

**EXPLANATORY MEMOIR TO
ACCOMPANY SHEET 20 OF THE
MAPS OF THE GEOLOGICAL
SURVEY OF IRELAND**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649232338

Explanatory memoir to accompany sheet 20 of the maps of the geological survey of Ireland by
R. Glascott Symes & W. H. Baily

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

R. GLASCOTT SYMES & W. H. BAILY

**EXPLANATORY MEMOIR TO
ACCOMPANY SHEET 20 OF THE
MAPS OF THE GEOLOGICAL
SURVEY OF IRELAND**

254.10
I 65
no. 20

20.

Memoirs of the Geological Survey.

EXPLANATORY MEMOIR

TO ACCOMPANY

SHEET 20 OF THE MAPS

OF THE

GEOLOGICAL SURVEY OF IRELAND,

INCLUDING THE

COUNTRY AROUND BALLYMENA, GLENARM, CONNOR,
AND THE MOUNTAINOUS DISTRICT WEST OF LARNE.

BY

R. GLASCOTT SYMES, M.A., F.G.S., (Senior Geologist),

WITH

PALÆONTOLOGICAL NOTES BY W. H. BAILY, F.R.S. (Acting Palæontologist).

Published by Order of the Lords Commissioners of Her Majesty's Treasury.



DUBLIN :

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE:

AND SOLD BY

ALEX. THOM & CO. (LIMITED), 87, 88, & 89, ABBEY-STREET,
THE QUEEN'S PRINTING OFFICE.

HODGES, FIGGIS, & CO., 104, GRAFTON-STREET.

LONDON: LONGMANS & Co., PATERNOSTER-ROW; TRÜBNER & Co., LUDGATE-HILL;

LETTS, SON, & Co. (LIMITED), 33, KING WILLIAM-STREET, E.C.;

E. STANFORD, 55, CHANCING CROSS; WYLD, 12, CHANCING CROSS; AND

B. QUARITCH, 15, PICCADILLY.

MANCHESTER: T. J. DAY, 53, MARKET-STREET.

EDINBURGH: W. & A. K. JOHNSTON, 4, ST. ANDREW'S-SQUARE.

1886.

st

CONTENTS.

	Page
INTRODUCTION,	5
CHAPTER I.	
Physical Geography,	5
CHAPTER II.	
Rock Formations and Divisions,	7
Table of Strata,	7
Triassic Beds,	7
Liassic and Rhaetic Beds,	7
Cretaceous Beds—Upper Greensand,	8
" Upper Chalk,	8
Tertiary Volcanic Rocks,	9
Lower Basaltic Series,	11
Lithomarge, Pavement and Fusolitic Iron Ore,	11
Upper Basalt,	17
Post Pliocene (Lower Boulder Clay),	19
" (Sand and Gravel),	19
Recent Deposits (Raised Beach, Flint implements, Peat Bog, and Alluvium),	21
CHAPTER III.	
Glacial Striae,	22
Microscopic Notes,	22
Paleontological Notes,	23
Remarks on the Fossils,	27
Appendix—Analyses of Iron-ores, &c.,	28

PREFACE.

THE district described in the following Memoir has been geologically surveyed by the author, Mr. R. G. Symes, and forms a portion of the great volcanic region of county Antrim, bordering on the eastern coast. It is economically of great importance from the extent of the upper basaltic sheets, under which the pisolitic iron-ore is *generally* to be found. The extent of the occurrence of this mineral, and the phenomena connected with its presence, are detailed by Mr. Symes, who also clearly indicates the difficulties, physical and commercial, which have to be encountered in mining.

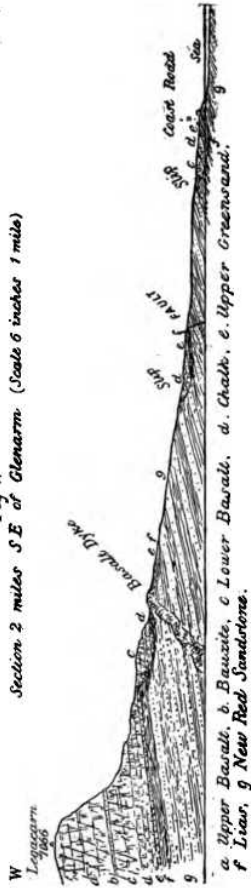
The geological survey of the district here described was originally undertaken, in 1876, by Mr. W. A. Traill; but, before it had proceeded far, Mr. Traill left the public service, and the work was taken up, in 1881, by Mr. Symes, who has made use of some of the notes and observations recorded by his predecessor.

EDWARD HULL,
Director.

5th May, 1886.

FRONTISPIECE.

Fig 1.
Section 2 miles S E of Glenarm (Scale 6 inches 1 mile)



EXPLANATORY MEMOIR
TO ACCOMPANY
SHEET 20 OF THE MAPS
OF THE
GEOLOGICAL SURVEY OF IRELAND.

INTRODUCTION.

The district about to be described lies wholly in the county Antrim, and contains the important town of Ballymena, and the villages of Broughshane, Glenarm, and Connor.

CHAPTER I.

Physical Geography.

The chief river of the district is the Maine which flows in a southerly direction into Lough Neagh (sheet 28), and drains about two-thirds of the area under description; its tributaries are the Clogh, the Braid, and the Kells or Glenwhirry, all flowing from the east.

The minor rivers on the east of the watershed are the Larne water, flowing north-east; and the Glenarm river with its two tributaries, the Owenclogh and Skeagh, flowing north into the sea at Glenarm.

The watershed enters the district on the south-east, and passes in a north-easterly direction towards Shane's Hill (1,044), thence northerly to Agnew's Hill (1,558), then westerly across the Star Bog, Creeve (1,186), Glen Head (1,287), and Douglas Top (1,316), then in a north-north-east direction across Tiftarney (951), Kane's Hill (938), and Drummore (865), and passes out of the district a little west of Glenarm.

A great ice sheet which was one of the denuding agents formed the principal valleys that seems to have entered the district near Glenarm, and spread itself in a fan-shape south-west and south along the valleys now occupied by the Braid and Glenarm rivers; the former stream flowing south-west in the same line as the ice moved, and the latter flowing in an opposite direction.

This great eroding agent in its south-west passage terraced the hills on the north, such as Neill's Top (1,040), Knockramer (1,106), Slievebave (1,326), and on the south Lisle's Hill (810), Slemish (1,437), by partially removing the almost horizontal sheets of Upper Basalt, and transferring fragments of them to the low ground between Broughshane and Ballymena, where it is probable it met and amalgamated with another great ice sheet coming from the south in the Lough Neagh direction; and, traversing the valley of the Maine passed north-west along the district now occupied by the large alluvial flats and boggy ground near Killagan and Glarryford (Sheet 13).

The valley of the Kells river was probably occupied in a similar manner, by the sheet which moved south along the Glenarm valley passing over Skeagh (1,127), Creeve (1,186), and turning south-west along the Glenwhirry river. The valley of the Clogh river in the north-west of the sheet also follows the direction of the glaciation.

In the east of the district the basalt presents on the sea face lofty escarpments, at the base of which the aqueous rocks are to be found. These cliffs have been formed along parallel faults and land slips; and by subaerial denudation, and possibly also by marine action when the sea was at a somewhat higher level than at present; but the process of erosion is still in progress.

The faults along the coast follow to a certain extent a N.N.W. and S.S.E. direction, which corresponds with that of the elevation owing to which the whole of the rocks over a large area are slightly tilted; giving the volcanic as well as the aqueous rocks a slight inclination to the S.W.

The landslips below the escarpments have been very numerous and have made such confusion in the rocks that the true geology of the subjacent ground is rendered very indistinct. The frequency of the landslips is due to the great pressure of the superincumbent masses of Chalk and Basalt on the Lias clays and Keuper marls. The latter are charged with moisture which is supplied from the great flow of waters between the Chalk and the Lias, converting the shales into a pasty mud which wells out and slips down the slope of the hills into the low ground.

All along these escarpments, principal springs come from beneath the Chalk; while minor springs issue from the boundaries between the basalt and chalk, and between the latter and the Lias and Triassic marl.

CHAPTER II.

Formations or Groups of Rocks entering into the Structure of the District.

Name.	Colour on Map.
Recent Accumulations. { Peat (Bog) Alluvium and other superficial covering, } <i>Pale sepia.</i>	
{ Drift or Post Pliocene, } <i>Engraved dots.</i>	
TERTIARY VOLCANIC ROCKS.	
B Upper, Basalt sheets, . . .	<i>Burnt carmine, deep tint.</i>
Pisolitic iron ore, } <i>Vermillion, very pale; gold</i>	
Lithomarge, and } <i>dots on outcrop of ore.</i>	
Ash, }	
B Lower, Basalt sheets . . .	<i>Burnt carmine, light tint.</i>
Bs, Volcanic Ash, . . .	<i>Do. with white dots.</i>
B†, Basalt dykes and necks (intrusive), }	<i>Do. deep tint with wash of carmine.</i>
Tp, Trachyte porphyry and Rhyolite. }	<i>Vermillion.</i>

AQUEOUS ROCKS.

Cretaceous, { <i>h</i> ³ Upper Chalk with Flints, } <i>Pale Emerald green.</i>	
{ <i>h</i> ⁴ Upper Greensand, . . . } <i>Do. (deeper tint).</i>	
Liassic, . { <i>g</i> Lower Lias and } <i>Chalons brown.</i>	
{ <i>f</i> Rhætic beds, . . . }	
Triassic, . { <i>f</i> ⁶ Keuper Marl, . . . } <i>Venetian red with wash of Indian ink.</i>	

TRIASSIC BEDS.

Keuper Marls.—The beds of this division are found in their true position at Drain's Bog, on the east of the district, but they occur in many places north and east of this, being exposed along the coast in landslips. In Drain's Bog they consist of red and gray marls alternating. Along the shore the formation is well represented by more or less horizontal beds of red and green marl, and one thin bed of sandstone. The marls break up into small fragments, and weather soft, and plastic, and are mottled with green circular spots and strings; the green mottled beds are the water bearing strata.

LIASSIC BEDS.

Liassic and Rhætic Beds are but sparingly represented, and are generally found in thin bands among the confused masses of rock brought together by landslips near Glenarm. At Little Deer Park, Drain's Bog, and Sallagh Braes, the highly fossiliferous blue clays have welled out into the low ground, carrying with them the Upper Greensand, and sliding apparently over the red marls of the Keuper division.