Infra-liassic(?) Strata of the Austrian Alps, in descending Order.

1 Koessen beds. (Synonyms, Upper St. Cassian beds of Escher and Merian; Upper Trias? or intermediate between Lias and Trias?)	Gray and black limestone with calcareous marls, having a thickness of about 50 feet. Among the fossils, Brachiopoda very numerous; some few species common to the genuine Lias; many peculiar. *Avicula contorta*, *Pecten Valoniensis*, *Cardium Rhæticum*, *Avicula inæquivalvis*, *Spirifer Münsteri*, Dav. Strata containing the above fossils alternate with the Dachstein beds, lying next below.
2. Dachstein beds, between Lias and Trias?	White or grayish limestone, often in beds 3 or 4 feet thick. Total thickness of the formation above 2000 feet. Upper part fossiliferous, with some strata composed of corals. (*Lithodendron.*) Lower portion without fossils. Among the characteristic shells are *Hemicardium Wulferii*, *Megalodon triqueter*, and other large bivalves.
3. Hallstatt beds (or St. Cassian). Upper Trias.	Red, pink, or white marble, from 800 to 1000 feet in thickness, containing more than 800 species of marine fossils, for the most part mollusca. Many species of *Orthoceras*. True *Ammonites*, besides *Ceratites* and *Goniatites*, *Belemnites* (rare), *Porcellia*, *Pleurotomaria*, *Trochus*, *Monotis salinaria*, &c.
4. *A.* Guttenstein beds. *B.* Werfen beds, base of Upper Trias? Lower Trias of some geologists.	*A.* Black and gray limestone 150 feet thick, alternating with the underlying Werfen beds. *B.* Red and green shale and sandstone with Salt and Gypsum. — Among the fossils are *Ceratites cassianus*, *Myacites fassaensis*, *Naticella costata*, &c.

In regard to the age of the rocks above mentioned, the Koessen and Dachstein beds are referred by some to the Lias, by others to the Trias, while many consider them to be of intermediate date. According to Mr. Suess, the Koessen beds correspond to the upper bone-bed of Swabia, in which the *Microlestes* was found (see p. 341), but it should not be forgotten that that stratum contains true triassic species of reptiles and fish. On the whole, the beds 1 and 2 contain a very peculiar fauna, and Mr. Suess remarks that some of the fossils are identical with the Irish "Portrush beds" of Colonel Portlock, described in his Report on Londonderry. The Koessen beds have been traced for 100 geographical miles from near Geneva to the environs of Vienna.

Whatever doubts may be entertained respecting the exact age of the beds Nos. 1 and 2, there is now no longer any dispute that the Hallstatt and St. Cassian beds agree in age with the Keuper or Upper Trias; but whether the Werfen sandstone, No. 4, should form part of the same series, or, as Von Hauer inclines to believe, should be classed as the equivalent of "the Bunter or Lower Trias," is still undetermined. The absence of well-characterized Muschelkalk fossils in the Austrian Alps renders this point very difficult to decide. Rich deposits of salt, associated with the Werfen beds, incline some geologists to presume that they belong to the Upper Trias. Should they be classed as "Bunter," the Guttenstein limestone would then correspond in position with the Muschelkalk, but no Muschelkalk fossils have ever been met with in it