

NOTE ON THE DIMENSIONS AND MEASUREMENTS OF THE DESCRIBED SPECIES OF RADIOLARIA.

All the dimensions of the species of Radiolaria described in the present work are given in millimetres. In the majority of the species the dimensions of only a single observed specimen have been measured by the micrometer, and usually only the most important proportions have been recorded. But since the outlines of nearly all the species figured (with very few exceptions) have been drawn by the camera lucida, and therefore usually are almost perfectly exact, and since the excellent artist, Mr. Adolph Giltch, has executed the lithographic plates with the greatest accuracy, having examined the objects themselves under the microscope, it is very easy to determine the dimensions of all the separate parts by comparative measurement. In very many of the species described (perhaps nine hundred or a thousand) several specimens of each species (usually three or four) have been measured comparatively, and the dimensions recorded are taken as averages. A very important contribution to the general conception of the proportions, and especially to the important question of the constancy of the dimensions, has been given by my honoured friend, Dr. Reinhold Teuscher of Jena. This excellent observer, to whom I am indebted for much and important co-operation in my Radiolarian work, has instituted at my request a long series of measurements, with the view of comparing the dimensions (of the entire skeleton as well as of its individual parts) in numerous (usually twenty or thirty) specimens of one and the same species. About three hundred species of very different groups (mainly Sphæroidea, Discoidea, Spyroidea, and Cyrtoidea) have been measured in this manner, and the general survey of the results obtained (about eight thousand measurements were recorded) has enabled me to form a good opinion of the constancy and variability of the dimensions in the individual species. The general result is, that they are not absolutely constant in any given case, but that each species (of which many specimens have been carefully compared) exhibits a certain degree of variability in all its proportions. The general meaning of "species," therefore, is in the unicellular Radiolaria the same as in all other organisms, and its development follows the same laws as are so accurately explained by Charles Darwin in his Origin of Species.