

**A CENTURY'S
PROGRESS
IN ASTRONOMY**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649035335

A Century's Progress in Astronomy by Hector Macpherson

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

HECTOR MACPHERSON

**A CENTURY'S
PROGRESS
IN ASTRONOMY**

**A Century's Progress in
Astronomy**

A Century's Progress

IN

Astronomy

BY

HECTOR MACPHERSON, JUN.

MEMBER OF THE SOCIÉTÉ ASTRONOMIQUE DE FRANCE;
MEMBER OF THE SOCIÉTÉ BELGE D'ASTRONOMIE;
AUTHOR OF 'ASTRONOMERS OF TO-DAY'

UNIV. OF
CALIFORNIA

WILLIAM BLACKWOOD AND SONS

EDINBURGH AND LONDON

MCMVI

All Rights reserved

PREFACE.

THE present volume originated in a desire to present, in small compass, a record of the marvellous progress in astronomy during the past hundred years. Indebtedness should be acknowledged to the valuable works of Professor Newcomb, Professor Schiaparelli, Professor Lowell, Professor Young, Sir Robert Ball, Mr Gore, M. Flammarion, and Miss Clerke, who, as the historian of modern astronomy, occupies a place at once authoritative and unique.

Portions of Chapters II. and XII. have already appeared in the form of an article on the Construction of the Heavens, contributed by the writer to the American periodical, 'Popular Astronomy.'

BALERNO, MID-LOTHIAN,
October 1906.



CONTENTS.

CHAPTER I.

HERSCHEL THE PIONEER.

	PAGE
Influence of Herschel's work—His characteristics—Birth and early years—Emigration to England—Caroline Herschel—Discovery of Uranus—King's Astronomer—Latter years and death—Death of Caroline Herschel	1

CHAPTER II.

HERSCHEL THE DISCOVERER.

Solar researches—Study of Venus—Of Mars—The Asteroids—Jupiter—Saturn—Discovery of satellites—Uranian satellites—Cometary researches—Motion of the Solar System—Discovery of binary stars—Clusters and nebulae—Nebulous stars—The Nebular Hypothesis—Star-gauging—The disc-theory—Subordinate clusters—Abandonment of the disc-theory—Second method of star-gauging—Estimate of Herschel's work	15
--	----

CHAPTER III.

THE SUN.

Schwabe and the sun-spot period—Researches of Wolf, Lamont, Sabine, Gautier—Observations of Carrington	
--	--

and Spörer—Career and work of Fraunhofer—Spectrum analysis—Work of Kirchhoff—Solar eclipse work—The Solar prominences—Janssen and Lockyer—Huggins and Zöllner—Work of Young—The Italian spectroscopists, Secchi, Respighi, Tacchini—Career of Tacchini—The reversing layer—The Corona—Doppler's principle—Rotation of the Sun—Work of Dunér—Janssen's solar atlas—Maunder and magnetism—Solar theories—Distance of the Sun—Summary	43
--	----

CHAPTER IV.

THE MOON.

Life and work of Schröter—Of Mädler—Of Schmidt—Changes on the Moon—Selenography in England—Lunar atmosphere—Lunar photography—Work of W. H. Pickering—The new Selenography—The Moon's heat—Motion of the Moon—Acceleration of the Moon's mean motion—Work of Laplace, Adams, Delaunay	65
---	----

CHAPTER V.

THE INNER PLANETS.

The problem of Vulcan—Mercury—Work of Schröter—Schiaparelli, his life and work—Work of Lowell—Spectrum of Mercury—Venus—Rotation period: work of Schröter, Di Vico, Schiaparelli, Tacchini, Lowell—Atmosphere and surface of Venus—The Earth: variation of latitude—Mars—Rotation of Mars—Surface—Discovery of canals—Work of Schiaparelli and Lowell—Interpretation of the canals—The theory of intelligent life—Spectrum of Mars—Satellites—The Asteroids—Bode's law—Work of Piazzi and Olbers—Application of photography by Wolf—Discovery of Eros	80
---	----

CHAPTER VI.

THE OUTER PLANETS.

Physical condition of Jupiter—Work of Zöllner and Proctor—The red spot—Satellites—Discovery of fifth satellite—Sixth and seventh satellites—Rings of Saturn: Bond, Maxwell, Keeler—Struve's theory—Globe of Saturn—New satellites—Uranus and its satellites—Discovery of Neptune—Adams and Le Verrier—Satellite—Trans-Neptunian planets	103
---	-----

CHAPTER VII.

COMETS.

Life and work of Olbers—His repulsion theory—Life and work of Encke—His comet—Biela's comet—Faye's comet—Return of Halley's comet—Donati's comet—Comet of 1861—Spectroscopic study of comets—Theory of Brédikhine—Spectra of comets—Comets of 1880 and 1882—The capture theory—Cometary photography	123
---	-----

CHAPTER VIII.

METEORS.

Meteoric shower of 1833—Work of Olmsted—Work of Erman and Kirkwood—Of H. A. Newton—Adams and the meteoric orbit—Shower of 1866—Connection of comets and meteors—Work of Schiaparelli—Shower of meteors in 1872—'Le Stelle Cadenti'—Meteoric observation—A. S. Herschel—Work of Denning—Stationary radiants—Bolides and aerolites—Origin of aerolites	138
--	-----