

**GENETICS. AN
INTRODUCTION TO THE
STUDY OF HEREDITY. WITH
72 FIGURES AND DIAGRAMS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649592234

Genetics. An Introduction to the Study of Heredity. With 72 Figures and Diagrams by Herbert Eugene Walter

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

HERBERT EUGENE WALTER

**GENETICS. AN
INTRODUCTION TO THE
STUDY OF HEREDITY. WITH
72 FIGURES AND DIAGRAMS**

GENETICS

AN INTRODUCTION TO THE STUDY
OF HEREDITY

BY

HERBERT EUGENE WALTER

ASSISTANT PROFESSOR OF BIOLOGY
BROWN UNIVERSITY

WITH 72 FIGURES AND DIAGRAMS

N. C. COLLEGE OF A. & M. A.
Dept. of Botany

New York

THE MACMILLAN COMPANY

1913

All rights reserved

COPYRIGHT, 1913,
By THE MACMILLAN COMPANY.

Set up and electrotyped. Published February, 1913.

Notwood Press
J. S. Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

THIS VOLUME
IS AFFECTIONATELY DEDICATED
TO
MY MOTHER

PREFACE

THE following pages had their origin in a course of lectures upon Heredity, given at Brown University during the winter of 1911-1912, which were amplified and repeated in part the following summer at Cold Spring Harbor, Long Island, before the biological summer school of the Brooklyn Institute of Arts and Sciences.

An attempt has been made to summarize for the intelligent, but uninitiated, reader some of the more recent phases of the questions of heredity which are at present agitating the biological world. It is hoped that this summary will not only be of interest to the general reader, but that it will also be of service in college courses dealing with evolution and heredity.

The subject of heredity concerns every one, but many of those who wish to become better informed regarding it are either too busily engaged or lack the opportunity to study the matter out for themselves. The recent literature in this field is already very large, with every indication that much more is about to follow, which is a further discouragement to non-technical readers.

It may not be a thankless task, therefore, out of the jargon of many tongues to raise a single voice

which shall attempt to tell the tale of heredity. There may be a certain advantage in having as spokesman one who is not at present immersed in the arduous technical investigations that are making the tale worth telling. The difficulties in understanding this complicated subject may possibly be realized better by one who is himself still struggling with them, than by the seasoned expert who has long since forgotten that such difficulties exist.

Among others I am particularly indebted to Dr. C. B. Davenport for many helpful suggestions, to my colleague, Professor A. D. Mead, for reading the manuscript critically, to Dr. S. I. Kornhauser who gave valuable aid in connection with the chapter on the Determination of Sex, and to my wife for assistance in final preparation for the press.

I wish to thank Professor H. S. Jennings and Dr. H. H. Goddard, who have given generous permission to copy certain diagrams, as well as The Outlook Company and The Macmillan Company for the use of figures 24 and 66, respectively.

The fact that all the suggestions which were at various times offered by my kindly critics have not been incorporated in the text, absolves them from responsibility for whatever remains.

H. E. W.

PROVIDENCE, R. I.,
September, 1912.

CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.	
1. The triangle of life	1
2. A definition of heredity	4
3. The maintenance of life	5
4. Somatoplasm and germplasm	10
II. THE CARRIERS OF THE HERITAGE.	
1. Introduction	14
2. The cell theory	14
3. A typical cell	15
4. Mitosis	18
5. Amitosis	20
6. Sexual reproduction	20
7. Maturation	22
8. Fertilization	24
9. Parthenogenesis	26
10. The hereditary bridge	27
11. The determiners of heredity	28
12. The chromosome theory	29
13. The enzyme theory of heredity	33
14. Conclusion	35
III. VARIATION.	
1. The most invariable thing in nature	36
2. The universality of variation	37
3. The kinds of variation with respect to their —	
<i>a.</i> Nature	38
<i>b.</i> Duplication	39
<i>c.</i> Utility	39
<i>d.</i> Direction in evolution	39
<i>e.</i> Source	40
<i>f.</i> Normality	40
<i>g.</i> Degree of continuity	40
<i>h.</i> Character	41
<i>i.</i> Relation to an average standard	41
<i>j.</i> Heritability	41