DESCRIPTIVE CATALOGUE OF ROCK SPECIMENS COLLECTED BY THE GEOLOGICAL SURVEY OF SCOTLAND, AND EXHIBITED IN THE EDINBURGH MUSEUM OF SCIENCE AND ART

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Descriptive Catalogue of Rock Specimens Collected by the Geological Survey of Scotland, and Exhibited in the Edinburgh Museum of Science and Art by Arch. Geikie

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ARCH. GEIKIE

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Trieste

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PREFACE.

The following Catalogue contains an enumeration of the rock specimens collected by the Geological Survey of Scotland, to illustrate the geology of the counties of Edinburgh, Haddington, Linlithgow, and Ayr, with portions of the counties of Lanark, Peebles, and Renfrew. The collection is increasing yearly, and, from want of space, can at present be exhibited only in part. In arranging it for exhibition, the following system is followed:—In the first place, advantage is taken of the political divisions of the country, and the specimens are grouped to represent well-marked districts. By this means, information can be most readily obtained regarding the nature of the rocks in any area. In the second place, the rocks of each large district are arranged as a series in stratigraphical order, beginning always with the oldest stratified deposits. The igneous rocks of contemporaneous origin are intercalated in their proper chronological place among the other rocks, from the formation in which they occur. Intrusive igneous rocks, the date of which is necessarily uncertain, are grouped by themselves at the end of each local series. Where metamorphosed rocks occur, they are placed after the unaltered rocks of the same formation. In a few instances the fossiliferous rocks are illustrated by some of their characteristic fossils—an arrangement which it is intended to carry out more fully when greater space can be obtained.

I have been anxious that the Catalogue should not be merely a list of specimens. Two objects seemed attainable. On the one hand, by arranging the specimens according to districts, and by inserting descriptions and sections of the geology of these districts, it appeared possible to present a tolerably complete idea of the geological structure and lithology of particular areas of the country, and thus to supplement the Maps and Memoirs of the Geological Survey. On the other hand, by furnishing a series of carefully collected specimens, and brief descriptions of them, it seemed that an amount of instruction might

be given in the petrographical part of geology which could not be so readily obtained from the ordinary text-books. Whether, therefore, as illustrating the geology of the country, or as practically offering lessons in petrography, such a descriptive Catalogue appeared likely to prove useful.*

In order, however, to understand fully the geology of the districts from which this collection has been taken, reference should be made to the published maps of the Geological Survey and to the Explanations issued with the maps. A large sheet showing the area of Scotland, of which the Geological Maps on the one-inch scale have been published, is suspended in the same room with the rock-collection.

I have drawn up and added to the Catalogue a brief synopsis of the leading characters of the rocks contained in the collection. The study of petrography, however, has been so sadly neglected in this country, and so much requires to be done in chemical and microscopic analysis, that some of the identifications of the Scottish with Continental rocks must be regarded as merely provisional.

The arrangement and description of the specimens from Peeblesshire, Renfrewshire, and the eastern half of Ayrshire, from Dunlop by Kilmarnock and Sorn, to Dalmellington, also the Silurian districts of the same county, have been done by Mr. James Geikie, by whom also these districts were surveyed in the course of the Geological Survey. The other portions of the Catalogue have been prepared by myself.

ARCH. GEIKIE,

Director of the Geological Survey of Scotland.

March 1870.

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* A portion of the specimens enumerated in this Catalogue was collected in duplicate for the Museum in Jermyn Street, London; and the description of this portion of the present collection is to some extent the same as that prepared by me for the Jermyn Street Catalogue.

CATALOGUE OF ROCK SPECIMENS.

HADDINGTONSHIRE.

[The specimens in this and the following case are entirely illustrative of the geology of Haddingtonshire, more especially of the trappean region between Haddington and Dunbar. They show that, between the deposition of the Old Red Sandstone and that of the Carboniferous Limestone, the north-eastern part of this county was the site of a long-continued series of volcanic eruptions, whereby ashes, stones, and sheets of melted lava were thrown out, which gradually accumulated to a depth of many hundred feet. The series begins at the very base of the Carboniferous rocks, above which come the tuffs with their included stones and intercalated limestone bands. These are followed by the later lava eruptions of the Garleton Hills; and, lastly, by the Carboniferous Limestone, which appears to have been deposited after the volcanic action in this district had ceased.]

Window Case, 21.

1. Sandstone, with annelide burrows. Bottom beds of Carboniferous series.

Near Cockburnspath.

2. Sandstone, with *Stigmaria* and *Lepidodendron*. Bottom beds of Carboniferous series.

Near Cockburnspath.

3. Sandy Limestone, with strips of large *Sigillaria*, fish remains, &c. Bottom beds of Carboniferous series.

Cove, south of Cockburnspath.

4. Sandy Limestone, with *Stigmaria*, &c. Bottom beds of Carboniferous series.

Cockburnspath.

5. Sandstone, with *Lepidodendron*. Bottom beds of Carboniferous series.

Cockburnspath.

TRAP-TUFF OR ASH OF DUNBAR AND NORTH BERWICK.

Immediately to the west of Dunbar the coast is fringed by a range of tall cliffs. They consist of stratified tuff, dull-red in colour, and roughened over with enclosed fragments which protrude from the rock in great numbers. The matrix of the tuff is highly felspathic and ferruginous, and varies in texture from a fine paste to a coarse conglomerate of sub-angular and rounded fragments. The enclosed stones are of all sizes up to masses a foot or more in diameter, the smaller pieces