

the junction of the two rivers, which cannot discharge itself until the Sobat levels have again fallen. At this time Lake No is enlarged by the flooding of the low-lying land on its shores.

The ponding back of one stream by another is also exemplified in the case of the Blue and White Niles. The Blue Nile, rising in Lake Tsana and descending from the Abyssinian hills as a red-brown torrent in time of flood, sweeps across from the point at Khartum to the opposite bank at Omdurman, pressing the White Nile against the western shore till it becomes just a long thin wedge, and ultimately is entirely cut off. The light yellowish-green waters of the White Nile break in gentle waves against the rushing stream as if it were a solid bank, and ultimately a placid lake is formed at the junction. A similar phenomenon occurs in connection with the Atbara, and these temporary lakes maintain the constancy of the Nile supply throughout the year, as the impounded water in one system takes the place of the flood-waters in another when these begin to fail, and the rivers thus automatically compensate one another.

**Lake Tsana**, with an area of about 1200 square miles, measures about 37 miles from east to west, and 45 miles from the mouth of the Magetsch to the outlet of the River Abai which issues from a bay on the southern side. The basin is a comparatively shallow depression about 5800 feet above sea-level, and the country on all sides rises gently at first to 6500 feet, and then more rapidly to 8000 and 9000 feet in the heights surrounding the lake. Stecker took 300 soundings from native boats, and found a depth of 236 feet between the islands of Dega and Zego, and a depth of 220 feet between Korata and the peninsula of Zegi. He says: <sup>1</sup> "The deepest places—in my opinion having a much greater depth than 100 metres (328 feet)—are to be found north of Dek, in the direction of Dega and Gorgora. One cannot, however, well venture to make an excursion to those parts in the fragile Abyssinian craft."

North of Berber the Nile becomes once more a mountain torrent with its course intercepted by rapids and cataracts, but in this case the geological structure of the country has determined the position, the extent, and the nature of these barriers. As the river has cut its way down through the overlying sandstone, it has met with portions of the crystalline rocks beneath, which have been greatly crushed by earth-movements and have developed lines of weakness. Along these lines the water rushes till it meets with obstructions to its flow, and thus the cataract portion is formed, stretching from Khartum to Assuan. Beyond Assuan the slope of the Nile is only 5 or 6 inches per mile.

The Nile branches at Cairo, discharging its waters into the

<sup>1</sup> See *Mitt. Afrik. Ges. in Deutschland*, Bd. iii. p. 32, 1881.