long. 132° W. As in the other figure the light line represents densities at 60° F. and the black line densities at the temperature *in situ*.

The course traced by the light line in the Atlantic shows very markedly the great concentration in the trade wind regions and the corresponding dilution in equatorial regions. In the Pacific evidence is seen of materially different conditions. In the South Pacific the trade wind region is clearly marked, though the concentration produced is not nearly so great as in the South Atlantic. In the North Pacific the water between lats. 20° and 30° N. is hardly more concentrated than the average of the equatorial water. Between lats. 7° and 9° N. two very remarkable dips will be observed in the curve. The water here had the abnormally low density of 1·02475. It was in the middle of the Counter Equatorial Current, which was running to the eastward at the rate of 54 miles per day. In lat. 3° N. the Equatorial Current was crossed running 70 miles per day to the westward, and its waters were comparatively dense.

From these curves the following Table (VI.) has been compiled, showing the mean densities at 60° F. and corresponding salinities in grammes per kilogramme of the surface waters in the two oceans as observed along these routes, and computed for every 5 degrees of latitude.

When the densities are reduced to their values at the temperature of the water *in situ*, it is found that, excluding regions affected by ice, the density of the water at the surface decreases with the latitude, and, broadly, the lightest water (1·022 to 1·023) is found at the Equator and the heaviest (1·026 to 1·027) in colder temperate regions. In water below the surface it is found that the apparent anomaly of denser water overlying less dense water disappears. Where the concentrated water of the trade wind region overlies less salt water its higher temperature makes it *in situ* really less dense than the fresher water below. So that if a series of waters be taken at any Station from the surface to the bottom, their densities *in situ* will be found to increase with the depth. Occasional exceptions to this rule are found.

The greatest changes of salinity per fathom of depth occur in tropical regions where vigorous concentration takes place at the surface, and in the first 200 or 300 fathoms from the surface. Here also the temperature falls sufficiently rapidly to counterbalance the effect of decreasing salinity. As the depth increases the changes in salinity become smaller and smaller, and the rate of decrease of temperature with increase of depth diminishes, and the actual density of the water *in situ* is affected chiefly by the pressure of the water above it. The composition, however, of the deeper water of all the oceans is so nearly identical that it may be assumed that their coefficients of compressibility are identical; so that, except for the purpose of actually estimating the weight of a column of water, for all comparative purposes the effect of pressure may be neglected, as it affects equally all waters at the same depth. Experiments made with piezometers on the sounding line showed that the compressibility of water decreases slightly but sensibly with