

of Switzerland, and other Miocene deposits. The Sub-Apenine stage includes, in addition to the Pliocene marine formations of Italy and the upper sands of Montpellier, a mixture of young Tertiary and diluvial deposits. D'Orbigny's classification is very unsatisfactory; it often throws together strata of quite different ages, and assumes stratigraphical limits for which there is no evidence.

In addition to Touraine, Gascony, and Turin, another district well known to the literature in connection with the Miocene strata is the Vienna basin. The first scientific observations of this area were contributed by Constant Prévost (1820) and Ami Boué (1822). The latter relied mainly on information given by Partsch and Hauer, who had been an enthusiastic collector of fossils in the localities near Vienna. In 1837, Bronn revised Hauer's collection, and by his identification of the fossils proved that the fauna was of Miocene age. In 1846, D'Orbigny published his excellent monograph on the Foraminifera of the Vienna basin, and two years later Reuss published an account of the fossil polyps.

Many geologists examined local areas and contributed sections and maps, but the first to give a clear exposition of the stratigraphical relations of the whole Vienna basin was Suess, in 1866, in a memoir entitled *Untersuchungen über den Charakter der österr. Tertiärlagerungen*. This memoir described not only the Alpine "Vienna basin," but also the deposits in the area between the Alps and the Manharts range. Suess showed that the Eocene Nummulite formation is succeeded by poorly fossiliferous marls and clays, then by the Meletta shales, which form a fairly constant band of strata in the Alps and Carpathians, in Alsace, and other localities. They are followed in the Vienna basin by the lowest Miocene strata of Molt and Horn, of Gauderndorf and Eggenburg, which are largely of fresh-water origin, and are covered by the widely-distributed "Schlier" or "Cyrena beds" of brackish-water origin. Then succeeds the richly fossiliferous Marine series, comprising sands, calcareous clays (Tegel), and limestones, passing into one another as diverse rock-facies of contemporaneous origin. The limestone facies predominates in the Leitha mountains, while the blue calcareous clays of Baden are the shallow-water equivalents of the Leitha limestones. The marine deposits were all comprised by Suess under the general term of "Mediterranean Stage."