

of alcoholic beverages. Many of these places are inadequately equipped with means of cleaning and sterilizing glassware. In many places not even running water is available, to say nothing of hot water. As a result various methods of cleaning and sterilizing glassware have developed, many of which are extremely questionable."

Their investigation was started some months after a local health ordinance had gone into effect requiring the use of a chlorine rinse containing 200 parts per million of chlorine as a sterilizing agent for beverage glasses. Prof. Mallmann and Mr. Devereux examined both the rinses being used and the glasses. Clean and dirty glasses were tested by swabbing the rims to a depth of half an inch on the inside and outside.

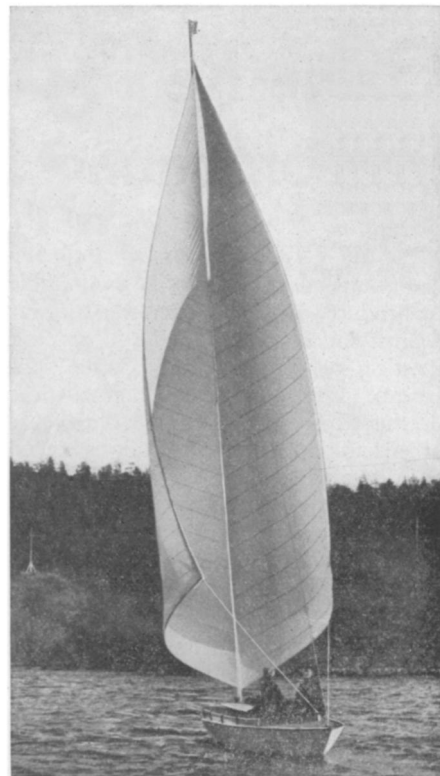
Few of the glasses were entirely free of germs, and as many as 50,000 to 100,000 bacteria were found on some. In most cases, there were more bacteria

found on the rims of the clean glasses than the dirty ones. This, Prof. Mallmann explained, is because the bacteria are washed off into the beverage in the glass. Nevertheless many of the dirty glasses and some of the clean ones had streptococci on their rims.

As a result of their investigation, the bacteriologists recommended certain provisions for sterilization of glasses. These included preliminary rinsing of the glasses to remove all beverage or other material, immersion for at least five minutes in the chlorine rinse or shorter immersion followed by five minutes draining without running off the chlorine water, and then a final rinsing in clean ice water or running tap water.

After these recommendations were made effective by the local health department, the bacteriologist revisited a number of places and found an improvement in the condition of the glassware.

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NO BOOM OR STAYS

Also without foresail is the new type sailboat from Sweden. Running before the wind its double sails open out to give giant parachute effect. On tacking into the wind the two sails lie one atop the other. Reefing of sails is accomplished by means of a revolving mast around which the sail winds like a window shade about its roller.

MARINE ENGINEERING

New Type Sailboat is Minus Foresail, Boom, and Stays

See Front Cover

PAGE the Ancient Mariner! Yachtsmen of Stockholm are discussing a new type sailboat without foresail, boom or stays; a craft so fast that it has beaten larger rivals in recent tests. Yet it is so simple to handle that the yachting experts expect the rules of small boat racing may be changed to take advantage of certain of its novel principles.

Invented by Dr. Fredrik Ljungström of the Academy of Engineering Sciences, Stockholm, the new type boat has a revolving mast on which the mainsail is wound up like a window shade on its roller.

To reduce sail area, as in orthodox reefing, the navigator simply turns a wheel at his elbow in the cockpit and rotates the mast by a system of ropes. Ball bearing rollers in the foot of the mast below decks make this rotation easy.

The mainsail is triangular but double. Running before the wind the double sail opens out into what looks like a great parachute jib sail. For tacking into the wind one sail lies smoothly on top of its mate.

Aerodynamic streamlining is achieved in the sail by having its forward edge fixed in a slot on the bow side of the forty-six foot pine mast. Thus there is no gap between the mast and sail as in ordinary craft.

As the sail fills its general shape resembles an airplane wing; thick and round at the front and narrowing off behind.

The only stay on the boat is tiny wire running from the tip of the mast to the stern. Such a lack of stays may arouse yachtsmen's suspicions; but Dr. Ljungström has sailed his boat in heavy weather with excellent results.

The lack of stays is one reason for the speed of the boat. Stays—the fixed rigging which keeps the mast in position—have more wind resistance than is sometimes commonly believed. Although the surface area of the wires may be small they vibrate in the wind and hence greatly increase their resistance to a breeze.

For small-craft yachtsmen the new Swedish boat has the following advantages:

1. Less and cheaper rigging.
2. Sail cost reduced because only one sail is needed.

3. Fewer torn sails because of faster reefing by simply winding the sail around the mast to reduce its area.

4. Less danger of accidents to persons and also to sails caused by a swinging boom. There is no boom to swing.

It is against the rules of yacht racing to use a revolving mast as does Dr. Ljungström's new craft. Because of the importance of the new invention, however, a movement is originating in Sweden to change this rule.

Sail area of the new boat is thirty-two square meters, or about 345 square feet, when the two sails lie atop one another as in tacking. The sail area is 690 square feet in running before the wind.

Reports Science Service's Swedish correspondent:

"The boat is frightfully fast and has easily beaten larger boats against which it has sailed. Most amazing is the way the new boat beats up against the wind, quicker, and nearer the wind than other boats."

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