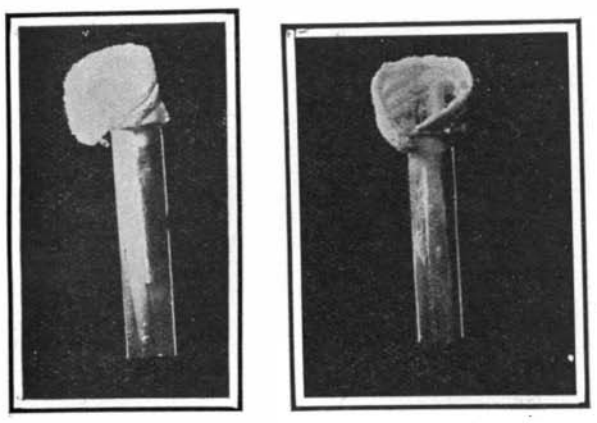
A CURIOUS CHEMICAL GROWTH.

In the course of some experiments in qualitative analysis in the High School at Medford, Mass., a test



CURIOUS CHEMICAL GROWTH.

tube containing solutions of several salts to which had been added hydrochloric acid and ammonium sulphite was set away in a closet for a few days. Projecting vertically from the tube was a small piece of filter paper. When the tube was removed, a peculiar calash-shaped hood of ammonium chloride crystals was found resting on the paper.

PLAYING WITH FIRE.

A can of gasoline can be handled as safely as a can of oil, for liquid gasoline does not explode. It is the gasoline vapor that is highly explosive when properly mixed with air. The accompanying illustrations show the safety with which burning gasoline may be handled. Fig. 1 shows a man pouring burning gasoline from one can into another. In Fig. 2 he is blowing into the spout of a can of gasoline to which a match has been applied. The little blue flame that ordinarily plays around the mouth of the can is transformed into a burning torch. Fig. 3 shows a pool of burning gasoline on the floor, and two gasoline cans aflame, but there is no explosion.

MEASURING HOLES BY ELECTRICITY.

One of the employees of a Chicago firm dealing in perforated metal to be used in flour mills has devised a simple measuring device for readily matching samples brought in by customers. A tapering needle, which is pushed into one of the perforations as far as it will go, carries a brush that passes a series of electric contact pieces. The latter are connected to a set of solenoids, and when the circuit is closed by pressing a button, one of these solenoids operates to uncover a number indicating the correct size of the hole.

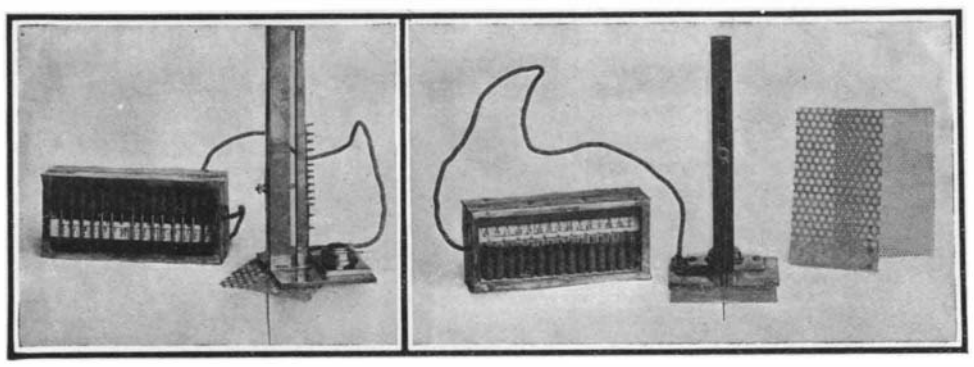
DIFFERENTIAL SPEED INDICATOR.

The well-known British naval architect Sir John I. Thornycroft has designed an ingenious device for use on twin-screw torpedo boats to indicate the relative speeds of the two propeller shafts. A sphere is supported on and rotated by two cylinders, whose axes meet at a point below the sphere. The axis of rotation of the sphere varies its position with the relative speed of rotation of the cylinders. A roller engaging the sphere tends to find a position where it does not slide. In other words, the axis of the roller moves into the plane of the axis of the sphere and a finger connected to the roller indicates the position of the axis of the sphere, and thereby shows the difference of speed of the two shafts.

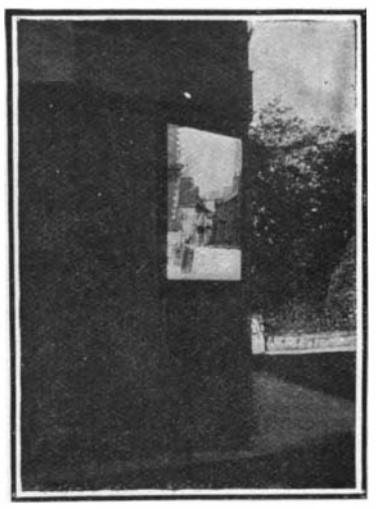
Measurement of Distance by Aerial Electric and Sound Waves.

Debrix has invented a method of measuring a ship's distance from a shore station, by taking advantage of the difference between the velocities of sound and electric waves. A bell is set ringing and wireless electric waves are generated simultaneously on the ship. The electric waves arrive almost instantaneously at the shore station and there set in motion a stop-clock. The distance of the ship can be computed from the number of seconds indicated on the dial when the sound of the bell is first heard. The computation is facilitated by the use of a table, in which, if necessary, allowance may be made for the fraction of a second consumed in the operation of the receiving and clock-starting apparatus. In this way the distance of the ship can be obtained, but not its direction or exact position. If, however, the ship's auditory and electric signals are simultaneously received at two stations connected by telegraph, the exact position of the ship on the chart will be found at the intersection of two circles, drawn round the stations as centers, with radii respectively equal to the ship's ascertained distances from those stations. The general introduction of this system would greatly increase the possibility of aiding ships in distress.—Prometheus.

PLAYING WITH FIRE.



MEASURING HOLES BY ELECTRICITY.



MOTORISTS ACCIDENT PREVENTER.

ACCIDENT PREVENTER.

Attached to the wall at the corner of a narrow street leading into the market place of Woodbridge, Suffolk County, England, is a mirror which makes it possible for automobilists coming from either direction to look around the corner and thus avoid collisions. The idea is being copied quite extensively by other English towns.

Castings of Chloride of Zinc.

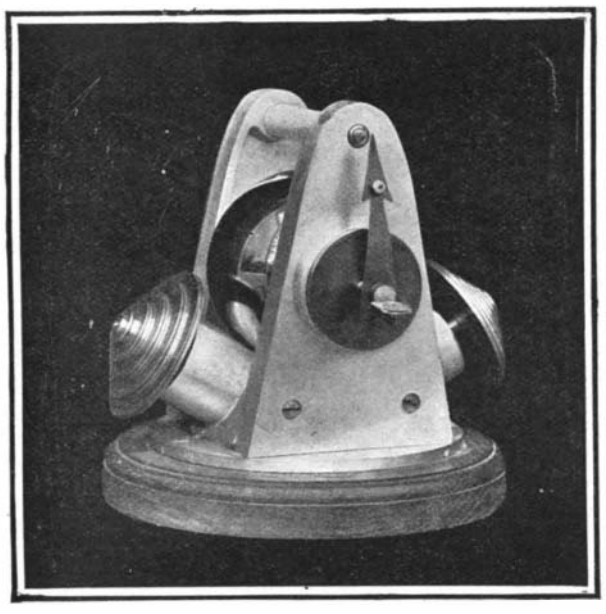
By mixing a concentrated solution of chloride of zinc, which must be of at least 55 deg. Bé., with highly heated zinc oxide, we obtain a mass that is admirably adapted for the casting of various art objects.

This preparation is at least equal in hardness to marble and takes a high polish; as regards its behavior to exterior influence, it excels marble altogether in its power of resistance, being unaffected by the action of severe cold, moisture, or even boiling water, and it is also fairly indifferent to the effects of very strong acids.

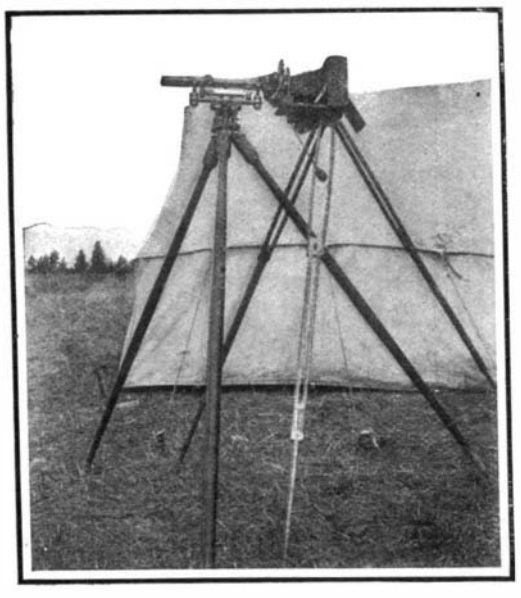
This excellent casting mass is best produced by taking 2 parts of zinc white which has been highly heated (calcined), and after cooling, kept in air-tight glass vessels until needed, and mixing it with 1 part of chloride of zinc solution of 55 deg. Bé. To effect the mixture, we use a porcelain vessel, in which we place first the zinc oxide, then pour in the chloride of zinc solution and, by stirring with a flat spatula, produce a uniform mixture. In mixing, great care must be taken that no air bubbles occur in the mass, for these would give rise to imperfect or defective castings. The well-stirred mixture is allowed to stand until it begins to become more fluid, and it is then poured into molds in which it is permitted to harden. If the zinc oxide, before using, is mixed with ground glass or with colors that exercise no chemical effect on zinc oxide (English red, manganese, chrome green, red lead), colored castings can be produced.

A SURVEYOR'S TELEPHOTO.

The view herewith reproduced was photographed at a distance of a mile with a surveyor's level set up in front of a 4 by 5 camera. The two instruments were connected light-tight by winding a dark cloth around the contiguous parts. An exposure of twenty seconds was made, as the weather was cloudy. It is somewhat surprising that no trace of the cross wires of the telescope appear on the picture.



DIFFERENTIAL SPEED INDICATOR.



A SURVEYOR'S TELEPHOTO.