

**PLATES AND MAPS**

IN ILLUSTRATION

OF

VOLUME VI.

*SECOND SERIES,*

OF

**THE TRANSACTIONS**

OF

**THE GEOLOGICAL SOCIETY**

**OF LONDON.**

---

LONDON:

PRINTED BY R. AND J. E. TAYLOR, RED LION COURT, FLEET STREET.

SOLD AT THE APARTMENTS OF THE GEOLOGICAL SOCIETY,  
SOMERSET HOUSE.

---

1842.

## EXPLANATION OF THE PLATES AND WOODCUTS.

### PLATES XXIII. and XXIV., also XXV. to XXXVIII.

Illustrate the memoir of Prof. Sedgwick and Mr. Murchison on the distribution and classification of the Palæozoic deposits of the north of Germany and Belgium: p. 221.

#### PLATE XXIII.

- Fig. 1.* General succession of ancient rocks in the Rhenish provinces and Germany.
- Fig. 2.* Section from the coal-field of Westphalia near Kettwig, to the carboniferous limestone east of Ratingen: p. 228 *et seq.*
- Fig. 3.* Section across the Devonian limestones at Schwelm, to show their dislocations and passage into the inferior strata: p. 228 *et seq.*, also p. 235 *et seq.* and p. 256 *et seq.*
- Fig. 4.* Section from the greensand at Dortmund to the mountains south of Iserlohn, exhibiting the succession from the coal-measures to the Silurian rocks. This section afforded the authors the correct order of formations in the Rhenish provinces. The beds (*a*) represent the ordinary coal-field; (*b*) lower grits belonging to the same series; (*c*) unproductive coal-measures, equivalents of the culm-measures of Devonshire; (*d*) the carboniferous limestone occupying the same position as in Devonshire; (*e*) shale and psammite, constituting the uppermost strata of the Devonian system; (*f*) Devonian limestone; (*g*) Devonian schist and shale; (*h* and *i*) Silurian greywacke: p. 228 *et seq.*, likewise p. 256 *et seq.*
- Fig. 5.* Section across the limestone strata of Paffrath, Gladbach and Bensberg, near Cologne, exhibiting an inversion of the deposits. The black limestone (*f*) is identical in aspect and fossils with that in figure 4, but the apparently overlying beds represent the lowest limestones of the Eifel, which constitute a passage into the Silurian system: p. 241.
- Fig. 6.* This section gives the general succession of strata near Dillenburg, the trap rocks being omitted to preserve the true sequence of the stratified series of deposits. The prevalent dip is to the S.S.E.: p. 244 *et seq.*, also p. 253 *et seq.*, and p. 256 *et seq.*
- Fig. 7.* Actual transverse section across a portion of the country east of Dillenburg, to exhibit the obscurity produced in the regular sequence of deposits (shown in section 6) by frequent outbursts of trap and repeated alternations of schaalstein or a contemporary igneous rock: p. 244 *et seq.* and p. 253 *et seq.*, likewise p. 256 *et seq.*
- Fig. 8.* Section from Herborn (south of Dillenburg) through Greifenstein to Daulbsen. The strata near Herborn have been proved by their fossils to be supra-Devonian, and those at Greifenstein are inferred to be upper Silurian, as they contain *Pentamerus Knightii*. Great dislocations, not visible on the surface, are supposed to occur between Thalesbach and Greifenstein: p. 244 *et seq.*, also p. 256 *et seq.*
- Fig. 9.* Section from the Devonian limestone at Limburg, on the Lahn, through the Taunus, to Königstein near Frankfort. It demonstrates that the sedimentary strata (greatly inverted) constitute only a crust of moderate thickness, resting on a mass of igneous products, which at many points have penetrated to the surface, and at others have altered the incumbent rocks; they likewise appear to be the origin of the various mineral waters of Nassau: p. 244 *et seq.*, also p. 280 *et seq.*
- Fig. 10.* Relative positions of the Devonian and Silurian strata at Sötenich, in the district of the Eifel: p. 267 *et seq.*

## EXPLANATION OF THE PLATES AND WOODCUTS.

*Fig. 11.* Section from Dietz on the Lahn to the Rhine, south of Coblenz. It exhibits the rise from beneath the Devonian limestone of a great slaty series, and from beneath these deposits of Silurian greywacke : p. 244 *et seq.*

*Fig. 12.* General section of the Ardennes, to show the relations of the Eifel on one flank and of the Liège country on the other to a central axis of older slaty rocks.

The youngest deposit in the Eifel is the equivalent of the South Devon limestone, and it passes into Silurian greywacke. On the Belgian side of the Ardennes the strata are frequently inverted, as pointed out by M. Dumont in his work on the province of Liège, and as represented in this section, *fig. 12* : p. 261 and p. 267 *et seq.*

*Fig. 13.* Actual section across a portion of the Eifel district, much invaded by volcanic eruptions. The same sequence of the strata as in the preceding sections may nevertheless be detected : p. 261 and p. 267 *et seq.*

*Fig. 14.* Section from the Ardennes on the N.N.W. of the Schnee Eifel to the country on the S.S.E. of Schönecken. It exhibits a considerable thickness of fossiliferous Silurian greywacke, passing upwards by alternations of shale and calcareous strata into limestone of the age of that of South Devon. The uppermost mass of limestone is the dolomite so prevalent in the Eifel and well displayed near Schönecken. Near the latter is a strongly marked line of fracture : p. 267 *et seq.*

*Figs. 15. and 16.* These sections represent the structure of the country south of the Fichtelgebirge in Upper Franconia : p. 298 *et seq.*

The first (*fig. 15.*) proves that the age of the chief limestone of that district (the oldest fossiliferous beds of Count Munster) is the same as that of the Devonian limestones, for it passes upwards into deposits containing mountain limestone fossils : p. 298.

The second section (*fig. 16.*) shows that the limestones of Elbersreuth and Schubelhammer (so celebrated for their organic remains) are members of the Devonian system, but affected by eruptions of trap, and greatly dislocated : p. 300.

*Figs. 17. and 18.* are sections through districts connected with the Hartz.

The first (*fig. 17.*) presents a general section from the Brocken to the plains of Brunswick, but many local details and faults are omitted. Its chief object is to exhibit an axis of Devonian limestone, much altered by intrusive porphyry, and overlaid on each flank by shale and impure limestone, highly charged with iron ore, as well as associated with numerous bands of bedded, contemporaneous trap ; there is also a large development of schaalstein. The shales and schists in contact with the granites of the Brocken and the Rosstrappe are much altered and inverted, and portions have been severed and carried up on the points of eruption. All the secondary strata, from the bunter sandstein to the chalk inclusive, have been also thrown into vertical or inverted positions : pp. 284, 292.

*Fig. 18.* exhibits an ascending section from the Devonian limestone of Hübigenstein and Gründ, to the overlying mining tract of Clausthal : p. 288.

## PLATE XXIV.

Map of the Rhenish provinces reduced from the great map of Hoffmann as improved by many recent observations of Prof. von Dechen and M. Erbreich, and communicated to the authors by the former. The palæozoic rocks are coloured according to the classification of

## EXPLANATION OF THE PLATES AND WOODCUTS.

the authors; and the map is chiefly intended to indicate approximately the relations of the great subdivisions of the older sedimentary deposits: p. 227 *et seq.*

### PLATES XXV. to XXXVIII.

The description of these Plates of Fossils illustrative of the Devonian and Silurian strata of the Rhenish provinces is given in the Memoir of Viscount d'Archiac and M. de Verneuil, and in the notice of their contents in a subsequent page of the explanation.

---

### WOODCUTS.

- Fig. 1.* Section near Arnsberg in Westphalia. An axis of carboniferous black limestone and Kiesel-schiefer, representatives of the culm limestone and flinty slate of Devonshire, is shown to be succeeded on each flank by the lower unproductive coal-measures, undistinguishable from those of Bideford: p. 233.
- Fig. 2.* Section of the general relations of the strata north and south of Brilon, exhibiting the disturbances produced by the igneous rocks: p. 239.
- Fig. 3.* This section presents the connexion of the limestone, iron-ore and schist, with porphyry, at Carpenheim, near Wetzlar, on the left bank of the Lahn: p. 250.
- Figs. 4 and 5.* Sections of the schaalstein and associated strata near München-Mühle and Arfurth: p. 251.
- Fig. 6.* Exhibits the manner in which the fossiliferous strata have been detached from the original position by porphyry, near Bilstein: p. 264.
- Fig. 7.* This section, from near the mouth of the Lahn, presents an instance of wedge-shaped masses of sandstone associated with slates, the whole mass being dislocated and highly inclined: p. 265.
- Fig. 8.* Section of the contorted and disturbed Silurian strata at Ehrenbreitstein: p. 265.
- Fig. 9.* Section opposite Braideburg of contorted beds of arenaceous and slaty greywacke, covered in part, obliquely, by another series of slaty beds of the same age: p. 266.
- Fig. 10a, b.* Diagrams to illustrate the nature of upright and inclined basins. *Fig. 10a.* exhibits an upright basin, in which a line drawn from near the centre, through the point of greatest curvature, falls within the area of the basin. *Fig. 10b.* is an inclined basin, in which a similarly drawn line falls without the area of the basin: p. 268.
- Fig. 11.* A species of *Homalonotus* resembling *H. Knightii*: p. 275.
- Fig. 12.* Section from Weingarten to Münster Eifel, exhibiting a regular sequence at one extremity, and an apparent, but inverted, succession at the other: p. 277.
- Fig. 13.* Section of the celebrated fossiliferous strata of Gerolstein, and of their dislocations. The organic remains are, for the most part, procured from the bands of limestone and shale between the dolomite and the Silurian flagstones with *Homalonoti*: p. 278.
- Figs. 14 and 15.* Sections in the Hartz: p. 286.
- Fig. 14.* Inverted and fragmentary condition of Devonian and Silurian strata near Goslar, north of the Brocken: p. 286.
- Fig. 15.* Section from the greywacke of Netzberg to the bunter sandstein of Nordhausen, with interpolated masses of quarzfreier porphyr: p. 286.

EXPLANATION OF THE PLATES AND WOODCUTS.

*Fig. 16.* Section of the slate quarries of Nordberg near Goslar. In this cut are represented the independence of bedding, cleavage and joints. The undulating lines indicate the bedding, the oblique the cleavage, and the horizontal the peculiar joints or floors. At the junction with the flanking masses of trap the slate is much altered: p 290.

PLATES XXV. to XXXVII.

Illustrate the description of the Devonian fossils of the Rhenish provinces, &c., by Viscount 'Archiac and M. de Verneuil: p. 303.

PLATE XXV.

- |  |  |
|--|--|
| <i>Fig. 1, a, b.</i> Goniatites Nœggerathii: p. 337.             | <i>Fig. 6, a, b.</i> Goniatites cancellatus: p. 339. |
| <i>Fig. 2, a, b.</i> ————— retrorsus: p. 338.                    | <i>Fig. 7, a, b.</i> ————— Hœninghausii: p. 339.     |
| <i>Fig. 3.</i> ————— id. jun.                                    | <i>Fig. 8, a, b.</i> ————— paucistriatus: p. 339.    |
| <i>Fig. 4, 5.</i> ————— id. var. <i>a</i> and <i>b</i> : p. 338. |  |

PLATE XXVI.

- |  |   |
|--|---|
| <i>Fig. 1, a, b.</i> Goniatites Buchii: p. 340.  | <i>Fig. 6, a.</i> Goniatites incertus: p. 342.    |
| <i>Fig. 2, a.</i> ————— ib. var. p. 340.         | <i>Fig. 7, a, b.</i> ————— tenuistriatus: p. 343. |
| <i>Fig. 3, a, b.</i> ————— costulatus: p. 341.   | <i>Fig. 8, a.</i> ————— id. jun.                  |
| <i>Fig. 4, a, b.</i> ————— tuberculatus: p. 342. | <i>Fig. 9.</i> Aptychus vetustus: p. 343.         |
| <i>Fig. 5, a.</i> ————— latestriatus: p. 341.    |   |

PLATE XXVII.

- |  |   |
|--|---|
| <i>Fig. 1, a.</i> Orthoceratites triangularis: p. 347. | <i>Fig. 4.</i> Orthoceratites gracilis: p. 344. |
| <i>Fig. 2.</i> ————— regularis: p. 344.                | <i>Fig. 5, a.</i> ————— striolatus: p. 345.     |
| <i>Fig. 3.</i> ————— Wissenbachii: p. 345.             | <i>Fig. 6.</i> ————— anguliferus: p. 346.       |

PLATE XXVIII.

- |  |  |
|--|--|
| <i>Fig. 1, a.</i> Orthoceratites Dannenbergi:<br>p. 345. | <i>Fig. 4, a, b.</i> Cyrthoceratites lamellosus: p. 348. |
| <i>Fig. 2, a.</i> ————— subfusiformis:<br>p. 347.        | <i>Fig. 5, a, b.</i> ————— ornatus: p. 349.              |
| <i>Fig. 3, a.</i> ————— subpyriformis:<br>p. 347.        | <i>Fig. 6.</i> Bellerophon striatus: p. 353.             |
|  | <i>Fig. 7, a, b.</i> ————— Murchisonii: p. 353.          |
|  | <i>Fig. 8.</i> ————— id. var.: p. 353.                   |
|  | <i>Fig. 9.</i> ————— tuberculatus: p. 353.               |

PLATE XXIX.

- |  |  |
|--|--|
| <i>Fig. 1, a.</i> Cyrthoceratites depressus: p. 350. | <i>Fig. 4, a, b, c.</i> Conularia Gervillii: p. 351. |
| <i>Fig. 2, a.</i> Bellerophon elegans: p. 354.       | <i>Fig. 5, a.</i> ————— ornata: p. 352.              |
| <i>Fig. 3.</i> Conularia Gervillii: p. 351.          |  |

EXPLANATION OF THE PLATES AND WOODCUTS.

PLATE XXX.

- |  |   |
|--|---|
| <p><i>Fig. 1, a.</i> Phragmoceratites subventricosus :<br/>p. 351.</p> | <p><i>Fig. 2, a.</i> Cyrthoceratites lineatus : p. 351.<br/><i>Fig. 3, a.</i> Orthoceratites, siphon? p. 348.</p> |
|--|---|

PLATE XXXI.

- |  |  |
|--|--|
| <p><i>Fig. 1, a.</i> Goniatites costatus : p. 340.<br/><i>Fig. 2, a, b.</i> Cyrthoceratites Eifelensis : p. 349.<br/><i>Fig. 3, a.</i> ————— tetragonus : p. 351.<br/><i>Fig. 4, a.</i> Orthoceratites nodulosus : p. 347.</p> | <p><i>Fig. 5, a.</i> Conularia Gerolsteinensis :<br/>p. 352.<br/><i>Fig. 6, a, b, c.</i> ————— Brongniarti : p. 352.</p> |
|--|--|

PLATE XXXII.

- |  |  |
|--|--|
| <p><i>Fig. 1.</i> Buccinum arculatum : p. 354.<br/><i>Fig. 2.</i> ————— Schlotheimii : p. 355.<br/><i>Fig. 3.</i> Murchisonia coronata : p. 355.<br/><i>Fig. 4.</i> ————— intermedia : p. 356.<br/><i>Fig. 5.</i> ————— id. var. <i>a.</i> : p. 356.<br/><i>Fig. 6.</i> ————— angulata : p. 356.<br/><i>Fig. 7.</i> ————— id. var. <i>a.</i> : p. 356.<br/><i>Fig. 8.</i> ————— bilineata : p. 356.<br/><i>Fig. 9.</i> ————— bigranulosa : p. 357.<br/><i>Fig. 10.</i> ————— id. var. <i>a.</i> : p. 357.<br/><i>Fig. 11.</i> ————— id. var. <i>b.</i> : p. 357.</p> | <p><i>Fig. 12.</i> Murchisonia binodosa : p. 357.<br/><i>Fig. 13, a.</i> ————— tricincta : p. 358.<br/><i>Fig. 14, a.</i> Turbo squamiferus : p. 358.<br/><i>Fig. 15, a.</i> Monodonta purpurea : p. 358.<br/><i>Fig. 16.</i> Trochus Ivanii : p. 359.<br/><i>Fig. 17, a.</i> Pleurotomaria catenulata : p. 359.<br/><i>Fig. 18, a.</i> ————— Orbignyana : p. 359.<br/><i>Fig. 19, a.</i> ————— id. var. <i>a.</i> : p. 359.<br/><i>Fig. 20, a.</i> ————— id. var. <i>b.</i> : p. 359.<br/><i>Fig. 21, a.</i> ————— Lonsdalii : p. 359.<br/><i>Fig. 22, a.</i> ————— Defrancii : p. 360.</p> |
|--|--|

PLATE XXXIII.

- |  |   |
|--|---|
| <p><i>Fig. 1, a.</i> Pleurotomaria Beaumonti : p. 361.<br/><i>Fig. 2.</i> ————— limbata : p. 361.<br/><i>Fig. 3, a, b, c.</i> ————— elegans : p. 360.<br/><i>Fig. 4.</i> ————— delphinuloides :<br/>p. 361.<br/><i>Fig. 4, a.</i> ————— id. var. : p. 362.<br/><i>Fig. 5.</i> ————— exaltata : p. 361.</p> | <p><i>Fig. 6, a, b.</i> Euomphalus Labadyei : p. 362.<br/><i>Fig. 7, a.</i> ————— planorbis : p. 363.<br/><i>Fig. 8, a.</i> ————— lævis : p. 363.<br/><i>Fig. 9, a, b.</i> ————— Serpula : p. 363.<br/><i>Fig. 10, a.</i> ————— trigonalis : p. 364.<br/><i>Fig. 11, a.</i> ————— annulatus : p. 362.</p> |
|--|---|

PLATE XXXIV.

- |  |   |
|--|---|
| <p><i>Fig. 1, a.</i> Euomphalus Goldfussii : p. 362.<br/><i>Fig. 2, a.</i> id. junior : p. 362.<br/><i>Fig. 3, a, b.</i> Schizostoma radiata : p. 364.<br/><i>Fig. 4, a.</i> Natica margaritifera : p. 366.<br/><i>Fig. 5, a.</i> ——— subcostata : p. 366.</p> | <p><i>Fig. 6.</i> Natica subcostata, var. : p. 366.<br/><i>Fig. 7, a, b.</i> Euomphalus Schnurii : p. 364.<br/><i>Fig. 8, a, b.</i> Schizostoma Puzosii : p. 365.<br/><i>Fig. 9, a.</i> Cirrus Leonhardi : p. 365.<br/><i>Fig. 10, a.</i> Pileopsis cassideus : p. 366.</p> |
|--|---|

EXPLANATION OF THE PLATES AND WOODCUTS.

PLATE XXXV.

- |                         |                                     |                         |  |
|-------------------------|-------------------------------------|-------------------------|--|
| <i>Fig. 1, a, b.</i>    | <i>Terebratula caïqua</i> : p. 367. | <i>Fig. 5, a.</i>       | <i>Strygocephalus dorsatus</i> : p. 369. |
| <i>Fig. 2, a, b, c.</i> | ———— <i>lepida</i> : p. 368.        | <i>Fig. 6, a, b.</i>    | <i>Spirifer cheiropteryx</i> : p. 370.   |
| <i>Fig. 3, b.</i>       | ———— <i>ferita</i> : p. 368.        | <i>Fig. 7, a.</i>       | ———— <i>aperturatus</i> : p. 369.        |
| <i>Fig. 3, a.</i>       | ———— <i>id. var.</i> : p. 368.      | <i>Fig. 8, a.</i>       | ———— <i>id. var.</i> : p. 369.           |
| <i>Fig. 4, a, b.</i>    | ———— <i>Voltzii</i> : p. 367.       | <i>Fig. 9, a, b, c.</i> | ———— <i>mediotextus</i> : p. 370.        |

PLATE XXXVI.

- |                      |                                      |                       |   |
|----------------------|--------------------------------------|-----------------------|---|
| <i>Fig. 1.</i>       | <i>Orthis Sedgwicki</i> : p. 371.    | <i>Fig. 9, a.</i>     | <i>Cardium Villarense</i> : p. 375.     |
| <i>Fig. 2.</i>       | ———— <i>Murchisoni</i> : p. 371.     | <i>Fig. 10, a.</i>    | ———— <i>id. var.</i> : p. 375.          |
| <i>Fig. 3.</i>       | ———— <i>subarachnoidea</i> : p. 372. | <i>Fig. 11, a.</i>    | <i>Megalodon concentricus</i> : p. 373. |
| <i>Fig. 4, a.</i>    | ———— <i>Lepis</i> : p. 372.          | <i>Fig. 12, a.</i>    | <i>Cardium pectunculoides</i> : p. 375. |
| <i>Fig. 5, a, b.</i> | ———— <i>minuta</i> : p. 372.         | <i>Fig. 13.</i>       | <i>Pecten Hasbachii</i> : p. 372.       |
| <i>Fig. 6.</i>       | <i>Arca Michelini</i> : p. 373.      | <i>Fig. 14, a, b.</i> | <i>Cypricardia elongata</i> : p. 374.   |
| <i>Fig. 7, a.</i>    | <i>Cardium aliforme</i> : p. 374.    | <i>Fig. 15, a.</i>    | <i>Avicula Goldfussii</i> : p. 373.     |
| <i>Fig. 8, a, b.</i> | ———— <i>Lyellii</i> : p. 375.        |                       |   |

PLATE XXXVII.

- |                   |                                      |                   |  |
|-------------------|--------------------------------------|-------------------|--|
| <i>Fig. 1, a.</i> | <i>Lucina proavia</i> : p. 375.      | <i>Fig. 5, a.</i> | <i>Solen pelagicus</i> : p. 376.                     |
| <i>Fig. 2, a.</i> | ———— <i>Dufrenoyi</i> : p. 375.      | <i>Fig. 6.</i>    | <i>Trigonia? sulcata</i> (non Min. Con.):<br>p. 373. |
| <i>Fig. 3, a.</i> | <i>Pholadomya Munsteri</i> : p. 376. | <i>Fig. 7.</i>    | <i>Ctenocrinus typus</i> : p. 376.                   |
| <i>Fig. 4, a.</i> | <i>Solen Lustheidii</i> : p. 376.    |                   |  |

PLATE XXXVIII.

Silurian Fossils, from the North of Germany and Rhenish provinces, described by Mr. J. de Carle Sowerby : p. 408.

- |                   |                                     |                                |  |
|-------------------|-------------------------------------|--------------------------------|--|
| <i>Fig. 1, 2.</i> | <i>Pterinea lamellosa</i> : p. 408. | <i>Fig. 11.</i>                | <i>Orthis partita</i> : p. 409.          |
| <i>Fig. 3.</i>    | ———— <i>costata</i> : p. 408.       | <i>Fig. 12.</i>                | ———— <i>circularis</i> : p. 409.         |
| <i>Fig. 4.</i>    | <i>Atrypa curvata</i> : p. 408.     | <i>Fig. 13.</i>                | <i>Leptæna profunda</i> : p. 409.        |
| <i>Fig. 5.</i>    | <i>Spirifer speciosus</i> : p. 408. | <i>Fig. 14, a, b, c, d, e.</i> | ———— <i>semiradiata</i> : p. 409.        |
| <i>Fig. 6.</i>    | ———— <i>micropterus</i> : p. 408.   | <i>Fig. 15.</i>                | ———— <i>explanata</i> : p. 409.          |
| <i>Fig. 7.</i>    | <i>Orthis? strigosa</i> : p. 409.   | <i>Fig. 16, a, b, c.</i>       | ———— <i>plicata</i> : p. 410.            |
| <i>Fig. 8.</i>    | ———— <i>virgulata</i> : p. 409.     | <i>Fig. 17.</i>                | <i>Homalonotus Knightii</i> : p.<br>410. |
| <i>Fig. 9.</i>    | ———— <i>Pecten?</i> : p. 409.       |                                |  |
| <i>Fig. 10.</i>   | ———— <i>obovata</i> : p. 409.       |                                |  |

## EXPLANATION OF THE PLATES AND WOODCUTS.

### PLATE XXXIX.

Illustrates Mr. Owen's memoir on remains of a Bird, a Tortoise, and Lizard from the Chalk of Kent and Cambridgeshire : p. 411-413.

*Fig. 1.* Portion of the shaft of the humerus of a longipennate bird : p. 411.

*Fig. 1 a.* Outline of its transverse section at the distal end : p. 411.

*Fig. 2.* Distal extremity of the tibia of probably the same bird : p. 411.

*Fig. 3.* Side-view of a portion of the lower jaw of the Lacertian reptile from the lower chalk near Cambridge : p. 413.

*Fig. 3 a.* Under view of the same jaw : p. 413.

*Fig. 3 b.* Upper view of part of the alveolar series, showing the circular section of the teeth *a* and *b*, and the incomplete alveolus at *c*. The adjoining figure gives an internal view of the alveoli and their outer plate : p. 413.

*Fig. 4.* The vertebral column of the Lacertian from the lower chalk in Kent : p. 412.

*Fig. 5.* Portions of the *Chelone Benstedii* from the lower chalk in Kent : p. 412.

---

### PLATE XL.

Map of part of South America to illustrate Mr. Darwin's memoir on the distribution of the Erratic Boulders and on the contemporaneous unstratified deposits of South America: p. 415.

---

### WOODCUTS,

*Fig. 1.* Section of the strata composing the districts adjacent to the Santa Cruz river, lat. 50° 10' south : p. 416.

*Fig. 2.* Section in Gregory Bay at the eastern part of the Strait of Magellan. It exhibits contorted beds of black mud, which gradually pass into yellow sandy mud : p. 422.

*Fig. 3.* Section also in Gregory Bay. It displays singular contortions in the subordinate layers of one of the strata : p. 423.

---

### PLATES XLI. and XLII.

Map and Sections to illustrate Mr. Austen's memoir on the South-east of Devonshire : p. 433-489.

### PLATE XLII.

*Fig. 1.* Coast sections from Hope's Nose to Petit Tor : p. 441, p. 449 *et seq.*, likewise p. 461 and p. 462 *et seq.*, also p. 470 *et seq.*

*Fig. 2.* Section from the granite south of Moreton Hampstead, to the high road between Newton Bushel and Totness : p. 449 *et seq.*, also p. 457 *et seq.*, and p. 462 *et seq.*, also p. 471.

*Fig. 3.* Section from West Oggwell to the greensand and tertiary beds east of Newton Quarry : p. 449 *et seq.* also p. 457 *et seq.*, and p. 462 *et seq.*, likewise p. 470 *et seq.*

*Fig. 4.* Section, near Totness, of trap resting on limestone and slate : p. 472.

*Fig. 5.* Coast-section near Dawlish, exhibiting the faults in the new red sandstone : pp. 483, 486.

*Fig. 6.* Section of the unconformable position of the carbonaceous deposits to the lower rocks near Chudleigh ; and of the intrusive trap : pp. 458, 460, 472.

## EXPLANATION OF THE PLATES AND WOODCUTS.

*Fig. 7.* Road-section near Newton : p. 463.

*Fig. 8 A to 8 E.* Sections to explain the relative positions of the carbonaceous shale and limestone between Oxencombe and Chudleigh Bridge : p. 461.

*Fig. 9.* Section near Knowle, exhibiting contorted bands of limestone in slate : p. 488.

---

### WOODCUTS.

*Fig. 1.* Represents the manner in which the exposed edges of the laminae of slate are separated and contorted : p. 437.

*Fig. 2.* Sections of fluvio-marine and marine raised estuary deposits : p. 441.

*Fig. 3.* Exhibits the raised beach at Hope's Nose, resting on highly inclined strata of limestone : p. 441.

*Fig. 4.* Section of recent marine deposits, presenting instances of oblique lamination : p. 442.

*Fig. 5.* Section, near Dawlish, of regenerated new red sand overlying a recent marine deposit, the subjacent formation being the regular new red sandstone : p. 447.

*Fig. 6.* Section of greensand resting unconformably on carbonaceous shales, near Combe Farm : p. 451.

*Figs. 7. and 8.* Diagrams of joints and cleavage, which affect the new red sandstone in the south-east of Devonshire : pp. 455, 456.

*Figs. 9, 10, and 11.* Sections exhibiting proofs of the unconformable position of the carbonaceous deposits to the older rocks near Newton and Landue Mill : pp. 458, 459.

*Fig. 12.* Section at Sharkham Point, showing the termination of the limestone and its position relative to the subjacent slates : p. 464.

*Fig. 13.* Ground plan of a trap dyke intersecting slates near West Down : p. 471.

*Fig. 14.* Section near Pulser of the junction of slate with a mass of intrusive trap : p. 473.

*Fig. 15.* Section near Murcheton, exhibiting the intrusion of porphyritic granite among masses of previously consolidated granite : p. 477.

*Fig. 16.* Section near Oghwell, showing the connexion of trap and slate, and the oblique lamination in the latter, apparently due to the action of the former : p. 479.

*Figs. 17, 19, and 20.* Instances of cleavage in variously contorted strata : pp. 481, 482.

*Fig. 18.* Section near Lew Trenchard, exhibiting a stratum of slate (*a*) with an oblique cleavage, interposed between strata of coarse sandstone (*b*) horizontally laminated : p. 481.

---

### WOODCUT.

Map of the Peninsula Aden, to illustrate Mr. Burr's account of the volcanic phenomena and rocks of the district : p. 499.

---

### WOODCUTS

To illustrate Mr. Owen's memoir on the teeth of the *Labyrinthodon* : p. 503—513.

*Fig. 1.* Part of a transverse slice of the tooth of *Labyrinthodon Jageri*, as seen by transmitted light ; magnified 10 diameters : p. 506.

*Fig. 2.* Portion of a transverse slice of the tooth of a *Labyrinthodon* from the Warwick sandstone : p. 511.

---

## EXPLANATION OF THE PLATES AND WOODCUTS.

### PLATES XLIII. to XLVII.

Illustrate Mr. Owen's paper on parts of the skeleton and teeth of five species of *Labyrinthodon*: p. 515.

#### PLATE XLIII.

*Fig. 1.* Portion of the upper jaw of *Labyrinthodon leptognathus*, seen from above: p. 516-521.

*Fig. 2.* The same, seen from below: p. 517-521.

*a,* Large anterior tusk of the outer dental series: p. 517.

*b,* Left vomerine bone, supporting the inner series of teeth: p. 519.

*c,* Posterior palatal foramen: p. 520.

*d,* Part of anterior dental foramen: p. 520, 521.

*Fig. 3.* Side view of the same fossil: p. 516-521.

*a,* Large anterior tusk of the outer dental series.

*b,* Ditto ditto inner or vomerine series.

*c,* Bony palate forming the floor of the nasal cavity.

*d,* Roof of nasal cavity.

*e,* The nasal cavity, filled with matrix.

*Fig. 4.* Portion of left upper jaw of *Labyrinthodon pachygnathus*: p. 528.

*Fig. 5.* A smaller fragment of the same.

*Fig. 6.* Serial teeth of the *Labyrinthodon pachygnathus*.

*Figs. 7. and 8.* Two views of a portion of the lower jaw of *Labyrinthodon pachygnathus*.

*Fig. 9.* Portion of the upper jaw of *Labyrinthodon pachygnathus*: p. 529-530.

*a,* Origin of the outer plate of the intermaxillary bone: p. 530.

*b,* Outer palatal plate of the same bone: p. 530.

*c,* Inner palatal plate, forming the anterior palatal foramen.

*Fig. 10.* Side-view of the same fossil: p. 529-530.

*c,* Anterior palatal foramen.

*d,* Maxillary or upper wall of nasal cavity.

*e,* Nasal cavity, filled with matrix: p. 530.

*Fig. 11.* Anterior frontal: p. 530.

The thickness of the anterior and posterior margins are shown in the appended figures.

*Fig. 12.* Portion of an undetermined bone of *Labyrinthodon*.

*Fig. 13.* An undetermined bone of *Labyrinthodon*.

#### PLATE XLIV.

*Fig. 1.* Portion of the right ramus of the lower jaw of the *Labyrinthodon pachygnathus*: p. 526.

*Fig. 2.* Inside view of anterior end of the same fossil: p. 526.

*a,* Anterior and external suture between the angular and dentary pieces.

*b,* Canal of the angular piece, supporting the dentary: p. 526.

*c, c,* Dentary piece.

*d,* Anterior prolongation of the angular piece.

*Fig. 3.* Upper view of ditto: p. 526.

## EXPLANATION OF THE PLATES AND WOODCUTS.

- Figs. 4, 5 and 6.* Fragments of jaw with teeth of the *Labyrinthodon Jægeri*, from the Warwick sandstone.
- Fig. 7.* Outside view of a portion of the upper jaw of the *Labyrinthodon leptognathus* (Pl. XLIII. figs. 1—3.).
- \* Two teeth of the same jaw, magnified.
- Fig. 8.* Portion of left ramus of lower jaw of *Labyrinthodon leptognathus* : p. 521—523.
- \* Two teeth of the same, magnified.
- Fig. 9.* Upper view of the same bone.

### PLATE XLV.

- Figs. 1—4.* Different views of a portion of a vertebra of *Labyrinthodon pachygnathus* : p. 532.
- Figs. 5—8.* Different views of a fractured vertebra of *Labyrinthodon leptognathus* : p. 523—524.
- Figs. 9 and 10.* Two views of the episternal bone of a *Labyrinthodon* : p. 524.
- Figs. 11—13.* Three views of the proximal half of the humerus of *Labyrinthodon pachygnathus* : p. 533.
- Fig. 14.* Proximal articulation of the same fossil : p. 533.
- Fig. 15.* Fractured end of the same fossil, showing the medullary cavity : p. 533.
- Fig. 16.* External view of the right iliac bone of the *Labyrinthodon pachygnathus* : p. 533.
- Fig. 17.* Internal view of the same bone : p. 533.
- Fig. 18.* Head of the femur of the same species of *Labyrinthodon* : p. 535.
- Fig. 19.* Coprolite from the same quarry.

### PLATE XLVI.

- Fig. 1.* Group of bones of the *Labyrinthodon (Anisopus) scutulatus* : p. 538.
- h, Humerus : p. 539.
- ff, Femora : p. 539.
- tt, Tibiæ : p. 539.
- The fractured ends of the tibia and of a large (jaw?) bone are given above the group.
- Fig. 1'.* Shows the opposite surface of the large bone.
- Fig. 2.* Upper view of a vertebra of the same fossil : p. 539.
- Fig. 3.* The same vertebra magnified, showing the expanded and sculptured summit of the spinous process.
- Fig. 4.* Side-view, and two ends of the same vertebra, natural size.
- Fig. 5.* A dermal scute, four times magnified, of the same fossil : p. 538.
- Fig. 6.* Group of cranial bones of the *Labyrinthodon pachygnathus* : p. 538.
- Fig. 7.* Side-view of the principal of the preceding bones.

### PLATE XLVII.

- Fig. 1.* Outside view of a portion of the left ramus of the lower jaw of the *Labyrinthodon Jægeri*, from Guy's Cliff : p. 537.
- Fig. 1\*.* View of the alveoli of the same fossil : p. 537.
- Fig. 2.* Outside view of a portion of the left ramus of the lower jaw of the same species, from the same locality : p. 537.
- Fig. 3.* Inside view of the anterior end of the same fossil, showing the beginning of the groove for the dentary piece : p. 537.

## EXPLANATION OF THE PLATES AND WOODCUTS.

### PLATE XLVIII.

Illustrates Mr. Strickland's description of a series of coloured sections of the cuttings on the Birmingham and Gloucester railway: p. 545 *et seq.*

The sections given in this plate exhibit the more important geological phenomena exposed along the line of the railway.

*Fig. 1.* Exhibits the cuttings from Stoke Prior through the summit-level of the Lickey ridge to Longbridge: p. 547.

*Fig. 2.* In this section the cutting through the Lickey ridge is given on an uniform scale; and the new red conglomerate is shown to rest unconformably on highly inclined strata of the lower new red sandstone: p. 547.

*Figs. 3 and 4.* Exhibit cuttings through the junction beds of the lower lias and red marl: p. 550, 551.

*Fig. 5.* Shows the positions of the marine gravel with flints, and the ancient fluviatile deposits with reference to the configuration of the country: p. 554.

---

### WOODCUTS

Explanatory of Mr. Maclauchlan's Notes on Pembrokeshire: pp. 557—560.

*Fig. 1.* Section from Aberiddy Bay to Solfach Harbour, near St. David's: p. 558—560. This section is about fifteen miles to the west of No. 2. and nearly parallel to it.

*Fig. 2.* Section from Llawhaden, near Canaston, to Dinas Head: p. 557—559.

---

### WOODCUT

Exhibiting the phenomena exposed in the cutting at Bleadon Hill on the line of the Bristol and Exeter railway, and described in the communication of the Rev. David Williams: p. 561, 562.

---

### THREE DIAGRAMS

Exhibiting the natural cleavage of quartz-rock (fig. 1.) and slate (figs. 2, 3.), noticed in the extract from the Rev. W. B. Clarke's paper on the Cotentin: p. 565, 566.

---

### TWO WOODCUTS,

Of veins of gravel in granite exposed on the north-west coast of Guernsey. The circumstances connected with these veins are described in the extract from a letter by W. C. Trevelyan, Esq.: p. 567.