

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

CAMBRIDGE LIBRARY COLLECTION

Books of enduring scholarly value

Religion

For centuries, scripture and theology were the focus of prodigious amounts of scholarship and publishing, dominated in the English-speaking world by the work of Protestant Christians. Enlightenment philosophy and science, anthropology, ethnology and the colonial experience all brought new perspectives, lively debates and heated controversies to the study of religion and its role in the world, many of which continue to this day. This series explores the editing and interpretation of religious texts, the history of religious ideas and institutions, and not least the encounter between religion and science.

Life in Nature

Life in Nature, published in 1862, is a series of papers by the nineteenth-century English surgeon and popular science writer James Hinton. About a third of the material, though revised and reworked for this book, had appeared previously under the title *Physiological Riddles* in the *Cornhill Magazine*, in which Hinton explained biological phenomena for non-scientific readers. Hinton wrote this thirteen-chapter book to present a concise overview of the human body, informed by the latest scientific insights, that would be more easily intelligible for the general population than the scientific physiological data of his day. His intention was also to demonstrate the similarity between patterns occurring in the organic world and in the rest of nature. This book will be of value to historians of Victorian culture and of science as an example of how authors and publishers responded to the growing middle-class interest in scientific discoveries.

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

Cambridge University Press has long been a pioneer in the reissuing of out-of-print titles from its own backlist, producing digital reprints of books that are still sought after by scholars and students but could not be reprinted economically using traditional technology. The Cambridge Library Collection extends this activity to a wider range of books which are still of importance to researchers and professionals, either for the source material they contain, or as landmarks in the history of their academic discipline.

Drawing from the world-renowned collections in the Cambridge University Library, and guided by the advice of experts in each subject area, Cambridge University Press is using state-of-the-art scanning machines in its own Printing House to capture the content of each book selected for inclusion. The files are processed to give a consistently clear, crisp image, and the books finished to the high quality standard for which the Press is recognised around the world. The latest print-on-demand technology ensures that the books will remain available indefinitely, and that orders for single or multiple copies can quickly be supplied.

The Cambridge Library Collection will bring back to life books of enduring scholarly value across a wide range of disciplines in the humanities and social sciences and in science and technology.

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

Life in Nature

JAMES HINTON



CAMBRIDGE
UNIVERSITY PRESS

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

CAMBRIDGE UNIVERSITY PRESS

Cambridge New York Melbourne Madrid Cape Town Singapore São Paulo Delhi

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org

Information on this title: www.cambridge.org/9781108000703

© in this compilation Cambridge University Press 2009

This edition first published 1862
This digitally printed version 2009

ISBN 978-1-108-00070-3

This book reproduces the text of the original edition. The content and language reflect the beliefs, practices and terminology of their time, and have not been updated.

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

L I F E I N N A T U R E .

a

Cambridge University Press
978-1-108-00070-3 - Life in Nature
James Hinton
Frontmatter
[More information](#)

LIFE IN NATURE.

BY

JAMES HINTON,

AUTHOR OF "MAN AND HIS DWELLING PLACE," ETC.

LONDON:

SMITH, ELDER AND CO., 65, CORNHILL.

M.DCCC.LXII.

[The Right of Translation is reserved.]

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

CONTENTS.

INTRODUCTION	PAGE xi
------------------------	------------

CHAPTER I.

OF FUNCTION ; OR, HOW WE ACT.

Disappointment apt to attend the Study of Life—Its Causes — Absence of definite Principles— Animal Activity— Meaning of the Term “Function”—, Illustrations—The Idea of <i>Tension</i> —The Living Body contains Force—And gives it off in Decay—In this like a Machine—Its Force stored up by Resistance to Chemical Affinity—Similar Instances in Nature—“Stimuli,” what they are—The Ground of previous False Ideas—Illustrations—The Body at the same time Nourished and Decaying—Applications : To the Nervous Force; to Hearing; to Sight; to Muscular Action—Apparent Objections—General Result—Simplifi- cation of View of Living Body, and of Vital Force	1
---	---

CHAPTER II.

OF NUTRITION ; OR, WHY WE GROW.

Life constantly ceasing is constantly renewed—Its apparent Independence—Real Dependence—The “Vital Principle” —How overthrown—Necessity of distinguishing various Elements in Life—What is Nutrition?—Illustration—In- duction of Facts—Nutrition dependent on Decay—The Springs of a Watch—The Force transferred—The Idea of Vibration—Life an Action produced by its opposite—This View originally expressed by Dr. Freke—Tested by Fer- mentation—The Growth of Yeast—Parallels in the Living Body—The Order thus made visible in Vital Phenomena— Illustration by a Fountain—Necessity of regarding what is not seen—Special Character of Life	35
---	----

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

CHAPTER III.

OF NUTRITION (*continued*).—THE VITAL FORCE.

	PAGE
Other Questions in respect to Nutrition—Is always dependent on Chemical Change—The Effect of the Forces of Heat, Light, &c.—Implies Resistance or Limitation to Chemical Action—Which Living Bodies present—Origin of Life undecided—Berthelot's Experiments—Views of Professor Graham—Religious Aspect of the Question—What the Term Vital Force denotes—Its peculiar Characters—De-oxidation—Relations between the Living Body and the Air—Vital Affinity a needless Supposition—Part played by Nitrogen—The Silkworm illustrating the Law—The Plant a Channel for Nature's Forces	59

CHAPTER IV.

OF LIVING FORMS ; OR, MORPHOLOGY.

The Admiration excited by the Forms of Organic Bodies—In what Sense best justified—Life a Revelation of all Nature—Bacon's Argument—Reasons for which the Laws of Living Form have not been studied—Nature's Division of Labour—Induction of Instances—Growth under Limit—Buds forming in Axils—Effects of Mechanical Conditions—Their Universality—Examples—The Spiral Form—Its Significance—Formation of the Heart—Why these Facts have been overlooked—The Conditions under which the Laws operate—Varying Directions of Growth—The Root—The Stem—Mushrooms raising Weights—Forms resulting from Decay	74
---	----

CHAPTER V.

OF LIVING FORMS (*continued*).—THE LAW OF FORM.

No Special Formative Power to be supposed in Living Bodies—Disproved by Deformities, &c.—The Doctrine of Types—The Mechanical Determination of Form an Axiom—Comes within the Law that Motion takes the direction of least Resistance—Sufficiency of this Axiom—Mr. Herbert Spencer's Remarks—The Effects of Internal and of External Influences—Mr. Rainey's Experiments—Dr. McVicar's Views—Repair and Healing of Wounds	108
--	-----

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

CONTENTS.

vii

CHAPTER VI.

IS LIFE UNIVERSAL?

	PAGE
Assumption that Life cannot be understood—Its Basis— Difficulty increased by the Connection of Bodily Life and Consciousness—Necessity for Dividing the Problem—Re- capitulation—Instance in the Growth of the Seed—The Force received from the Inorganic World restored to the same—Relation of Nutrition and Function—They are the same Fact, oppositely regarded—Our Relation to Nature —Organic Life another Form of that which is in the In- organic—Analogy to a Machine—What is Life?—Idea of a Vital Principle or Entity—Views of Coleridge—"Principle of Individuation"—Organic Life constituted by a limiting of the Forces of Nature—The Body an Instrument— Links which Unite all Nature—The Living not derived from the Dead—Is Nature wholly Living?—Physical Life a Living Relation of Unliving Parts, or Atoms—Analogy of the Groups of Stars—Comparison of Chemical Affinity and Gravity—"Organization of the Heavens"—Cosmos —The Unity of Nature—General View of the Subjects Discussed—Are like Riddles to Exercise and Develop our Powers?—Lord Bacon—The Divine Spirit teaching us as in Play	125

CHAPTER VII.

THE LIVING WORLD.

Further Results of the preceding Ideas—Is not Life denied by them?—Its Identification with Mechanical and Chemical Forces, even if demonstrable, not satisfactory--Key fur- nished by the Doctrine that we perceive only Phenomena —Life only seems to be Mechanical—Liberty given to our Emotions by this Doctrine respecting our Perception and Knowledge—Life to be interpreted and known by the Moral Nature—The True Problem it presents—Belongs not merely to the Intellectual, but to the Moral Sphere— The Physical is the Appearance to us of the Spiritual— The Law of Least Resistance, what its true Significance is—Bearing on the Inorganic World	155
--	-----

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

CHAPTER VIII.

NATURE AND MAN.

	PAGE
Nature more than it appears to us—Value of the Doctrine— Necessary opposition, for a time, of Science to our moral Emotions—The resulting Harmony—Fruits of the Study of the Conditions of our Knowledge—Knowledge respect- ing Man gained through the Study of Nature—If Nature is Living, why is it perceived as Dead?—A Deadness in Man—Results involved in the idea—Attractiveness of them —Confirmation by the Utterances of Man, and of Scripture —The Life of Nature reaffirmed through Science—The Spiritual Life—The Future	169

CHAPTER IX.

THE PHENOMENAL AND THE TRUE.

Study of the Physical and of the Spiritual, not to be separated—Meaning of the Proposition that we only know Phenomena—Feeling things to exist which do not exist—Illustrations—The “Practical” not necessarily the True—Further Illustrations—The false Feeling that might arise from Absence of the Sense of Touch—Correction of it by the perfecting of the Faculties—Similar Effect in Dreaming, and from similar Cause—A Faculty that belongs to our perfect Nature, wanting or imperfectly in action—The Deadness in Man thus exhibited from another side, and Light cast upon his Life—Guidance in our Thought of Nature—Simplification of all Questions	180
---	-----

CHAPTER X.

FORCE.

The Physical World, like a Book, to be interpreted by our Moral Powers—Force—Source of the Idea—Is due to our own Nature—Is not in the World around—Difficulty of conceding this—Arises from the false Feeling of Existence—Presents Objects as at once without Action, and yet Acting—The Difficulty removed—Force not varying in Amount—Its Exhibition, therefore, always Twofold—

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

CONTENTS.

ix

	PAGE
Equal <i>plus</i> and <i>minus</i> —Vibration—A Universal Law—Its Significance—Equal <i>plus</i> and <i>minus</i> = 0—Is Nature Illusion?—Is a Revelation of the Unseen	189

CHAPTER XI.

THE ORGANIC AND THE INORGANIC.

The Organic World not especially mysterious—Is the part of Nature best understood—The Chemical Affinities being pre-supposed, Organic Life is simple—But Mystery is shown by it—Our Feeling the effect of Ignorance—The Inorganic World less within our view, therefore seeming less—Consciousness—A similar Error—Where we perceive Nature most directly we perceive it as Conscious—Where indirectly, we perceive it as Unconscious—True Significance of these Facts—All Nature a Conscious Existence—Why the apparent Absence of Consciousness—What it were “to be one with Nature”—The Organic Kingdom not the highest part of Nature—Is truly the lowest—Arises by a Limitation—Our opposite Feelings in respect to it—Of Admiration and of Loathing—Justification and Meaning of them—The Organic World exhibits the Universal Beauty—But perverted—Significance of Deformity and Disease. 196

CHAPTER XII.

THE LIFE OF MAN.

Moral Significance of Physical Life—Spiritual Things exhibited to the Eye of Sense—The Control of Force in Life—The Control of Passion in Man—The Growth of a Seed—Dependent on Resistance—Passion resisted the Source of Life—The Law of *Tension*—Its meaning—Difference of Man from Nature—The Evil of his State—Power of Appearances to Mislead—Or to Guide—Nutrition and Function—The Ideas not Special—Belong to Force universally—And to Human Life—Are the Interpretation of Failure and of Loss—The Lessons taught by Nature—Which is most full of Spiritual Meaning when interpreted

Cambridge University Press
 978-1-108-00070-3 - Life in Nature
 James Hinton
 Frontmatter
[More information](#)

	PAGE
by Science—The Physical and Spiritual how to be Connected?—Conditions of Answering this Question—Must look along the Line of Physical Changes—Successive Objects are Different Exhibitions of one Essence—The whole Succession to be considered—The “Course of Nature” perceived by Change in Man—Illustrations—This View the more simple—Evidenced by the Nature of Force—Elevation of the Idea of Nature—The Cause of our Consciousness—The Unity of Men—The Work achieved—Represented in Nature—Summed up in the giving Life to Man.	205

CHAPTER XIII.

CONCLUSION.

The Path open to Thought—The Assumption that it is Closed—Latent Presumption in this—Insufficiency of our Expectations—Greater Success implied in our Failure—Two Aspects under which this may be seen—The Subordination of the Intellect to the Moral Powers—The True Question—Is Man in a Normal State—Answered Undesignedly.	221
---	-----

APPENDIX.

AN ATTEMPT TOWARDS A MORE EXTENDED INDUCTION OF THE LAWS OF LIFE.

The Two Opposite Processes in Organic Life—How Mutually Dependent—The Idea of Resistance—Evidences from the Organic Body—Conformity to the General Course of Nature—Illustrations.	229
--	-----

INTRODUCTION.



THE following pages contain a popular exposition of some of the most interesting questions which Living Bodies suggest, and are designed to present in a brief compass and easily-intelligible form a general view of them, which, it is believed, will be found more simple and more satisfactory than the ideas commonly entertained. All thoughtful persons feel that the subject of Life cannot be satisfactorily discussed on physiological grounds alone, but that it opens up some of the deepest problems which surround our existence, and raises questions the practical importance of which cannot be over-estimated. I have therefore endeavoured to give a brief expression to the views which I entertain on some of these questions ; feeling that science, happily for us, cannot, even if she would, confine herself to

the mere relations of physical objects or material forces; but that she has a message for us, not less from heaven because conveyed through earthly instruments, respecting our inmost nature and our highest relations. Science, in a word, can teach us—it is her loftiest function and her greatest boon—not only respecting nature, but respecting ourselves, and so can enable us to look with purged eyes on objects which only to our blinded senses can seem trivial. We lose our privilege, we fall short of our duty, if we do not seek to gather these fruits wherever they are presented to our hand.

In perusing these pages, the reader, especially if unaccustomed to similar studies, will possibly experience more or less of a feeling as if he were losing hold of something that he could not afford to part with. He may feel that there is a tendency in them to materialize that which he cannot but regard as altogether above matter, and to reduce to the level of mechanism that which owes its chief beauty to its freedom from mechanical conditions. If so, let him by all means cherish this feeling. He could by no possibility more entirely depart from the spirit of the

book than by seeking to suppress it, or in any way to diminish its force. No one more firmly or more reverently than myself believes in the authority of feelings of this character; it is chiefly because I believe also that they can receive their perfect satisfaction only through modes of thinking such as are here set forth, that I attach any value to the thoughts. But in truth the course through which I solicit the reader to follow me is of a twofold character. I beg a relinquishment in order to a fuller possession; a giving up as the condition of a more abundant having.

Let it be supposed that there stood before us two bodies, one a small ingot of gold, the other a mass of apparent clay; and that a man should set about to prove to us that the small ingot was really of the same kind as the larger mass. Supposing now the former were truly gold, what would he thereby prove but that the larger mass, though seeming otherwise, was truly also gold? Yet it might seem to us, confident in our impressions, that he was taking the opposite course and trying to reduce gold to clay; and we might for the sake of retaining the less, be impatient

of the very proofs which would establish the presence of the more.

It is just in this way we feel when we are reluctant to admit evidence which tends to demonstrate an identity between the organic world (that is, of plants and animals) and the rest of nature. When arguments of this kind are suspected of a tendency to banish life from the world and interfere with the Creator's prerogative, it is surely forgotten that those forces and laws to which the phenomena of vitality are thus referred, are to be judged of by their fruits, and not to be pronounced beforehand incapable of bearing them. To assume that we know what those laws and forces are, and are capable of doing, is arbitrarily to limit our own capacities. If the organic and the inorganic worlds in nature are two presentations to us of one thing, how much more penetrating and worthy may our knowledge become of both, each being interpreted to us by the other!

Let it be assumed, for argument's sake, that all the phenomena of life could be traced back to chemical and mechanical powers, what would follow? Simply that all the wonder and admiration with which we

INTRODUCTION.

xv

now regard the living body, would be extended with increased intensity and elevation to those powers, which we call chemistry or mechanics, but which we should then perceive we had entirely under-estimated. Would it not be beautiful to see these forces stand before us thus in a new attitude and with more than doubled lustre; on the one hand confining themselves within the equable and unvarying sequence which the mechanist or chemist seems to have entirely within his grasp, and on the other breaking forth, as if to mock man's fancied rule, into the infinite variety and spontaneous grace of life?—the very union of law and liberty, reminding us that liberty is truly none the less, is only, there where law is perfectly fulfilled; that in the perfectness of freedom the perfectness of obedience lies hidden, each in each, yet in Nature separately shown to us (else undiscerning) that we may learn to know them both. But on this point it is needless to say more here, since it is discussed in other parts of the volume.

In respect to the novelty or otherwise of the views herein contained, I have no wish to make any claim to originality. I believe that in this case as in so

many others, similar ideas have occurred at about the same time to various persons, showing that a new line of thought is rather an expression of prevailing tendencies than the result of individual effort. I have sought to give a reference to every writer in whom I have met with a decided similarity to my own ideas, in so far as they differ from those ordinarily received ; but in case I have failed in doing this, I wish to state expressly that in publishing them under my own name, I put in no claim to be anything more than their mouthpiece. I have, however, placed at the end of the volume an essay written by me in the year 1855, and submitted at the time to some eminent scientific men, but not before published. It presents the first form in which the idea of Nutrition suggested itself to me. Of the thirteen chapters which this volume contains, four, though now revised and modified, have appeared before ; they are Chapters I., II., IV., and VI.

JAMES HINTON.

London, 10th November, 1862.