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CAMBRIDGE
AT THE UNIVERSITY PRESS
1935

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CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107456303

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First published 1935

First paperback edition 2014

A catalogue record for this publication is available from the British Library

ISBN 978-1-107-45630-3 Paperback

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CONTENTS

<i>Chap.</i>	I. The Mystery of Life	<i>page</i> 1
	II. The Laws of Heredity	13
	III. The Gene: the Origin of Life	30
	IV. The Gene Complex	40
	V. How Evolution Progresses	57
	VI. The Nature and Value of Sex	74
	VII. Experimental Creation of New Species	89
	VIII. The Ascent of Man and Mind	104
	IX. The Future of Man and Mind	118
<i>Text-figures</i>	1. Honeycomb and plant cells	15
	2. Leaf-cell of potato	16
	3. Mendelian heredity in peas	20
	4. Cell growth	22
	5. Formation of pollen-cells	23
	6. Formation of seeds	25
	7. Alteration of chromosomes	62
	8. Changes in chromosomes	66
	9. Formation of polyploids	68

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PREFACE

THE discovery of the gene by Mendel in the 19th century, although completely ignored by his contemporaries, has had a profound influence on Man's outlook in the 20th century.

In the light of the gene we no longer see through a glass darkly, and the old-time problems of heredity, variation, sex and species appear as clear as crystal. Thousands of Mendelian and X-ray experiments, involving the study of millions of plants and animals, have definitely established the fact that the gene is the primary organiser and determiner of all structural and functional characters in living organisms, and recent research indicates that complexes of living genes are the source and foundation of human thought and action.

The far-reaching importance of these vital units to mankind can therefore hardly be overestimated. It is evident that the gene is the prime unit of life and therefore the foundation and origin of all evolutionary progress, culminating in the ascent of Man and Mind.

Experiments demonstrate that individuality in plants and animals, including Man, is dependent on

the presence of a peculiar complex of living genes, one half of which are directly inherited from the mother parent and the other half from the father. In the higher organisms, and in Man, every growing cell carries a complete complex of genes which organises and controls the development and expression of the individual personality. In Man the individual gene complex is composed of 48 distinct groups of genes known as chromosomes, 24 of which are directly derived from the egg-cell of the mother parent and 24 from the sperm-cell of the father. Experiments in plants and animals show that the genes are arranged in each chromosome in definite order, side by side, while in the maternal and paternal pair of chromosomes similar genes occupy corresponding positions immediately opposite to one another.

The discovery last year that the chromosomes of the salivary gland-cells of the fruit fly when stretched are about 150 times longer than the ordinary chromosomes should enable us to extend considerably our present knowledge of the nature and structure of the gene.

The science of genetics, which deals with genes and gene complexes as precise units, is an exact experimental science and its conclusions can always be tested by repeated experiments.

The object of this little book is to provide the general reader with a popular epitome of recent re-

P R E F A C E

ix

search in genetics in so far as it is concerned with the origin, evolution and ascent of Man. Of necessity the account is limited and circumscribed. Those who feel inclined to pursue the subject farther and in more detail are referred to my larger volumes on *The Mechanism of Creative Evolution*, 1932 (2nd edition, 1933), and *Experiments in Genetics*, 1925, published by the Cambridge University Press, which are freely illustrated, and in which references are given to original papers.

Those who follow closely the results of the new knowledge set out in these books will perceive that Man, if he chooses to do so, can, here and now, take a hand in creative evolution by creating new species of living organisms and by replacing natural selection by human selection. There is no doubt that, if he so wills, he can to a large extent determine the destiny of his own species and so become the master of his own fate. Scientific research has brought freedom, power and responsibility to Man, and the future evolution of Man and Mind depends largely on his response to the new knowledge and on his intelligent application of these discoveries in the near and distant future.

C. C. H.

April, 1935