ward over the Hunger Steppe and Fergana plains, *i. e.*, widening in proportion to the height of mountains drained. This alluvial zone, furthermore, extends into the great Sand, where it is penetrated by the rivers Tedjen, Murg-ab, and Zerafshan, and where it is divided by the rivers Syr and Amu crossing to the Aral Sea. Now, it is a fact of significance that all five of these large rivers, as well as many smaller ones that still reach, or have recently reached, well out onto the plains, have cut channels from 10 to 100 feet or more in depth to where they debouch over deltas. It is, moreover, characteristic of these channels that they vary in depth in such a way as to indicate a varied warping of the plains. And though most of them are still occupied by streams, there are many instances of channels now always dry, but so recently abandoned by the streams now ending many miles above in a shrunken condition that ground-water still survives, obtainable in shallow wells of the nomads. On our large-scale Russian maps there are remarkable fragments of such channels so far removed from present alluviation that it is difficult, sometimes impossible, to say what river they belonged to. Others appear to have been the work of distributaries cutting into the plains they had once overflowed. Where distributaries have been thus incised, we have definite proof of crustal movement. Our most striking examples of distributaries cut into a warped plain are afforded by the Zerafshan, while of those cut into the zone of uptilted piedmonts we find most remarkable examples along the southern border of the Fergana plains.

The vast alluvial zone of this basin was built by its rivers when they wandered freely. Now most of them are relatively fixed. That the Turkoman Trough was at one time the Amu's flood-plain, when that river flowed to the Caspian, building the immense deltas characterizing the coast south of Krasnovodsk, seems more than likely. That would be postglacial. Then it and doubtless most of the large rivers were unconfined and spread a large portion of their load on the plains, whereas silt of the Amu and Syr of to-day is mostly in transit to the Aral. This period of free-shifting rivers with unconstrained alluviation was followed by warping. Here we must remember the postglacial uplift of mountains, the peripheral uplift of our fourth erosion cycle. The warping of plains, uptilting of their margins, and uplift of their border ranges fall logically together into one cycle of a basin's differential movements. As a confirmation of this idea we have the corresponding increase of aridity, shrinkage of sea-water area, contraction of streams, shrinkage of living loess, and expansion of flying sands, and, finally, depopulation of oases.

RECENT CHANGES IN THE COURSE OF THE OXUS (AMU DARYA).

The archeologic and historic period of this basin is treated under "Physiography of Oases," chapter XV, this report, but there has been so much discussion about historic changes of river courses, especially of the Oxus, that a physiography of the basin must take up the problem. Élisée Reclus states:

> The great changes that have taken place in the course of the Oxus within the historic period are amongst the most remarkable physiographic phenomena, comparable in recent times only to the periodic displacements of the Hoang Ho. . . . . In the days of Strabo the Oxus, "largest of all Asiatic rivers except