

(2) The limit of permissible *B. coli* content is not too low. A properly operated filtration plant will produce a better water than the standard requires. A disinfection plant which will not produce a water within the limits should be considered as only a temporary protection and filtration should be adopted. An untreated ground supply containing more *B. coli* than the standard permits is being contaminated by outside sources which should be discovered and eliminated.

(3) Sanitary surveys of the sources of supply are absolutely essential to correlate the bacteriological analyses.

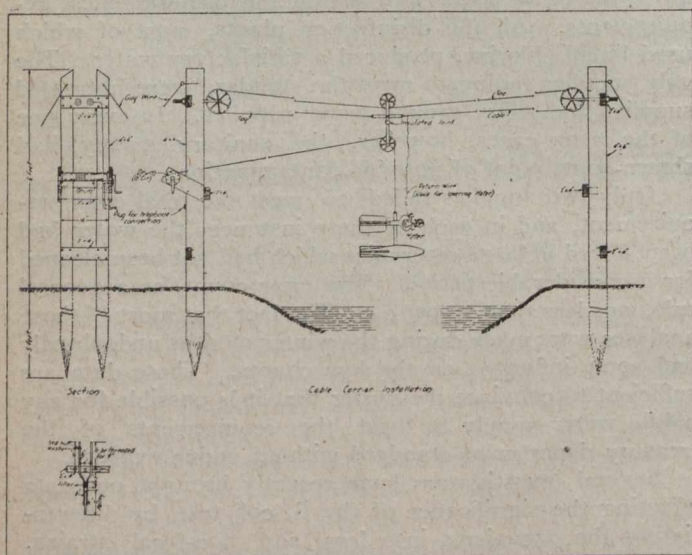
(4) The treasury department standard has been of immeasurable value, not only by causing carriers to furnish a safe drinking water for passengers, but more so by the establishment of a high criterion for judging the quality of public water supplies.

METERING ACCESSORIES OF MANITOBA'S HYDROMETRIC SURVEY

In connection with its investigations in the province of Manitoba, the Manitoba Hydrometric Survey has developed several devices for use in gathering stream-flow data.

Cable for Suspending Meter.

A number of the stations operated are on large streams, where depths up to seventy-five feet are encountered. Piano wire has been used for suspending the meter, a small, insulated wire forming the second side of the circuit. Lately a special steel cable of small diameter, with an insulated copper core, has been experimented with and has given good results, the advantage



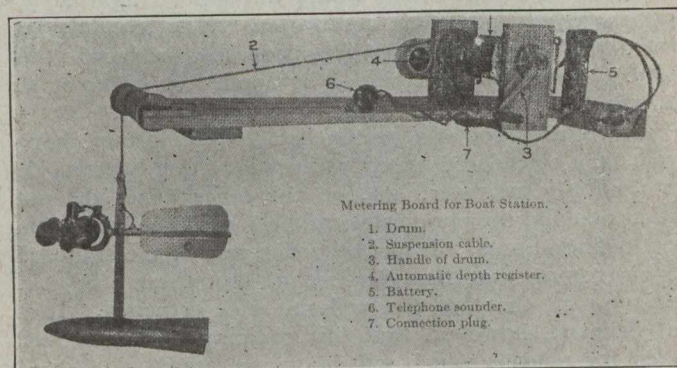
Details of Support and Tightener for Cable.

over piano wire being less liability to break through kinking and the elimination of the second wire. Where either method of suspension is adopted, a reel is necessary, so that all the stations where considerable depths are encountered are equipped with reels, a special equipment being used for metering at boat stations.

Counting Device for Use with Reels.

Mr. W. J. Ireland, assistant engineer, during the year designed a counting device for use with the reels, and a number of them are now in use. The counting part

of the device is similar to that used in gas meters. It is connected to the spindle of the reel by a train of gears, the counter and gears being enclosed in a metal case. Through the connection, each revolution or part of a revolution of the reel or drum is recorded on the dial of the counter. By turning in one direction the revolutions are added, and by reversing the direction they are subtracted. The counter may readily be thrown out of gear and the dial reading brought to zero. By using a reel exactly



Metering Board for Boat Station

one foot in circumference and setting the dial to read zero when the meter is at the surface of the water any position with reference to the surface of the water is automatically registered on the dial. The counting device may be detached from the reel by loosening three thumb-screws; they are interchangeable, so that one may be carried by each field engineer and used with any reel.

The Nelson and the Saskatchewan are two of the largest rivers metered; on each of these there are boat stations. The velocities being high, it has been found that a canoe does not afford a steady enough working platform. The method now employed is to secure two canoes together parallel to one another by means of three pieces of oak laid across the gunwales and bolted to the thwarts at each end, thus forming a kind of catamaran. A bridle is then fastened to the bows of the canoes and a line led from the centre of this bridle to the tag line stretched across the river. The meter may be suspended between the canoes or over either side by means of the metering board used on boat sections. This modified form of the metering board is fully illustrated herewith.

A. F. Macallum, Commissioner of Works of Ottawa, Ont., has issued an eight-page booklet for foremen, containing the department's regulations for their conduct in regard to requisitions, etc. The booklet is bound in stiff cardboard, and is of very handy pocket size, 3" x 5", and leaves no excuse for the foremen to handle paysheets, requisitions, etc., in any irregular manner.

On July 1 the last unit of the jetty work authorized at the mouth of the Fraser River, B.C., was completed by the contractors, Messrs. Marsh, Hutton, Powers Co., Ltd., of New Westminster. The completion of this jetty represents the final investment by the Dominion Government for this year of \$500,000 sunk in the waters at the mouth of the Fraser River for the purpose of aiding the currents of the river in carrying out to sea the vast deposits of silt that would otherwise spread over the flats below Steveston and divide the outlet of the river into so many mouths that no definite channel could be relied on. Now the rushing currents of the river strike this wall of rock and are confined so that they rush on out to sea, carrying along the silt that would otherwise block the channel. This channel wall rests on mattresses of brush, sunk to the bottom by weights, and is about 90 feet wide at the base, tapering to a width of 3 ft. at the top, and is built entirely without cement.