

their uniform and continued horizontality was caused by alluvial soils, or at least by arenaceous tertiary strata. The sands which in the Baltic provinces, and in all the north of Germany, cover coarse limestone and chalk, seem to justify these systematic ideas, which have been extended to the Sahara, and the steppes of Asia. But the observations which we have been able to collect, sufficiently prove that both in the Old and the New World, both plains, steppes, and deserts contain numerous formations of different æras, and that these formations often appear without being covered by alluvial deposits. Jura limestone, gem-salt, (plains of the Meta and Patagonia), and coal-sandstone, are found in the Llanos of South America; quadersandstein,\* a saliferous soil, beds of coal,† and limestone with trilobites,‡ fill the vast plains of Louisiana and Canada. In examining the specimens collected by the indefatigable Caillaud in the Lybian desert and the Oasis of Siwa, we recognize sandstone similar to that of Thebes; fragments of petrified dicotyledonous wood (from thirty to forty feet long), with rudiments of branches and medullary concentric layers, coming perhaps from tertiary sandstone with lignites§; chalk with spatangi and anachytes, Jura limestone with nummulites partly agatized; another fine grained limestone|| employed in the construction of the temple of Jupiter Ammon (Omm-Beydah); and gem-salt with sulphur and bitumen. These examples sufficiently prove that the

\* The forms of these rocks in walls and pyramids, or divided in rhomboid blocks, seems no doubt to indicate quadersandstein; but the sandstone of the eastern declivity of the Rocky Mountains, in which the learned traveller Mr. James, found salt-springs (licks), strata of gypsum, and no coal, appear rather to belong to variegated sandstone (bunter sandstein).

† This coal immediately covers, as in Belgium, the grauwacke, or transition-sandstone.

‡ In the plains of the Upper Missouri the limestone is immediately covered by a secondary limestone with turrulites, believed to be Jurassic, while a limestone with grypheæ, rich in lead-ore, and which I should have believed to be still more ancient than oolitic limestone, and analogous to lias, is described by Mr. James as lying above the most recent formation of sandstone. Has this superposition been well ascertained?

§ Formation of molassus.

|| M. von Buch very reasonably inquires whether this statuary limestone, which resembles Parian marble, and limestone become granular by contact with the systematic granite of Predazzo, is a modification of