

**TRANSACTIONS OF THE
MANCHESTER
GEOLOGICAL SOCIETY.
VOL. I**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649723980

Transactions of the Manchester Geological Society. Vol. I by Various

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

VARIOUS

**TRANSACTIONS OF THE
MANCHESTER
GEOLOGICAL
SOCIETY. VOL. I**

TRANSACTIONS
OF THE
MANCHESTER GEOLOGICAL SOCIETY.

81-m

TRANSACTIONS

OF

THE MANCHESTER
=

GEOLOGICAL SOCIETY.

VOL. I.

LONDON:
SIMPKIN, MARSHALL, AND CO.;
SIMMS AND DINHAM, MANCHESTER.

MDCCCLL

OFFICERS.

1840-41.

- PRESIDENT.

The Right Honourable Lord Francis Egerton, M.P. F.G.S.

VICE-PRESIDENTS.

James Heywood, Esq., F.R.S. & G.S.
Ralph Thicknesse, jun., Esq.
William Hulton, Esq., F.G.S.
John Eddowes Bowman, Esq., F.G.S. & L.S.

TREASURER.

George Wareing Ormerod, Esq., M.A. F.G.S.

AUDITORS.

Thomas Kirkman, Esq.
Samuel Elsworth Cottam, Esq., F.R.A.S.

HONORARY SECRETARIES.

Edward William Binney, Esq.
John Frederic Bateman, Esq.

ORDINARY MEMBERS OF THE COUNCIL.

James Black, M.D. F.G.S.	Eaton Hodgkinson, Esq., F.R.S.
Captain Brown, F.L.S. M.W.S.	Francis Looney, Esq., F.G.S.
George Watson Buck, Esq.	Edmund Lyon, M.D.
Charles Clay, Esq.	William Mellor, Esq.
Matthew Dawes, Esq., F.G.S.	John S. Newbold, M.D.
William Fairbairn, Esq.	John Ogden, Esq.
John Hawkshaw, Esq., F.G.S.	William Peace, Esq.

BANKER.

Sir Benjamin Heywood, Bart., and Co.

ADVERTISEMENT.

THE Council of the Manchester Geological Society make it known to the Public, that the Authors alone are responsible for the facts and opinions contained in their respective Papers.

ERRATA.

Page	4,	line 29,	for "combination,"	read "combinations."
—	5,	— 16,	— "seat,"	read "heat."
—	19,	— 20,	— "holopticheus,"	read "holoptychius."
—	43,	— 27,	— "axis,"	read "axes."
—	60,	— 29,	— "Burdic,"	read "Burdie."
—	55,	— 23,	— "minims,"	read "minimus."
—	57,	— 14,	— "sinkings,"	read "borings."
—	61,	— 10,	— "red stone,"	read "red sandstone."
—	71,	— 1,	— "Ethertow,"	read "Etherow."
—	82,	— 27,	— "Ichthyology,"	read "Ichthyology."
—	88,	— 7,	— "Parron,"	read "Parson."
—	188,	— 25,	— "plate II,"	read "plate VIII."
—	190,	— 26,	— "plate II a,"	read "plate IX."

THE
TRANSACTIONS
OF THE
MANCHESTER GEOLOGICAL SOCIETY.

ART. I.

On some of the Objects and Uses of Geological Researches. By J. BLACK, M.D., F.G.S., &c.

FROM the earliest records of mankind, we find that the nature and motions of the heavenly bodies have attracted the attention and study of the curious and contemplative; and so continued and intense has been the inquiry of the human mind, from the remotest ages, to gain a knowledge of the forces and laws which govern them, that successive systems have been invented, having their origin in superstition and speculation, till, at length, one of mathematical proof has been deduced, on which the civilized and intelligent mind of man now rests in undiminished wonder, but in rational and satisfactory repose.

The sublimity of the science of astronomy, and the vastness and loftiness of its objects and laws, have carried it so far above any relation to what occurs in such a comparatively small speck of the universe, as our globe is, that it is only in the calculations of our almanacs, or when we

traverse the surface of the ocean, or the extended desert, that we ever make the grand theorems of this sublime science subservient to our temporal and perishable purposes. The objects of astronomical study are transcendental, and unbounded as infinity; while their useful and economical bearings are few, simple, and precious: they are, as being of a celestial nature, far more adapted to instruct, improve, and elevate the immortal part of our nature, than to administer to the desires and wants of our bodily frames.

Leaving the lofty regions of this first of sciences, we lay hold on that of Geography, which, though deriving its birth from its celestial parent, and founded on heaven-born laws, yet offers its more condescending and familiar hand, to lead us in those paths of knowledge, that have a more diffused and intimate connection with the conditions and fortunes of our race.

In the higher departments of this science, we are informed of the configuration of the earth, the great lines of the distribution of land and water, and of the elevations and depressions of the surface, with their corresponding climates and productions; and, in its more extended application to man, as a social being, it lays out the boundaries of nations, races, and families, their external political relations, and, finally, the sites of their cities and habitations. In all this extensive sphere of scientific and useful knowledge, which should be the object of every member of social, commercial, or political life to acquire, it is to be remarked, that we have chiefly to do with the superficies of the earth—including its areas and distances. The objects of geographical study are all facts, open and visible, and are not dependent on experiment, induction, or reasoning, except a few which, by mathematical demonstration, are connected with astronomy.

A person may, moreover, be well versed in geographical science, may have traversed the earth from pole to pole,

and have become acquainted with every divisional line and contour of its physical surface, and with every thing that moves and lives upon it, yet be ignorant of the world that lies beyond our atmosphere, and also of that great field of nature's works which are deposited beneath his feet. The one region may be as much above as the other is beyond his ken; and, as he may suppose the study of the nature and motions of the heavenly bodies to be far above its being applied to any purposes of human and practical utility, so he may conceive, that, beyond the bright metal or coal of a mine, the earth contains, like the pages of ancient history, little but what leads to fable, superstition, or infidelity.

At this stage in the order of human knowledge and inquiry, we have to pass into a new field of nature, which is no less fertile in its objects, and as wide, and often more recondite in the range of its study, than any of the two sciences which have already been mentioned. Where the finger of Geography points only to the surface of the earth, and to what grows and lives upon it; the Science, to which we intend to draw a little attention, takes up the torch of knowledge, penetrates the outer mantle of the globe, and carries research and inquiry into its inmost recesses. And what is worthy of remark, that however far removed the labours and study of the Geologist may apparently be from the loftier objects of astronomical inquiry; and however much his progress is facilitated by a necessary acquaintance with the phenomena and laws belonging to the visible and living world, yet in the deeper investigations that occasionally force themselves upon his mind, he has occasion to revert to the sublimest of all sciences, to account for many of the phenomena which he often witnesses in the crust of the earth.

In the depth of a mine, or the elevation of a mountain, he sees many things which neither geography, botany, nor