

# SCIENCE

A WEEKLY JOURNAL DEVOTED TO THE ADVANCEMENT OF SCIENCE, PUBLISHING THE  
OFFICIAL NOTICES AND PROCEEDINGS OF THE AMERICAN ASSOCIATION  
FOR THE ADVANCEMENT OF SCIENCE

FRIDAY, OCTOBER 4, 1907

## CONTENTS

<i>On the Chemical Character of the Process of Fertilization and its Bearing upon the Theory of Life Phenomena: PROFESSOR JACQUES LOEB</i> .....	425
<i>Scientific Books:—</i>	
<i>Mathematical Text-books: PROFESSOR C. J. KEYSER. Von Noorden's Metabolism and Practical Medicine: PROFESSOR OTTO FOLIN. Clements's Plant Physiology and Ecology: PROFESSOR CHARLES E. BESSEY</i> .....	437
<i>Scientific Journals and Articles</i> .....	441
<i>Discussion and Correspondence:—</i>	
<i>The Parasitism of Neocosmospora: HOWARD S. REED. An Official Letter on "Temperance Physiologies": PROFESSOR M. A. BIGELOW. The Types of North American Genera of Birds: PROFESSOR WITMER STONE</i> .....	441
<i>Special Articles:—</i>	
<i>Some Old-world Types of Insects in the Miocene of Colorado: PROFESSOR T. D. A. COCKERELL. Census of Four Square Feet: W. L. MCATEE</i> .....	446
<i>Quotations:—</i>	
<i>Agricultural Education</i> .....	449
<i>Current Notes on Land Forms:—</i>	
<i>Relation of Valleys to Joints; Valleys of Southwestern Wisconsin; Block Mountains in New Zealand: W. M. D.</i> .....	450
<i>James Carroll: G. M. S.</i> .....	453
<i>Scientific Notes and News</i> .....	453
<i>University and Educational News</i> .....	455

## ON THE CHEMICAL CHARACTER OF THE PROCESS OF FERTILIZATION AND ITS BEARING UPON THE THEORY OF LIFE PHENOMENA<sup>1</sup>

### I

THERE may be a difference of opinion as to whether or not it will ever be possible to produce living matter from inanimate; but I think we all agree that we can not well hope to succeed in making living matter artificially unless we have a clear conception of what living matter is. Living organisms have the peculiarity of developing and reproducing themselves automatically, and it is this automatic character of reproduction and development which differentiates them, for the time being, from machines made of inanimate matter. Hence the answer to the question of what living matter is will have to be an answer to the question what determines the phenomena of automatic development and reproduction. Since all life phenomena are ultimately purely chemical, the answer must consist in pointing out one or more series of definite chemical reactions, for which it can be proved that they are identical with the phenomena of development and self-perpetuation. It always seemed to me that the natural starting point for a search after this definite chemical reaction or series of reactions was the analysis of that process which causes the resting egg to develop into an embryo, namely, the process of fertilization.

<sup>1</sup> Address delivered at the International Zoological Congress at Boston, August 22, 1907.

MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

# Science

**26 (666)**

*Science* **26** (666), 425-456.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/26/666.citation>

**PERMISSIONS**

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

---

*Science* (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.