

CURRENTS IN INLAND LAKES AND SEAS.

In such large bodies of water as the North American lakes, the continuance of a strong wind in one direction often causes the elevation of the water, and its accumulation on the leeward side; and while the equilibrium is restoring itself, powerful currents are occasioned. In October, 1833, a strong current in Lake Erie, caused partly by the set of the waters towards the outlet of the lake, and partly by the prevailing wind, burst a passage through the extensive peninsula called Long Point, and soon excavated a channel more than nine feet deep and nine hundred feet wide. Its width and depth have since increased, and a new and costly pier has been erected; for it is hoped that this event will permanently improve the navigation of Lake Erie for steam-boats.* On the opposite, or southern coast of this lake, in front of the town of Cleveland, the degradation of the cliffs had been so rapid for several years preceding a survey made in 1837, as to threaten many towns with demolition.† In the Black Sea, also, although free from tides, we learn from Pallas that there is a sufficiently strong current to undermine the cliffs in many parts, and particularly in the Crimea.

Straits of Gibraltar.—That the level of the Mediterranean is from twenty to thirty feet lower than that of the Red Sea, at Suez, has been already stated.‡

It is well known that a powerful current sets constantly from the Atlantic into the Mediterranean, and its influence extends along the whole southern borders of that sea, and even to the shores of Asia Minor. Captain Smyth found, during his survey, that the central current ran constantly at the rate of from three to six miles an hour eastward into the Mediterranean, the body of water being three miles and a half wide. But there are also two lateral currents—one on the European, and one on the African side; each of them about two miles and a half broad, and flowing at about the same rate as the central stream. These lateral currents ebb and flow with the tide, setting alternately into the Mediterranean and into the Atlantic. The excess of water constantly flowing in is very great, and there is only one cause to which this can be attributed, the loss of water in the Mediterranean by evaporation. That the level of this sea should be considerably depressed by this cause is quite conceivable, since we know that the winds blowing from the shores of Africa are hot and dry; and hygrometrical experiments recently made in Malta and other places, show that the mean quantity of moisture in the air investing the Mediterranean is equal only to one half of that in the atmosphere of England. The temperature also of the great inland sea is upon an average higher, by $3\frac{1}{2}^{\circ}$ of Fahrenheit, than the eastern part of the Atlantic Ocean in the same latitude, which must greatly promote its evaporation. The Black Sea being situated in a higher latitude,

* MS. of Capt. Bayfield, R. N.

† Silliman's Journ. vol. xxxiv. p. 349.

‡ See p. 31.