

oölytic, with *Ceratites nodosus*, *Encrinurus liliiformis*, *Myophoria vulgaris*, *Monotis Alberti*, *Lima striata*, *Pecten discites*, *Spirifer fragilis*.

In the Alps, the *Virgloria* or Gutenstein limestone (the *Virglorian*): (a) stage of *Trachyceras balaticum* and *T. binodosum*; (b) stage of *Trachyceras trinodosum*. In Lombardy the same stages: Varenna marble, Salvator dolomite, Besano dolomite. Other Middle Triassic species are *Ptychites gibbosus*, *Gymnites incultus*, *Foosdiceras bidorsatum*, *Atractites secundus*.

**3. Upper Trias.** — (1) *Keuperian*. In Germany: (a) *Lettenkohle* group with the *Grenzdolomit*; *Anoplophora lettica*, *Myophoria Goldfussi*, *Estheria minuta*, *Ceratodus*, *Equiseta*, *Calamites*, *Voltzia*; (b) *Keupermergel*, with *Anoplophora Münsteri*, *Estheria*, *Mastodonsaurus Jaegeri*, *Equiseta*, *Pterophyllum Jaegeri*, *Calamites arenaceus*, *Danæopsis*.

In the Alps: (a) *Wengen* shales overlaid by (b) the St. Cassian beds and (c) the Hallstadt limestone of the Salzburg region; (d) Wetterstein limestone and (e) Schlern dolomite; with the stages (a) *Arcestes giganto-galeatus* and *Pinacoceras Metternichi* (overlying beds of the Middle Trias containing *Choristoceras Haueri*); (b) *Pinacoceras parma*, and *Didymites globus*; (c) *Arcestes ruber*; (d) *Didymites tectus*; (e) *Tropites subbullatus*. In Lombardy: the zones of (a) *Trachyceras Reitzi* and *T. Curionii*; (b) *T. Archelaus* and *Daonella Lommeli*.

(2) *Rhætic beds*. — In England: *Avicula contorta*, *Pecten Valoniensis* (these two species characteristic and abundant), *Pleurophorus elongatus*, *Pullastra arenicola*, *Monotis decussata*, *Modiola minima*, *Ostrea liassica*; *Spirifer Münsteri*, *Estheria minuta*; *Acrodus minimus*, *Hybodus plicatilis*, *Saurichthys apicalis*, *Gyrolepis tenuistriata*, vertebræ of *Ichthyosaurs* and *Plesiosaurs*, tracks of *Chirotherium*; *Microlestes* in Bone-bed. Many of the species occur also in the Lias.

In the Alps: (a) *Raibl* shales; (b) *Hauptdolomit* (*Dachstein* limestone); (c) *Kössen* beds: stages (a) *Trachyceras aonoides*, *Cardites crenatus*, *Gervillia bipartita*; (b) *Turbo solitarius*, *Avicula exilis*, *Megalodon triquetus*; (c) *Avicula contorta*.

The "White Lias" of England, at the top of the Rhætic, also called the *Infra-Lias*, is the *Hettangian* of Renevier.

The Triassic rocks of Spitzbergen, partly bituminous shales, have afforded species of *Nautilus*, *Ammonites*, *Ceratites*, *Halobia*, etc., closely like, if not identical with, species of the St. Cassian beds (Laube).

## 2. JURASSIC.

The belt of Trias in England (see map, page 694) is succeeded on the eastward by approximately parallel and interlocking belts of Lias and Oölyte, and then follows the Cretaceous. This position of the Jurassic areas between the Triassic and Cretaceous is common over Europe. In France and Germany, south of the broad coast region of Tertiary and Cretaceous, comes first the Jurassic next to the Cretaceous, and then the Triassic. The British Jurassic belt, which reaches the Channel at Lyme-Regis, reappears in France, and is continued along by the inner side of the Cretaceous, about the so-called Paris Basin, and also in Hanover, in northwestern Germany. Further, Jurassic areas border the inner side of the Triassic. From west-central France they extend southeast to the Mediterranean, and from east-central southeast to the Juras; and a long Jura-mountain belt, of northeastward course, reaches far into northern Bavaria and Germany. Jurassic rocks occur also along both sides of the Alps, and extend on through the Austrian Alps; and after an interruption about Vienna, appear again in the Carpathians.