given. With so light a fan, flaws in the current itself were often noticeable, which gave different inclinations, especially near the surface. When this was the case a mean value was obtained, in taking the observations.

Inclination i , in degrees.	4°		8°	10°	15°	20°	25°	30°
Velocity v, in knots per hour	0.27	0.33	0.38	0.43	0.23	. 0.62	0.71	0.79

In using the deep fan for the observation of the under-currents, it was generally best to lower it first to the greatest depth, where the inclination was usually nearest the vertical; and in raising it the inclination would increase towards the surface, as the current became stronger. In this way a set of observations from a depth of 30 or 40 fathoms to the surface could be obtained quickly, which was often important when the current was veering and changing.

It would have been very helpful in understanding the currents in this region, if the direction of the under-current could have been obtained at regular intervals at some standard depth, say every half hour at 30 fathoms. This was attempted, but found to be impracticable owing to the swinging of the vessel on its hawser. This swinging was the chief difficulty; and to obtain reliable results much patient watchfulness was required, to take advantage of times when the vessel was most steady. The swinging was partly due to the slowness of the currents themselves, as the The swinging was party due to the abovess of the outrients themserves, as the versel lay "between wind and current," and every flaw of wind drove it against the current or allowed it to swing back. When the current was strongest, it would lio the most steadily even in a stiff breeze. The trouble was largely owing to the unsuitable character of the vessel itself. With a length of 180 feet, it has an area above water on a longitudinal section of 2,980 square feet. Its high sides, especially towards the bow, give the wind a great hold upon it; and this appears to explain the worst kind of swinging that occurred, when the vessel would head first to one side and then to the other, after the manner of a kite in the air. Under certain conditions this would continue for two or three hours at a time, until a change occurred in either wind or current. The change of heading amounted to two or even four points, in a corresponding period of ten to twenty minutes; and the extent of the swing was therefore great, as the depth of anchorage usually ranged from 40 to 80 fathoms, and the length of hawser was twice to three times the depth, which gave a long radius for swing. The trouble was sometimes mitigated by hoisting a try-sail aft. But while any serious amount of swinging went on, the under-current observations by the method described were not attempted, as then also the closest attention was required to find the correct direction of the surface current itself. To obviate any uncertainty in the under-current observations, a reflector was attached to the binnacle compass which enabled it to be watched constantly while standing by the deep fan, and in this way any swinging of the vessel could at once be detected.

All directions and bearings given throughout this report, are magnetic. The variation in this region ranges from 29° to 34° west.

The methods used for accuracy in the determination of densities, and temperatures, were the same as those already described in last year's report. (See Report of Progress, April, 1896; pages 9 and 10.)

SELECTION OF STATIONS.

The stations for the observation of the currents were chosen to ascertain the actual nature of the currents met with on the main steamship route already referred to; and also whether there were any currents of a constant character, or any general circulation in the north-eastern portion of the Gulf of St. Lawrence. As the first question req route from C: of July, was between Anti equal distanc miles off Tabl shore. It is is, therefore, current along weather was (there, any tid.

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