

# SCIENCE

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## THE LIFE CYCLE OF THE PROTOZOA<sup>1</sup>

*The American Association for the Advancement of Science:*

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THE obligation which this occasion brings offers a challenge to the zoologist whose pleasant privilege it is to address you, to summon from his experience his ripest judgment upon the problems of greatest interest in his field of investigation. It affords him the opportunity to round up his vagrant ideas, to corral his scattered observations and to brand them with the symbols which we all recognize. He must therefore leave the specialized field in which he ranges and come into the arena of our common and central problems.

The Protozoa, according to our generally accepted view of the evolution of the animal kingdom, stands at the base of the animal tree of life. From them have sprung, perhaps in a polyphyletic fashion, the other phyla. The structure of the collar cells of the Porifera suggests the origin of this phylum from the Choanoflagellata. The occurrence of nematocysts, tentacles and eyespots in the Dinoflagellata turns our attention from them to the Cœlenterata, while some ciliates and the platyhelminthes have much in common. Be this as it may, the Protozoa are found in the oldest fossiliferous rocks, and the genera of Radiolaria therein conform rather closely to genera living to-day, while the fossil Dinoflagellata of the flints of Delitzsch are scarcely distinguishable from species living in the modern seas. The striking similarities of the most ancient fossil Protozoa to recent ones afford some ground for the inference that the Protozoa living to-day differ but little from those when life was young. We may therefore turn to this group with some confidence that the phenomena which we discover therein to-day are

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<sup>1</sup> Vice-presidential address before Section F—Zoology of the American Association for the Advancement of Science and presidential address before the American Society of Zoologists at Boston, December 27, 1922.

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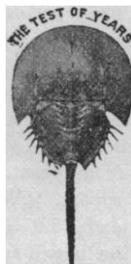
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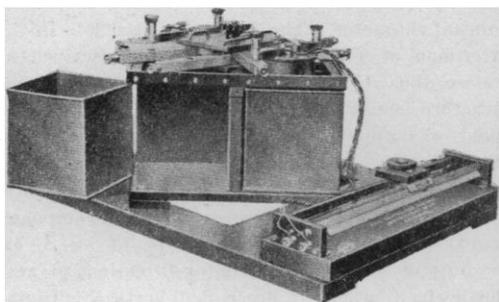
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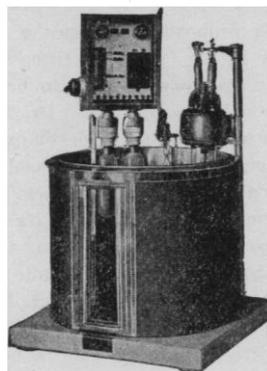
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