

They outcrop along the Apennines, the Pyrenees, and east-central Spain. They cover large areas in central and northern Russia. The beds have a small development along the Alps compared with the Triassic; but the fossils and rocks show, by their kinds, that the great continental sea was here of unusual depth and purity.

In England the subdivisions of the Jurassic series are as follows:—

1. *Liassic Group.*

(1) The LOWER LIAS, consisting of clays, shales, and gray limestone, and about 900 feet thick.

(2) The MIDDLE LIAS, or Marlstone, a coarse shaly argillaceous and ferruginous limestone with sand-beds and clays; 200 to 350 feet thick.

(3) The UPPER LIAS, consisting of clays and shales, and containing limestone concretions; 200 to 300 feet thick; with the Midford sands in southern England about 200 feet. The *jet* of the Yorkshire coast is a compact variety of coal from the Upper Lias.

These subdivisions were named in France by D'Orbigny: (1) the *Sinemurian*, from the Latin word for the town of Sémur; (2) the *Liassian*; and (3) the *Toarcian*, from Thouars, in western France.

2. *Oölytic Group.*

(1) The LOWER OÖLYTE.

Divided into (1) the *Inferior Oölyte*, which includes the sandstones or Dogger of Yorkshire and the Cheltenham beds—the *Bajocian*; and (2) the *Great* or Bath Oölyte—the *Bathonian*, including (a) the Fuller's earth, or clay-beds of varying thickness up to 400' in Dorsetshire; (b) the Stonesfield slate, a thin-bedded limestone in Oxfordshire, and above it; (c) the Forest Marble, consisting of sandy and clayey layers with Oölyte; and (d) the Cornbrash, a coarse shelly limestone. At Brora, on the east coast of northern Scotland, there is a coal-bed 2½' thick, overlaid by beds containing Middle Oölyte fossils. In Yorkshire, the Inferior Oölyte contains estuarine beds with thin seams of coal and many remains of plants.

(2) The MIDDLE, or OXFORD OÖLYTE.

Divided into (1) the *Callovian*, consisting of the Kellaways rock; (2) the *Oxfordian*, calcareous sandstone and the Oxford clay; and (3) the *Corallian*, made up of the Coral rag or Coralline Oölyte, 10' to 120', with more or less of calcareous grit, 5' to 80'.

(3) The UPPER, or PORTLAND OÖLYTE.

Divided into (1) the *Kimmeridgian*, or Kimmeridge clay, having ferruginous concretions in the lower division, called "doggers"; (2) the *Portlandian*, or the Portland stone, including marlytes and limestone, in part oölytic, with fresh-water beds; and (3) the *Purbeckian*, or Purbeck beds, well displayed in Dorsetshire, mostly shales with some limestone at middle which is partly of marine origin, 100' to 400' thick, and affording remains of numerous Insects and Mammals. The "Portland dirt-bed" is at its base.

In Europe other subdivisions have been introduced, for which see page 790.