

X.—*On an Unusual Drought in the Lake District in 1859.* By JOHN DAVY, M.D.,
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(Read 17th April 1860.)

In a former communication to the Royal Society of Edinburgh, I gave an account of an unusual fall of rain in the Lake District in the month of January last year. That occurrence was followed by its opposite in May, June, and July; not for a long period, not since 1826, has the district suffered more from want of water than in those months.

This drought is best shown by the following table, in which will be found the rain-fall for the several months of the year at five different places, only a few miles remote from each other. The table will also show the remarkable contrast as to excess and deficiency of rain during the period. It may be premised, that at Ambleside, where the drought appears to have been felt as much as anywhere, the ordinary fall of rain for the months in question is about three times as great; thus for May (our driest month of the twelve), taking the average of the preceding eleven years, it is 2·37 inches, for June 4·22 inches, for July 5·27 inches, making a total of 12·36 inches, against 4·54 inches of the months of drought.

TABLE I.

Months.	Kendal.		Lesketh How, Ambleside.		Keswick.		High Close, above Grasmere.		Seathwaite, Borrowdale.
	Inches.	Rainy Days.	Inches.	Rainy Days.	Inches.	Rainy Days.	Inches.	Rainy Days.	Inches.
January, . .	6·514	17	14·82	19	11·168	21	10·95	19	23·40
February, . .	4·022	18	7·29	22	5·214	20	6·29	21	15·80
March, . . .	5·617	20	10·32	23	9·512	21	8·78	23	20·84
April, . . .	3·900	12	5·44	12	4·868	13	5·27	16	12·71
May,	0·123	1	0·55	4	0·206	2	0·23	5	1·04
June,	2·024	12	1·91	13	2·446	9	2·81	14	5·95
July,	1·757	8	2·08	10	2·866	7	2·55	9	3·33
August, . . .	5·224	10	5·45	12	5·467	12	6·55	15	13·38
September, .	7·343	21	11·36	20	9·346	20	11·16	22	15·32
October, . . .	2·760	12	6·89	14	3·834	10	4·99	14	8·27
November, . .	5·075	17	10·08	16	6·595	13	8·61	17	13·55
December, . .	3·931	13	7·93	16	5·451	15	6·59	16	13·70
	43·290	161	84·12	181	66·883	163	75·08	191	147·29

For the Table which follows I am indebted to Mr SAMUEL MARSHALL of Kendal, a gentleman of whose accuracy as an observer I have before made mention. The results it contains, expressive of the meteorological qualities of most importance, are applicable, with certain allowances, to the Lake District generally, and more especially as regards atmospheric temperature, and the prevailing winds.

TABLE II.

Months.	Barometer.			Thermometer.			Thermometer on Grass.		Mason's Hygrometer.		Quantity of Rain in Inches.	Number of Rainy Days.	Prevalent Winds.	Ozone.
	Maximum.	Minimum.	Mean.	Max.	Min.	Mean.	Solar Rad°.	Terrest. Rad°.	Dry Bulb.	Wet Bulb.				
January, . .	30.398	29.097	29.853	52°	28°	40.468	46.6	33.7	40.4	39.1	6.514	17	S.W.	1.7
February, . .	30.483	29.048	29.712	52	27½	40.946	53.7	34.3	40.5	39	4.022	18	S.W.	4.1
March, . . .	30.201	28.894	29.701	59½	24	44.113	63.1	39.5	43.7	41.8	5.617	20	S.W.	4.3
April, . . .	30.085	29.454	29.694	68½	24	43.416	82.3	34.6	45.6	41.3	3.900	12	S.W.	4.2
May,	30.251	29.660	29.922	79	29	54.532	10.4	35	60	54	0.123	1	N.E.	3.4
June,	30.099	29.578	29.854	80	39	59.216	97.3	46.8	62.3	56.3	2.024	12	N.E.	3.2
July,	30.265	29.739	30.021	86	41	63.468	104.4	49.8	66.2	60.1	1.757	8	S.W.	2.5
August, . . .	30.258	29.219	29.837	83	39	61.089	93.4	47.8	62.7	58.1	5.224	10	S.W.	2.4
September, .	30.139	29.279	29.677	66	35	53.733	83.6	42.4	54.4	52.1	7.343	21	S.W.	3.0
October, . . .	29.965	28.936	29.566	71	19	48.113	69.3	39.8	47.6	45.8	2.760	12	N.E.	2.0
November, . .	30.566	28.502	29.769	53½	22	39.541	52.3	30.1	37.4	36.1	5.075	17	N.E.	2.1
December, . .	30.459	28.756	29.552	54	11	33.008	31.3	30.5	38.4	23.6	3.931	13	S.E.	3.2
Annual Means, &c. }	30.264	29.180	29.763	67	28	48.470	73.4	38.7	49.9	45.6	48.290	161	S.W.	3.0

The following Table (No. III.) is given for the purpose of showing the great inequality of the fall of rain in different parts of the United Kingdom. For the observations from which it is framed, I am chiefly indebted to correspondents.

Comparing these Tables, it would appear, that whilst one portion of the country was suffering from deficiency of rain, other parts of it had rain in excess, and both in a remarkable degree; for instance, London and the Lake District. It would appear, also, that over the country generally, even where for three months a drought prevailed, the yearly fall of rain exceeded the average. At Seathwaite, in the upper part of Borrowdale, according to the observer there, Mr JOHN DIXON, the excess, in that spot, so remarkable for its rain, exceeded that of the average of the last fourteen years by 17 inches.

Recurring to the drought as experienced in the Lake District,—a district, from the nature of its declivities and the quality of its soil, peculiarly apt to suffer

TABLE III.

Months.	Penzance.	Burcher, near King- ton, Herefordshire.	London.	Cambridge.	Wakefield.	Caton, about four miles east of Lancaster.			Edinburgh.	Glasgow.	Stornoway Castle, Isle of Lewis.
						Caton Farm, near Nor- manton, Yorkshire.	Arnclyff, head of Wharfedale.				
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
January, . . .	3·18	1·16	0·794	0·310*	0·709	0·72	4·095	8·76	1·86	5·300	5·43
February, . . .	2·3	1·51	1·232	1·117	1·460	1·48	2·751	5·91	1·19	5·327	3·61
March, . . .	2·74	2·38	1·331	1·259	2·485	2·36	4·709	11·06	2·54	5·160	6·16
April, . . .	3·10	2·47	2·528	1·379	3·766	4·35	3·208	5·30	2·78	4·437	3·12
May, . . .	1·04	1·12	2·214	1·284	0·784	0·37	0·222	0·34	0·17	0·582	0·55
June, . . .	0·59	3·65	2·896	1·243	3·345	3·47	1·764	4·24	2·04	1·953	2·21
July, . . .	1·00	2·61	2·929	2·305	5·558	3·25	1·854	3·55	3·08	2·538	3·46
August, . . .	3·40	3·53	2·652	1·638	3·957	4·20	3·742	4·66	0·67	2·858	3·46
September, . . .	4·42	3·98	4·039	2·103	3·434	3·88	5·558	9·97	1·35	4·867	4·76
October, . . .	5·34	3·73	2·496	3·746*	2·777	3·19	2·603	5·36	3·04	6·062	2·64
November, . . .	3·62	4·33	2·930	0·864	2·053	3·02	3·494	9·17	2·48	3·243	3·08
December, . . .	8·28	4·49	2·248	0·070	2·879	2·71	4·332	5·98	1·44	2·415	4·06
	39·01	34·96	28·289	17·818*	33·207	33·50	38·330	74·30	22·64	44·742	42·53

* It is stated that the rain-gauge was out of order during part of January and part of November, and that, to make up the deficiency, about 5 inches, it is estimated, should be added, making a total of about 23 inches for the year.

from any deficiency of rain,—its effects were witnessed not only in a failure of most of the springs and a want of water distressingly felt by the inhabitants, but also on vegetation; those plants requiring moisture, suffering; those benefited by warmth and dryness—the comparative few—flourishing. The crop of small fruits, such as the gooseberry, currant, strawberry, was unusually scanty and poor; that of mushrooms, and of other fungi,* was unusually abundant. The same in regard to flowers; the lavender flowered in fine profusion; roses the contrary, and with a very small growth of wood. The drought took effect severely on the grasses; the hay-grass, the great crop of this pastoral district, was only about one-third an average one. Animals, I need hardly remark, were not exempt from its influence; some insects were unusually abundant and troublesome; others the opposite. During the dry months, our valley was almost deserted by the swallows.

* The common mushroom, *Agaricus campestris*, was so abundant, that in the Lancaster market it was sold at a penny a quart, about four or five times cheaper than usual: it was met with, too, in places where, it is said, it had never before been found. Of wild flowering plants, the common harebell, *Campanula rotundifolia*, was unusually plentiful, and in many spots where I had never seen it before.

The weather which followed this drought was also abnormal. Snow accompanied with frost fell in October;* and this before many of the trees had acquired their autumnal tints. Moreover, the winter months, up indeed to the present time, have been remarkable for uncommon vicissitudes of temperature, for frequent snow-storms—the snow lying much longer than ordinary—and for severe gales, some of these almost hurricanes, accompanied with sudden and great fluctuations of the barometer.

LESKETH HOW, AMBLESIDE, *March 22, 1860.*

Postscript.

The loss of stock amongst the farmers in the Lake District, the consequence of the drought and the inclement winter which followed it up to the present time has been great, and it has continued increasing. In the *Kendal Mercury* of the 7th April there is an account of it, so descriptive, and, as I believe, truthful, that I am induced to transcribe it. It is headed, “Dreadful mortality amongst the mountain sheep in Westmoreland.” “In our last week’s impression” (it proceeds), “we noticed the snow-storm that fell on the hills and valleys in Westmoreland, on Saturday morning the 25th ult., and that a vast number of sheep, not only on the hills, but on the low grounds, were buried beneath the snow, and that in consequence of a large quantity of rain falling along and at intervals during the storm, the worst fears were entertained for the

* Mr SAMUEL MARSHALL, in his summary of Meteorological observations for this month, remarks, “On the morning of the 21st October we had the first frost this season, and on the following one the first snow, and the next a heavier fall still. The thermometer has not been below the freezing point since the 9th May till the 21st October, or more than five months.” A very unusual degree of cold, about the same time, was observed elsewhere. Mr LOWE in a note of the 23d of October, from Highfield House Observatory, headed “Great Cold,” published in the *Evening Mail*, says, “It is scarcely three weeks since I had to announce a degree of heat greater than had been known to have occurred in October (viz., 77°·5), and now the same has to be said with regard to the intense cold of the past two nights. Yesterday the *minimum* temperature was 23°·5, and this morning it fell to 22°·4; previously 24°·6 was the greatest cold that had been registered here.” It was curious to observe the aspect of plants at this time;—the foliage of many trees, such as the sycamore and the ash, their leaves still green, were shrivelled and curled by the frost, so that their under surface was conspicuous, whilst the roses, the China variety still in flower, were weighed down by snow. The effect of the severity of the winter as to cold was not less strongly marked on vegetation than the summer drought; some of the hardier plants were killed, for instance the Russian violet, which during the preceding winter had flowered uninterruptedly; and yet, even the shallower lakes, such as Rydal Mere, were frozen over, so as to allow of skating, only for two or three days, and this only once, so rapid were the changes of temperature from a low degree, as 12° to 15° and 20° to 34°–40°; it was rarely higher. And, as the mildness of last winter was shown by a forward vegetation, so the severity of the last and the protracted low temperature have been indicated by the opposite this year; now, on the 21st of March, the flower-buds of the *Ribes sanguineum* have only just begun to unfold, and not a leaf-bud of the sweetbrier has yet opened.

safety of the sheep; and we are sorry to say that those fears have been realised to an alarming extent. The snow was nearly all washed from the grounds by the rains which fell during the succeeding week, and then the shepherds began to have some idea of the destruction amongst their flocks, and it was truly fearful. On Saturday last, one skinner in Kendal received no less than 250 skins from the neighbourhood of Shap, and other skinners in this town had an almost fabulous number. Cartloads of skins were also forwarded on Saturday to Penrith, and other towns and villages in the neighbourhood of the hills; and they still, nearly daily, keep arriving here from the fells. On Wednesday last, 100 skins arrived from one farm, and it was some time before the owner could dispose of them, as the skinners had so large a number still unpulled that were rotting and becoming putrid in their skinneries. The sheep, whose skins are now brought in, have not all perished in the snow-storm, but they were so weak and emaciated from the long winter, and hunger, and cold, that they reeled about, and then tottered, fell, and died by scores together. It is said that one-half of the sheep in the parish of Bampton have perished, and that Mr T. MOUNSEY, in that parish, has lost 500, and Mr T. ABBOTT, of Thornthwaite Hall, near Shap, counts up his loss to more than 1200 head. Indeed, the loss has been fearful all along the Lake Mountains, and the range of hills extending from Coniston Old Man to Stainmore. From Coniston, Hawkshead, Ambleside, Troutbeck, Kentmere, Longsleddale, Selside, Shap, Bampton, Crosby, Ravensworth, Ravenstonedale, Kirby Stephen, Garsdale, Hawes, Wensleydale, and Dent, the loss has been great, and the flocks are very weak and sickly, and large numbers are daily dying. Never, in the memory of the oldest shepherd on the hills of Westmoreland, can be remembered so fearful a mortality amongst the mountain sheep, and great fears are entertained that it has not yet reached its highest pitch." These fears, I regret to add, are too likely to be realised; on this 9th of April there has been another fall of snow, succeeding a fall of rain of 1·15 inch in the twenty-four hours; this morning, not only were the hills covered with snow, but even the lower dales. Since April last year, that month included, I find recorded here thirteen falls of snow, in some instances mixed with sleet and rain, the whole equal to, that is, yielding when thawed, 6·9 inches of water. Now, supposing it to have been all snow, as it probably was on the higher fells, the total depth of snow there, if accumulated, would be little short of 83 inches.* It is remarkable that from the 23d of October, when snow first fell, up to the present time, some of the higher hills have not been free from snow.

Incidents, catastrophes, such as have been described above, in connection with

* Of course, according to the quality of the snow, the proportion of water it will yield when thawed must vary; in one instance, when the depth of snow was 6·5 inches, the water from it measured ·54 inch; in another instance, when its depth was 4·5 inches, the water it yielded was ·47 inch. The snow was collected in the funnel of the rain-gauge; its depth was tried where it had not drifted.

adverse seasons, and resulting in scarcity of food and an excessive mortality, seem specially deserving of attention, being equally applicable to the human race—*e.g.*, our army in the Crimea, during the first winter, under the same circumstances—and to brute animals, and may help to account for the extinction of races or species.

LESKETH HOW, AMBLESIDE, *April 9, 1860.*