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THUNDERSTORMS.

THUNDERSTORMS of such unusual frequency, extent and severity, have occurred since the 16th of June, that we have undertaken to compile a record of their phenomena and results. By doubling the size, and trebling the contents of the present number, we are able to report in a condensed form most of the events of the storms of June 17th, 18th, and 19th. In our next we hope to complete the record, and give such maps, &c., as may be required to render evident the localities most severely visited, and perhaps the general features of the storms as indicated by our reports. For this purpose we shall be glad to receive *brief* notes, such as "No storm here between 16th and 21st;" or, "Violent storm passed from S.W. to N.W., between 5.30 and 7 p.m. on 16th, total rain, 2.12 in. in 1½ hours."

GREENWICH AND KEW.

WE are afraid that there are signs of a coming struggle between the authorities of the observatories at Greenwich and Kew. This would so seriously impede the progress of science, and in every respect be so prejudicial, that we deem it our duty to devote a few pages to the consideration of the object, aims, and present condition of the two observatories, so far as relates to meteorology.

The Royal Observatory at Greenwich is an institution of which every Englishman should be proud; the efficiency of the Astronomical department is, we believe, unassailable; but it is only with the Meteorological department that we are concerned. We cannot refrain from expressing our regret that the Astronomer-Royal should have penned the following remarks in the Report presented to the Board of Visitors, on June 1st:—"Indeed the Observatory has long been a Physical Observatory by virtue of its Magnetical and Meteorological department, the systematic observations in which are,

as I believe, the best in the world." We are not aware that the Astronomer-Royal ever devoted much of his own thought to Meteorology, and we therefore feel the less hesitation in saying that if they are "the best in the world" they are far from perfect. We consider that the Osler's anemometer, so far as regards the records of high pressures, has been useless for a long time. We consider that the space devoted to Meteorology is too much shut in by trees, shrubs, and buildings, and thereby, not only are the rain gauges too much sheltered, but also by the "glare" from the white buildings the temperature is unduly raised. We consider a barometer with an error of about 0.006 in. should not be the best standard of our National Observatory, and we agree with the Astronomer-Royal that "the electrical apparatus is not satisfactory."

But, in spite of all these points, we should look upon the suspension or cessation of the Greenwich Meteorological record as a national disgrace and a scientific disaster. The Greenwich records are not perfect (and it would, we think, be wise to set one computer to go deliberately through them with the sole object of detecting errors), but if the value of a meteorological record may be considered as the product of (accuracy  $\times$  duration), we maintain that it certainly has no equal in this country, and few, if any, in the world. Extending as it does to the early years of the present century, it would be suicidal madness to allow it to be stopped. We have not heard that the proposal has been made, we hope that it never will be, and we believe that in directing attention to its preposterous folly we are taking the best steps towards preventing the interruption of that which could never be replaced. That there is nothing unreasonable in our calling attention to the question is shown by the conclusion of the paragraph, part of which we have already quoted. In its entirety it is as follows :—

"Indeed, the observatory has long been a physical observatory, by virtue of its magnetical and meteorological department; the systematic observations in which are, as I believe, the best in the world. They remove all necessity of subvention by the Government to any other magnetical or meteorological observatory in this part of Britain."

In several respects meteorology is looking up at the Royal Observatory; as illustrations we may quote the facts (1) that the photographic records of the thermograph and barograph, after years of practical oblivion, are being discussed; (2) that the eye observations taken each morning at 9 a.m., are now daily forwarded to and published by the metropolitan newspapers, thereby granting that which has so long been wanted,—the opportunity of comparing observations with those made at our national observatory. We trust that the several points which we specified, and a few other obvious and minor ones, will receive consideration, and then the Greenwich meteorological department, with perfect records for the time present, and unequalled ones for the time past, will be a worthy companion for the Astronomical Observatory.

Kew as a meteorological observatory has practically no published results by which it can be judged. No one who knows anything of

the facts will assign to Kew (prior to 1868) any higher rank than that of scores of meteorological stations scattered over the British Isles. We are not even aware that the observations made there have ever been published except in the columns of the *Illustrated London News*. Since 1868, it has been made one of the seven observatories of the Meteorological Office, but that provides it with no record of the past, no perfect record of the present, and no means of determining secular changes—for that we must look to Greenwich, and to Greenwich alone.

But these facts must not be considered as condemnatory of Kew. We merely contend that as a meteorological station Kew is inferior to Greenwich, primarily because of its recent organization, and secondly because it is in such a very low situation, only some 5 ft. above high water mark.

Kew, however, we cannot spare, and thanks to Mr. Gassiot's splendid donation, we need not fear its annihilation. Kew is most useful and necessary, and requires only one alteration—namely, development. If the Kew authorities had done nothing but help the Meteorological Committee to devise their instruments, they might have been content, but they have done very much besides, in constructing and supplying standard instruments, and in their careful verification of all that are submitted to them and granting official certificates, they have met a want which will, we trust, increase in an increasing ratio.

To sum up the whole argument, we consider that the two observatories have essentially divergent objects: to Greenwich we look for continuity of observation and information respecting secular changes, while we consider the aims of Kew should be verification of instruments, and original physical research.

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#### REVIEW.

*Handbook to South Africa, containing Map of Routes to the Diamond Fields, Physical Geography, Climate, and Resources of Cape of Good Hope and Natal, with an Introduction.* By H. W. BATES, F.R.G.S. Post 8vo., 61 pp., and folding map. S. W. Silver and Co.

METEOROLOGY has, unfortunately, very little to do with diamonds, but the handy little manual before us not only gives a collection of reports by eye-witnesses of the rush to the banks of the Orange and Vaal rivers, but it also gives a general idea of the climate of that upland district, compiled by Mr. Bates from, probably, his own general knowledge and the records of travellers and sportsmen acquainted with the district. We may be quite sure that no meteorological observations are taken by diamond diggers, and they may, many of them, thank Messrs. Silver for giving them the best information obtainable as to the climate with which they may expect to have to contend. For full details we must refer our readers to the pamphlet before us, but as a rough indication we may just remark that the leading features appear to be drought, dust, and diamonds, great range of temperature, great heat, and occasional thunderstorms. Taken altogether the manual is useful and complete.

## THE THUNDERSTORMS OF JUNE 17TH, 18TH, AND 19TH.

## MIDDLESEX.

WINCHMORE HILL.—This district was visited by a series of violent, though very local thunderstorms, on the 17th, 18th, and 19th; on the 17th, distant thunder was first heard in S.S.W. at 4 p.m. 4.30 p.m., thunderstorm with very frequent and heavy peals of thunder; heavy rain from 4.30 to 4.50, amount .26 in.; thunder ceased at 5 p.m. This storm was very local, no rain having fallen three miles to the S. 18th. Heavy thunder in W. from 1 to 1.15 p.m., a few large drops of rain. 4 p.m. Frequent peals of thunder in S.W.; from 4.15 p.m. to 5.45 p.m., the thunder was peculiarly heavy, and perfectly incessant; vivid lightning at 5 p.m. At 6 p.m., the storm-cloud, which had been apparently coming right over from S.W., subsided with a S.E. current; no rain fell during the storm. 19th. Distant thunder in S.W. from 10 to 11 a.m. 1.30 to 1.33 p.m. Heavy shower, amount gauged .07 in. 1.35 p.m. Thunderstorm, bright lightning, and heavy thunder, till 1.50. Thunder ceased at 2.15 p.m. Rainfall very heavy half a mile to the eastward. The drops of rain on the 17th were of immense size, and fell in heavy fitful splashes.—*Thos. Paulin.*

PINNER HILL, WATFORD.—A most extraordinary rain-storm took place here between 4 and 5 p.m. on 18th. It lasted not more than half-an-hour in its intensity, although it rained for more than double that time. Situated as we are at a distance from a river, a flood with us is of very rare occurrence, but yesterday our ditches were suddenly converted into rivers six feet deep and 30 yards wide, garden walls thrown down, the traffic nearly stopped on the railway, the rails in some places being entirely covered with water, and immense damage was done to the standing crops of grass. The area of the storm seems to have been limited to a small district; at Eastcot, only a mile off, there was no rain at all. I fancy this house did not get the full force of the storm, but the amount I measured in my gauge was .93, or nearly an inch. This, in such a short time as an hour, is unprecedented in my records.—*W. A. Tooke.*

## KENT.

WALTON HOUSE, EASTRY, NEAR SANDWICH.—On Wednesday, 19th, p.m., we had a most heavy rainfall. In a sudden squall, which lasted for 20 minutes or so, we had exactly an inch of rain. The hailstones which fell during the storm were large enough to break many panes of glass in the green-house and framing grounds here, and in other places in the village.—*J. Rae.*

## HERTS.

BERKHAMPSTEAD.—We had but little of the thunderstorms which have been so heavy elsewhere. On the 18th there was thunder and lightning between 4 and 5 p.m., and heavy rain for a short time; and in the afternoon of the 19th we had similar weather. The rain on the 18th measured 0.13 inch, and on the 19th 0.11 inch. The maximum temperature on the two days was 87° and 86° 5.—*W. Squire.*

## NORTHAMPTON.

BARTON SEAGRAVE, KETTERING.—I send you some particulars respecting the great storm of the 18th June. I may mention that on the 17th we had a severe thunderstorm at 7.15 p.m., during which the wind turned from S.W. to E.S.E., and 0.40 in. of rain fell. The morning of the 18th was hot and gloomy, and the day continued so, with a shade temp., max., of 86°, but no indication of storm until 3 p.m., wind continuing E.S.E. The storm rose almost more rapidly than I have before witnessed in S.S.W. I should imagine it extended from 14 to 15 miles, and was of an oblong form, oscillating when at its height between S.W. to W.N.W. I certainly have never seen anything approaching this storm in Great Britain. The rain seemed to be in flakes as large as my hand, mingled with pieces of ice. The storm lasted about five hours, and the amount of rain shown by the rain gauge was 3.62 in., but in my opinion the fall was much larger, as, owing to the hurricane which at times prevailed, the whole amount of rain would not be taken by the gauge. The wind continued E.S.E. during the storm, with fierce S.S.W. squalls at intervals, but remained S.E. during the night and a part of the following day. You will see an account in the *Times* of June 21st of this storm, written by myself, in which I mention that 3.22 in. of rain fell in less than three hours. I measured this amount when the fury of the storm was over, and have now given you the total fall (as far as I am able) during the storm. I should, however, imagine that at least 4 in. of rain fell in the five hours.—*J. Borlase Tibbits.*

KETTERING.—Very heavy thunderstorms occurred in this neighbourhood on Monday and Tuesday. The heat for several days had been very oppressive. Thunder was heard at intervals most of the day on Monday, but towards evening the clouds gathered, and about 7 o'clock the storm began in earnest, and for more than an hour and a half the lightning was most vivid and incessant, and the thunder loud and continuous. Considerable damage was done by the lightning in the neighbourhood of Pytchley. A valuable heifer belonging to Mr. Mash was killed in a field, and several trees were split and stripped of their bark. On Tuesday the storm commenced early in the afternoon, and raged with terrific violence until about 7 in the evening. Mr. J. Borlase Tibbits writes from Barton Seagrave, near Kettering, that the thunderstorm of Tuesday was the most severe that has occurred in the midland counties. Though the day had been oppressively hot, with a temperature of 86° in the shade, there was no indication of a storm until 3 p.m., when in the course of half an hour enormous cumuli of an inky blackness had risen in the S.S.W. For nearly three hours the storm raged with an intensity that Mr. Tibbits has never seen approached in Great Britain, the lightning and thunder being appalling, while rain and pieces of ice fell in sheets. In less than three hours the rain gauge showed 3.22 in. of rain. The damage by floods must be enormous, the whole valley of the Ise and Nene being one vast lake, and thousands of acres of mowing grass being entirely submerged. On the Midland main line some hundreds of men are employed in repairing the rails washed away near Rushton station, and numerous fatal accidents occurred.

NORTHAMPTON.—The heavy thunderstorm which broke over Northampton and county on Tuesday afternoon the 18th, caused great damage, and several lives were lost. At Overstone, a village about four miles distant, where is situated the country seat of Lord Overstone, the storm was very heavy, and trees and walls were in many cases entirely destroyed. The stone wall which encloses Overstone Park has been washed down for many yards, and the large coping stones, weighing

upwards of 2 cwt. have been washed into an adjoining field. All down the meadows at the side of the Nene for many miles the land is under water, and what hay was cut has been floated down towards the fens. Animals that were grazing were drowned. At Northampton the river overflowed its banks at the west end of the town, the residents in the houses being compelled to remove from the ground floors and live in the bed rooms, the furniture on the ground floor floating about the rooms. The pigs in the styes were in some cases drowned. A bridge over the river was also washed away, and a quantity of timber in the wharves adjacent to the stream washed from the moorings and sent down the stream. In one meadow a number of freemen's cattle were grazing, and some were lost. About one o'clock at night the members of the Volunteer Fire Brigade were called up to assist in getting horses and cows out of the raging waters. Several pleasure boats broke from their anchors and went down the stream. Three men managed to secure one of the boats and got into it, and were very soon capsized and drowned. Only one of the bodies has up to the present time been found. The foundations of an inhabited house in Church-street were also washed away, and the house had to be propped up with timber. In St. James's-end the people are living in their bedrooms, and communication with the town and suburbs in the west has been kept up by means of carts and boats.

WELLINGBOROUGH.—A very heavy storm of thunder and lightning passed over this town and neighbourhood on Monday night last. During the storm a great quantity of rain fell.

#### OXFORD.

MAGDALEN COLLEGE, OXFORD.—At the close of a week which will be memorable for the severity of thunderstorms and floods in the northern midland counties, and south-west of England, the remarkable freedom from such visitations enjoyed by Oxford may be of interest to you. On Tuesday, the day of the greatest disturbance, thunder was heard once or twice at a great distance. The day was fine, and the evening clear and tranquil. --*Edward Chapman.*

#### ESSEX.

BOXFORD RECTORY, COLCHESTER.—The rain commenced here at 5 p.m. on the 19th, somewhat heavy for about half-an-hour, followed by a quiet fall for about 2 hours after sunset; total .69.—*J. Byng.*

HIGH RODING, DUNMOW.—No thunder-storm till 19th; first muttering at 2.23 p.m.; storm at its height at 2.53, when was the nearest flash, followed by the heaviest rain, and great fall of hail, or rather lumps of ice. Direction of storm uncertain—S.W. to N.E.? Wind during storm, E. Rainfall in about three-quarters of an hour was 0.72 inch.—*E. Maxwell.*

#### DORSET.

LYME REGIS, DORSET.—A thunderstorm with heavy rain occurred here on the 19th inst. It commenced about half-past 7 a.m., and lasted until 10 a.m, during which time 1.10 in. fell. The lightning came from N.E., and passed away to S.W.—*Henry Tucker.*

#### DEVON.

FORE STREET HILL, KINGSBRIDGE.—Kingsbridge was visited by a severe thunderstorm on the evening of the 18th and morning of the 19th. Distant thunder was heard in the S.W. during the afternoon, the atmosphere throughout the day being exceedingly oppressive. The

storm commenced about 6 p.m., and continued, with some intermission, until 4 a.m. of the 19th. At 2.45 a.m. the storm was very severe, the flashes of forked lightning being very vivid, with crashing thunder. From 2.45 to 4 a.m., the rain fell very heavily, the amount registered being 1.23 in. The storm gradually passed off towards the N.E.—*G. Fox.*

**KINGSBRIDGE.**—At Marlborough, a village between Kingsbridge and Salcombe, the lightning between seven and eight o'clock on Tuesday, struck a thatched cottage occupied by a labourer named James Andrews and his wife. The latter was absent, and Andrews, who had been standing at his cottage door while the storm was raging, turned to enter, when he became momentarily paralysed. The room appeared to be in a blaze, and an alarm was immediately raised that the cottage was on fire, as the thatch was blazing, but by timely assistance the fire was extinguished. It appeared from examination afterwards that the electric fluid descended the chimney, entered the bedroom, and shivered a wooden bedstead to splinters. It then ran to the kitchen, obtaining egress through the back door. It appears to have afterwards struck a pigstye, and killed a pig. Considerable damage was done to the telegraph wires, and at the Modbury Post Office the instrument smashed with a noise similar to the explosion of a gun.

**NEWTON ABBOT.**—The chimney of the dwelling-house of Mr. Moale, Newton Abbot, was very much damaged by the lightning, and a candlestick standing upon the bedroom table was hurled with great force across the room; fortunately no person was injured. Mr. Vicary also had considerable damage done to his tannery by the electric fluid and the heavy rain.

**PLYMOUTH.**—Plymouth was visited on Tuesday night by a terrific thunderstorm, which commenced at 6 p.m. and lasted 12 hours. Yesterday the lightning and thunder were very severe, and rain at intervals fell in torrents. The storm was heaviest between 2 and 5 a.m. on Wednesday. About the latter hour a horse belonging to Mr. Baston, mail contractor, while drawing the London mail from the railway station to the post office, was killed by the lightning. Several minor casualties are reported. Early in the evening of 18th 0.56 in. fell in 35 minutes, and on 19th between 4 and 5 a.m. 0.40 fell in 25 minutes.

**LANDSCORE VILLA, TEIGNMOUTH, DEVON.**—During the great storm of thunder and lightning the rainfall from 5 to 8 a.m., on 19th, was 1.44 in.—*M. Clark.*

**WHITSTONE RECTORY, EXETER.**—The remarkable thunderstorm of Tuesday, June 18th, left its traces here. In my rain gauge the amount of fall was 0.68 in. At the Devon and Exeter Institution, Cathedral Yard, Exeter, four miles east of my house, the fall recorded was 1.10 in.—*Wilse Brown.*

**WIDDICOMBE-ON-THE MOOR.**—Eighteen sheep, the property of Mr. John Hern, Scobbitor, Widdicombe-on-the Moor, were killed by lightning.

**WITHERIDGE.**—At Witheridge, about four o'clock on Wednesday morning, the lightning set fire to the thatched house of Mr. Selley, a large cattle dealer and butcher. About £500 worth of wool was burnt and damaged, and the house and the one adjoining were destroyed. Eight sheep and four lambs in a field were killed by lightning.

**BLACKTORRINGTON.**—Two cottages were washed down at Blacktorrington, and the inmates escaped from the windows on planks.

**CREDITON,** at about half-past eight o'clock on Tuesday night, the street lamps not being lighted, was enveloped in dense darkness, which proved the precursor of a terrible storm of thunder and lightning that appeared to be raging in several parts at one time. The lightning first came from the south-west, and within a minute or two afterwards it darted in immense sheets from the south-east. Lightning just as vivid, but of a very blue colour, also came from

the north-west ; and altogether the scene was indescribably grand. The thunder and lightning continued with more or less violence during the whole night, but little rain fell until six o'clock, when for an hour it descended in torrents. During the night and morning a rain gauge at the vicarage registered very nearly seven-tenths of an inch. The storm has seriously deteriorated the value of an immense deal of half dried hay lying in the fields unsaved.

**DAWLISH.**—Among the other effects of the storm reported are six sheep killed by lightning, one of them worth £20, belonging to Mr. White, Westley Farm, Dawlish.

**EXETER.**—Exeter was visited by violent thunderstorms on Tuesday night. The premonitory flashes were seen shortly after eight o'clock, but the full force of the storm was not felt for an hour or more, when the lightning became extremely vivid and the thunder claps very heavy. Copious showers of rain fell about ten o'clock. The storm had passed away to northward an hour later. Shortly after midnight another storm came on, rivalling the first in fierceness. Flashes of lightning some sheet, others forked, followed each other in rapid succession for two or three hours ; the thunder was very violent, and the rain descended in torrents, being quite of a tropical character. It was remarked that much of the lightning was of a decidedly bluish tint. At five o'clock the storm which had meanwhile somewhat abated, was once more renewed. The lightning seemed to be stronger, or in larger flashes, than before, while the thunder was equally heavy. Just after six o'clock an extraordinarily vivid flash of lightning was witnessed, followed almost instantly by a crushing peal of thunder, which literally shook many buildings, and the sound of which was almost deafening. The lightning had the appearance of a huge ball of fire, from which a great fork darted to the earth in a direction perpendicular to the horizon. No accidents are reported in the neighbourhood of Exeter, although the storms were the fiercest that have been known in that favoured region for some years. The comparative freedom of Exeter from violent thunderstorms is attributable to the fact that it is situated between two ridges of high land—Haldon and the Blackdown Hill—both of which attract the clouds.

**HOLSWORTHY.**—Considerable damage to bridges was done in the neighbourhood of Holsworthy by the floods.

**SIDMOUTH.**—A thunderstorm of more than usual severity occurred at Sidmouth yesterday morning, the 19th instant. The temperature during the whole of the previous day was very oppressive, reaching  $70^{\circ}\cdot 2$  in the shade. About 8.55 p.m. the sky became overcast, dark heavy clouds came up from the south-west, a slight ripple appeared on the previously calm sea, followed in a few minutes by a flash of sheet lightning, which was succeeded by other flashes of a similar character for some hours. The barometer at 11.30 p.m. was 30.004. On the 19th, at 6 a.m., began a storm of thunder and lightning, which for the vividity of the flashes of lightning and the quick succession of the peals of thunder (resembling a continuous explosion of rockets), accompanied by heavy rain, bore more resemblance to a tropical storm than one in Devonshire. This continued till about 7.30, the rain till 9 a.m. The barometer fell to 29.888 ; thermometer,  $68^{\circ}$ . The quantity of rain that fell was one inch and one-tenth exactly.

**TORRINGTON.**—I think it right to inform you at once of the heavy fall of rain we had here on the evening of 18th and early on 19th ; my gauge had 2.83 in. The usual receiver was not large enough to contain the downpour, and there was nearly half an inch in the outside can. It was a series of thunderstorms ; one of the heaviest I ever saw, and one of the longest. The 18th was very hot. I was at Chittlehampton when a premonitory shower fell between 5 and 6 p.m., and lasted some considerable time. There was thunder, but not very near us. It cleared off, and at about 8 we started for home. We had not gone very far when I noticed some suspicious looking clouds to the southward, and by the time we had gone, say two and half miles, we felt

some warning drops, which soon quickened into one of the heaviest showers I was ever out in; flash followed flash, and peal peal, until we began to think of shelter, and found it in a farm-house on our way about two miles from where the rain had begun. We were weather-bound there for about two hours, when we again sallied forth, and reached home without more rain. But there was a heavy bank of cloud to the westward, which proved itself full of electricity, for at about 1.15 a.m., the storm began again, and continued with greater or less intensity for some five hours. The lightning was sometimes rose coloured, sometimes blue, and some of the rolls of thunder were most unusual, one with a quick vibration like the roll on the small drum, another a simple explosion like that of a cannon. The Post Office battery is injured, the intensity coil being damaged. I fancy that the wire which is attached to the spire was struck, or else the conductor which comes from the vane. I hear that the telegraph wire between Bideford and Appledore is also injured. The river is in full flood, some six feet deeper than it was yesterday morning—*Sam. Buckland.*

P.S.—The storm I encountered *en route* was felt here, but I cannot give you time or duration.—*S. B.*

MESHAW, SOUTH MOLTON.—This neighbourhood has usually but little thunder and lightning, but on Tuesday evening, 18th, a very severe storm visited us, commencing about 7.30 p.m., and continuing with more or less severity till nearly 9 a.m., 19th. The rainfall then measured amounted to 1.15 in. The lightning was very vivid, and I am sorry to say struck a house in Witheridge, about four miles to the south of this place, and set it on fire; no life was lost, but the house struck was consumed, and an adjoining house much damaged. The course of the storm appeared to be from S.E. to N.W.—*W.H. Karslake.*

BARNSTAPLE.—The storm of rain and thunder here on 18th and 19th was more severe than had ever been experienced within the memory of the oldest inhabitant, and considerable damage was done in the neighbourhood. The rainfall in the ten hours amounted to 2.50 in. I observed with surprise that at 4.45 a.m., whilst the thunder was loudest the blackbirds, thrushes, and cuckoos, which abound in our grounds, continued to sing unconcernedly.—*Townshend M. Hull, F.G.S.*

BARNSTAPLE.—The storm passed away from Barnstaple and the neighbourhood about ten o'clock on 18th, but at two in the morning of the 19th, it came on with increased fury, and the main drainage works outside the river wall along the New Road burst with the report of a gunpowder explosion, about forty or fifty yards of the drain being destroyed. The drain had only recently been constructed at a cost of several hundred pounds.

BIDEFORD.—The second outburst occurred at about two o'clock yesterday morning, 19th. The claps of thunder were deafening, peal after peal followed each other at intervals of a few minutes, and the rain literally poured in torrents. So close were the electric clouds that the furniture in the houses shook, and great alarm was felt. The storm continued thus for several hours. The river Torridge was so swollen by the rain as to present the appearance of a tidal river. With the hail and rain the marsh grass has been laid flat and injured. Mr. Cole, of Lower Gunstone, was riding over the bridge when his horse was struck down by lightning. The leg of the rider was injured, but the horse was unhurt. Several cases of cattle killing and destruction of trees are reported. At Appledore the telegraph wires were broken.

## CORNWALL.

HEXWORTHY, LAUNCESTON.—The rain registered here during the storms of 18th and 19th was 1.72.—*H. M. Harvey.*

ROBOROUGH (E.S.E. of Great Torrington, five miles).—The storms about six o'clock of the 18th seemed to approach from the S.W. and S., and met over the Great Torrington district. About ten o'clock it became fine, but a violent storm came over again about one o'clock, a.m., of the 19th, and continued until five o'clock, when rain descended in torrents; the lightning was very blue.—*H. M. Harvey.*

## SOMERSET.

BINCOMBE HOUSE, CREWKERNE.—On Tuesday night, 18th, at sunset, heavy clouds began to rise, and it lightened all night, but no rain fell until Wednesday, at 7.20 a.m., when it began, and in one hour and forty minutes I measured 0.73 in.; it ended at 11.15 a.m., when 0.29 in. more had fallen, making 1.02 in. all together.—*F. J. Sparks.*

WIMBORNE STATION.—This part of the country is rarely visited by thunderstorms of any great severity; this I have specially noticed for some years, and in this case we were singularly exempted from a visitation. On the 16th and 17th the heat was excessive, and there was no variation in the barometer worth recording; towards 2 p.m. a distinct ponderous thunder-cloud rose in the south, remarkable for its isolation; the sky being at this time remarkably clear, I noticed the hard and strong outlines of this cloud, also noticed its rapid increase and development, and felt certain that a great storm was impending; it maintained its position, however, and at 4 p.m. had passed into a modification of ordinary cloud stratus, followed by a rack of detached "mackerel" clouds, which disappeared in the zenith; no lightning was visible at night, and the moon rose clear and brilliant. I heard in the evening that thunder had occurred at Weymouth, with slight rain, and also that a storm had burst in the Channel south of Portland; this then was the storm I had noticed rising over the line of hills which run east and west from Swanage towards Dorchester, being due south, looking from Wimborne, my post of observation.—Tuesday, the 18th. Heat still exceedingly oppressive; the sky nearly overcast with a filmy, hazy, cloud canopy, which at 10 a.m. was relieved by a lower formation of hard marble cirro-cumuli, with no perceptible motion, but nevertheless with a gradual clearing in the direction of the sea (east) and an increasing density towards the west; at noon the sun shone with tremendous power and with a comparatively clear sky, which maintained itself throughout the afternoon, and I particularly noticed the absence of those electric indications which were so evident in the early part of the day. At 6 p.m. I noticed thunder cumuli in the E.N.E. very distant and isolated, and it was not until 9 p.m. that any real manifestations of great change were apparent. Due west at this time an immense bank of cumulo-stratus, throwing up anvil shaped projections, rested upon the horizon, broken here and there with towering "heads" of extreme density in

grand relief against a deep orange-tinted background ; across the moor (due S.) patches of cloud in detachments worked up from the S. At 9.30 p.m., rapid flashes of lightning were visible in the direction of the Channel (E.), and more especially in the W. and N.W., but no rain fell, neither was thunder heard. The night passed quietly, but at 7 a.m., 19th, we were visited with heavy rain and a slight storm of thunder, which worked up from the S.E., and worked away to the N.W. Shortly after this a rapid scud was borne up with a N.W. wind, but I noticed that the upper layer of clouds was coming from the S., and that the clouds were very electrical in their formation and appearance. Rain fell heavily during the morning of the 19th. At noon the sky cleared bodily, and in a short time clouds of a different character altogether (the "nimbus") rose from the N.W., with a fall of 7° in temperature, and a brisk cool wind set in—the change had been effected.—*E. J. Gale.*

**BATH.**—Yesterday morning a violent thunderstorm broke over Bath and the surrounding neighbourhood, lasting with more or less severity for one or two hours. The rainfall was very heavy, and was accompanied by many flashes of lightning and peals of thunder. The storm fell without any warning of its approach, the morning having been fine. No damage of moment was the result.

#### GLOUCESTER.

**CIRENCESTER.**—About noon on 18th, thunder was heard in the west ; it continued for two hours, and then seemed to pass away to the north-west. Light clouds hanging about, but no rain at Cirencester, and none apparently to the east of it. We were evidently at the eastern edge of the storm ; there was rain at Stroud and Gloucester, and the storm there appeared to be travelling up the vale of the Severn. On 19th there was a storm very similar to that of the previous day, and it seemed to hang about in the same place, but part of the storm just touched us, and 0.31 of rain fell in the storm, and a little drizzle that followed. There must have been a great deal of rain to the west of us, but not much to the east, and we were, as before, at the eastern edge of the storm. It began about 10 o'clock in the morning, and thundered for about an hour.

**HUNTLEY.**—The storm on 18th commenced from the southward, at about five minutes to 12 o'clock, and to five minutes past showering of hailstones and water were continuous ; from five minutes to 12 till lull in storm at 12.15, rainfall 0.29. A fresh storm commenced about 0.20 p.m., and at 1 p.m. rain measured .52 in. The storm passed off to the northward, working round to the eastward, coming overhead again about 2.30 and 5 o'clock ; additional rainfall to 9 a.m. 19th, 0.35 ; total in 24 hours, 1.16. Hailstones were pip-shaped and round, the larger ones averaging three-quarters to an inch long and half-inch broad, and the lesser about half-inch in diameter.—*W. L. W. Eyre.*

**UPFIELD, STROUD.**—Yesterday, 18th, a heavy thunderstorm passed up the Vale of the Severn towards Gloucester and Malvern, commencing about 12 a.m. The amount of rain that fell here during the storm was .31. At Stroud, a mile to the east of us, none fell, and up

to 5 o'clock p.m., no rain had fallen at Cheltenham, merely the edge of the storm passed over us. It thundered heavily all day to the N.W. of us. At 8 a.m. on 19th, another thunderstorm passed up in the same direction, from the S., the amount of rain for the 24 hours at 9 a.m. being 0·85 ; greatest heat yesterday, 85°.—*B. Stanton.*

## SHROPSHIRE.

**BUILDWAS.**—A heavy storm, which came up rather suddenly on Wednesday morning, was accompanied by a fall of rain to the amount of 1·07 inch, nearly all of which fell in the space of about an hour.

**OSWESTRY.**—At Oswestry, some farm buildings and wheat stacks were fired, and two men injured.

**ELLESMERE.**—Farm buildings and haystacks were set on fire near Ellesmere.

## STAFFORDSHIRE.

**THE LYONS, ENVILLE, STOURBRIDGE.**—My observations for the two days are as follows :—

Date.	Barometer.	Wind.	Weather.	Rain.
18th.....	29·92 ...	S.S.W. ...	{ det. cl., distant thunder, great storm } at Birmingham and elsewhere.	.00
19th ... ..	29·78 ...	S.W. ...	det. cl., thunder storm from W.	.02

I may mention that my house is situated on the slope of the high ground called the Sheepwalk, about 15 miles N.W. from Birmingham.

—*Robt. S. Edwards.*

**WALSALL.**—On Tuesday a mother and child were killed by lightning near Walsall. Another child in the mother's arms escaped unhurt. The husband and father, who was standing by, was also struck, but not seriously hurt.

## WORCESTER.

**LANSDOWNE, EVESHAM.**—No disturbance whatever here, Tuesday, 18th instant. No rain ; distant thunder in N.W.-N.E. a little distant lightning seen. Wednesday, 19th. Short sharp showers in forenoon ; no lightning or thunder. Total rain ·23 in. River flowing past here rose four feet in the night, being *unusually turbid*, indicating much rain north of this. Both days heavy electrical cumuli, with wild interlaced cirri and cirri-stratus. Barometer steady, 29·900 ; thermometer, max. Monday 17th (85°) ; Tuesday 18th (86°·5).—*R. Burlingham.*

**MOSELEY, BIRMINGHAM.**—The fall of rain in this district on 18th was very erratic, as will be seen from the following deductions : Moseley (Thomas L. Plant), 2·47 in. ; Bloomsbury street, (D. Smith), 1·23 in. ; Edgbaston (Latham), 0·81 in. We had another storm on the 19th, when the rainfall at Bloomsbury-street was 0·64 in. and Moseley 0·46 in. The distance of the two places from Stephenson-place (the centre of the town) is about the same, two-and-quarter miles ; directions, Bloomsbury-street E.N.E., and Moseley, S.S.E. The distance from Moseley (Park-hill) to the Botanical Gardens, Edgbaston (Mr. Latham), is about two-and-a-half miles, E.S.E. to W.N.W.—*T. L. Plant.*

ORLETON, TENBURY.—A terrific thunderstorm burst over here on the 18th. The preceding three days had been very fine and hot, the ther. rising on the 17th to  $80^{\circ}6$  in the shade, fully protected. Soon after noon on that day a lofty plate of dusky rain-clouds gradually obscured the southern part of the sky, and cleared away again after 4 p.m., leaving large piles of cumuli in the eastern horizon. The morning of the 18th was very bright and hot, the ther. reaching  $83^{\circ}2$  in the shade; soon after 12 the southern part of the sky filled with lofty cumuli, and distant thunder commenced, rapidly approaching. From one till half-past one p.m. the lightning was very brilliant and frequent, followed at very short intervals by deafening peals of thunder, and a great fall of rain, mixed with some hail. The violence of the storm then abated, but increased again about a quarter before three o'clock, and did not pass away till half-past three p.m. About half-a-mile from this place a fine double elm tree was struck by the lightning, and three large fat oxen which lay under it were instantly killed. About two miles distant, three cows which were sheltering under a tree were killed in a similar manner, and within a radius of one-and-a-half miles from the centre of the storm, seven or eight trees were struck by the lightning, and one of them, a large oak tree, nearly stripped of its bark. Viewed from a distance of twelve miles to the north, where there fell no rain, the great plate of cloud from which the thunder proceeded appeared to be very lofty, and shaded off at the edges into a clear blue sky, below which, on the horizon, to the west and north, were grand piles of cumuli, the nucleus of other storms. On the following morning, the 19th, another great thunderstorm passed over this locality, commencing soon after nine a.m., and was accompanied by a great fall of rain. On the 18th, the fall was 0.65 in., and on the 19th, 0.76 in., making together 1.41 in. On the 24th another heavy thunderstorm passed over us, with a fall of 0.61 in. of rain.—*Thomas Henry Davis.*

#### WARWICK.

SOUTH WARWICKSHIRE.—The thunderstorm in South Warwickshire yesterday caused immense damage to property over an area of about 30 miles. The weather in the early part of the day was clear, but exceedingly sultry, and continued so up to midday, when dark clouds overspread the western part of the sky. Heavy peals of thunder commenced at 2 o'clock, and shortly afterwards the rain descended almost in sheets of water. At Bishop's Itchington a large hay-rick, the property of a Mr. Pearson, was struck by lightning and set on fire. At Hatton, large hailstones fell for a long time, and in some cases broke the windows of dwellings in the same district. The water courses were inadequate to take away the water, and many of the fields were submerged five and six inches deep. The fury of the storm was intense in the Henley district, where in some instances the roads were flooded some four, five and six feet, and many of the inhabitants were compelled to take refuge in the upper parts of their dwellings, in consequence of the water in the kitchen and basement stories. One horse was drowned. It is feared there has been great destruction of property.

HENLEY-IN-ARDEN.—In less than two hours, 3.41 (or nearly three and a half) inches of rain and hail fell at Henley-in-Arden, and during the first 55 minutes a rain gauge registered no less than 2.74 (or two and three-quarter) inches. incessant sheet lightning and thunder accompanied the storm. The unusual maximum temperature was, on Tuesday,  $84\frac{1}{2}^{\circ}$  in the shade.

BIRMINGHAM.—Mr. T. L. Plant writes :—“The storm which visited Birmingham and vicinity on Tuesday last, 18th, came from the south, the greatest severity of which was felt at Henley-in-Arden. At Birmingham the tempest began at 1 p.m. Shortly before 2 o'clock, and for half-an-hour, the rain was mingled with immense pieces of ice, three-quarters of an inch to an inch and upwards in length, and of most irregular shape. The storm lasted 3½ hours. Rain fell at Moseley (2¼ miles from the centre of the town), 2.47 in. This is the largest quantity of rain I have registered, and fully 1½ in. fell in three-quarters of an hour between 1.50 and 2.35 p.m. The greatest recorded rainfall in Birmingham in the shortest space of time was in the evening of Sunday, July 6, 1845, when 1.95 in. of rain fell in less than half an hour, and was registered at the Birmingham Philosophical Institution, Cannon-street.” On Wednesday forenoon, 19th, soon after ten o'clock, the scene of the previous day was re-enacted, and thunder, lightning, and torrents of rain burst over the town in undiminished fury. Since the visit of the Queen to Birmingham, in 1858, no storm to equal that of the last two days has been experienced in the district, and the fall of rain has surpassed that during any previous storm on record. Several thousand pounds of damage has been done to houses in the lower part of the town, and wherever an immediate exit could not be found to the volume of water which fell. Hundreds of gardens in the suburbs are reduced to shapeless masses of mingled earth, gravel, and uprooted vegetation. The macadamised roads in the outskirts of the town present the appearance of the dried-up beds of mountain torrents. The hailstones have done serious damage to glass, the windows of many dwellings presenting the appearance of having suffered from musketry fire. Two houses were struck, the chimneys were thrown down, and some parts were carried a distance of thirty yards. The electric current passed into one of the houses, carrying away the chimney-piece and smashing the ornaments thereon. Mrs. Gritten, the occupant of the house, and her infant, three months old, were in the room, but escaped unhurt. Mingled with the rain, which descended at times in sheets, were hailstones of enormous size. The little river Rea, which traverses the town, overflowed its banks in several places, and all the low lying parts were temporarily flooded. No fatal accidents are reported, but the damage to property, and especially crops and garden stock, is considerable. In Norfolk-street a torrent of water poured down from the tunnel under the canal, and in a few minutes the houses were three to four feet deep in water. New-street station was also flooded to the depth of two feet. Considerable damage is done to fruit and cereal crops.

LEAMINGTON.—Yesterday morning, 19th, two violent thunderstorms passed over Leamington and neighbourhood, which escaped the full fury of the storm of the previous day. About 11 o'clock the electric fluid struck the shop of Mr. Jones, trunkmaker, Bath-street. How it entered cannot be discovered, but it made its exit into the main street through a door, a thick square of plate-glass in which was shattered into fragments. Portions were fused, and had evidently been subjected to intense heat. A cottage in Springfield-street was also struck during the second storm shortly after midday. The lightning struck the chimney and entered the earth. Several hairbreadth escapes are reported, but no serious casualties. During both storms, which lasted a considerable time, the thunder was loud and sharp, immediately overhead, and the lightning remarkably vivid and often forked. Rain fell in torrents, and the streets were literally flooded. The afternoon and evening were close and oppressive, but without serious electrical disturbances.

LEAMINGTON, (*another account*).—A second thunderstorm occurred here on 19th, and continued about two hours, during which time there was heavy rain and incessant thunder, with forked and sheet lightning of extraordinary grandeur. At ten a thunderbolt fell in a yard at the back of a house in Bath-street, occupied by Mr. Jones, portmanteau manufacturer. It entered his premises through an open back window, and, passing into the shop, ultimately struck a large sheet of plate glass in the front door, and shattered it into innumerable fragments. Mr. Jones and two ladies near the door narrowly escaped. The shop was filled with a sulphurous smell long after the occurrence. The glass was made quite hot by the electric fluid.

## LEICESTER.

BELMONT VILLAS, LEICESTER.—On Monday evening, the 17th, much distant lightning was visible, and on Tuesday we were visited by a most fearful storm, which commenced at 4.30 p.m., the rain being heaviest from 5 to 5.30; very little fell after 5.45, but the thunder and lightning kept on incessantly till 8 p.m., and seemed to be overhead for so long a time. The storm was heaviest at Market Harborough, about 15 miles S.E. of here; it was also very heavy in the Peak of Derbyshire. Greatest heat—June 15th, 82·2; 16th, 81·2; 17th, 87·2; 18th, 86·5; 19th, 78·2. Rainfall at Belmont Villas, June 18th, from 4.30 to 5.45, 1·22 in.; June 19th, 0·56 in. At Freeman's Common—June 18th, from 4.30 to 5.45, 1·11 in.; June 19th, 0·46 in., which fell in a little more than an hour.—*Henry Billson.*

MARKET HARBOUROUGH.—One of the heaviest storms of rain, lightning and thunder that has ever been known here occurred on Tuesday. Probably the streets never before so rapidly presented the appearance of a sea, the whole space from causeway to causeway being some depth in water. The principal roads were impassable except by conveyances, and the cellars of houses in the lower part of the town were flooded. The Sheep market and the space from above Lubenham-lane, Northampton-road, and St. Mary's-road was one sheet of water, and a quantity of posts, &c., which were lying for sale on the gravel were soon floating about. Had the river Welland been full, the state of things would have been much more serious. It was at one time thought that the Folly-pond had burst, so great was the body of water that came from it; but on going to the spot, it was found that the pond was only overflowing its banks. At the Swans hotel, a fire-engine had to be engaged to clear the cellar of water. It was reported that at Little Bowden two men had been drowned, but this, we believe, is incorrect, as we understand the men who had got into the stream were rescued, although with great difficulty. [We are informed by a correspondent residing in the neighbourhood that one man *was* drowned.—E.D.] Trains on the Midland railway were unable to pass for some time, owing to the great body of water which flowed on to the permanent way. We hear that Mr. Cox gauged the rainfall between 4.50 p.m. and 7.50 p.m., and found it no less than 4 inches.

## RUTLAND.

RUTLAND.—A terrific thunderstorm burst over this county on Wednesday, lasting for several hours. At Caldecote it was very severe. The Sun inn, at Great Easton, was struck by the lightning. A sheep was killed, and an oak tree near the village was completely split from top to bottom. A large elm growing at the back of the gardens at Bisbrook Hall was on Tuesday evening struck by lightning. The electric fluid passed from one of the top branches down the trunk to within a foot of the ground, tearing off a strip of bark three or four inches wide, and some of the fragments were scattered twenty yards from the tree. At Wymondham, the lightning and thunder were perfectly alarming. A tree was struck at Teigh; at Sproxtton part of a house was knocked down; and a sheep and a beast were struck.

## LINCOLN.

ALFORD.—A terrific thunderstorm burst over Alford at 1 a.m., on Tuesday, and continued until three o'clock, when it seemed to have passed over in a north-easterly direction. The rain fell in torrents, and the lightning was both frequent and vivid. Happily, no more damage in the town was done beyond a few trees being shattered, but in the neighbourhood there were more serious results. At Belleau, on the farm of Mr. Tom Young, three valuable sheep intended for a prize show were killed as they lay together under an ash tree; and a calf and a

young horse were injured. At Fordington, on the farm of Mr. Geo. Cartwright, the shepherd and his wife and child had a very narrow escape. Disturbed by the storm they left their bedroom, and went into the kitchen, where they were almost immediately struck down by lightning, and rendered apparently lifeless. The electric fluid entered by the chimney, and in escaping set on fire a cupboard full of clothes, scorched a pillow upon which the child had lain, and shattered the window panes. A saw which was hanging on a wall was shivered to pieces, and a metal candlestick was melted. The Forrel Farm, at Bilsby, belonging to the Rev. J. Allott, and occupied by Mr. Drewry, was also struck by lightning. The chimney stack was damaged, and some tiles were scattered, but no one was injured. A cottage called the Old Rectory, at Sutton, occupied by David Holmes, was set on fire by a flash, but not much harm was done.

BOSTON.—A terrific thunderstorm passed over Boston and the neighbourhood about midnight on Monday last. The lightning was unusually vivid, and the peals of thunder were very loud. At Sibsey, and some places north and north-east of that parish a good deal of damage was done; instead of rain, as at Boston, there was a heavy fall of hail. The windows of several houses were broken, and the wheat and potato crops were much injured. A horse, valued at £50, the property of Mrs. Arlice, of the East-fen, was killed by the electric fluid while grazing in a field, as also were two sheep belonging to Mr. Cawdwell, of Leake. Several trees were more or less damaged by the lightning.

GRANTHAM.—On Monday evening this district was visited by a very severe thunderstorm, during which a youth named Peck, residing in Grantley-street, was struck by lightning. He was conveyed home, and medical aid was promptly obtained, but he continued insensible until about noon on Tuesday; he is now progressing favourably. Another storm on Tuesday was very severe, the rainfall being extremely heavy. Most of the houses lying low, or at the foot of a declivity, were flooded, but no serious damage was done.

HORNCASTLE.—On Monday night and early on Tuesday morning Horncastle was visited by a tremendous storm. The lightning was extremely vivid, and the crash of the thunder was occasionally appalling. Torrents of rain fell, and also hail. We have not heard of any damage being done in the neighbourhood. The storm did not have the usual effect of cooling the air, for the heat on Tuesday was most oppressive.

LINCOLN.—Heavy thunderstorms were experienced at Lincoln on Monday night and Tuesday evening. On the latter day the heat was intense, the thermometer standing at 83° in the shade.

LOUTH.—After two days of excessive heat, closely following upon cold March-like weather, a storm of unusual severity broke over Louth and its neighbourhood on Tuesday morning last shortly after one o'clock. The thunder was so loud and the lightning so vivid, that many were awakened from slumber in no little alarm. Heavy rain and hail fell during the progress of the storm, which continued nearly three quarters of an hour. After its cessation the atmosphere was brilliantly lighted up for an hour by sheet lightning.

SPALDING.—The lightning was very vivid, and but little rain fell. Six sheep on the farm of Mr. Fletcher, at Weston, were killed by the lightning. On Wednesday afternoon another heavy storm broke over the town, and for about half an hour rain descended very heavily.

SPILSBY.—On Monday night the town and neighbourhood of Spilsby was visited with a terrible storm. During the whole of the evening continuous peals of thunder in the distance were heard. These waxed louder and the flashes of lightning became more vivid as the midnight approached, until at length the elemental war burst upon the town in all its fury. Rain fell in torrents, flashes of lightning, chiefly of the description called sheet lightning, followed each other, from every part of the heavens, in immediate and rapid succession, ever and anon giving to the landscape the brightness of day. The peals of thunder were remarkably loud, louder indeed than had been heard here before for many a day. With the exception of the splitting of an oak gate-post in a field occupied by Mr. Pool Baker, we have heard of no damage having been effected. The storm appears to have been productive of more injury in some of the adjoining villages

than in the town itself. Captain Preston, of Dalby Park, had a ewe killed. A field of beans, belonging to Mr. J. B. Parish, of Toynton All Saints, was much damaged, as also was one on the farm of Mr. Croft, of the same place. All were, however, insured. During the same night a horse belonging to Mr. Spence, of Toynton, was killed, while depasturing on the Hobhole drain-bank. The church tower of Harrington was slightly injured by the lightning, and a magnificent oak on the property of the Rev. Langhorne Burton Burton, was rent and barked from top to bottom.

#### NOTTINGHAM.

NOTTINGHAM.—A terrible thunderstorm passed over Nottingham yesterday afternoon. James Carter and a friend, who had been fishing in the River Trent, sheltered under a neighbouring oak tree, when the tree was struck by lightning, stripped of its bark, portions being found 50 yards off, and Carter killed instantaneously. The other man was not hurt. A house occupied by Miss Shirecliff, on Trent road, was struck, the lightning passing down the chimney and escaping out of the door. The roof was much damaged, but the occupants were not injured beyond being shaken. Other smaller accidents happened. Mr. E. J. Lowe, writes from Highfield-house Observatory, Nottingham, that on Tuesday the temperature in the shade reached 90·2 deg. at noon. At 2 p.m. distant thunder was heard, and from 3.25 p.m. till 4 o'clock there was a violent storm, during which above half an inch of rain fell. The storm passed over in a S.S.E. current, and was apparently more violent south of Highfield. At first the thunder and lightning were most remarkable, for when quite overhead the lightning was scarcely visible and the thunder nearly inaudible. At 3.42 p.m. there was a change in the singular character of the storm, the lightning becoming very vivid and the thunder loud. At 2 p.m. the temperature was 87·5 deg., the wet bulb being 14 deg. lower; at 3 p.m. the temperature was 81 deg., the wet bulb being 8 deg. lower; and at 3.50 the temperature was 65 deg., the wet bulb also reading 65 deg. After 4 p.m. the rain was slight, but continued; and the thunder and lightning did not cease till midnight. In the town a youth, while at work at a printing press, was struck and seriously injured, being conveyed home insensible. Other casualties are reported.

NEWARK.—The storms of Monday and Tuesday were heavy at and around Newark. The atmosphere was oppressive on both days, and on Tuesday the lightning and thunder, which lasted about three hours, were terrific. Several trees were struck by the electric fluid, and some of the crops were damaged. A very refreshing rain fell.

WORKSOP.—A heavy thunderstorm passed over Worksop between three and four o'clock yesterday. Hail stones of great size fell, and the lightning was very vivid. The thunder was fearful. Some poplar trees in Gateford road were struck by the lightning.

#### DERBYSHIRE.

DERBY was visited by a very heavy thunderstorm, or rather a series of storms, which lasted from about three o'clock until after midnight, with but little intermission. The first storm was at its height about five o'clock in the afternoon, when the flashes of lightning were frequent, and the thunder almost a continuous roll, the rain at the same time falling heavily. Between six and seven o'clock, there was a slight abatement, but about eight o'clock the heavens again became darkened, the thunder rolled, and a great downpouring of rain followed. It was not until after twelve o'clock that the storm had abated. About half-past five o'clock a vivid flash of forked lightning struck a stack of chimneys on the top of the house occupied by Mrs. Griggs, 6, Darwin-terrace, hurling a mass of bricks and large stones on the roof of the adjoining house, No. 7, occupied by Mr. Geo. Hibbert. The roof of this house was much shattered and was penetrated in several places, freely admitting the downpouring rain into two of the bedrooms. The bricks and stones next fell into the yard at the rear of No. 6, with a fearful crash, causing the greatest consternation to the occupants of both houses, but fortunately no one was injured. At No. 8 of the same terrace, occupied by Mr. Thomson,

the shock to the buildings caused nearly the whole of the plaster ceiling in one of the sitting-rooms to fall from its position, the rafters being left exposed. On Wednesday a second storm burst over the town shortly after noon, but was not so severe as those of the previous day, not lasting more than three-quarters of an hour. The continuous heavy rain caused the river Derwent to rise rapidly to a great height, to become a rushing, mighty torrent, and to overflow the banks and meadows on its course. It is feared that much damage will be done to the growing crops in its vicinity.

#### CHESHIRE.

**CHOLMONDELEY, NEAR NANTWICH.**—My rain gauge showed 2·08 in. of rain on the 19th, at 9 a.m. It fell in a few hours between 4 p.m. and 12 p.m. on the 18th.—*E. Leader Williams.*

**NORTHWICH.**—I gauged 1·85 in. to 9 a.m., 19th; on the 19th another storm fell of about 0·55 in. We had a great flood in the rivers Dane and Weaver.—*E. Leader Williams.*

**USEFUL KNOWLEDGE SOCIETY, MACCLESFIELD.**—An extraordinary fall of rain (for this district), accompanied by thunder every few minutes for 12 hours, occurred here on 18th, namely, 4·27 in. I have searched our register (which commenced in April, 1850) through, and cannot find an instance of even half that quantity falling in the space of time. Our ordinarily insignificant stream passing through the town has, of course, swollen to such an extent as to cause serious damage in several of the lower parts of the town.—*W. Jeffery.*

**CREWE.**—A terrible thunderstorm visited Crewe, lasting several hours, rain falling in torrents and flooding the thoroughfares. About 6 p.m. the electric fluid struck the Victoria Inn, Victoria-street, entering a bed-room by the chimney and window. The glass of the window was smashed to pieces, and the woodwork splintered. The floor of the bed-room was also torn, and an opening through into the bar parlour below was made big enough to admit a man's body. The curtains of the bed in the upper room were set on fire, and Mrs. Gartside, the landlady, who was dressing at the time, was knocked down and injured. The cries of the injured woman soon brought assistance, and the flames about the bed were speedily extinguished.

**HEATON CHAPEL.**—For nearly an hour, after 1 p.m., on 18th, vivid lightning and thunder prevailed, being accompanied by heavy rain, and unusually large hailstones. Some of the latter were larger than a pigeon's egg, and broke a large amount of glass in the neighbouring greenhouses, besides injuring plants in the open air. Up to a little after six o'clock it continued fine, but all at once thunder and lightning came again worse than ever, being followed by violent dashing rain, which up to 10 o'clock amounted to over one and a quarter inch, while that for the noon-fall was nearly half an inch.

**MACCLESFIELD.**—It is stated from Macclesfield that a storm unprecedentedly furious raged from six till midnight yesterday. The canal burst its banks and many hundred hands are out of employ.

**NORTHWICH.**—A very serious flood occurred at Northwich yesterday, doing considerable damage to property. The river Weaver overflowed its banks during the night, and High-street was flooded to the depth of four or five feet during the day. At 8 o'clock p.m. the water was still rising. Underground cellars are full of water, and shops on each side of the street are flooded very seriously, great damage being done to the stocks. The occupants of several lock-up shops were fetched out in boats, which are sailing in the street. Shortly after noon the River Dane overflowed its banks, and the fields and roads for a long distance were flooded. A sitting of the Northwich County Court was being held at the time in the drill-shed, and in a short time the building was surrounded with water to the depth of two and in some places three feet. The floor of the room was flooded to a

considerable extent before the business was adjourned. The occupants of the room had taken refuge on the forms. Some of the people got through the window, and, walking along some iron hurdles and walls, got away. The Judge and the Registrar were fetched away in a trap, others waded through the water, while several of the attorneys were carried out of the place and through Leftwich-road on the backs of boatmen and others. One or two rafts were also improvised and used. Persons were conveyed along the roads in carts and conveyances all day. A great many houses are flooded. Fortunately no serious accidents occurred. The salt works at Anderton and Winsford were flooded, and the fires put out. At the latter place a child was washed out of a house at 12 o'clock at night, and drowned. The other members of the family were only rescued by men going into the place with ropes tied round them.

#### LANCASHIRE.

WALTON-ON-THE-HILL, LIVERPOOL.—Tuesday morning (18th) opened magnificently, but with a rapidly-falling barometer; temp. in shade, 75° at 8.15 a.m.; wind S.E. It continued hot and fine till 1.20 p.m., when clouds (immense and black) began to make their appearance in the S.W. At 1.30 p.m. the first storm began, and lasted till 2 p.m., at which period it began to moderate, having been exceedingly severe. Distant thunder from 2 p.m. to 4 p.m., at which time the second storm began (I was not able to measure the fall of rain after the first storm was over, being in town at the time): from 4 p.m. up to 5.50 p.m.: the storm was terrible in the extreme, and enormous quantities of rain (but no hail) fell in, so to speak, spasmodic showers. I arrived home from town at 6.5 p.m., and measured the rainfall at once, and found it to be .77 in., the whole of which, I was told, had fallen in less than an hour and a half. Another slight storm occurred at 7 p.m., with a perfect deluge of water, which, however, only lasted a few minutes. Next morning the rainfall was .29 in., making a total of 1.06 in. for the day of the 18th. The barometer, which fell for two days before the storm, continued comparatively steady at about 29.81 in. (corrected and reduced to sea level) while the elemental turmoil was going on. The Wednesday morning was again close, and heavy, but not quite so warm. At 11 a.m. thunder was first heard, and continued with slight intermissions for upwards of two hours; only about .20 in. of rain fell in this storm.—*Arthur R. Andersson.*

ASHTON.—At Ashton the flashes and thunder claps were rapid in succession and very severe. Hail, snow, and rain fell in abundance. The electric fluid entered the residence of Mr. Councillor N. B. Sutcliff, Tudor Cottage, Ashton, by the chimney, but beyond injuring the outside of the stack and filling the house with soot, did no damage. The thunder claps were so heavy that in several houses the windows were shaken out of their frames.

BURNLEY.—At Burnley the thunder was most severe, and the lightning vivid and constant. The rain fell in torrents, and flooded the low-lying districts. The electric fluid struck a factory chimney in Burnley Wood, and a house in Padiham. At the latter a quantity of crockery was broken, but no further damage was done.

BURY.—At Bury shortly before one o'clock, the electric fluid was seen to strike the gable of the Star Inn, Freetown, kept by Andrew Crowther, and about 200 yards from the mill, where a few weeks ago about £200 worth of damage was caused by a storm. A portion of the chimney stack was dismantled, a part of the house unroofed, and a large hole driven through the brickwork into one of the bedrooms, the ceiling of which was broken for a space of three or four square yards. The only other damage done in the room was the smashing of some glass frames.

Almost simultaneously with this occurrence the lightning struck in at the front door, to the great alarm of some young women who were sheltering there, and made its way into the cellar. The coupling of a inch gaspipe near the meter was wrenched away, and the gas that rushed from the pipe became ignited. This, however, was soon discovered, otherwise the house would have been set on fire. No person was injured—those at the door and in the passage were simply dazed. Upon the bedroom being opened, it could scarcely be entered, so oppressive was the sulphurous nature of the atmosphere. The electric fluid also struck the house No. 40, in Cecil-street, The Mosses, occupied by Edward Rigby, a mechanic. The building was struck in much the same way as the Star Inn, the chimney on the gable being split, and a hole driven through into the bedroom. Several lengths of gilded picture-frame wood were reared against the wall near the chimney, and the lightning set on fire the paper in which the wood was wrapped. The wall on the opposite side was rent, and a line left on the plaster similar to what might be expected from the firing of a train of gunpowder. The gilt framework wood was charred and spoiled. Rigby's wife and children were in the house part, and the little boy was lying asleep on the sofa, off which he was hurled to the floor. The damage in other parts of the town consisted of broken skylights, mirrors, the sweeping of ornaments off mantel pieces, &c. The storm at noon, which continued about half an hour was succeeded by another at 6 o'clock in the evening, which continued with greater intensity for upwards of an hour. Such a breaking forth of the meteorological storm elements have never been witnessed in Bury for some twenty years back. Telegraphic communication along the railway was suspended for two or three hours, and that with Bacup was totally cut off from three o'clock in the afternoon.

LIVERPOOL.—A steam tug named the Knight Templar, while lying at the Prince's landing-stage, was struck by the lightning during the first storm, and the truck of the mainmast was carried away. The steamer Memphis, cotton laden, was also struck, and about 60 bales were destroyed by the fire which the lightning caused.

MIDDLETON.—At Middleton, the electric fluid struck the residence of Mr. Faulkner, dyer, of Hunter-street, partly demolishing the roof and chimney. The cornice and a number of ornaments in the front bedroom were thrown down and smashed in a thousand pieces. Several children were playing round the kitchen fire in the lower rooms at the time, and one, a child, was thought to be seriously injured, but after much exertion it was restored. A few articles of furniture were broken, and the fluid escaped by an open door. Trees were also torn up by the roots through the force of the storm, and the crops are said to be very greatly damaged.

OLDHAM.—At Oldham, the storm commenced about one o'clock, and continued till nearly two. The lightning struck Bell Mill, Mumps, and caught a large flagstaff on the roof, reducing it to splinters, and setting the fragments on fire. Fears were entertained of the fire being communicated to the cotton spinning rooms below, but several men who ascended the roof put the fire out. The engineer engaged at the same mill was sent with considerable force against the boiler fire-grate; while two operatives, following the line of a steam-pipe, were sent to the ground in contrary directions by the force of the fluid. No material injury resulted to the men. A young man in the service of Messrs. W. and A. Forsyth, spirit merchants, Yorkshire-street, while standing in front of the premises, was knocked down, and for some time was insensible. A beerhouse in Beaver-street, off Yorkshire-street, was also unpleasantly visited. The lightning passed down the chimney, taking with it a large quantity of soot. A house in course of erection, in Napier-street East, was also damaged. Several tiers of bricks were stripped off one of the walls, but, no one being near, no injury resulted. The telegraphic wires communicating between the three police stations were struck on a cotton mill in Bell-street.

#### YORKSHIRE.

BEVERLEY.—On Monday (17th) and Tuesday (18th), whilst the storms were raging in the west of the Wolds, we on the east side had

nothing more than darkness, distant thunder and lightning, and a few heavy drops of rain.—*Thos. Dyson.*

**ACASTER SELBY.**—At about four o'clock on Tuesday afternoon, when the storm was at its height, a labourer and his daughter, John and Sarah Dillon, the former sixty-eight and the latter seventeen years of age, were working together in a field in the occupation Mr. W. Stead, at Acaster Selby, and there being no other refuge near, they did what was possibly the worst thing under the circumstances, chose the shelter of a large oak tree in the field. Here they had not stood very long ere a flash of lightning struck them both to the ground, the father thereby meeting with instant death, and the daughter, on recovering from the insensible condition into which she had been thrown, suffering excruciating pain in her feet, shoulders, breast, and other parts of her body which had been struck by the electric fluid. She was totally unable to stand, no one was near to render any aid, and the poor sufferer had to crawl for nearly three-quarters of a mile on her hands and knees, in the pouring rain and mud, from the dead body of her father to the house of Mr. Stead, the farmer, for whom they had been working. Every assistance was rendered her, and on being brought to this city Mr. Marshall, surgeon, also attended her. Although severely scorched in several places she is in a fair way towards recovery. The body of Dillon was left at Acaster to await the coroner's inquest.

**BARNSLEY.**—Yesterday afternoon, 18th, a thunderstorm of a most terrific character, accompanied by a very heavy and continuous downfall of rain, did a great deal of damage. The flashes of lightning and peals of thunder were such as were never before experienced in the district. All the power-loom factories were entirely stopped. In one of the main thoroughfares, where four roads meet, the water was fully four feet high, so that persons had to be taken across in carts, waggons, and cabs. In the lower part of the town the water flooded the lower rooms and cellars to a depth of several feet. John Riley, a boy, nine years of age, was drowned, being carried away in an open culvert.

**BRADFORD.**—At Bradford the storm raged tremendously, but, happily, produced no worse results than the damages such as usually attend rapid accumulations of water in public streets. Hailstones fell of extraordinary size, and glaziers will have plenty of work all over the town for days to come. Persons arriving from the North Riding report that the storm had been at the height of its fury there, and hailstones fell quite as large as boys' marbles. Houses and other buildings were struck by lightning, and chimneys and walls were knocked down in all directions. More than 1½ in. of rain fell in less than an hour.

**SHEFFIELD, CROOKES.**—A heavy storm, accompanied by exceedingly vivid flashes of lightning, broke over this neighbourhood yesterday afternoon, 18th. The parsonage house at Crookes, occupied by the Rev. C. G. Coombe, M.A., was struck by the lightning and very considerable damage was done. Mr. Coombe, with his wife and four children, were in the dining-room watching the lightning, when they were startled by a tremendous explosion, followed by a heavy fall of *debris* down the chimney. The lightning had struck the west stack, a portion of which had fallen on the lawn, some had gone through the roof, and the remainder down the chimney. Inside of the room the plaster of the chimney was cracked in several places, books were scattered in all directions, and the room presented a scene of the greatest confusion. The electric fluid appears to have passed between the flooring and ceiling into another room, forced up the hearthstone, and done considerable damage there. The occupants of the house were much alarmed, but they all escaped uninjured.—About the same time a cottage house at Crookes, belonging to Mr. John Spooner, was struck by lightning. Some damage was done to the cottage, and the furniture was knocked about a good deal, but no one was injured.

**DONCASTER.**—A heavy thunderstorm passed over Doncaster yesterday afternoon. The rain descended in torrents, and the thunder and lightning were fearful.

**DRIFIELD.**—On Monday last a fearful thunderstorm passed over this district. The lightning was very vivid, and the whirlwind so powerful as to blow down

trees and carry them 200 or 300 yards distance. Such was the case on the farm of Mr. Allanson Kendall, one tree being blown and driven over the adjoining field. About a mile distant, at the Wold House, Mr. R. Hornby's windows were broken and trees torn from the wall. At Kilham, a windmill was blown down, and cases of damage in different places in the district are reported.—A second and one of the longest and most terrible storms ever remembered, took place on Tuesday, continuing its fury for three hours, the thunder and lightning being incessant, and the downpour of rain enormous. On the Wolds the rainfall was so heavy that the water did great damage to the crops, and filled the cuttings on the Malton and Driffield Railway with muddy water quite level with the rails.

**EASINGWOLD.**—On Tuesday afternoon, a most terrific thunderstorm passed over this town and neighbourhood. During all the morning thunder could be heard at a distance, and about half-past two o'clock it began to be very loud, and the lightning was very vivid. The storm continued for about four hours, during which time the rain descended in torrents.

**FIMBER.**—One of the most destructive accompaniments of the storm occurred on the line of railway between Malton and Driffield. A survey on Thursday morning revealed the fact that a very deluge of water had fallen. For about a mile, commencing on the Malton side of Fimber, the railway was inundated with mud and gravel, left by the flood waters, and on the East side of the line the hills have six or eight abraded lines, several yards broad resembling the dried-up beds of rapid rivers. The soil thus brought down was deposited on the line in places quite a foot thick, and carried over the railway into the fields below, covering the crops.

**HELMSLEY, &c.**—On Tuesday, a fearful storm visited this district. The quantity of rain which fell was enormous, and at one part of the Thirsk line the trains ran through the water for nearly a mile. At Amotherby station the road had six inches of soft mud all over it. At Hovingham the crops were all under water, and the railway yard and some of the lower houses were flooded. At the saw-mills a great amount of damage was done, and some of the timber was carried away. From Hovingham to Gilling the land on either side was one great lake, and from Cawton to Gilling, about two miles, the water ran over the railway bank like a huge mill weir. A regular river was running through Gilling station, and the Helmsley trains could not depart from the proper platform. Access to Gilling could only be made in conveyances, and the whole town was under water, the cellars of the inn being flooded, and every room on the ground floor being more than a foot deep. The deplorable condition of the village from soft mud can hardly be imagined. At Ampleforth the water came off the hills so rapidly that it flooded some houses and ran out of the windows into the street. At this town the storm was a perfect deluge, and nothing like it can be remembered. Reports of stock drowned in the flood and killed by lightning are frequent. The view from the hill above Gilling down the Vale of Mowbray resembled the low part of Windermere. The loss to the farmers must be enormous.

**KNARESBRÖ.**—A violent thunderstorm broke over the town and neighbourhood of Knaresbrö on Tuesday afternoon. The dwelling-house of Mr. Benjamin Robinson, near the Oddfellows' Hall, in Knaresbrö was struck by the electric fluid, and though some damage was occasioned to the building the inmates escaped unhurt, and the mischief is not serious. At Plompton, a cow was killed by the lightning, and several trees in the neighbourhood were also destroyed by the same terrible agency.

**LEEDS.**—On Monday, Leeds and neighbourhood was visited by a thunderstorm of almost unexampled violence. The lightning struck a chimney on the residence of Mr. Carter, dentist, 30, Park-square, but did no damage beyond filling the kitchen with soot and the house generally with smoke. A house in Marshall-street, Holbeck, and another in Fleece-lane, Meadow-lane, were struck, but in no instance has much damage been done, so far as can be ascertained. In some of the lower parts of the town cellars were flooded; but no great damage has been done. On Tuesday, there was another storm, but it was not so violent as Monday's. The river Wharfe was much swollen, and the lower part of Ilkley was four feet under water.

**MALTON.**—At Malton the lightning struck the gable end of Mrs. Arundel's tailors' shop, in Chapel-yard, knocked the brickwork and displaced a bay-window below, in which a man was sitting at work, who escaped unhurt.

**HUTTON.**—At Hutton, on Mr. Stilborn's farm, two horses were struck in different fields. One horse was in a cart, under which a young man had taken shelter from the rain. The horse bounded forward, and the young man escaped without injury. A number of sheep, the property of Mr. J. W. Cromet, of Milford Farm, were killed in the same way.

**LOW MOWTHORPE.**—A most terrific storm burst over the greater part of North and East Yorkshire, on the 17th. From every part accounts come in of damage to trees, crops, and stock, but the most serious case is that of a young gentleman who was struck dead at Low Mowthorpe. He was Mr. Robert Topham, son of one of the principal farmers of the Yorkshire Wold Valley, and was walking across a grass field towards the house, returning from ordering some women to get away, as a storm was coming, when he was struck down by the lightning and killed.

**NEWHILL.**—A dreadful thunderstorm, accompanied by rain and hail, burst over Newhill yesterday afternoon about three o'clock. A young man named Jas. Thorpe, a native of Wath, who was holding a horse in a cart, near the colliery at Newhill, was struck by lightning. He was holding a fork in one hand, and fell to the ground as if dead. He remained unconscious for a considerable time.

**NORMANTON.**—At Normanton Springs and Intake there was also a violent thunderstorm. The lightning was forked and very vivid, and accompanied by heavy showers of rain. No damage was heard of.

**NUN-MONKTON.**—The thunderstorm burst over the village of Nun-Monkton, on Monday, about noon, when the clouds gathered to the north-west of the village, and heavy peals of thunder followed, but the storm passed away to the northward. It had hardly, however, cleared away before a second storm was seen gathering, and this time, evidently coming directly towards the village. The clouds increased in density, and at half-past one in the afternoon the electric clouds had gathered so hugely and hung so low over the village that the darkness was quite appalling. Presently the lightning began to flash and the thunder to roll, moderately at first, but soon increasing in intensity, until flash followed flash in such rapid succession that it was hardly possible to discriminate between one and another, and the peals of thunder following created great alarm. The storm seemed to have reached its climax in about an hour, during which space it hung directly over the village, when there came a flash of extraordinary brilliance followed instantaneously by a terrific detonation, shaking the whole village. At this moment the house of a widow, named Wharton, was struck by the electric fluid, which tore away the coping of the western gable and made a large hole in the end of the house, entering an upper room and scattering the *debris* in every direction. The fluid then appears to have passed along the front of the building, which it again entered by a low window at the east end, driving in the glass of the window, and, striking a cupboard in a corner of the room scattered part of its contents on the floor. It then appears to have quitted the place, without leaving any evidence of the way in which it had escaped. After this fearful flash the storm gradually decreased in intensity and passed away to the eastward, but on its way the electric fluid killed three fat sheep, belonging to the Hon. Payan Dawney, which, with a large flock, were grazing in a field adjoining Beningbrough Park. The sheep which were killed were beneath an oak tree, which was only slightly injured. A recurrence of the storm took place on Tuesday afternoon, and continued with great violence from four o'clock until near seven, the rain falling in torrents, deluging the village and pastures, and causing the rivers Ouse and Nidd to rise upwards of a foot in about a couple of hours. During the storm the electric fluid killed a cow belonging to Mr. Greenwood, farmer, of Nun-Monkton, and one of the trees in Beningbrough Park was shattered and thrown across the road.

**OVDENDEN.**—A mill hand named Halliwell was killed at Halifax, when on his way to Ovenden; and at Ripponden, it is said, a boy was struck dead.

**PIMBER HILL.**—Six sheep the property of the Earl of Zetland were slain by the lightning in a field on Pimber Hill.

**ROTHERHAM.**—Yesterday afternoon, shortly after one o'clock, an alarming thunderstorm burst over Rotherham, and the surrounding villages. The peals of thunder were loud and oft-repeated, while the flashes of lightning were awfully vivid. This was continued throughout the afternoon and evening with more or less severity. Rain fell in torrents almost incessantly from one o'clock till a late hour last night. Several parts of the town were flooded, and in many instances dwelling-houses suffered very much from the effects of the flood. A house at The Holmes was struck by the lightning yesterday afternoon, and a young man who was in bed, was also struck and paralysed.

**SELBY.**—The violent thunderstorm which visited this county on Tuesday last was not very severely felt in Selby. For about an hour and a half the lightning was incessant, but not remarkably vivid, and the thunder continuous, but not heavy. The district around Selby was not so fortunate, for in nearly all the neighbouring villages the storm was very severe. At Riccall, a hay stack, the property of Mr. Bradley, was struck by the lightning, but did not sustain serious injury. During the storm a large stone was displaced from the Abbey Church, but as the lightning at no time appeared to be very near, it is difficult to believe it was occasioned by that agency. It may probably have been loose, and the vibration occasioned by the thunder have caused it to fall.

**SHEFFIELD.**—One of the most severe and serious thunderstorms which it has been our duty to chronicle for a long time occurred yesterday in Sheffield. The atmosphere during the early morning and throughout the forenoon was most sultry and oppressive. The sky was overcast, and the distant muttering of thunder could be heard at short intervals. It was not, however, until about half-past two or twenty minutes to three o'clock in the afternoon that the storm burst in its intensity over the town. The cloud was travelling in a northerly direction, and was very low and threatening. The peals of thunder were loud and prolonged, while the lightning was of a most brilliant and dazzling description. Large sheets of fire descended—they could not be called flashes—and lighted up the air with a strange, weird glare, and seemed to burst in some cases with a loud report. Higher up, streaks of the more dangerous forked lightning seemed to play a game of hide and seek with each other, and danced in and out of the cloud with bewildering rapidity. At half-past three the violence of the thunderstorm seemed to have abated. About four o'clock, however, it again began to thunder and lighten, and this state of things continued for some two hours and a half, rain falling most of the time. We regret to have to record some destruction of property in Sheffield, but fortunately, although several persons were placed in imminent danger, they escaped comparatively unhurt.

**STANNINGLEY.**—At Stanningley, a cow belonging to Mr. David Roberts was killed in the field, and at Calverley Moor a child was knocked down and stunned by the shock, but happily was not seriously injured.

**TADCASTER.**—A terrific gale passed over this neighbourhood on Tuesday afternoon. The thunder and lightning were very severe. We hear of several accidents having happened. In one instance two valuable beasts belonging to Mr. J. Stephenson, of Newton Kyme, were struck dead. Mr. F. Jackson, cabinet maker, of this town, was passing about ten yards distant at the time, but escaped unhurt.

**THURGOLAND.**—The storm raged for about one hour and a half. About 3 o'clock, the house of Mr. William Laycock was struck by lightning, which entered the chimney and pierced the ceiling. A clock was broken to pieces, and the house was filled with smoke and also the next house, but no personal injury was sustained. Rain descended in torrents. It was the heaviest storm for many years.

**ULLESKELF.**—A cow, the property of Mr. R. Powell, was killed by lightning.

**WALKLEY.**—About a quarter to three o'clock the lightning struck the chimney of a workshop at Walkley Bank-road, and in this case also some destruction to property was caused. The shop is in the occupation of Mrs. Wimpey, and in it the trade of file-cutting is carried on by her son and several other men. On the out-break of the storm work had to be suspended, and at the

time the bolt struck the stack three men were in the shop. The chimney was about five feet in height, and fully two feet of it has fallen. Passing down it the lightning blew out the bricks built round the stove, and appeared in blinding brilliancy on the floor, in shape like a ball of fire. A terrific explosion followed, and had it not been that the door and windows of the place, which is but of small size, were open, there is little doubt but that it would have been blown to pieces. The three workmen made their escape as quickly as possible, and on getting outside, one of them (Mr. Walter Wimpey) discovered that he was lame. On examining his right leg he found that the lightning must have touched him in some way, as on the "calf" there was a dull blue mark several inches in diameter. On venturing inside the workshop again, the men discovered that the fluid had completely destroyed, among other things, an old fashioned clock with brass chains, which hung over the fire-place. Several of the wheels were twisted out of all shape, and more than two-thirds of the chains were melted by the powerful heat.

**RIVER WHARFE.**—Great damage is done to the corn and grain crops adjoining this river, owing to the heavy rains having caused it to overflow its banks and wash the sand and rubbish among them.

**YORK.**—In this city and neighbourhood the thunderstorms of Monday and Tuesday last were of unusual severity, that on the last-mentioned day not having been equalled in duration and intensity by any storm for some years past. The lightning, sheet and forked, was of the most vivid description, and the peals of thunder rapidly succeeding each other, and increasing in power, accompanied by a long-continued heavy rain, rendered the storm of a terrific character. On Monday the thunderstorm lasted little short of an hour, but that of Tuesday continued for double that period. Considerable damage will doubtless have been done to many gardens and crops through the violence of the rain, which flooded the streets, and in some instances entered the cellars and lower rooms of houses, causing much inconvenience. Fortunately the damage to property in connection with the storms has not in this city been of nearly so extensive a character as in many other places. The only instance of which we have heard was the overthrow of an old stack of chimneys at the house of Mr. Dowson, butcher, Colliergate, in this city. At half-past four o'clock on Tuesday afternoon the lightning struck the chimney pots, shattering them to pieces, and overthrew the adjoining brick-work, which, falling heavily on to the roof, seriously damaged it. No other injury was, however, done. The greatest alarm at the time existed in the neighbourhood, a large quantity of the *debris* being precipitated into the street, in which fortunately at the time no one was passing. At the Barracks, Fulford-road, in the suburbs of this city, some considerable damage was done. A corrugated iron roof supported on pillars, leading from the officers' mess to the billiard-room, was thrown to the ground and broken, either through having been struck by the lightning or caught by the wind, which at the height of the storm was very violent. One of the barrack-room windows was also forced into the room, and one peculiarity of the storm noticed at the Barracks was its being accompanied, as at Newcastle and other places in the north, by a very strong whirlwind, the effect of which was that several wheelbarrows were lifted from the ground and whirled in the air for a considerable distance. This fact is vouched for by most reliable witnesses, who state that they had never except in India seen any more violent storm. As a consequence of the heavy torrent of rain the barrack yard was flooded over the greater part of its area, and presented the appearance of a lake. Fortunately no injury was sustained by any of the occupants of the barracks. The weather had been oppressively hot before the storm, the thermometer registering 82 degrees in the shade. After the storm the air was much cooler, the thermometer having fallen from eight to ten degrees. Occasional flashes of lightning were visible during the remainder of the evening. As a result of the heavy downpour of rain the Ouse and Foss were on the following morning considerably swollen; many large branches of trees were seen drifting with the stream, and adjacent low-lying lands were flooded.—A farm servant at Grimston, near this city, in the service of Miss Watkinson, whilst engaged milking in a shed, was struck by lightning and found in an insensible condition.

On assistance being rendered it was found that beyond being stunned and receiving a severe shock to his system he was not otherwise injured.—On Monday afternoon one of the garden walls of Captain Key, Fulford, was blown down. A chimney and part of the roof of a house situate in Cowper's Court, Skeldergate, were much injured by the lightning, and the inmates of the house, Mr. Dale, a groom, and his wife, were very much alarmed, but fortunately they were not injured. The rainfall during the continuance of the storms was unprecedentedly high at York. According to the register kept by Mr. F. P. Sigsworth, of Coney-street, no less a quantity than 0·60 in. fell in the course of half an hour on Monday, and on the following afternoon the enormous amount of 1·40 in. fell during the thunderstorm, making two inches altogether.

#### DURHAM.

WEST HENDON HOUSE, SUNDERLAND.—On the 17th we had a little thunder, but on the 18th, the greatest thunderstorm I ever saw in this country. The different portions of the storm moved from S.W. to N.E. The thunder was heard about 1 p.m. and it continued to be frequent till 6.10 p.m.; it was almost incessant from 1.45 to 3.15 p.m., and quite so for about half-an-hour at the height of the storm. The lightning was frequent from 2 to 6 p.m. most of it being forked. The storm was at its height about 2.20 p.m., about which time there was furious rain, mixed with hail; 50 in. fell from 1.45 to 2.45 p.m., nearly all of it falling in a few minutes. I counted twenty flashes in three minutes, and at another time thirty in five and a half minutes, but when two or three occurred at or near the same moment, I called them but one. I saw four within a second at one time, far apart. The spectrum of the brightest flashes consisted of bright lines, apparently those of the ordinary spectrum of air. In the afternoon and evening the fluctuations of the barometer were very numerous, but small. The ther. fell to 56° about 6 p.m., rising with a strong breeze to 67°·0 about 10.45, and reaching a min. of 54° in the night.—*T. W.*

#### *Backhouse.*

BISHOP AUCKLAND.—At Bishop Auckland the storm caused extensive damage to property. Shortly after one o'clock in the afternoon, the sky became overcast, and rain commenced to fall. Thunder and lightning followed, peal after peal and flash after flash, in rapid succession, for upwards of an hour, when a terrific crash took place immediately over the town, which appeared to shake every building. Several houses were struck and more or less damaged. A house in Clyde-terrace was struck, and the roof and ceiling were considerably damaged. The chimney of the house of Mr. Lindsay, Board of Health Surveyor, in Silver-street, was struck by the electric fluid. The rain which fell in torrents during the whole of the time, has done an amount of damage which cannot at present be estimated; and it is said that never was such a deluge known in Bishop Auckland before. The lower part of the town, as a matter of course, suffered the most. All the streets with the least incline emptied themselves into those lower, and Princes-street was like a large river, as were also High and Fore Bondgate, Tenters-street, and the Chares. The Market Place was like a small sea. The shop of Mr. Briggs, at the corner of Tenters and Newgate-streets, was flooded a foot deep, while in the kitchen the child's cradle and other furniture were floating about the floor. Serious damage was done to the wardrobes of Mr. Buttlers's company at the Theatre. The dressing rooms are under the stage, and through the main sewer in Newgate-street being unequal to the flood, the water appears to have flowed back up the drain, and completely flooded the dressing room to a depth of nearly five feet. The baskets containing the wardrobes floated about, and no one dared enter. Consequently all the property was completely saturated. The cellar of Mr. Boyd's Hotel stood nearly five feet deep with water from the same cause, and even large barrels of beer and spirit and cases of champagne were floated about, and damage to a large amount done. Numerous other cellars were flooded, and great damage done to property.

(*To be continued.*)

## EVAPORATION.

*To the Editor of the Meteorological Magazine.*

SIR,—In your review on Dr. Buijs Ballot's "Suggestions on a Uniform System of Meteorological Observations," I observe in the June number of the Magazine this remark—"He, however, has evidently come to the same conclusion as ourselves respecting the uselessness of the evaporators hitherto used." Now, are we to look upon this assertion as anticipating the long-expected report on the experiments made at Strathfield Turgiss, and are the observers of this country forthwith to abandon their present evaporators?

On reading the "Suggestions," I noted what Dr. Ballot states, under the head of "Atmometer;" he says:—"Unless more minute observations be taken, we shall certainly get but a faint notion of what is restored to the atmosphere. The amount now seems larger than what is received. Yet, on the whole, this is positively inconsistent with the fact. What would become of the rivers of England if more was evaporated than what falls? It may be right in lower regions, where in general less rain falls, yet even here it will not be taken for granted."

I wrote to him on this subject, and pointed out that my own observations, given in the *British Rainfall*, show a different result—that I make the evaporation much less than the rainfall—though my observations are made in a low country, and in the region of least rain (in England). At present I am engaged experimenting on a method for determining the evaporation from different soils, and from grass, and I hope to make my *Evaporometer* self-registering; but as my method is not fully developed, I must reserve details for a future time. I should be glad to see evaporation receive from meteorologists the attention it deserves, for if we can arrive at a reliable method of estimating it, will it not be an important element in solving the great problem of solar energy, as well as in determining the amount of water to be carried from the land by rivers and drains?

Yours very truly,

SAMUEL H. MILLER.

*Wisbech, 28th June, 1872.*

[We are surprised that Mr. Miller should have been led into error by the sentence which he quotes from our June number. In writing it we assumed that our readers remembered our remarks upon the subject in previous publications, in the last of which (*British Rainfall*, 1871,) it is stated that the subject of evaporation "has almost entirely passed out of my hands and into those of Mr. Rogers Field," wherefore we should certainly not indicate his final results in so casual a manner as by less than two lines in a review. Our remark is based upon the experiments quoted in *British Rainfall*, 1869, p. 155, which, to the best of our belief, have been corroborated by every subsequent enquiry. Mr. Miller seems to think that in condemning the evaporators hitherto used we are condemning his: not at all. His are experimental ones, not ordinary instruments, and we are all much indebted to him for his services

in this difficult matter, but as some of his evaporators lose twice as much as others, it is clear that he himself will ere long have to condemn some of them; as for the instruments sold by opticians as evaporation gauges, the sooner they are sold for old metal the better.—Ed.]

RAINFALL REGISTERED BY GAUGES INCLINED AT  $45^\circ$ ,  
AT THE ELEVATION OF 6 AND 30 FEET.

*To the Editor of the Meteorological Magazine.*

SIR,—In *British Rainfall*, 1871, page 56, you call the especial attention of your readers to the following observed facts, that two gauges, inclined at an angle of  $45^\circ$ , at the elevations of 6 and 30 ft., give *equal* amounts of rainfall, though the horizontal gauges at 6 and 25 feet, show the normal differences. I suggest that the true explanation of this apparent departure from the law of decrease with elevation, is as follows:—Referring to *British Rainfall*, 1871, page 28, Table II., compiled by the Rev. F. Stow, we find that the average angle of rain with the vertical at 5 or 6 feet is about  $58^\circ$ , at 10 feet about  $61^\circ$ , so I think we may assume the angle at 30 feet to be not less than  $70^\circ$ . Now, though the increasing angle of rain causes no difference in the amounts registered by horizontal gauges, it is far otherwise with inclined gauges. By a deduction from Table II. we find that the returns of a gauge inclined at right angles to the rain falling at an angle of  $70^\circ$ , will exceed those of a similarly placed gauge with the rain at an angle of  $58^\circ$ , in the ratio of 152 to 100 (*see* rainfall for March and April, in Table II., when the angles of rainfall are about  $70^\circ$  and  $58^\circ$  respectively); if these two gauges are tilted up to only  $45^\circ$ , then the ratio will not be nearly so disproportionate; yet the gauge at 30 feet elevation, where rain is falling at an angle of  $70^\circ$ , will register an amount considerably in excess of that at 6 feet, where rain is falling at  $58^\circ$ . Now let us refer to the results observed by Mr. Arnold (*British Rainfall*, 1871, page 52), the gauge inclined at  $45^\circ$  at the elevation of 30 feet, registers very nearly the same amount as that at 6 feet; why does not the usual decrease of rainfall with elevation show itself? I think we may safely infer that there is a counteracting cause of increase, which nullifies the former, viz. (as stated above), the larger proportion of rain caught by the higher gauge in consequence of the rain falling at a larger angle with the vertical. It is very remarkable that the observations made by Mr. Arnold with gauges inclined at  $45^\circ$ , show that the loss of rainfall, which is presumably caused by increase of height from the ground, is exactly balanced by the gain arising from the increased angle of rain; I think it would be very satisfactory to compare the results of further experiments with gauges inclined at  $45^\circ$ , at various elevations, with a view to throw further light on this subject. Trusting that I have not occupied too much space in your Magazine,

I am, Sir, yours truly,

G. WARREN.

*Merton Villa, Cambridge, June 21st, 1872.*

JUNE, 1872.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					TEMPERATURE.				No. of Nights below 32°	
		Total Fall.	Difference from average 1860-5	Greatest Fall in 24 hours.		Days on which $\geq 0.1$ or more fell.	Max.		Min.		In shade	On grass.
				Dpth	Date.		Deg.	Date.	Deg.	Date.		
		inches	inches.	in.								
I.	Camden Town .....	2.55	— .50	.58	24	15	85.9	17	40.6	7	0	0
II.	Maidstone (Linton Park) .....	4.13	+ 1.39	1.71	24	17	91.0	18	36.0	1, 3	0	...
..	Selborne (The Wakes) .....	3.68	+ .45	.80	8	17	80.2	17	33.5	7	0	1
III.	Hitchin .....	2.47	— .17	.39	11	18	80.0	16†	39.0	6	0	...
..	Banbury .....	2.76	— .52	.46	9	15	86.5	18	35.0	7	0	...
IV.	Bury St. Edmunds (Culford) .....	2.01	— .57	.23	27	17	84.0	17	35.0	4	0	1
V.	Bridport .....	4.12	+ .88	.94	18	18	79.0	17	36.0	1	0	...
..	Barnstaple .....	5.32	+ 1.20	2.50	18	19	74.5	25	41.0	1	...	...
..	Bodmin .....	3.20	— .84	.63	7	17	73.0	18	42.0	1	0	0
VI.	Cirencester .....	3.45	+ .07	.36	8*	18	...	...	...	...	...	...
..	Shiffnal (Haughton Hall) .....	4.72	+ 1.61	1.51	24	16	81.0	18	37.0	7	0	...
..	Tenbury (Orleton) .....	5.29	+ 1.77	.76	19	20	83.2	18	34.7	7	0	1
VII.	Leicester (Wigston) .....	4.68	+ 1.92	1.12	18	17	91.0	18	36.0	6	0	...
..	Boston .....	2.00	— .19	.42	8	17	83.6	18	40.0	1	0	0
..	Grimsby (Killingholme) .....	2.17	...	.49	25	16	77.0	18	41.0	1	0	...
..	Derby .....	5.27	+ 2.38	1.06	25	18	84.0	18	37.0	7	0	...
VIII.	Manchester .....	6.90	+ 3.56	...	...	24	...	...	...	...	...	...
IX.	York .....	5.84	+ 3.74	1.31	18	18	83.0	19	39.0	1	0	...
..	Skipton (Arncliffe) .....	6.05	+ 1.95	.63	24	23	...	...	...	...	...	...
X.	North Shields .....	2.95	+ .21	.75	18	19	71.0	16	39.8	1	0	0
..	Borrowdale (Seathwaite) .....	12.30	+ 1.79	1.67	27	18	...	...	...	...	...	...
XI.	Cairdiff (Ely) .....	3.96	— .68	.76	20	14	...	...	...	...	...	...
..	Haverfordwest .....	5.38	+ 1.73	.78	19	15	76.2	17	39.5	29	0	...
..	Rhayader (Cefnfaes) .....	5.72	+ 1.74	1.20	18	20	76.0	...	35.0	...	0	...
..	Llandudno .....	5.20	+ 2.91	1.55	9	22	78.7	18	39.8	7	0	...
XII.	Dumfries .....	5.60	+ 2.70	.74	8	21	79.5	18	37.5	7	0	0
..	Hawick (Silverbut Hall) .....	2.78	...	.62	6	18	...	...	...	...	...	...
XIV.	Ayr (Auchendrane House) .....	5.39	+ 2.04	.93	24	22	75.0	18	37.0	7	0	0
XV.	Castle Toward .....	8.67	+ 5.18	1.05	23	24	68.0	18	...	...	...	...
XVI.	Leven (Nookton) .....	3.63	+ 1.39	.51	27	23	72.0	18‡	39.0	1	0	2
..	Stirling (Deanston) .....	6.88	+ 3.96	.68	19	25	76.7	18	36.0	1	0	1
..	Logierait .....	5.20	...	.68	7	23	76.0	18	35.0	3	0	...
XVII.	Ballater .....	...	...	...	...	...	...	...	...	...	...	...
..	Aberdeen .....	3.84	...	.57	7	22	69.5	18	41.0	1	0	2
XVIII.	Inverness (Culloden) .....	4.94	...	1.48	8	17	67.7	19	43.8	1	0	0
..	Portree .....	4.80	+ .02	.67	7	28	...	...	...	...	...	...
..	Loch Broom .....	5.66	...	1.25	8	23	...	...	...	...	...	...
XIX.	Helmsdale .....	4.81	...	1.24	7	25	...	...	...	...	...	...
..	Sandwick .....	3.52	+ 1.98	.86	28	18	67.5	18	42.8	1	0	1
XX.	Cork .....	3.52	...	.51	7	18	...	...	...	...	...	...
..	Waterford .....	3.20	+ .22	.52	30	21	70.0	19‡	40.0	10	0	...
..	Killaloe .....	4.73	+ 1.10	.86	1	24	76.0	17§	37.0	6	0	0
XXI.	Portarlington .....	3.21	— .04	.59	15	26	71.0	18	38.5	1	0	...
..	Monkstown .....	2.60	— .02	.52	1	19	78.5	18	34.0	8	0	...
XXII.	Galway .....	6.09	...	.87	21	27	68.0	17¶	40.0	7, 9	0	...
..	Bunninadden (Doo Castle) .....	...	...	...	...	...	...	...	...	...	...	...
XXIII.	Bawnboy (Owendoon) .....	...	...	...	...	...	...	...	...	...	...	...
..	Waringstown .....	3.08	...	.46	8	22	78.0	17	41.0	6, 7	0	0
..	Strabane (Leckpatrick) .....	5.41	...	.66	1	27	...	...	...	...	...	...

\* And 9, 11. † And 17. ‡ And 20. § And 28, 29. ¶ And 18.  
 † Shows that the fall was above the average ; — that it was below it.

## METEOROLOGICAL NOTES ON JUNE.

**ABBREVIATIONS.**—Bar for Barometer; Ther. for Thermometer; Max. for Maximum Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail S for Snow.

## ENGLAND.

**LINTON PARK.**—Except a few days in the middle, the month has been dull, wet, and often cold for June. Thunder frequent, but not often near, excepting on 24th, when we had the most severe thunderstorm I have on record, the thunder continuing for four or five hours in the afternoon, and at 5 p.m. .50 in. fell in a few minutes; at 7 p.m. the storm was repeated with greater force, 1.20 in. falling in little more than 30 minutes, the thunder and lightning continuing the whole time; we had no hail, though some of our neighbours only a short distance off had hail of an unusual size, and doing much damage. Bar. unsteady, wheat not fairly in ear until the 18th, being four or five days later than usual.

**SELBORNE.**—Almost oppressively hot from 15th to 19th inclusive, the mean max. being 73 deg. for the five days. We have had distant rolling thunder repeatedly, but no thunderstorm this month; frost on the grass on the 7th; rain, hail, and thunder on same date.

**HITCHIN.**—Heavy thunderstorm coming up from S.W. on 19th; 1 inch of rain fell within three-quarters of a mile of this house, but we had only .04.

**BANBURY.**—Thunderstorm on 7th, 19th at 10.30 a.m., and 23rd, but no heavy rain.

**CULFORD.**—Mean temp. of month 59°·2; westerly winds on 24 days, and easterly on six. Thunder on 3rd, 10th, 18th, 19th, 24th and 26th.

**BRIDPORT.**—A very wet month; temp. high from 16th to 20th; lightning on the morning of the 18th, and on the morning of the 19th there was a heavy thunderstorm from 7.15 to 10.45 a.m., when 1.10 in. fell in three-and-a-half hours; heavy gale on the 8th.

**BODMIN.**—Average bar. 29.94; average temp. 58°·9.

**CIRENCESTER.**—Very cold and wet till about 13th, when warm weather set in, and continued with slight intermissions to the close.

**SHIFFNAL.**—The early part of the month wet and cold, up to the 12th the ther. only once reached 65 deg. (on 4th), but a sudden change took place on the 13th, when it rose from 62 deg to 70 deg., and the high temp. kept up till the 22nd; oppressively hot from 14th to 19th inclusive, 81 deg. on 18th; distant thunder on 18th; severe thunderstorm on 19th, at 10.30 a.m., but on 24th such a thunderstorm as cannot be remembered, with a deluge of rain, nearly 1.50 in. falling between 3 and 4.15 p.m. The wind varied from N.W. to S.W. throughout the month. Foxglove and dog rose in flower on 14th; blue butterfly first seen on 15th, painted lady butterfly first seen on 20th.

**ORLETON.**—Very cold, cloudy, and stormy, till the 12th, with rain every day, then five fine days, followed by great thunderstorms on the 18th and 19th. Another great thunderstorm occurred on 24th. Thunder heard 7th, 18th, 19th, 24th, 25th, 26th, and 28th. Rough winds frequent. Mean temp. rather more than half a degree below the average. Frost on the 7th.

**WIGSTON.**—Temp. since the 12th much above the average for this month, and both grass and corn have been much improved. Rainfall greatly in excess of average, and I have no record for 36 years of so large an amount of rain falling in the *first six months* as during the past six months, the total quantity being 17 in.

**BOSTON.**—Thunderstorms on 6th, 7th, 10th, 17th, 18th, and 24th.

**GRIMSBY.**—The ground full of slugs and wireworms, and garden crops suffering in consequence; grass abundant, but rain wanted at the end of the month for the root crops. Thunderstorm on 3rd at 10.30 a.m. A man killed at Ottringham, Yorkshire. Thunderstorm, with hail and rain at noon on 10th. Thunderstorm on evening of 24th. Thunder, evening of 7th and 25th. Lightning on 17th. Distant thunder in N. on 18th. Wheat coming into ear on 20th.

**DERBY.**—Rain of month nearly double the average; temp. about 4 deg. above the average. Violent thunder on 18th, 19th, 24th and 25th. Low lying lands frequently inundated; the great crop of grass injured and spoiled; pasture cannot be kept down by the stock. This kind of weather has provoked the growth of shrubs and trees in a marvellous degree.

**ARNCLIFFE.**—The whole month unusually cold and cheerless, with much thunder.

**N. SHIELDS.**—Terrible thunderstorm on 18th. Solar halo on 5th.

#### W A L E S.

**HAVERFORDWEST.**—During the last 23 years there has only been one June exceeding this in wetness, and that was in 1860, when 6·70 in. fell; the temp. has been below the average. Early on the morning of 19th there was a heavy thunderstorm, lasting rather more than an hour; 60 in fell during the storm. Several sheep and one or two young horses were killed a few miles from this place during the storm. Ther. only exceeded 70 deg. on four days, and reached it on five. Heavy hay crops; corn looking bad, and very backward in blooming.

**CEFNFAES.**—The month has been cold and wet; warm summer weather from 14th to 20th. Violent thunderstorm on night of 18th and morning of 19th. Heavy rains, doing some damage by sudden overflowing of small brooks. Sheep and cattle killed.

**LLANDUDNO.**—The whole month has been wet and uncomfortable, with the exception of three or four days, which were brilliantly bright and warm; frequent thunder.

#### S C O T L A N D.

**DUMFRIES.**—This has been the wettest month of June on record for upwards of 22 years, there having been only 9 days on which no rain has fallen. Thunder on 9th, 18th and 19th. On 19th so dark at noon that gas had to be lighted. The rainfall is greatly in excess of the average, temp. 1·75 lower than corresponding month of last year; although the rainfall has been so excessive (this district having a dry soil) the excess has not been prejudicial except for haymaking, crops of all kind are very luxuriant and the fruit crop promises to be abundant.

**SILVERBUT HALL, HAWICK.**—A cold wet windy month. Magnificent crops of hay.

**AUCHENDRANE.**—The monthly mean ther., bar. pressure, elastic force of vapour, and evaporation are all below the June mean, while the bar. range, rainfall, force of wind, and amount of cloud are all more or less above it. We have had no thunderstorms, which have been so severe in other districts, rivers full all the month, crops looking well, hay crop heavy, foliage of trees particularly large and fine. Lightning in S. on 18th in evening.

**CASTLE TOWARD.**—The rainfall this month has been very large, scarcely any day without rain, and but little sunshine. Potatoes and other crops look very healthy, and grass abundant. Dense fog on 17th, flood on 28th, and on the whole a bad month for all out-door occupations.

**NOOKTON.**—Thunder between 7.30 and 8 p.m. on 18th.

**DEANSTON.**—The whole month very cold and wet, rain 6·88 inches, being nearly 4 in. above the average, and more than in any month of June since 1838, when there was 7·80. On 8th and 9th thunderstorm with rain and hail, distant thunder on 10th, 11th, and 20th. Crops generally looking well, but fruit more deficient than was expected.

**LOGIERAIT.**—Only 7 days on which no rain was measured, a very unusual occurrence. Vegetation well advanced, hay crop remarkably heavy, thunder on 8th and 18th.

**ABERDEEN.**—A dull wet month, with unusual frequency of fogs, but rather mild. Turnip sowing very much hindered, other crops looking much better than might have been expected, but rather late; the rainfall since the 1st of January, 8 in. above the average; for at least 40 years the same months have never been so wet.

**PORTREE.**—A very wet and cold month; the coldest June on record. A strong gale from S. from 4 a.m. to 1 p.m. on 22nd. The cold has retarded all our crops, which will give us a late harvest.

**LOCHBROOM.**—This has been a wet and cold month. Turnip sowing, sheep shearing and other agricultural occupations kept back, but though the weather has been cold as well as wet, yet the grazing is most abundant, stock in capital condition, the clip of wool is said never to have been better, and the price seems to correspond.

**SANDWICK.**—This has been the wettest June during the 32 years of observation, the temperature has also been high, so that vegetation has been rapid; many peals of distant thunder from 7.30 to 8.30 p.m. on 18th.

#### I R E L A N D.

**MONKSTOWN.**—Beginning and end of month wet; about the third week we had some fine warm weather; highest daily mean, 63°·6 on 19th; thunderstorm on 8th.

**WARINGSTOWN.**—Rain fell on 22 days, and the weather (with the exception of a few days in the middle) was cold, yet notwithstanding this want of heat the crops are, generally speaking, fine here.

**LECKPATRICK.**—Rainfall more than double the average of past ten years; the wettest June during that period except in 1863, when it was 5·87 in.

#### ART AND METEOROLOGY.

*To the Editor of the Meteorological Magazine.*

SIR,—I wish to note, for consideration at some future time, the fact that on the evening of Sunday, the 23rd of June, the atmosphere of London and its neighbourhood was so serene and clear, that from Primrose Hill I was enabled to see the following landmarks:—the Crystal Palace and its Water Towers, Knockholt Beeches, more than 20 miles distant, on the North Downs, and Shooters' Hill, to the south of the Thames, Harrow, Hampstead and Highgate Churches to the north and north-west of the Hill. The wind blew gently from the S.E.; it was a splendid evening, St. Paul's, and every building in London, within view, was as distinct as if they had been painted on canvas by the most scrupulous pre-Raphaelite.

In the western sky there were some persistent *cirri*, forming strange groups, which lasted for more than an hour. The *cirri* bristled (electrically?) in one fish-like form, so as to represent the fins and tail.

The next day there was a heavy thunderstorm, which was severely felt in London and elsewhere.

Could not the artist's pencil be added to our list of meteorological instruments? I have often thought that from such points as Hampstead or Primrose Hill, were an artist to sketch the western and the eastern skies, at a definite time before and after the setting and rising of the sun, for a whole twelvemonth, and the weather noted, much really practical information might be accumulated and easily taught. What impossible skies we see every year in the Academy! simply, I suppose, because "Nature puts the artists out," as she did Fuzeli, according to his own confession to Haydon.

Let anyone, however, work, crayon in hand, from any selected spot for a twelvemonth together, and carefully note the weather of the locality, I feel confident that he would never regret the fulfilment of his task, and science would be greatly indebted to him. Such a series of pictures, if carefully executed, would be enough to establish a young artist's name, and eventually lead him on to fame.—I am, Sir, obediently yours,

ALFRED HAVILAND.

*Hampstead, July 9th, 1872.*