox, Motorow, No-Ro, (rowing seems to have been on everyone's mind), Blakely, Hi-Speed, Miller, Nymph, Jewell, Emmons, Ferro, Joy, Spinaway. On and on.

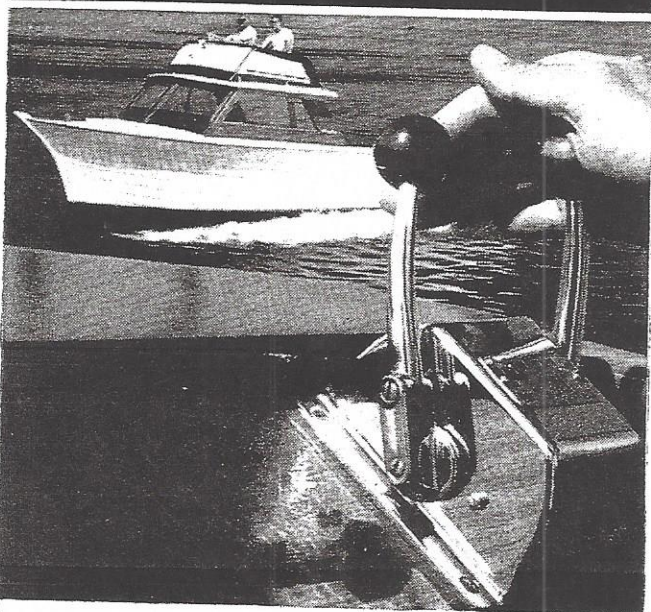
IDEAS GALORE

Understandably in a new field, the 1910-1920 decade saw a plenitude of new ideas appear on the many makes of outboard motors. Some concepts soon vanished, others disappeared for years to reappear at a later date, others stayed to become accepted practice and are still seen on modern outboards.

An early attempt at silencing appeared in 1914 when the Caille Perfection Motor Company of Detroit piped exhaust beneath the water surface to provide a crude underwater exhaust system. Nothing more than a tube which trailed in the water astern the motor, this feature was seen on the Machek Amphion and Koban outboards by 1916, as well as on the Spinaway and Racine.

Reversibility was common on early outboards, although none used transmissions akin to present types. The Lockwood-Ash and others simply ran the engine backwards for

Why HENRY LUHRS uses MORSE CONTROLS

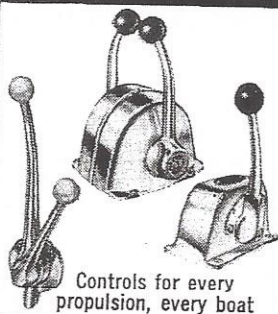


Henry Luhrs, President of Henry Luhrs Sea Skiffs, Inc. explains it this way...

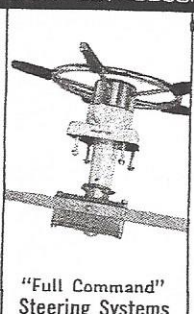
"ONLY MORSE GIVES US THE QUALITY APPEARANCE AND WARRANTED PERFORMANCE OUR CUSTOMERS LOOK FOR"

"Morse controls are often copied—never equalled," according to Mr. Luhrs. "Only Morse gives us the appearance and performance Sea Skiff buyers expect. We don't have to sell the merits of Morse controls because they are widely recognized as the finest controls on the market." □ More quality-conscious engine and boat manufacturers install Morse controls than any other make. That's a good recommendation. When you buy a new boat or re-power your present boat, install Morse engine controls, steering systems and accessories. Systems available for all popular inboards, outboards and inboard-outdrives. See your marine dealer, or write our Department MB-6.

THE **MORSE** INSTRUMENT CO., HUDSON, OHIO 44236



Controls for every propulsion, every boat



"Full Command" Steering Systems



Marine Accessories

reverse, having built their ignition systems to permit this. The 1914 Wright turned the underwater gearcase through 180 degrees to reverse the thrust of the propeller. The 1896 American, the 1915 Waterman and others reversed the pitch of the propeller blades to back up, as did a long line of Caille outboards.

Today, the controllable-pitch propeller is considered an improvement for the outboard of the future. Yet the 1915 Caille Five-Speed was famed for this gadget. Simply by moving the end of the steering handle up or down, the boatman could switch the propeller pitch to any of five positions, including reverse—while the engine was running!

Most early "detachables" were started by grasping a knob on the flywheel and swinging the flywheel vigorously—soon giving rise to the sobriquet "knuckle-buster." Caille, in 1916, introduced a rewind starter. One merely tugged on a handle and a tape spun the flywheel, with a spring rewinding the tape. After vanishing, the device reappeared in 1931 and derivatives appear on every motor built during the last decade.

Although they were not to be popular until the 1920s, two-cylinder outboards appeared circa 1914. The Koban, advertised as "the first rowboat motor with two cylinders," was a horizontally opposed twin made by the Koban Motor Company of Milwaukee. Excellent balance resulted from this configuration, which would dominate the next two decades. Arrow of New York and Federal of Washington, D.C., followed Koban with similar twins by 1916. Koban, incidentally, boasted 3 horsepower.

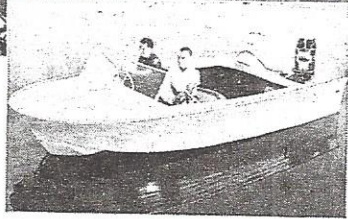
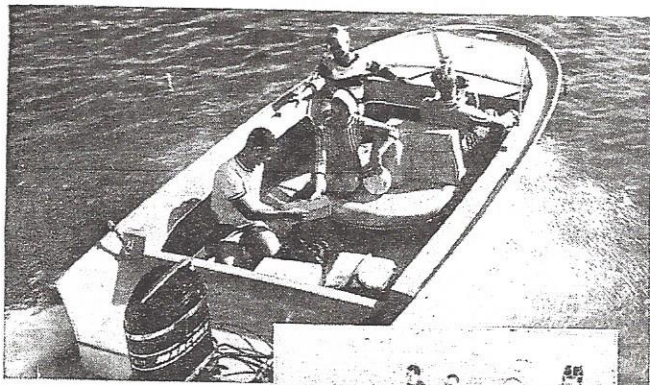
Unlike these makers, Machek-Amphion showed a parallel or alternate-firing, twin in 1916. Every modern twin is of the alternate-firing type. The Milwaukee-built Amphion did not resemble later engines, however, for the crankshaft was horizontal and bevel gears transmitted power to the vertical driveshaft. In keeping with good practice of 40 years later, the Amphion was a "square" engine with the bore and stroke each being 2½ inches.

Then as now, outboard makers had a hard time deciding on the best type of ignition for their engines. The earliest motors used battery ignition. Seeking maximum portability, Evinrude introduced the flywheel magneto in 1911. The Lockwood-Ash Motor Company of Jackson, Michigan, offered an option of battery ignition or flywheel magneto in 1916. The Northwestern Motor Company of Eau Claire, Wisconsin, took no chances whatever and their customers could choose from battery ignition, flywheel magneto, or an integral Bosch magneto.

AVOIDING THE OBVIOUS

Find it hard to imagine an outboard motor that won't tilt up when beached or when it hits a sunken object? Early manufacturers completely overlooked this major advantage of the outboard motor, even while providing means to adjust engine tilt for boats of varying transom angles. Not until 1915 did this simple concept of tilting appear, introduced by the Federal Motor Manufacturing Company, Washington, D.C. Machek-Amphion offered a similar arrangement in 1916, the same year that Koban sold an accessory bracket to permit tilting of their twin.

Equally strange to those familiar with modern outboards would be a motor which is not steered simply by swiveling the whole affair around a vertical axis. Not so in 1916. The Lockwood-Ash, the Spinaway, the then-current Waterman and the Racine were typical of the school which
(Continued on page 84)



VEE SLED!

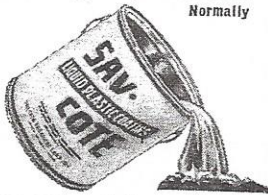
Unsinkable under rated load conditions . . .

This is boating's finest hour. Crosby has developed an 18' Deep V Sled which provides the easiest ride ever in rough waters. And, this Sled planes instantly. Even the interior is new. Take the SOMBRERO SEAT for instance. It seats up to 6 passengers, saves deck space for other uses. There's a tremendous increase in storage space, too. 40-200 H.P. rated. Comes fully equipped . . . your choice of colors.

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CROSBY AEROMARINE CO.
Municipal Airport, Marianna, Florida

TOUGH—YET STRETCHES 100%
Applies like paint . . .
Save up to 80%
On refinishing costs
Up to 50% on painting time!
Normally



Liquid Plastic Coating
PUTS AN END TO YOUR PAINT & SURFACE COATING PROBLEMS
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IN 30 MINUTES FOR THE ENTIRE BOAT
LOW FACTORY PRICES

Now, modern plastic chemistry offers you the most watertight weatherproof and elastic finish yet produced. Applied like paint . . . brush it, spray it or roll it. Forms a tough skin that will not crack, peel or chip in 250° heat or Arctic cold. Even a wallop will dent rather than shatter it. Cuts refinishing costs to 80%. Never needs removal.

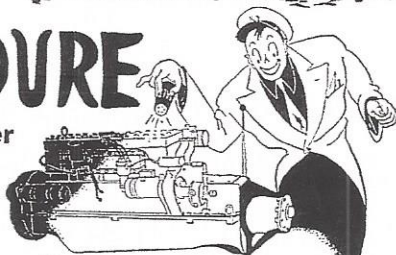
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INVESTIGATE AND SAVE



DON'T SALT YOUR ENGINE

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SEN-DURE PRODUCTS, Inc., BAY SHORE, N. Y.

EXCHANGERS — OIL COOLERS — PUMPS — STRAINERS
GALLEY WATER HEATERS — RELATED MARINE FITTINGS

OUTBOARD MOTOR CONTINUED FROM PAGE 78

clamped the engine rigidly to the boat and steered with a rudder attached abaft the propeller. In contrast, the Miller, the Michigan, the Northwestern and many others clamped the powerhead rigidly to the boat but swiveled the submerged gearbox and propeller for steering. This provided effective response but forced the operator to hold the tiller handle against the engine torque being transmitted through the vertical driveshaft, a most tiresome procedure.

The 1916 Koban and Federal twins, on the other hand, steered the entire engine in the modern manner, so avoiding muscle cramp in the pilot's steering arm.

BOATS BY MOTOR MAKERS

In 1915, as in 1965, some outboard motor makers had branched into the building of boats to carry their engines.

The Evinrude Motor Company, of Milwaukee, offered a round-bottomed 16-footer. Noteworthy was the claim that "the transom is 1 1/4 inches thick to withstand the vibratory effects of the motor." The day of the common rowboat was passing, with special boats for outboard use soon to cover the waters of the nation.

The Caille Perfection Motor Company went a bit wild on its offering, the Caille Telescope. This boat was in three watertight sections, each of which nested into the next. Intended to ease portaging, the maker made the most of the odd construction by claiming that "one of the compartments can be flooded for a live fish box!" Sixteen feet long when "untelescoped," the Telescope sold for \$45.

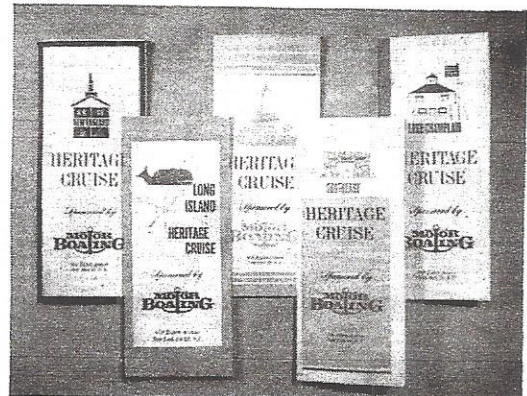
STATURE ACHIEVED

By 1920 the outboard motor was an accepted part of the American scene. Over 300,000 engines were in use, with an average output of 2 horsepower each. Outboards of up to 4 horsepower were sold in the U.S. and 12 horsepower French engines had seen service in World War I, propelling pontoon craft. Yet the decade to come would see progress beyond the wildest dream.

NEXT MONTH: IMPACT OF THE LIGHTWEIGHT MULTI-CYLINDER OUTBOARD MOTOR.



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