feet above the water with an accurate, tested anemometer, and the direction of the wind with a pocket compass. The wind was taken three times a day. The floats were located at night by means of a sextant. The vanes on the floats were placed 5, 7½, 10, 15, 17½, 20, 25, 27½ and 30 feet from the surface. The place where each float was found was then plotted on a plan and a general study made of the velocity and direction of the wind and the location of the float. With this information on hand it was possible to arrive at some definite conclusions.

From the study of our observations I am satisfied that if Lake Ontario had no inlet or outlet and was placed so that no wind would ever touch its surface, there would be no current outside of that caused by changes in temperature, and our floats would remain where they were placed.

If, however, an inlet and an outlet were introduced, the general movement of the water would be towards the outlet. There might, of course, be slight back currents along the sides and bottom caused by projections, etc.

We found that in Lake Ontario, at the end of the sewer outlet, when htere was no wind and the previous day had been calm, our floats were invariably carried east.

On July 19th the wind blew from the north and north-west from 5 to 20 miles an hour. On July 20th it blew from 0 to 4.9 miles an hour from the south-west and south, and on the 21st it blew from 2 to 6.5 miles from the east. On the night of the 21st, with an east wind blowing, our floats were found east of the buoy (sewer outlet). This would show that either the current was naturally to the east, or that the winds on the 19th and 20th had caused the current to be easterly.

On the 20th, with the south-west wind, our floats were found east of the buoy, where we would expect to find them, whether there was a natural easterly current or not.

On the 22nd, with an east and south-east wind, about seven miles an hour, our floats were west of the buoy.

In each case the deep float was nearest the buoy, and the shallow float furthest away, with the others between these.

On the 24th the wind was from the north-west at 17 miles an hour; still the floats went slightly west (400 feet), caused by the wind of the three days previous.

It should be stated here that we very seldom found a float grounded. If the wind was towards shore, our floats tended to go parallel with the shore. This will be mentioned later.

A 4-mile south-west wind on the 26th took the 17½-foot float 4,600 feet and the 5-foot float 8,300 feet east of the buoy.

On August 4th the wind was from the south and east, 5 to 7 miles, and on the 5th, 3 to 11 miles from the east, while on the 6th it was 4 to 7 from the south-west; still, our deep floats on the 6th went west and south again, showing that the wind of the previous days had created a sub-surface current to the west. The shallow floats went due south on this day.

On August 5th, with a 3 to 11-mile east wind, and the south and east wind of the 4th, the floats were west of the buoy, the 27½ feet being closest and the shallowest float furthest away. This again shows wind of previous days and August 4th drove all floats west .

A 7-mile south-west wind on the 8th, with an 8 to 18 west wind on the 9th, sent the floats east, the 7½-foot float being 8,000 feet and the 22½-foot float 1,200 feet from the buoy. West winds of August 9th and 10th took the deep floats of the 11th a mile east, although there was a 10-mile south-east wind blowing. In this case the 7½-foot float, which went north-west, was acted on by the wind, and the 26-foot float by the current caused by the previous three days' west winds.

On August 10th, with a 10-mile west wind (shifting to a 15-mile north-east wind) and three days' previous west wind, the 5-foot float followed the north-east wind 10,600 feet out into the lake, while the 27½-foot float went only 4,900 feet from the buoy, and south-south-west. Evidently the 27½-foot float was caught where the two currents met, and as a consequence was carried south.

The wind on the 11th, 12th, 13th, and 14th, was from the east, 7 to 23.7 miles per hour, and the floats of the 14th all kept within 300 feet of each other, and went south-west from the buoy 3,800 feet. The floats on this day were 5, 7½, 15, 17½, 25 and 27½ feet deep, so that the current was practically equal at all depths this day. A straight east wind (and the wind was such) should have driven them to shore, but they went south-west, or tended to run parallel with the shore.

On the 13th, with two days' continuous due east wind, the shallow floats went west, while the deeper floats went south of south-west. On this day the 27½-foot float went further than the shallower floats. A distinct distance was noticeable between the 5 to 12-foot floats and the 15 to 27½-foot floats. The former apparently went with the wind, while the latter went out into the lake. This day the 27½-foot float went 7,500 feet south-west, and was about on the line of Leslie Street produced.

On September 1st, with an 18-mile north-west wind, the floats went 8,700 feet south-south-east of the buoy and out in the lake on the line of Woodbine Avenue produced. The wind on August 30th was 8 to 11 miles south, and on the 31st, 3 to 14 miles south-west.

On September 2nd the wind blew from a westerly direction, 10 to 12 miles an hour, and our floats were found about 5 miles east and ½ mile from shore, opposite Scarboro' Bluffs.

Numerous other examples might be given, but space will not permit.

By making a study of all the data the following conclusions have been drawn:—

(1) With no wind there is a gradual movement of the water towards the east.

(2) There is practically no regular current in Lake Ontario in any particular direction.

(3) Currents are formed in the vicinity of the outlet by the action of the wind only, and their velocity increases inversely as the depth.

(4) The surface water moves in the direction of the wind, but when within two or three thousand feet of shore it tends to run parallel with the shore in either direction, depending entirely on the direction of the wind at the time; but this current has not sufficient velocity to transport sand.

(5) The sub-surface water is not affected as rapidly as the surface, and may continue to move in one direction for hours after the wind has blown in that direction and at the same time as the surface water is moving in the opposite direction.

There is a current along shore caused by the wind directly, and indirectly by the wind through the waves, the direction of this current depending upon the direction of the wind.

The one prominent point of these conclusions is that the wind governs the current.

The writer does not like the word "current" to describe the gradual easterly movement of the water in calm weather