EXPLANATION OF THE PLATES.

Plates I., II. & III.

Illustrate Dr. Buckland and Mr. De la Beche's paper on the Geology of the neighbourhood of Weymouth and the adjacent parts of the coast of Dorset.

Plate I.

Geological Map of the neighbourhood of Weymouth and the adjacent parts of the coast of Dorset.

The reader is requested to take notice that the authors do not profess to mark the exact limits of the lower Purbeck Beds in Portland, but merely to indicate their presence as the uppermost formation in the north end of that island.

Plate II.

Series of Sections.—Colours the same as in the Map.

Fig. 1. Section from the Great fault near Upway to the Bill of Portland*.

Fig. 2. Section from the Great fault near Moigne's Down Farm to Ringstead Bay.

Fig. 3. Section from the Great fault near Poxwell to the signal station near Osmington Mills.

Fig. 4. Section from the Great fault near Sutton to the Sea at Ham Cliff.

Fig. 5. Section from the Great fault near Sutton to Jordon Hill in Weymouth Bay.

Fig. 6. Section from Abbotsbury Common over Linton Hill.

Fig. 7. Section from Abbotsbury Castle to Abbotsbury Swanery, showing the continuation of the Great fault.

Fig. 8. Coast section from Jordon Hill to near Boat Cove. The apparent curvature in the Oxford Clay and other strata at the east end of this section arises from an indentation of the coast: the strata have an E. and W. direction throughout, and dip rapidly N., and have not the bend here represented, by throwing the curves of the coast into a straight line.

Fig. 9. Coast section from near the termination of fig. 8 to Ringstead Bay. As the coast ranges along the line of direction of the strata, its indentations give these strata a false appearance of dipping in different directions: they form a small arch at Osmington Mills.

* The Scale (in length) of fig. 1. is one inch to the mile; of fig. 2. to 10. inclusive, two inches to the mile: figs. 11. to 13. inclusive are on a larger scale, and fig. 14. two inches to the mile.

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Fig. 10. Coast section near White Nore.

Fig. 11. Fault in the Cliffs, a little W. of White Nore.

Fig. 12. Theoretical diagram representing the manner in which different rocks may be seen in contact, in consequence of various degrees of denudation, on the same fault. Illustrations of this may be found in Sutton Valley;—where there is little or no denudation, the Portland Stone and Chalk are in contact at the surface; where a denudation occurs to the depth of the curved line *a a*, the Portland Stone and Green Sand are in contact, on opposites sides of the fault; at the depth *b b*, the Portland Sand and green sand touch each other; and at the depth *c c*, the Kimmeridge clay touches green sand.

Fig. 13. Fault in the cliff west of Bridport Harbour.

Fig. 13 *a*. Eastern termination of the Bridport Harbour fault.

Fig. 14. Section from the cliff west of Bridport Harbour to Askerswell.

PLATE III.

Fig. 1. Tabular and proportional view of the strata in the Weymouth district.

a. Angular flints and plastic clay.

b. Chalk.

c. Chalk interspersed with grains of green earth (Craie chloritée).

d. Indurated green sand, with quartz grains and quartzose sandstone.

e. Greenish brown sands with indurated concretions.

f. Light brown sands. Fox mould.

g. Green sandy marl beds, with nodules similar to the cow-stone at Lyme Regis.

h. Purbeck beds.

i. Dirt bed, above the Portland beds, frequently contains rolled calcareous pebbles, and fossil silicified trunks of large coniferous trees, and of Cycadeoideæ.

k. Best beds of the Portland Stone.

l. Compact light-coloured limestone, with beds, seams, and nodules of chert.

m. Grey shelly beds, the base of the Portland Stone.

n. Green, brown, and grey sands and sandstones.

o. Brown and grey sandy marls, with indurated nodules.

p. Kimmeridge clay, contains an abundance of deltoid oysters.

q. Clay ironstone in the lower part of the Kimmeridge clay.

r. Upper grit beds, containing deltoid oysters: these beds are most fully developed near Sandfoot Castle.

s. Oolite differently developed in different places.

t. Brown sands, containing indurated nodules of calcareous sandstone.

u. Grey clay.

v. Larger deposit of calcareous grit, containing *Gryphæa dilatata*.

w. Oxford clay, grey marl, abounding in *Gryphæa dilatata*.

x. Rubbly and slaty Cornbrash limestones, alternating with clays and marls.

y. Slaty and shelly grey and brown limestones, containing *Apiocrinites rotundus*, lignite, broken shells, &c.

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z. Grey marl, with marlstone in its lowest region.

a a. Coarse granular limestone, loaded with grains and veins of hydrate of iron.

b b. Light brown and yellow calcareo-siliceous sands and sandstones, often highly micaceous.

Fig. 2. Section showing details of the Oxford oolite near the east extremity of Weymouth Bay.

Fig. 3. Detailed section of the strata that occur in the Isle of Portland.

Note.—Since the paper has been printed to which these sections refer, a notice has appeared in the London and Edinburgh Philosophical Magazine, August 1, 1833, p. 158, by Mr. R. Phillips, containing a minute analysis of the water of two sulphureous springs of similar quality near Weymouth, both of which issue from near the junction of the lower beds of the Oxford clay with the cornbrash or upper beds of the Forest Marble Formation. One is situated at Nottington, about three miles on the North of Weymouth, and was described by Dr. Pickford in a small treatise printed at Weymouth in 1821. The other rises at Radipole, about one mile from Weymouth, and was discovered but a short time ago. The most important of the ingredients of these mineral waters is sulphuretted hydrogen, which is derived from the passage of the water through strata that contain iron pyrites in a state of decomposition. Mr. Phillips remarks that "the saline contents of these waters are so small in quantity, that they must be considered as quite inert, and therefore those who wish to avail themselves merely of the sulphuretted hydrogen, may take them in larger quantity than if they were active in other respects.

PLATES IV. & V.

Illustrate Professor Sedgwick's paper introductory to the General Structure of the Cumbrian Mountains, with a description of the great dislocations by which they have been separated from the neighbouring carboniferous chains: p. 47.

PLATE IV.

Map exhibiting the geological structure of the district, and the range of the band of limestone and calcareous slate between the quartzose green slate and the greywacké slate.

PLATE V.

Sections exhibiting some of the great dislocations produced by the elevation of the northern carboniferous chain: p. 59.

PLATE VI.

Illustrates Professor Sedgwick's paper on a Series of longitudinal and transverse sections through a portion of the carboniferous chain between Penigent and Kirkby Stephen: p. 69.