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VOL. 94

FRIDAY, NOVEMBER 14, 1941

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

Lancaster, Pa.

Garrison, N. Y.

New York City: Grand Central Terminal

Annual Subscription, \$6.00

Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington, D. C.

THE TRANSITION FROM THE INDIVIDUAL TO THE SOCIAL LEVEL¹

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?

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

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