

upon the same spot, with like success. The depth in fathoms should be carefully noted, as a most important element in determining the conditions of life and distribution of species; and the nature of the bottom—whether mud, sand, or gravel; and if the latter, it is well to state the nature and composition of the pebbles, and if possible the source from which they may probably have been derived. Now that we have in the Miller-Casella thermometer a reliable instrument for this purpose, the bottom temperature ought always to be noted. This is important whether in shallow or in deep water. In shallow water it gives a datum for determining the range of annual variation of temperature which can be endured by certain species; and at great depths it is even more important, as we are now aware that, owing to the movement of masses of water at different temperatures in various directions, totally different conditions of climate may exist in deep water within a few miles of one another, and the limits of these conditions can only be determined by direct experiment. It is important when determining the bottom temperature to note also the temperature of the surface of the sea, the temperature of the air, the direction and force of the wind, and the general atmospheric conditions. If the dredger be purely a zoologist, having no particular interest in special physical problems, it will still be well worth his while to make all the observations indicated and to publish the results. These then pass into the hands of physical geographers, to whom all trustworthy additions to the myriad of data which are required to arrive at a true generalization of the