gives the impression that a generally uniform temperature is maintained by a belt of water at a depth of from seven to eight hundred fathoms, and that this belt separates two bodies of water which are under essentially different conditions. Above, the vertical distribution of temperature differs greatly in different localities; while below the uniform belt there is a slow and gradual cooling, which also differs both in rate and in amount in different localities, but in another way. These variations in temperature, whether in the superficial layers or in the deeper, are undoubtedly in all cases connected with currents or movements of the water, and may be regarded as evidences of portions, modified by various causes, of a general system of circulation of the water of the ocean.

The movements of surface-water may usually be determined with considerable precision by a comparison at the end of a given time of the apparent course of a ship and her position by dead reckoning with her actual position by observation. The rate and direction of a surface-current may also be ascertained by getting in some way a fixed point—by anchoring a boat, for instance—and observing and timing the course of a body floating past it. Neither of these methods can be satisfactorily applied to deep-sea currents; indeed, it seems probable that the movements of masses of underlying water are so slow, that, even if we had some feasible method of observation, the indications of movement within a limited period would be too slight to be measured with any degree of accuracy.

We can not, therefore, measure these currents directly, but we have in the thermometer an indirect means of ascertaining their existence, their volume, and, approximately, their direction. Water is a very bad conductor of heat, and consequently a body of water at a given temperature, passing into a region where the temperature conditions are different, retains for a long time, without much change, the temperature of the place where its temperature was acquired. To take an example: the bot-