

Memoirs of the Geological Survey.

EXPLANATORY MEMOIR

TO ACCOMPANY

SHEET 13 OF THE MAPS

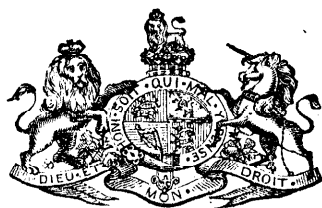
OF THE

GEOLOGICAL SURVEY OF IRELAND,

BY

F. W. EGAN, B.A.

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



DUBLIN:

PRINTED FOR HER MAJESTY'S STATIONERY OFFICE:

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THE
GEOLOGICAL SURVEY OF THE UNITED KINGDOM

IS CONDUCTED UNDER THE POWERS OF THE
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The observations made in the course of the Geological Survey are entered, in the first instance, on the Maps of the Ordnance Townland Survey, which are on the scale of six inches to the mile. By means of marks, writing, and colours, the nature, extent, direction, and geological formation of all portions of rock visible at the surface are laid down on these maps, which are preserved as data maps and geological records in the office in Dublin.

The results of the Survey are published by means of coloured copies of the one-inch map of the Ordnance Survey, accompanied by printed Explanations.

Longitudinal sections, on the scale of six inches to the mile, and vertical sections of coal-pits, &c., on the scale of forty feet to the inch, are also published, and in preparation.

Condensed memoirs on particular districts will also eventually appear.

The heights mentioned in these Explanations are all taken from the Ordnance Maps.

AGENTS FOR THE SALE OF THE MAPS AND PUBLICATIONS:

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P R E F A C E .

THE Geological Survey of the district embraced by this Memoir was carried out by the Author, Mr. Egan, during the years 1881-82. The district itself is one possessing little variety in its geological features, being formed for the most part of sheets of basalt, overlaid by deposits of boulder-clay, or sand and gravel. Yet, as forming a portion of the great volcanic region of counties Antrim and Derry, it possesses an interest in connection with the adjoining districts of which it forms a portion ; and, in order that the map should be properly understood, it ought in all cases to be placed in connection with those of the adjoining districts.

EDWARD HULL,
Director.

25th February, 1884.

EXPLANATORY MEMOIR
TO ACCOMPANY
SHEET 13 OF THE MAPS
OF THE
GEOLOGICAL SURVEY OF IRELAND.

CHAPTER I.

PHYSICAL GEOGRAPHY.

THIS sheet contains portions of the counties of Londonderry and Antrim, which are separated by the river Bann for a distance of eight and a half miles from its entrance at the southern margin. From Macfinn northward the divisional boundary passes through the bogs that lie four miles east and south-east of Coleraine. The area includes Coleraine and Garvagh in co. Londonderry; with Ballymoney, Dervock, Stranocum, Armoy, Dunloy, and Clogh Mills in co. Antrim.

As a rule the surface has a gradual rise east and west from the river Bann, the ascent becoming more rapid in some parts near the boundaries of the sheet. In the east the highest points are, Kendal's Hill, 610 feet above the sea; the summit of a ridge passing by Mount Hamilton, about 500 feet; and a point north-east of Armoy, 455 feet. A large tract south-west of Dunloy, consisting chiefly of basaltic rocks concealed below an undulating expanse of peat bog, attains an elevation of 700 feet, the surface falling quickly from the rocky areas which form its eastern and western boundaries, to the alluvial lands along the Main river and the smaller stream that flows by Rockstown. This high ground is traversed by escarpments in the basalt, either projecting above the surface, or else covered by a sufficient depth of drift or peat to produce the undulating character referred to.

The escarpments are sharply defined along its western boundary, between Whistlebare and Upper Craigs, the same structure prevailing in the drift-denuded area west of Middle Craigs. An elevation of 850 feet is attained in the rocky ground situated at the south-west corner of the sheet; and the height reaches 730 feet about midway along the western margin, where the surface commences to rise more rapidly towards the bleak region that lies immediately to the west. From this there is a fall to the level of 100 feet in the north-west.

Throughout the greater part of the sheet the rocks are hidden by a deep deposit of boulder-clay and gravel, the principal exceptions being in the west, along a line of country extending

for about two miles from the western margin, and north and south between Dunalis and Ringsend. The high ground at Ballinrees and Ballystrone exhibits in a striking manner the scarped outlines already spoken of, the ascent from the level of the Macosquin River being marked by a series of terraces bounded by cliffs, which vary in height up to about thirty feet. The same features are very general throughout the area extending from Letterloan to Upper Cam and Lower Cam.

In the low-lying parts of the district, in which the Drift deposits are most thickly spread, the surface is undulating, the clay and gravel occurring for the most part either in prominent mounds or in more gentle swellings, arranged longitudinally in directions that correspond in each locality to that of the drainage. These varieties of surface sometimes give place to extensive flats produced by the accumulation of peat and alluvial clay and gravel, which materials form also shallow deposits along the courses of streams. The more extensive flat lands, taken together, occupy about sixty square miles, or two-sevenths of the entire area.

The effects of ice action are abundantly evident in the planing and grooving of rock surfaces, and may be best seen in those localities to which attention is directed on the map. The bearing of the striæ is, like that of the drift hills, generally parallel to the water-flow, the prevalent tendency in both cases being probably due to the same cause, namely, the passage of a great ice-sheet across the country, which ground down and carved out the rocky surface, and, upon melting, left the detritus arranged in more or less broken ridges, these conditions ultimately determining the directions of the principal channels. A subsequent submergence, with its combinations of currents and cross currents, would complete the rounding of the drift hills, give rise to additional water-courses, and at the same time cause the formation of water-worn gravel, sand, and fine clay, which, transported from various quarters, would be deposited in bedded heaps upon the denuded surface of the boulder-clay.

On the whole, the aspect of the glaciated rocks, and the bearings of the striæ in a few localities where they are best preserved, favour the supposition that in this particular district the ice proceeded from south-east to north-west.

Of the 216 square miles included in this sheet, 140 are drained by the River Bann and its tributaries, the principal of the latter being the Agivey River, flowing by Garvagh. The Bush River, entering the sea near the Giant's Causeway, drains an irregular area of fifty-three square miles, extending for upwards of half-way towards the west and south along the northern and eastern borders of the map, and including the large bog north of Ballymoney; while the Main River, flowing south to Lough Neagh, carries off the drainage from the remaining twenty-three square miles, extending from Kendal's Hill to the south-east corner, and westward as far as Lough Naroon. In the last case the drainage eventually flows from Lough Neagh to the sea by the River Bann.

The watershed which forms the eastern boundary of the basin

of the Bann is very tortuous. Its course may be indicated by reference to the following places, lying in its immediate vicinity. Entering the sheet in the south at about long. $6^{\circ} 26'$, it passes by Lough Naroon, north by Illanavoon, turning south-east near The Hill, and north-east near Killagan Bridge—thence by Knock-aholet, Tobernagola, Larchfield, Rosemount, along the line of road to Ballymoney, north-west from that town, by Knowehead, Fort Town, Seacon, Turnakibbock, Liswatty, and Gorticloghan, leaving the sheet near long. $6^{\circ} 35'$.

CHAPTER II.

ROCK FORMATIONS AND DIVISIONS.

Aqueous Rocks.

Name.		Colour on Map.
Recent, . . .	Bog and Alluvium, . . .	{ <i>Chalons Brown and Gamboge.</i>
Post Pliocene (Drift), . . .	{ Sand and Gravel, . . . Boulder Clay, . . .	{ <i>Engraved dots.</i>
Cretaceous, . . .	Upper Chalk, with Flints, . . .	<i>Pale Emerald Green.</i>
Triassic, . . .	Lower Keuper Sandstone, . . .	{ <i>Venetian Red, with wash of Indian Ink.</i>

Igneous and Metamorphic Rocks.

Miocene, . . .	{ Upper Basaltic Sheets, . . . Pisolitic Iron Ore, with Litho- marge, . . .	{ <i>Burnt carmine (deep). Gold dots, on light reddish brown.</i>
(Tertiary), . . .	{ Lower Basaltic Sheets, . . .	{ <i>Burnt carmine (light).</i>
Altered Lower Silurian Rocks, . . .		{ <i>Pale purple, with a wash of carmine.</i>

ALTERED LOWER SILURIAN ROCKS.

Mica-schist.—In the small area in this sheet occupied by the metamorphic strata near Armoy, the rock comes to the surface in only one place, east of Moyaver, where it consists of mica-schist, partly quartzose and finely speckled with black mica, but in some cases more like clay-slate. These beds are part of the metamorphic series which spreads over so great an extent of country to the west, in Londonderry and Donegal; and are considered to be of Lower Silurian Age, corresponding with those which are recognized in Scotland as belonging to that Period.*

TRIASSIC BEDS.

Lower Keuper Sandstone.—The beds of this formation do not come to the surface in this sheet, but occur in the Bush River immediately to the east, dipping away from the underlying mica-schist. In character they resemble the bright red sandstone, belonging to the same division, which crops out below the escarpment west of the basaltic area, where in some places they are seen to underlie the Keuper Marl.

* See Memoir, Sheet 27, p. 10.

CRETACEOUS BEDS.

Upper Chalk.—The Chalk occurs only in the north-east of the sheet, where it occupies a strip of ground parallel to the course of the Bush River south-east of Armoy. It is exposed to view in small quarries near Moyaver, with low north-westerly dips. The rock is the ordinary hard white fossiliferous limestone of the district, the beds being in places separated by layers and thin partings of whitish, reddish, and brownish, and occasionally dark gray marl. It is in some cases rubbly, and as a rule abounds in flint nodules. Some of the numerous joints are lined with small calcite crystals. An old disused quarry west of the road at the Seven Acres contains chalk-rock below about fifteen feet of boulder-clay, and it is more extensively laid bare at Carrowquin, below a quarried face of basalt.

LOWER BASALT AND DOLERITE.

Almost the whole of the district described in this memoir is underlaid by rocks belonging to the lower division of the Miocene Basalt. Besides the large masses which, as already mentioned, form escarpments in the more elevated areas, many bare patches and prominent bosses occur throughout the sheet.

The varieties which here go to make up the division are seen to best advantage in the western part, where the drift has been greatly removed by denudation. At intervals among the sheets of basalt and dolerite there are layers of bole, or red earth, each of which seems to mark a period of rest occurring between the outflows of lava, during which the bed last formed became decomposed under the atmosphere.*

Massive dolerite exists in the rugged escarpment that runs south-east between Compaw and Ballinreës, three and a half miles W.S.W. of Coleraine; and a section on the road at the former place shows the beds below, composed of fine dolerite weathering spheroidally, and in great part reduced to a brown sandy clay, containing in some places a number of minute spherulitic ferruginous particles. A little farther north-east along the road there is spheroidal dolerite with a rudely bedded structure, dipping at 10° S.S.E.; the weathered portions, north of the road, at the parish boundary, containing distinct grains of olivine.

The rocks south of Ballystrone, already referred to as forming a succession of escarpments, are much glaciated, and consist of massive dense basalt. At Dunalis More the sheets are thinner, and are composed of trap in various stages of disintegration. Some consist of solid compact basalt; others are finely vesicular, containing irregular cavities either empty, or lined with minute globules of soft zeolite. A section in the river about a mile west of Macosquin exhibits a variety of beds having obscure southeasterly dips, at 5° to 20°. Among them is one composed of reddish decomposed trap containing calc-spar in dentiform and

* See Geol. Survey Memoir, Sheets 21, 28, 29, p. 22, and Sheet 19, p. 14.

prismatic crystals; another of dark decomposed iron-stained trap from which issues a chalybeate spring; and, in addition to these, beds of reddish brown amygdaloid and dark gray earthy trap.

The numerous escarpments throughout the area that extends three miles south of Letterloan are composed of basalt and fine-grained dolerite, weathering with a rough exterior. The most prominent crags are distinguished by names commencing with *Craig*, as *Craignamaddy*, *Craigroryoge*, *Craignamolt*, &c. The first named, situated at the margin, south-west of Croghan, is a rugged face of rock rising about thirty feet above the peat bog which lies to the east, and across which may be traced the features of similar escarpments concealed below the surface. At Craignagunn, a crag which forms nearly a complete circle on the summit of a conspicuous hill half a mile south-east of Letterloan, massive dolerite overlies, in horizontal sheets, ten feet of friable red and gray bole. This is of common occurrence, the cliffs being due to the weathering away underneath of comparatively soft rock (often an easily decomposed bed of basalt, bole, or amygdaloid) which is generally found to crop out at the base of the harder basalt. The rocks that extend beneath Craignagunn are largely exposed, with glaciated surfaces, in the sides of Croaghan Glen, through which the road passes at half a mile west of Letterloan. In Three-nooked Glen, west of The Strand, precipitous faces, upwards of thirty feet in height, and partly hidden behind a growth of hazel trees and brushwood, are formed of fine dolerite overlying decomposed beds of brown and gray trap. The latter have a spheroidal structure, and exhibit a passage from the hard rock into a species of lithomarge containing globular particles of soft zeolite. A bedded arrangement is also perceptible in the more weathered portions of the dolerite, having a low dip towards E.S.E. The rocks at Lower Cam contain olivine in unusually large and well defined grains.

Large quarries are occasionally opened in the basalt. In one example at Ballysally House, near Coleraine, the rock is fine-grained in the upper portions, becoming coarser below where it is traversed by narrow fissures, and contains nests, filled or lined with zeolite, sometimes in an apparently amorphous condition, but more usually in the form of small semi-transparent tabular crystals (a soda zeolite, probably analcime); also dodecahedrons, round which are clustered minute acicular crystals of some lime zeolite. In a quarry at Hill Cottage, massive basalt contains vesicles filled with zeolite and calcite. The latter mineral occurs also in fine prismatic crystals beautifully disposed in nests having a parallel cellular arrangement; and the same is seen in a quarry at Blackburn Bridge, two miles from Coleraine, on the road to Garvagh.

Basalt containing satin spar (carbonate of lime) in strings and vesicles, and a large quantity of aragonite, occurs in the River Bann at the salmon weir at Castleroe. Aragonite is also found in a small quarry a short distance to the south, where the ice striæ are seen.

At Gill's Cottage, west of the Bann, there are beds of basalt and amygdaloid, the latter very friable, and yielding, when broken

up, numerous globular and almond-shaped masses of lime zeolite. Some of these (scolecite?) are found lining the cavities, in a fine fibrous form resembling satin spar, while in the interior are lodged whitish and semi-transparent crystals, interlaced in every direction.

South of Moneycarrie House, along the Agivey River, hard blue basalt overlies amygdaloid containing calcite (dog-tooth spar) and zeolites; and a section in the Aghadowey River, south of Ballydevitt, exposes massive basalt above thin beds of basalt and amygdaloid, and imperfect layers of bole.

Hard bluish basalt occurs in a large quarry at Craigatempin, three miles east of Ballymoney. It contains strings and lenticular nests lined with calcedony, of bluish gray and yellowish colours, the interior being filled with white calcite. The calcedony is slightly mammillated, and has the inner surface coated with minute crystals of quartz. Occasionally associated with these is another mineral, of yellowish white colour, compact, more or less calcareous, and appearing to be identical with a mineral that occurs in the basalt at Downhill, mentioned by Portlock,* and supposed by him to be a mixture of the hydrocarbonates of lime and magnesia. Calcedony is also found lining the vesicles in decomposed trap in a railway cutting at the hill, four miles south-east of Ballymoney.

Hard dark-gray granular basalt, containing grains of olivine, occurs in the Bush River, west of Armoy. The rock rarely comes to the surface in the district immediately adjacent, but appears again at Moyaver, and east of the isles, near the Chalk boundary.

Pisolithic iron ore and Lithomarge.—The ferruginous band, composed of pisolithic iron ore and the underlying lithomarge, which comes between the Upper and the Lower Basalt, occurs at a short distance east of Killagan Bridge. Except for a length of about five hundred yards, its exact course is unknown; but it is conjectured that it extends under the whole of the elevated ground as shown on the map.

The ore bed is a red earthy mass, abounding in irregular grains of hard black magnetic iron oxide. Fragments of this rock and of reddish brown lithomarge lie on the surface at the mouth of a short adit driven some years ago E.N.E. of the bridge; and similar loose material lies at another opening three hundred yards south of the bridge.

Upper Basalt.—Rocks belonging to this division of the Basalt were exposed in section in cutting a road south-east of Killagan bridge. They are of massive structure, rudely bedded, and consist here of bluish basalt overlaid by amygdaloid, dipping N. E. at 5°-10°. The amygdaloid contains elongated vesicles filled with zeolite, and strings of the same (Epistilbite). This mineral occurs partly in small pearl-like white globules composed of fine radiating crystals with a silky lustre, sometimes attached in strings like a row of beads. The globular form gradually disappears, the globules becoming enlarged and closely united, and the mineral

* See Report on the Geology of Londonderry, Tyrone, &c., p. 215.

assumes an apparently amorphous character. It fuses before the blowpipe, with twistings, to a white glass. The basalt is generally here concealed by drift, but comes to the surface near the summit of the hill, and appears on the road north-west of Mount Hamilton.

POST PLIOCENE.—(DRIFT DEPOSITS.)

The drift is here divisible into at least two quite distinct parts, the Lower Boulder-clay and the overlying stratified Sand and Gravel. Towards the north the latter become much mixed with clay, and pass upward into very gravelly boulder-clay, more or less distinctly bedded, and containing layers of sand and gravel. This may possibly be the Upper Boulder-clay, the more regularly stratified deposits below it being the Interglacial Beds. The elevated ground is covered thinly by drift clay, while sand and gravel are abundantly spread over the lower areas, resting either on the boulder-clay or directly on the rock.

The Lower Boulder-clay consists of a dense mass of brown clay enclosing rounded and subangular boulders of basalt and of various rocks from adjacent parts of the country; also round and angular pebbles of the same, including chalk, flint, quartz, mica-schist, &c. The larger fragments are frequently striated and polished by ice. Sections occur in the north-west of the sheet, as seen best along the Articlave River, a little, however, outside the margin. Eastward, near Quilly, the drift appears in the form of brown sand, the commencement of the stratified sand and gravel, which at Drumaquill is exposed for a considerable depth in gravel pits, beneath a capping of boulder-clay.

The intervals between the escarpments in the high ground to the west are occupied by a thin covering of boulder-clay, while the sand and gravel form mounds in the flat peaty portions, as may be seen west of Ballinrees and in other localities. The latter are found resting on the boulder-clay in sections on the Aghadowey River, east of Shanlongford Bridge.

The cuttings of the Derry Central Railway near Moneycarrie House pass through boulder-clay abounding in water-worn pebbles of basalt, chalk, mica-schist, &c. The boulders are chiefly of basalt, mostly water-worn, and often at the same time striated. East of Ballygawley it contains seams of sand, and overlies laminated clay; while a little to the south the glaciated basalt in the river is covered by fifteen feet of boulder-clay containing a seam of similar laminated clay near the top; and near Brome the boulder-clay, a steep face of which overhangs the river, is capped by stratified sand and gravel.

The lower Boulder-clay and the Interglacial Beds are thus represented in this locality, and an examination of the railway cuttings and other sections through the country to the north-east, by Ballymoney, Dervock, Stranocum, and Armoy, shows that the latter, thickening out considerably, and becoming more sandy in their composition, merge upward into a gravelly and more or less clearly stratified clay with boulders, similar to that near Moneycarrie House and Ballygawley.

Reddish laminated clay, belonging to the middle division of the drift, is laid open in drains and railway cuttings, in association with darker clays and seams of sand, at Macfinn, Ballygan, &c. North-east of the latter place, where the glacial striæ are shown, boulder-clay overlying the basalt is capped by stratified sand and gravel; and along the stream east of Ballynacree House the brick clay rests on stiff boulder-clay.

The manufacture of tiles from reddish laminated clay was at one time carried on near Balnamore House; and similar clay of light reddish and bluish gray colour is at present used for making bricks, tiles, flower-pots, &c., near Glasgort, south-west of Agivey, Bann Bridge. Here it contains, in the lower beds, hard, highly calcareous, flat nodules, similar to the so-called "cracking-stones" and "sandstones" that occur in the clays near Maghera, as also on the northern shore of Lough Neagh,* and in many other places. The following localities in this sheet, where these nodular clays are found, may be noticed:—East of the Bann, along a stream north-west of Coolderry South, where the nodules are imbedded in, or form indurated portions of whitish marl, which occurs in broken laminæ in reddish clay and brown sand, all being overlaid by gravelly boulder-clay; at the parish boundary south-east of Knockantern National School, where the clay, which contains particles of softened lignite, is said to overlie pure sand at a depth of thirty feet; south of Mount Sandel Cottage, close to the river; north-west of Coleraine Workhouse, where a section twenty-five feet deep was cut in boulder-clay with seams of sand, the central portion changing to sand with nodular clays in which was imbedded a large piece of softened lignite; in the railway cutting at the new cemetery near Coleraine, where the laminated clay with nodules passes upward into apparently unstratified boulder-clay.

A little west of Coleraine, south of Irish Houses, the clay is extensively used for making tiles and bricks. Among it are found beds of sand, and occasionally gravel, the clay itself being more or less arenaceous. The top beds are of brownish colour with blue markings, those lower down being darker, and known as "blue clay." They enclose a few basalt boulders, and also contain in some beds flat and rudely cylindrical calcareous nodules, many of the latter penetrated by narrow tubular cavities surrounded by concentric iron-stains.

The gravel at Drumaquill is, as before stated, overlaid by boulder-clay, and a well-sinking at two-thirds of a mile east of Irish Houses passed through thirty-five feet of that deposit over running sand. The town of Coleraine is chiefly built on stratified sand and gravel, extensive sections in which were opened at the railway station in excavating for ballast. Iron-stone nodules are of common occurrence here, and in many other localities, in the gravel. Fragments of silicified wood are sparingly distributed, one specimen eighteen inches long being found near the Irish Houses, smaller pieces at the station, and near Ballymoney, along the river Bann, &c. Pebbles of trachyte porphyry are of rare occurrence in the gravel east of Ballymoney.

* Geol. Survey Memoir, Sheet 27, p. 36.

The gravel at Drumaquill is characterized by the presence of a great number of specimens of *Gryphæa*, but little water-worn; also belemnites, and a large quantity of chalk pebbles.

Various excavations prove that in the district north-east and north-west of Ballymoney boulder-clay both underlies and overlies stratified gravel and sand and finely laminated clay. In an opening for a culvert half a mile east of the town, the lower half, nine feet deep, consisted of amorphous dark gravelly clay full of boulders, the top part being lighter and more sandy, and containing irregular nests or patches of gravel and fewer large stones. Slickensides occur in the clay here, the surfaces in some cases being coated with black leafy vegetable matter, which substance is also found in some of the layers of sand and gravel (overlaid by boulder-clay) in the cuttings east of Kidstown and west of Greenville.

N.N.E. of Kidstown fine pure sand, resembling the ordinary sea sand of our coasts, is covered by obscurely stratified boulder-clay containing water-worn blocks three feet in diameter, some deposited in lines parallel to the surface and bedding of the sand below.

The cuttings at Dervock also contain boulder-clay resting on fine sand, with an intervening line of boulders, the clay enclosing seams of sand. At Clover Hill fine siliceous sand is flanked by, and merges up into, gravelly boulder-clay, while in the cuttings for two miles west of Armoy the latter predominates, with no apparent stratification, but abounding in round pebbles of basalt, chalk, and other rocks common to the gravel, including some ironstone nodules, and occasionally silicified wood.

The railway cuttings in the south-east of the sheet pass through stratified gravel and sand thickly heaped over the surface in uneven mounds; narrow sinuous ridges, or eskers, occurring in the flat boggy ground. Small basalt boulders are frequent in this gravel, the greater part of which is composed of the same rock, pebbles of flint, chalk, quartz, &c., being very few in number. The sand composes but a small proportion of the stratified deposits in this locality.

RECENT AND POST-GLACIAL.

Bogs and Alluvial Flats.—The most extensive tract of peat is that which lies north of Ballymoney, where this deposit covers the entire of the flat ground traversed by the Bush River, except certain alluvial portions situated along its course, and forming narrow strips which skirt its tributary streams. The peat overlies brown and gray sandy alluvium, sometimes containing a large quantity of finely divided mica. Sections in the river banks show several feet deep of brown alluvial clay with embedded trunks of oak. These remains, with fragments of fir trees, are of common occurrence, the former being found chiefly at the bottom of the peat, resting on the boulder-clay or gravel. In some cases the roots remain in their natural position, occasionally in such numbers as to mark the site of a grove or forest. Portions of

the bogs have been drained and cultivated, but as a rule there are no facilities for extending improvements of this kind over large areas, through want of sufficient fall for the water.

The large bog which stretches from near Ballymoney southward by Clogh Mills traverses a peculiarly damp and cold tract of country. Here the river Main has its source, and its overflowings, caused by a high average rainfall throughout a flat and low-lying area, keep the lands under water for a long period every year. The snow in winter, also, lies longer in this part of the district than in the adjacent surrounding region. Besides the ordinary brown clay of which, together with occasional beds of fine or coarse gravel, the alluvial deposits here principally consist, there exists along the river Bann, as far north as Ballynacree House, a peculiar brownish gray diatomaceous clay ("Bann Clay"), weathering white.* It is made into bricks in the flat land bordering the river west of New Row, where the section was as follows:—

Bann Clay,	.	.	.	4 feet.
Peaty Clay,	.	.	.	3 "
Whitish Sand,	.	.	.	1 "

these being above tough "blue clay" of unknown depth.

Vessels containing butter in a state of preservation have been found in the bogs, as, for example, south of Glasgort, a short distance west of the Bann; also north of Ballintaggart, four miles to the N.N.W.; where a jar full of this substance occurred at eight feet below the surface. In the former place a boat twelve feet long was dug out. Part of a deer's antler was discovered at six feet from the surface in the bog west of Coleraine, two feet above the underlying gravel. Such remains are rare in this district, and the records are of so scanty a nature as to furnish no certain information regarding the species.

CHAPTER III.

PRINCIPAL FAULTS, &c.

The fault running nearly N. and S., at a mile west of Clogh Mills, with an easterly downthrow, has brought down portions of the iron ore and overlying basalt, which have thus escaped the extensive denudation that removed the greater part of these members of the Miocene Basalt series. That which passes by Lisanoure Castle has a N. Westerly downthrow, as is proved in the adjoining sheet (No. 14); and in the same sheet we must look for the principal evidence in connexion with the fault close to Armoy, which brings down the basalt on the north against the Triassic and Cretaceous beds.

* Geological Survey Memoir, Sheet 19, p. 19.

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