

sometimes effected by floating ice. They have left their ancient platforms of alluvium in successive terraces high above the present watercourses. Each terrace consists generally of the following succession of deposits in ascending order: (1) A lower gravel (*gravier de fond*), the pebbles of which are coarsest toward the bottom and are interstratified with layers of sand, sometimes inclined and contorted. (2) Gray sandy loam (*sable gras*). (3) The foregoing strata are covered by yellow calcareous loess (p. 566), or with an overlying dark brown loam or brick-earth. The upper exposed parts of the gravels and sands are commonly well oxidized, and present a yellowish-brown or deep reddish-brown tint, while the lower portions remain more or less gray. Hence the old names *diluvium gris* and *diluvium rouge*. The gravels and brick-earths have yielded terrestrial and fresh-water shells, most of which are of still living species, and numerous mammalian bones, among which are *Rhinoceros antiquitatis* (*tichorhinus*), *R. etruscus*, *R. leptorhinus*, *Hippopotamus amphibius*, *Elephas antiquus*, *E. primigenius*, wild boar, stag, roe, ibex, Canadian elk, musk-sheep, urus, beaver, cave-bear, wolf, fox, cave-hyæna, and cave-lion. Palæolithic implements found in the same deposits show that man was a contemporary of these animals (see p. 1733).<sup>32</sup>

It is in the centre and east of France that the most unequivocal signs of the ice of the Glacial Period are to be met with. The mountain groups of Auvergne, which even now show deep rifts of snow in summer, had their glaciers whereby moraine heaps and large blocks of rock were strewn over the valleys; not only so, but there is evidence in that region of a retreat and redescent of the ice, for above the older moraines lie interglacial deposits containing abundant remains of land-plants with bones of *Elephas meridionalis*, *Rhinoceros leptorhinus*, etc., the whole being covered by newer moraines.<sup>33</sup>

The much lower grounds of the Lyonnais and Beaujolais (rising to more than 3000 feet) likewise supported indepen-

---

<sup>32</sup> A detailed study of the Quaternary deposits of the north of France has been made by J. Ladrière, who divides them into three stages, each marked off by a gravelly layer at the base and terminating above in a loam with terrestrial vegetation and fresh-water and terrestrial shells. The lowest is the *assise*, with *Elephas primigenius* and *Rhinoceros tichorhinus*. *Ann. Soc. Geol. Nord*, xviii. 1890, p. 93.

<sup>33</sup> Julien, "Des Phénomènes glaciaires dans le Plateau central de la France," 1869. *Rames, Bull. Soc. Geol. France*, 1884.