

unwise to attempt to draw any general conclusions from such imperfect data. Considering, however, our four parallel sections, we have at least this positive result—that in the month of June and mean lat. 36° N. the surface-water in mid-ocean has a mean specific gravity of 1.02712; that in the months of February and March and mean lat. 22° N. the mean surface specific gravity is 1.02773; that in the month of August and mean lat. 2° N. it is 1.02624; and that in the month of October in mean lat. $36'$ S. it is 1.02621.

On the way to and from Halifax, in the month of May, some observations were obtained in the cold water with which the north-eastern coast of America is surrounded, the mean specific gravity being 1.02463. On the 1st of May, in the Gulf-stream, the specific gravity of the water was 1.02675, and its temperature $23^{\circ}9$ C.; and the next day it was 1.02538, and the temperature $13^{\circ}3$ C. If the results be reduced to their values at the respective temperatures of the different waters, we have for the specific gravity of the Gulf-stream water 1.02445, and of Labrador-current water 1.02584; so that the fall of temperature very much more than counterbalances the want of salt in the water. In the same way we find the mean specific gravity of the water referred to the temperature which it has in the ocean to be, in lat. 36° N. and month of June, 1.02548; in 22° N. and months of February and March, 1.02592; in 2° N. and month of August, 1.02335; and in 36° S. and month of October, 1.02659.

From the determination of the specific gravity of intermediate and bottom water, Mr. Buchanan concludes that, as a general rule, both in the Atlantic and the Pacific oceans, between the parallels of 40° N. and 40° S., the specific gravity reduced to 15.56 C., is greatest at or near the surface, and decreases more or less regularly until a minimum is reached, generally 400 fathoms from the surface, whence there is a slow rise, the bottom-water being slightly heavier.

From Mr. Buchanan's report, and from the specific-gravity