



On the Causes of Certain Phenomena Observed on Lough Erne

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MONDAY, JANUARY 14TH, 1856.

THOMAS ROMNEY ROBINSON, D. D., PRESIDENT,
in the Chair.

ON the recommendation of the Council,—

IT WAS RESOLVED,—That the thanks of the Academy be presented to His Excellency the Lord Lieutenant and Chief Secretary of Ireland, for the interest they have taken in the welfare of the Academy, in procuring from Government a grant of £150 for the purchase of the gold ornaments lately found in the county of Clare.

The Secretary read a letter addressed to the President by Henry Hennessy, Esq., M.R.I.A., on the causes of certain phenomena observed in Lough Erne.

“ *Catholic University, Dublin,*
“ *January 1, 1856.*”

“ MY DEAR SIR,—I have been reminded, by seeing Mr. Barton’s letter on the phenomena observed at Lough Erne, in the Proceedings of the Academy, that I promised to communicate to you, in a letter, my views in explanation of the matter which I mentioned to you soon after the letter had been read.

“ It is well known that in hilly regions the alternations of temperature between the high and low grounds produce currents alternately ascending and descending. Such currents have been specially studied by M. Fournet among the Alps. He points out how the action of descending currents in some places produces frost, so as to destroy young and tender plants in the valleys. In some quarters such a current is called ‘*loup de vent.*’ It acts with great energy, and causes the thermometer to sink suddenly by 3 or 4 degrees centigrade (5° 4’ and 7° 2’ Fahrenheit).

“ It appears in general that, among the Alps, the formation of such currents depends on the setting and rising of the sun. In proportion to the clearness of the sky at any locality, this law will be found to hold with more or less exactness, and, therefore, although established for the interior of the Continent, we cannot, *à priori*, expect to find it realized in the analogous phenomena which may be observed in this country. Considerable changes of temperature may take place in Ireland, from the variable brightness of the sky, and the influence of oceanic currents. We should, therefore, be prepared to find conditions arising, which would cause ascending or descending currents at periods of the day that would not be at all anticipated by the observations made among the Alps.

“ I proceed to apply these observations to the phenomenon noticed by Mr. Barton. If we conceive an inland sheet of water, bounded by hills on at least one side, the alternations in temperature between the air at the top and at the foot of these hills will produce such currents as I have indicated. If the hills be very steep towards the lake, the upper masses of air will sometimes even flow over the escarpment in a kind of cascade, and falling downwards in a direction more or less inclined to the vertical, will ultimately strike the waters of the lake in the neighbourhood of the hills. The more the direction of the descending current approaches the vertical, the greater will be the pressure on the lake, and therefore its effect in producing waves. Whenever a breeze tends to propagate waves on the surface of a sheet of water, its effective action is due chiefly to the vertical component of the force with which it strikes the water. Very feeble currents descending vertically might thus produce greater disturbance on the surface of a lake than strong currents skimming it horizontally. Such vertical currents descending only close to the hills at one side of the lake would not be felt at the other. Thus, during perfectly calm weather, a heavy swell might be observed at one

side of the lake, from the action of a downward current at the opposite side.

“The fact that such a phenomenon has not been observed at Lough Neagh tends to confirm these views, for Lough Neagh is surrounded by flat shores, and is, therefore, not likely to be subjected to the action of vertical currents.

“I remember seeing, somewhere in the writings of Humboldt, a conjecture that the tides in the Lake of Geneva, called *seiches*, arise from variations in the atmospheric pressure at different parts of the lake. These variations are, no doubt, the results of such vertical currents, and suggest a mode of verifying the correctness of the views here put forward, if observers, furnished with barometers, resided on the opposite shores of a lake where the phenomenon has been noticed. I find that Saussure attaches great importance to the influence of vertical currents on the barometer. This, he remarks, is most likely to take place among the mountain gorges and funnel-shaped basins.*

“As the method of studying vertical currents by the variations of the barometer seems a little complicated, and too delicate for ordinary purposes, I have devised a wind-gauge which will indicate the existence of ascending or descending currents. It will also show the direction of the wind with regard to the points of the compass. I am surprised at not having already heard of some similar instrument in the hands of those who have paid attention to mountain winds. The instrument I have devised is not a measurer, but simply an indicator, and I expect to receive one in a short time from our philosophical instrument-makers in Paris.

“Believe me to be, my dear Sir,

“Yours very truly,

“HENRY HENNESSY.

“*The Rev. T. R. Robinson, D. D.*”

* *Voyages dans les Alpes*, tom. iii., p. 71.