

around the extensive mud banks at the extreme mouths of the river. Every one acquainted with the geography of Louisiana is aware that the most southern part of the delta forms a long narrow tongue of land protruding for 50 miles into the Gulf of Mexico, at the end of which are numerous channels of discharge. This singular promontory consists simply of the river and its two low, flat banks, covered with reeds, young willows, and poplars. Its appearance answers precisely to that of the banks far in the interior, when nothing appears above water during inundations but the higher part of the sloping glacis or bank. In the one case we have the swamps or an expanse of fresh water with the tops of trees appearing above, in the other the bluish green surface of the Gulf of Mexico. An opinion has very commonly prevailed that this narrow promontory, the newest product of the river, has gained very rapidly upon the sea, since the foundation of New Orleans; but after visiting the Balize in 1846, in company with Dr. Carpenter, and making many inquiries of the pilots, and comparing the present outline of the coast with the excellent Spanish chart, published by Charlevoix 120 years before, we came to a different conclusion. The rate of permanent advance of the new land has been very slow, not exceeding perhaps one mile in a century. The gain may have been somewhat more rapid in former years, when the new strip of soil projected less far into the gulf, since it is now much more exposed to the action of a strong marine current. The tides also, when the waters of the river are low, enter into each opening, and scour them out, destroying the banks of mud and the sand bars newly formed during the flood season.

An observation of Darby, in regard to the strata composing part of this delta, deserves attention. In the steep banks of the Atchafalaya, before alluded to, the following section, he says, is observable at low water:—first, an upper stratum, consisting invariably of bluish clay, common to the banks of the Mississippi; below this a stratum of red ochreous earth, peculiar to Red River, under which the blue clay of the Mississippi again appears; and this arrangement is constant, proving, as that geographer remarks, that the waters of the Mississippi and the Red River occupied alternately, at some former periods, considerable tracts below their present point of union.* Such alternations are probably common in submarine spaces situated between two converging deltas; for, before the two rivers unite, there must almost always be a certain period when an intermediate tract will by turns be occupied and abandoned by the waters of each stream; since it can rarely happen that the season of highest flood will precisely correspond in each. In the case of the Red River and Mississippi, which carry off the waters from countries placed under widely distant latitudes, an exact coincidence in the time of greatest inundation is very improbable.

The antiquity of the delta, or length of the period which has been occupied in the deposition of so vast a mass of alluvial matter, is a question which may well excite the curiosity of every geologist. Sufficient data have not yet been obtained to afford a full and satis-

* Darby's Louisiana, p. 103.