THE NEW YORK CYCLE AND AUTOMOBILE SHOW

SOME NOTABLE EXHIBITS.

Among the many exhibits at the recent Madison Square Garden show were to be seen the two machines illustrated on this page, each of which will doubtless prove of interest to our readers.

One of these is the "Trimoto," of the American Bicycle Company—a little machine built somewhat on tricycle lines, yet having a wide enough seat to carry two persons comfortably. A general idea of this machine can be formed from our illustration. The 2¼ horse power air-cooled motor, together with the tank, carbureter, etc., are all hung on the front or motor wheel, where they can easily be reached. The machine is steered by the horizontal steering lever, and the speed is governed by turning the handle of the same. The motor is started with a crank, the steering lever being first raised about forty-five degrees. When the handle is lowered, the motor is thrown into gear with the front wheel by compressing a band brake. There is no low-speed gear or reverse. The motor is fitted with roller bearings and equipped with a much larger flywheel than is generally used with motors of this type. The flywheel and gears are on one side of the front wheel, the motor being on the other, and the wheel is so well balanced that it will stay in place if the hands are removed from the steering lever. The carbureter employed is constructed on the atomizer principle, and hot air is conducted to it through a pipe which ends in a flange that partly surrounds the cylinder. Electric ignition has replaced the hot tube igniter with which the machine was originally equipped. The gasoline tank has a capacity of 1½ gallons. The lubricating oil is kept in a small tank adjoining the gasoline tank.

The "Trimoto" weighs 400 pounds, and can make 12 miles an hour over average city or country roads.

Now that the bicycle has reached its probable final design in the chainless bevel gear machine of 1901, it is interesting to note any further attempts at improvements, even though they prove abortive. Many of this year's bicycles are equipped with cushion seat posts; and spring suspension saddles, somewhat on the lines of the Kirkpatrick used on the early Columbias, were also to be seen at the recent cycle show.

These attempts at reducing unpleasant vibrations on the standard models are worked out in a different way by the inventor of the "freak" wheel here pictured, which was the only machine of its class on exhibition. The inventor, who hails from Jericho, N. Y., claims much less vibration to the arms through the lever extensions of the handle bar. Their main purpose, however, is to afford a means of propelling with the hands as well as the feet in ascending hills, the upward pull usually exerted on the handle bar being here applied directly in helping to rotate the pedals. The machine is steered by the thumbs, which operate the two small loops on the handles of the levers. These loops are connected to the steering head through a short handle bar, and move the front fork without moving the cross bar to which the levers are attached.

In operating this machine the rider exercises his arms as well as his feet; he is obliged to sit erect, and to bring all the muscles of the body into play as the latter sways slightly from side to side. So completely are all the muscles developed that not only do the toes pedal, but even the thumbs are trained to steer! For an all round out-of-door exerciser this Yankee invention certainly cannot be surpassed!

As for the pull by the arms in climbing a hill, although applied direct in a rotative effort, it is applied under the disadvantage of having the arms bent at the elbow at a constantly changing angle, instead of being straight, as in ordinary hill climbing. It is doubtful if this arrangement, although good exercise for the muscles of the arm, will develop the maximum power.

A FOOT AND HAND PROPELLED BICYCLE.

A GASOLINE "TRIMOTO" VEHICLE.

SUBMARINE SIGNALING.

BY ARTHUR J. MUNDY.

When the idea of a submerged signal first occurred to the writer he foresaw that he would be unable to develop it properly without the assistance of some master mind accustomed to wrestle with nature for her secrets. He therefore invited his friend, the late Prof. Elisha Gray, of telephone fame, to join him in the undertaking, and received in reply an enthusiastic acceptance. Prof. Gray brought to the subject a wide knowledge of the laws of acoustics in their relation to electrical science, which has enabled him to overcome difficulties that have heretofore seemed insuperable.

An experimental boat christened the "Sea Bell" was built and equipped with an 800-pound bell to be operated electrically, the necessary power being supplied by a small dynamo driven by a gasoline engine. This bell is lowered into the sea through a well-hole directly in the center of the boat until it is twenty feet below the surface. By an ingenious mechanism it may be either tolled continuously or made to ring any desired number or numbers, at the will of the operator, who is thereby enabled to send intelligible messages, each letter of the alphabet being represented by a given number.

The sound thus produced under water may be heard from a passing ship at a distance of, say, a mile or more, provided the observer go below in the hold of the vessel as close to the keel as possible and listen, just as he would listen for an air signal on deck. The sound waves produced by the bell come through the water and penetrate the skin of the ship, diffusing themselves in the atmosphere of the hold, where they are recognized by the unaided ear, just as any local sound might be. The sound is heard more plainly, however, by placing one end of a wooden rod against the skin of the ship, and pressing the other end against the outer ear.

A common tin ear-trumpet, such as is used by a deaf person, screwed into the end of a piece of gas pipe and submerged a few feet, the mouth of the trumpet being sealed with a tin diaphragm, will enable the observer at the upper end of the pipe to hear the bell a distance of three miles.

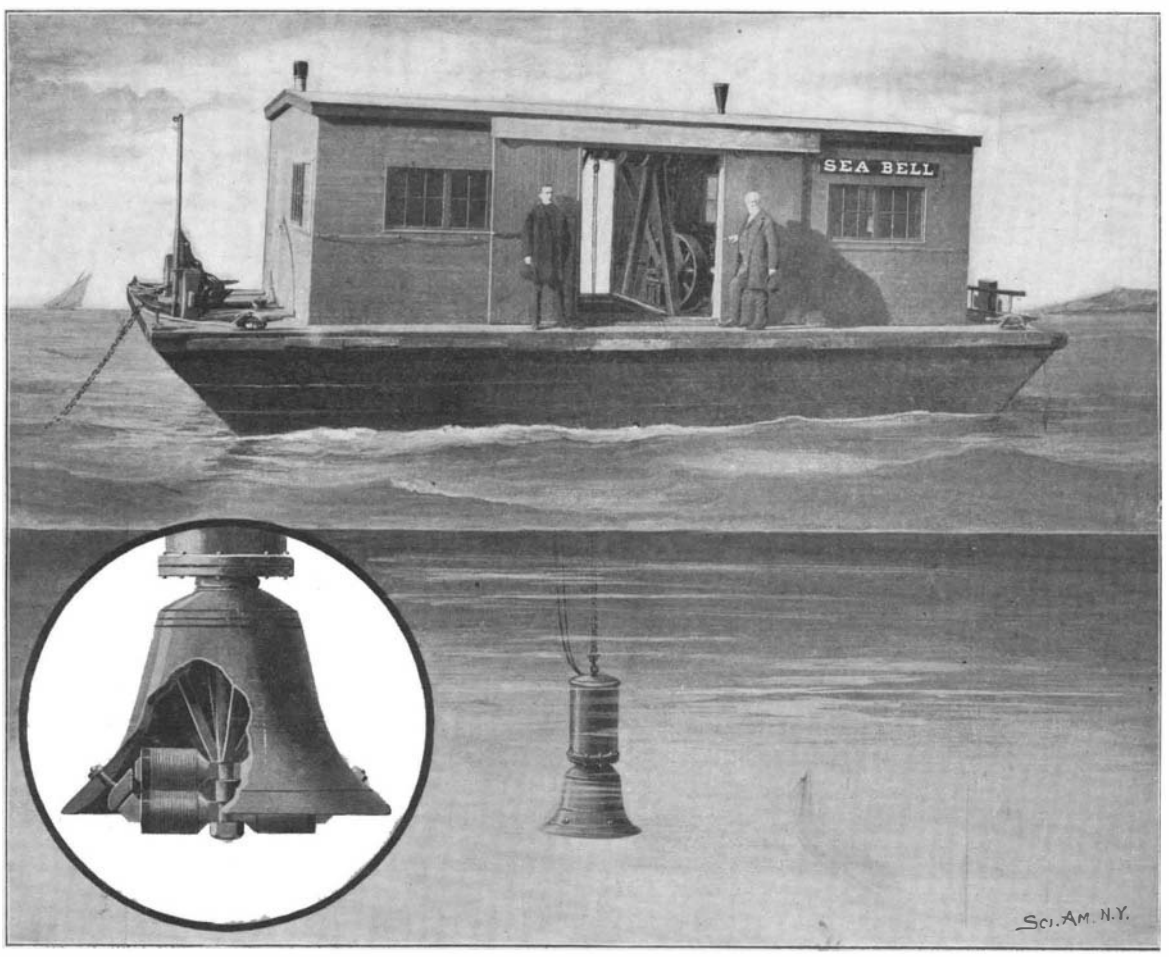
For greater distances Prof. Gray invented an electrical sound receiver. From this submerged instrument a connection is made to any part of the ship—say, the pilot house—where the navigator will listen for the sound through an ordinary telephone receiver.

A practical test of this apparatus was made on the last day of the century just ended. Several gentlemen were invited to witness the results accomplished. Among those present were Mr. Henry M. Whitney, who has given the enterprise his hearty support from the start; Prof. Wallace C. Sabine, of Harvard, an expert in acoustics; and Commander Arthur P. Nazro, U. S. N., Lighthouse Inspector. The "Sea Bell" was anchored in the open sea off Winthrop Head, near Boston Light, and the steamer having the party on board proceeded seaward. These gentlemen testified to having heard the submerged bell.

At 1½ miles the sound of the bell was very loud and very distinct; at 4 miles the sound was quite as distinct and almost as loud as at 1½ miles; at 8 miles the sound was quite as distinct as at 1½ miles and almost as loud as at 4 miles; at 12 miles the sound was heard at times quite distinctly, and at times somewhat feebly. Even at 12 miles the sound received was sufficient to give a practicable warning signal. It has been thus demonstrated that sound may be produced in the water at a given point and picked up electrically at any point within a radius of twelve miles.

It is now proposed to install a practical working station for the use and benefit of shipping entering and leaving Boston Harbor, in order that the great utility and value of the system may become known. Two bells, of different pitch, will be anchored one on either side of Boston Light, 50 feet below the surface of the sea. These bells will be, say, five miles apart, and each bell a mile or more from shore.

The bells will not be suspended from boats as here shown, but from submerged buoys, holding them up, and anchored to moorings holding them down, so that their position will be fixed and unchanging and properly charted. The electric power for ringing them will be supplied by insulated cables from the shore. They will be rung automatically from the power house at regular intervals, just as a flash-



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