

**OBSERVATIONS
AND REFLECTIONS
ON GEOLOGY**

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Observations and reflections on geology by John Hunter

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JOHN HUNTER

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BY

JOHN HUNTER, F.R.S.

INTENDED TO SERVE AS

AN INTRODUCTION TO THE CATALOGUE

OF HIS

COLLECTION OF EXTRANEOUS FOSSILS.



LONDON:

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

1859.



P R E F A C E.

THE Introduction mentioned in the title-page is contained in two Hunterian Manuscripts, now in the possession of the Royal College of Surgeons of England. The first of these, a thin quarto of seventy-two pages, bound in calf, and lettered on the back, is in the handwritings of two of Mr. Hunter's well-known assistants and amanuenses, Messrs. W. Bell and W. Clift. It is marked "PART THE FIRST." The second Manuscript, entirely in Mr. Clift's handwriting, contains an accurate copy from the first Manuscript, of PART FIRST, with a continuation and conclusion of the subject, entitled PART SECOND. It is believed that this Second Part must have been copied by Mr. Clift from an original MS. (probably furnished by Capt. Sir E. Home), nothing being known of such original among the papers of the College.

The manner in which the original MS., PART FIRST, came into the possession of the College, is fully explained by the following memorandum, in the handwriting of Mr. Clift, prefixed to the contents of the second Manuscript.

" On the day of the delivery of the Hunterian Oration, Feb. 14, 1839, at the entrance into the Theatre of the Visitors and Council, Mr. Keate put into my hands a thin volume, desiring me to look at it *afterwards*. Mr. Keate had doubtless (or probably) just received it from Captain Sir Everard Home, who was among the Visitors. This volume had evidently been lately bound in calf, and contains a portion of Mr. Hunter's Manuscript Introduction to a History of Fossils, and consists of seventy-two leaves written on one side, and numerous additions on the opposite or blank pages. It is evidently *only a part* of the MS., by the catchword at the foot of the *last* page.

"The Bookbinder had been directed to put on the back—

"HUNTER'S CATALOGUE (11) OF FOSSILS,' and within, on the title-page, in Capt. Home's handwriting, 'CATALOGUE OF MR. HUNTER'S Cabinet of Fossils now in the Col. of Surgeons, corrected by himself.'

"N.B. That this manuscript was one of those which Mr. Hunter revised and made many additions to, in *probably* the last year of his life, but *certainly* within the last two, is evident from the fact that many of the pages are in my handwriting, and occasionally afterwards interlined and amended by additions in Mr. Hunter's handwriting; and some of the additional notes are begun by Mr. Hunter, and were then given to me to copy-in the remainder of the sentence from his loose slips.

"This volume is certainly a curiosity in its way; and *after this*, one need not despair of seeing the fabulous Phoenix proved to be *no fable*, and both him and the Dodo emerge from their *ashes* or their other obscure haunts.

"WILLIAM CLIFT."

Mr. Clift not having received any communication, either in writing or verbally, from Mr. Keate concerning the Volume described over leaf, wrote the following Note to Mr. Keate, desiring further instructions concerning its disposal:—

"Museum, Royal College of Surgeons,
March 14, 1839.

"SIR,

"Will you be so good as to inform me whether the Volume which you put into my hands, on the day of the last Oration, be intended as a present to the College or Museum, or a loan similar to the other papers which Captain Sir Everard Home lent, to permit a transcript to be made, some years since? I merely wished to know whether I ought to present it as a Donation at the next Board of Curators, or report upon it if otherwise.

"I beg leave to acquaint you that the above-mentioned Volume is imperfect, containing only *Part the First* of Mr. Hunter's Introduction to a History of Fossils; and that *there was* or is a *Second Part*, of about the same quantity of manuscript: and that this manuscript was one among the last that Mr. Hunter revised, and made large additions to, a short time previous to his death, is evident from the fact that a considerable part is in my own handwriting, with Mr. Hunter's subsequent corrections and additions.

"I remain, Sir,

"Yours very respectfully,

"WILLIAM CLIFT."

"To Robert Keate, Esq.,
&c. &c. &c."

The reception of the work is authenticated by the subjoined minute of the then Board of Curators of the College :—

Copy of Minute of Board of Curators, April 2, 1839.

“ Mr. Clift laid before the Committee, presented for the Museum by Capt. Sir Everard Home, Baronet, the Manuscript of the first part of Mr. Hunter's Introduction to the Catalogue of his Collection of Extraneous Fossils, containing many of Mr. Hunter's corrections of the Manuscript.”

The Introduction, as now printed, is a verbatim copy of the manuscript presented to the Board of Curators, the alterations having been strictly confined to the correction of mere clerical errors.

Considering this Introduction as not inferior in scientific value and interest to anything which has proceeded from the pen of the author, the Council have great pleasure in directing its separate publication, as an urgently necessary though long-delayed act of justice to the character and memory of him who founded their noble Museum. It is a new and astonishing evidence of his unrivalled excellence in original investigation and patient thought.

Scientific men had not observed and investigated with sufficient care and accuracy the organic remains of extinct animals and plants, their nature having been rather obscured than indicated by the appellation of Extraneous Fossils, when the attention of Mr. Hunter was drawn to them by receiving presents of specimens as contributions to his Museum. His sagacious mind immediately perceived the extent and importance of the subject; he entered on its investigation with his wonted energy and indefatigable industry, aided by the thorough knowledge he had already acquired of the whole organised creation. He collected specimens from all quarters, ascertaining the localities in which they were found and the circumstances of their discovery, subjecting them to rigorous examination and comparison, directed by his intimate acquaintance with the laws of organized existence. He exerted the whole powers of his mind in long and repeated meditation, in the sanguine hope of discovering the nature and action of the forces which might explain the present state and position of the fossils. He thus anticipated by many years the views and conclusions of subsequent and still living inquirers, who have followed, with the advantages of more leisure and a constantly increasing accession of new facts and illustrations, in the path which he first opened. He had, however, perceived the true nature of these fossils as relics of animals no longer living on the surface of the earth, as having belonged to a former creation, so that, in his own phrase, they could not be “ matched with the recent”; he felt that the ex-

inction of such races, the imbedding and preservation in the earth of their more solid parts, the depth at which they are often found, and the successive strata overlying them, can only be explained by revolutions in the surface of the globe during periods of immense, but indefinite and uncertain duration. He may therefore be regarded as having laid the foundation of that interesting branch of science for which his modern successors have devised the name of Paleontology.

The attentive reader of the following pages cannot fail to observe that Mr. Hunter had made himself well acquainted with Geology and Mineralogy, according to the state of knowledge in those departments at the time of his labours. The inquiries connected with this publication have made known a circumstance nearly forgotten, but which ought to be rescued from oblivion, as throwing a new and striking light on the boundless range of investigation which had been undertaken by Mr. Hunter. There is only a slight printed record of the matter, which has, accordingly, been left nearly unnoticed by most of the biographers of this highly gifted man. Not content with inquiring into the entire series of organic existences, he extended his researches into the inorganic kingdom, and formed a large and valuable collection of minerals, which he was accustomed to use in his lectures to exemplify the distinction between the laws which regulate the growth of organic, and the increase of inorganic bodies. This collection had not yet been placed in the Museum; it remained at the time of his death in his private residence, and was sold with other effects, partly as having no connexion with the Museum, and partly to defray the current expenses of his family and of the Museum.

N.B. The word *Fossils*, of which the etymology is obvious, was formerly used indiscriminately to denote various objects dug out of the earth, and it therefore included minerals and metals, as well as organic remains. Mr. Hunter called the former *NATURAL* or *NATIVE Fossils*, as having been formed in the situations where they are now found. He designates as *EXTRANEous Fossils* the numerous and various organic structures found in the more or less solid external strata of the globe, from which they differ entirely in composition and nature, having become mixed up with their materials by the agency of external causes.—*Editor*.

OF EXTRANEOUS FOSSILS.

PART I.

EXTRANEOUS Fossils make one part of a class of preserved parts of Vegetables and Animals; and as most vegetables and many parts of a great variety of animals can either be preserved themselves, or make such impressions as mark the originals to be either vegetable or animal, which are lasting, we are at no loss to say what had been either vegetable or animal:—but for the understanding of which, it will be proper to take a general view of such preserved parts, and to give some of the principal leading facts to establish a principle respecting their preservation.

As vegetables are formed only on the land, and are stationary, and as animals are formed both on the land and in the sea, also inhabiting both; and may be said to be stationary respecting the elements in which they live; and as they are all found in a fossil state now in the earth which is not covered by water, as if all had been originally formed there, it naturally leads us into an investigation of the operations that must have taken place on the surface of this Globe; and which also, so far as the Extraneous Fossils go, leads to the formation of Native or Mineral Fossils. But it is to be understood that this investigation has nothing to do with the original formation of the earth itself; for that must have been prior to the formation of the Extraneous Fossil, which has only a connexion with the changes on the surface; therefore, as in the Fossils, our mode of reasoning on this subject may be termed retrograde; it is supposing from the state of