The Upper oolitic system of the above table has usually the Kimmeridge clay for its base; the Middle oolitic system, the Oxford clay. The Lower system reposes on the Lias, an argillo-calcareous formation, which some include in the Lower Oolite, but which will be treated of separately in the next chapter. Many of these subdivisions are distinguished by peculiar organic remains; and, though varying in thickness, may be traced in certain directions for great distances, especially if we compare the part of England to which the above-mentioned type refers with the northeast of France and the Jura mountains adjoining. In that country, distant above 400 geographical miles, the analogy to the accepted English type, notwithstanding the thinness or occasional absence of the clays, is more perfect than in Yorkshire or Normandy.

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*Physical geography.*—The alternation, on a grand scale, of distinct formations of clay and limestone has caused the oolitic and liassic series to give rise to some marked features in the physical outline of parts of England and France. Wide valleys can usually be traced throughout the long bands of country where the argillaceous strata crop out; and between these valleys the limestones are observed, composing ranges of hills or more elevated grounds. These ranges terminate abruptly on the side on which the several clays rise up from beneath the calcareous strata.

The annexed cut will give the reader an idea of the configuration of the surface now alluded to, such as may be seen in passing from London to Cheltenham, or in other parallel lines, from east to west, in the southern part of England. It has been necessary, however, in this drawing, greatly



to exaggerate the inclination of the beds, and the height of the several formations, as compared to their horizontal extent. It will be remarked, that the lines of cliff, or escarpment, face towards the west in the great calcareous eminences formed by the Chalk and the Upper, Middle, and Lower Oolites; and at the base of which we have respectively the Gault, Kimmeridge clay, Oxford clay, and Lias. This last forms, generally, a broad vale at the foot of the escarpment of inferior oolite, but where it acquires considerable thickness, and contains solid beds of marl-stone, it occupies the lower part of the escarpment.

The external outline of the country which the geologist observes in travelling eastward from Paris to Metz is precisely analogous, and is caused by a similar succession of rocks intervening between the tertiary strata and the Lias; with this difference, however, that the escarpments of Chalk, Upper, Middle, and Lower Oolites face towards the east instead of the west.