

**DEPARTMENT OF THE
INTERIOR - U.S. GEOLOGICAL
SURVEY: THE ORIGIN AND
NATURE OF SOILS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649664115

Department of the Interior - U.S. Geological Survey: The Origin and Nature of Soils by
Nathaniel Southgate Shaler

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

NATHANIEL SOUTHGATE SHALER

**DEPARTMENT OF THE
INTERIOR - U.S. GEOLOGICAL
SURVEY: THE ORIGIN AND
NATURE OF SOILS**

Folio
S
591
952
C.1

DEPARTMENT OF THE INTERIOR—U. S. GEOLOGICAL SURVEY
J. W. POWELL, DIRECTOR

THE
ORIGIN AND NATURE OF SOILS

BY

NATHANIEL SOUTHGATE SHALER

EXTRACT FROM THE TWELFTH ANNUAL REPORT OF THE DIRECTOR, 1890-'91



WASHINGTON
GOVERNMENT PRINTING OFFICE
1892

H215.1.4

THE ORIGIN AND NATURE OF SOILS.

BY

NATHANIEL SOUTHGATE SHALER.

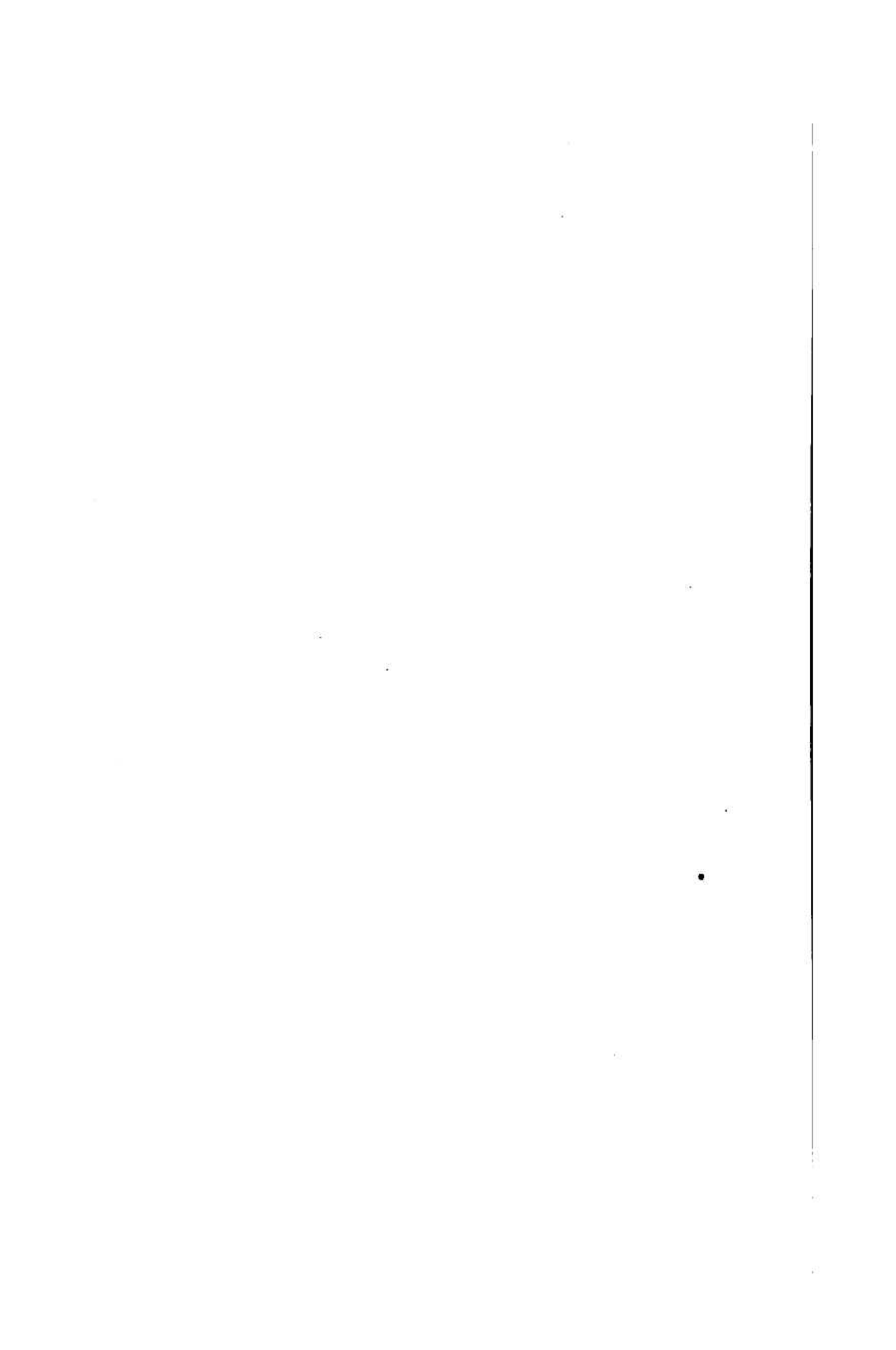
213

Museum

100

CONTENTS.

	Page.
Prefatory note	219
Nature and origin of soils.....	221
Processes of soil formation.....	230
Cliff talus soils.....	232
Glaciated soils.....	236
Volcanic soils.....	238
Soils of newly elevated ocean bottoms.....	245
Physiology of soils.....	260
Effect of animals and plants on soils.....	268
Effect of certain geologic conditions of soils.....	287
Glacial aggregation.....	288
Alluvial aggregation.....	288
Overplacement.....	296
Inheritance.....	300
Certain peculiar soil conditions.....	306
Swamp soils.....	311
Marine marshes.....	317
Tule lands.....	320
Ancient soils.....	321
Prairie soils.....	323
Wind-blown soils.....	326
Action and reaction of man and the soil.....	329
Effects of soil on health.....	340
Man's duty to the earth.....	344



ILLUSTRATIONS.

Pl.		Page
II.	View on the eastern shore of Cape Ann, Massachusetts, showing shore line stripped of soil materials by wave action	226
III.	Glaciated rock surface from which the thin soil has been swept away, eastern Massachusetts	228
IV.	Effect of glacial action on a surface which has not yet been recovered by soil	230
V.	Precipices with talus of rock fragments passing downward into rude alluvial terraces	232
VI.	View showing varied rate of decay of talus formation in Triassic sandstone schist near Fort Wingate, New Mexico	234
VII.	Process of decay of soft rocks which are easily worn by flowing water	236
VIII.	Earthquake fissure in Arizona, showing the manner in which these shocks may rupture the surface	238
IX.	Process of decay in talus formation in much-jointed granitic rock, Mount Lyell, Sierra Nevada, California	240
X.	View showing the process of rock decay where the material contains solid portions which are not readily corroded	242
XI.	View of a mountain valley showing coalesced talus slopes through which the river finds its way below the surface	244
XII.	Talus deposits in a mountain gorge where the stream has slight cutting power, Lake Canyon, California	246
XIII.	Process of erosion of rather soft rock, the talus from which is invading forest	248
XIV.	Cliffs of soft rock without distinct talus	250
XV.	Morainal front in eastern Massachusetts, showing the way in which vegetation occupies a boulder strewn surface	252
XVI.	Drumlins or lenticular hills in eastern Massachusetts, showing the arched outlines of these deposits	254
XVII.	Aspect of a surface on which lie extinct volcanoes; also showing details of talus structure	256
XVIII.	View showing rapid decay of lava	258
XIX.	Process of decay of obsidian or glassy lavas near Mono Lake, California	260
XX.	Margin of a lava stream overflowing soil occupied by vegetation	262
XXI.	Summit of Mount Vesuvius, showing cone of coarse volcanic ash lying upon lava which occupies the foreground	264
XXII.	View near caves of Luray, Virginia, showing the character of surface in a country underlaid by caverns	266
XXIII.	Broad alluvial valley in a mountainous district, the area partly improved by irrigation ditches	290
XXIV.	View of a mountain valley, showing the beginnings of the river alluvial plains	292