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THE TRANSITION FROM THE INDIVIDUAL TO THE SOCIAL LEVEL[1]

By Professor H. S. JENNINGS

THE UNIVERSITY OF CALIFORNIA AT LOS ANGELES

THE self-sustaining biological individual in its most elementary, non-social condition is seen in the free single cell. I shall deal with such free single cells, known as Protozoa, and shall try to trace the various directions in which there is transition in their activities from the individual to the social level. I shall deal mainly with those Protozoa which are known as ciliate infusoria.

As criteria of social action several points or relations are distinguishable. First, in any grouping of organisms, are the individuals influencing each other? Second and perhaps more important is the question of the functional value of the relations of the individuals: are there relations of mutual benefit, of cooperation in the performance of necessary biological activities? (In some cases the functional value is negative; the individuals harm each other.)

Third is the question of functional differentiation, of division of labor among individuals that are reaching socially. This is perhaps equivalent to the question whether there exists social *organization*. Only if the individuals play different functional roles is there social organization.

Social behavior commonly manifests itself in the

[1] Symposium on "Levels of Integration in Biological and Social Systems. Group or Population Aspects," University of Chicago, Tuesday, September 23.