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THE GREAT ENGLISH EARTHQUAKE.

WE are not in the habit of employing strong adjectives, they would be out of place in these pages ; as however, during the nineteen years that the *Meteorological Magazine* has been in existence we have had to report the occurrence of several English Earthquakes, and never one which could be compared with that of April 22nd, 1884, we have called it "great," as the only appropriate distinction.

It may be well to give a list of these little shocks for the convenience of reference.

1866. Sept. 13th.—East Budleigh, Sidmouth, Devon. Windows rattled. Vol. I., p. 82.
1867. Feb. 23rd.—Ambleside, Westmoreland. Houses, windows and crockery shaken for several miles round. Vol. II., p. 21.
1868. Jan. 4th.—Wellington, Somerset. Houses and beds shaken in several parts of Somerset. Vol. III., p. 12.
1868. Oct. 30th.—Monmouthshire. Three chairs were reported to be overturned in a house near Monmouth, but there is no record of actual structural damage. This shock was felt in London, the Isle of Wight, and generally in the W. of England from Cornwall to Leicester. A map of the area over which it was felt is given. Vol. III., pp. 153 and 201.
1869. March 15th.—South Lancashire and Yorkshire. This produced two instances of structural damage, a wall was cracked and one chimney was thrown down. Vol. IV., p. 37.
1871. March 17th.—North Lancashire. Felt generally from the centre of England to the South of Scotland, but no structural damage reported. Vol. VI., pp. 32 and 37.
1873. April 29th.—Doncaster. A vibration felt almost exclusively in the town of Doncaster. Possibly an earthquake, possibly not. Vol. VIII., p. 79.
1875. Sept. 23rd.—North West Yorkshire. Slight local tremor, no damage. Vol. X., pp. 143 and 154.

1878. Jan. 28th.—South East England and France. This was felt at many places between London and the Pyrenees; it was recorded on the magnetographs at Kew Observatory, and in Dorset and Jersey it caused bells to ring, but no structural damage is reported. Vol. XIII., pp. 2 and 26.
1883. June 25th. Devon and Cornwall. Very slight shock, and no structural damage. Vol. XVIII., p. 89.

From the above list it will be seen that during nearly twenty years the entire damage reported was one wall cracked and one chimney overthrown. It is not easy to imagine a greater contrast than that statement, and the present condition of the little town of Wivenhoe.

It is difficult to decide upon the mode of adequately reporting the facts respecting the recent shock within the space which we can here devote to it.

We should like to give a list of all known British Earthquakes in which actual structural damage was done, but the compilation of such a list will take both time and space, and must therefore be deferred. It may, however, be well at once to place upon record along with the shock of 1884 that of September 8th, 1692, of which we have records from Coggeshall, from Colchester, and from Ipswich.

The following extract from "Bufton's Diary" is quoted by the Rev. Bryan Dale, in his "Annals of Coggeshall":—

"1692. September 8th being Thursday and the same day that Jacob Cox dyed, about 2 o'clock there was an Earthquake at Coxall and many towns beside hereabouts and at London and several other Countries we heard and ye news-letter said it was at ye same time in Holland and ye rest of ye provinces in ye Netherlands—I was in our garret at that time and heard ye house crack and perceived it shake and was afraid it would fall and therefore ran down-stairs."

The Rev. A. Jeffery writes respecting the same earthquake:—

"As far as I am aware, the only other earthquake of which there is any record in the annals of Ipswich took place about two o'clock on the afternoon of Thursday, September 8th, 1692, as recorded by the Rev. John Langston, the first minister of Tacket-street Chapel. In this earthquake, which was felt throughout the East of England, 1,500 of the inhabitants of Port Royal, in Jamaica, perished, being buried beneath the ruins of their own dwellings. Mr. Langston states that the earthquake was preceded by an unusually severe thunderstorm, on August 13th. This information is given in the minute-book of Tacket-street Chapel, which (through the courtesy of Mr. T. Conder, of Christchurch-street) I happen to have in my possession at the present moment for purposes of research."

On reference to Cromwell's "History of Colchester," we find that St. Peter's Church was severely shaken by an earthquake in 1692, the particulars of which are recorded in the parish register, under the hand of the Rev. Robert Dickman, then vicar. The entry is:—

"September 8th, 1692, there happened, about 2 of the clock in the afternoon, for the space of a minute or more, an universal earthquake all over England, France, Holland, and some parts of Germany. And particularly it was attested to me by the masons that were there a-plastering the steeple of St. Peter's, in this town, and upon the uppermost scaffold, that the steeple parted so wide in the midst that they could have put their hand into the crack or cleft, and immediately shut up close again, without any damage to the workmen (who expected all would have fallen down) {or to the steeple itself. Most of the houses here and elsewhere shook, and part of a chimney fell down on North Hill; and very many who were sensible of it were taken at the same time with a giddiness in their head for some short time. In witness of what is here related, I have hereto set my hand. ROBERT DICKMAN, Minister of St. Peter, Colchester."

Though from this extract it appears that the convulsion took a much wider area than the present visitation, it is evident that the shock recorded in such quaint language by the Rev. Robert Dickman was not nearly so disastrous as the present one.

Immediately upon hearing of the earthquake of April 22nd, 1884, a letter was sent to the *Times*, specifying some of the features respecting which information was most required, and arrangements were made for an examination of the locality on April 24th, but though scarcely 48 hours had elapsed, many of the tottering stacks had been taken down, and bricklayers were at work in all parts of the district, repairing it is true, but also destroying valuable evidence as to the direction of the shock. Much, however, still remained, and the observations then made will be subsequently discussed; meanwhile we insert a brief record of what was seen.

NOTES OF AN INSPECTION OF THE DAMAGE ON THE ROADS FROM COLCHESTER THROUGH ABBERTON, PELDON, AND STROOD GREEN TO MERSEA ISLAND, RETURNING THROUGH LANGENHOE, FINGRINGHOE, ROWHEDGE AND WIVENHOE TO COLCHESTER.

Colchester.—The first damage noticed was that two old chimney stacks in North-street, about 100 yards N. of the river Colne, were overthrown; in the town numerous chimney stacks were down, perhaps 5 per cent. of the whole, but they were mostly old or faulty. About 20 ft. of the top of the spire of the Congregational Church, in Lion Walk, was down, the piece destroyed being that which had been substituted for what had been brought down on a previous occasion by a gale; the débris fell partly through the roof and partly to N. 35° E. from the tower. Although considerable damage was done, no great force was probably required. The damage in *Colchester* itself seemed to be chiefly on the N.E. side of the town and along East Hill.

The son of Dr. Wallace (who resides in the centre of the town) was standing with his assistant facing S.W., when they considered

that the shock came to them from S.W. and passed to E., and in support of this say that they saw chimney stacks fall to the S.W. of them, and felt the rocking of Dr. Wallace's house, before the spire of the chapel began to fall.

Starting on the road to *Abberton*, the damage in Head-street and the southern part of the town was found to be but slight. St. Giles's Rectory, about one mile S.S.E. of the town, was said to be much damaged.

Nothing of much importance, except a large chimney stack overthrown at *Roman Hill*, was observed until *Abberton* was reached, but there most of the tiled roofs had lost about half their tiles, apparently by a kind of quivering motion, and only a few chimney stacks were left standing. Near Borley's farm, almost the whole of a gable end, facing about S. by E., was thrown down. Between the village and the church is a nearly completed new rectory, very substantially built; none of the three chimney stacks has fallen, but two have their upper parts standing out of the square with their lower ones, indicating the twist which they have had. The architect states that there is scarcely a room in the house which has not sustained injury.

Abberton Village.—Not more than half-a-dozen chimney stacks remained standing, and those were all new and good. Most of the tiles had been shaken off the chancel roof of *Abberton Church*, a few off that of the nave, and the mullions of an old window had been shifted. *Abberton Hall*, a small house near the church, has lost part of one chimney stack. The very substantially built mansion known as *Abberton House* had been much shaken, and several of the chimney stacks were in process of removal. Of two old cottages running roughly N. and S., nearly all the tiles had slipped down, the chimney stacks were thrown over, the debris falling in the direction S.S.E. to N.N.W. (owner, working in garden, had to steady himself on his spade). A new and well-built cottage had its gable facing S. thrown out (about 20 feet of brickwork), the chimney stack at E. side fell over to E.N.E. The occupier saw stacks fall, first E. or E.N.E. of him, and afterwards others in S.W.

Abberton to Peldon.—Not a chimney stack standing along the road; two or three of the fallen ones appeared to have been very good work.

Peldon.—Probably 70 per cent. of all the chimney stacks gone, and several walls much shaken; brickwork as a rule good; S. end wall of cottage facing W. cracked from bottom to top; and the top of the gable fallen (good brickwork). *Peldon Church* had part of its battlements down, and its massive tower, of which the walls are nearly 2 ft. thick, cracked nearly from bottom to top, the crack at 5 ft. above the ground being nearly an inch wide; several large cracks along both sides of the nave and chancel, the portions of wall on different sides of some cracks being in different planes as much as half-an-inch to one inch. The glass from a standard lamp was

thrown in a line E.S.E. to W.N.W. At Peldon Rectory, large, well-built stacks new, but with very heavy cornices, were thrown down, and a similar one was twisted two or three inches; a bronze statuette, weighing about 10 lbs., on a base five or six inches in diameter, and of which the centre of gravity was well within its base was thrown off the mantel-piece. There were cracks in various places, and not one upstairs room was habitable, owing to the roof being broken in by falling chimney-stacks.

In a row of three cottages, facing S.W., out of six chimney-stacks, only one was standing, viz., at the S.E. end, the N.W. stacks having in all cases suffered most; the N.W. end of each cottage had three or four large cracks twenty or thirty feet long, nearly or quite across it in a slanting direction, the top apparently having been thrust forward two or three inches, the S.E. ends appeared to be in their original positions; from the inside of the cottages daylight could be seen through the walls in many places.

Along the road towards Mersea the cottages were shaken, and stacks thrown down, but nothing very striking was seen for about a mile. The "*Rose*" Inn was much shaken; all the chimney-stacks were twisted or fell; two were twisted about four inches, the direction of revolution being from E. by N. to W.; the chimneys were supported by iron stays just below the point of rupture. Several of the walls were bulged, and the inside of one chimney was displaced right down to the fireplace. On the opposite side of the road, at *Peldon Mill* a chimney-stack or two had fallen, and a chimney-shaft, 30 ft. high, was broken across about 10 ft. from the top, and slightly twisted, the shaft was not old, remained upright, and appeared to be well and solidly built.

Strood Villa, the residence of Mr. Hugh Green, exhibited the worst specimen of damage. It appeared to be particularly well and substantially built, was of recent date (1860), and all built at one time; it had no tall or heavy chimney stacks and altogether appeared well calculated to escape damage by the shock. But yet it is in such a state that it is a marvel that it stands at all, every wall is cracked and twisted in a manner more suited to iron under the influence of sudden cold than to bricks and mortar; no junction of two walls is left undisturbed, scarcely a door frame is complete in its setting, and no room that is not damaged. The chimneys are of course gone, but there are also two unusual features; first that many panes of glass are broken—this (owing perhaps to the elasticity of glass) is very rare, even where thick walls are broken through. Secondly that about 80 feet of garden wall is down—this also is rare, the walls rarely swayed beyond the point at which the next vibration brought them back, standing, even if weakened.

The damage in *Mersea* proved to be less than was previously reported. Part of a mullion had been thrown W.S.W. from the belfry window of West Mersea Church, and two iron chimney pots fell away to the S.W. of the church, but that appeared to be all the

injury there. At the National School, the bell and bell turret were thrown down. At the White Hart Inn, and at some of the cottages in *West Mersea*, chimneys had been overthrown, but nothing serious was observed.

The road from *West Mersea* to Mersea Lane forms the S.W. boundary of the island, and is 34 ft. above mean sea level, or perhaps 20 ft. above the saltings and muddy foreshore, to which it drops abruptly. Along perhaps 150 yards of this road, on the sea margin of it, *i.e.*, on the margin close to which the ground falls rapidly to the sea, a crack was formed, which in some places was said to have been about three inches wide, and more than two yards deep.

Near the church end of this lane, but on the shore, very little above high water mark, is a square wooden trough, constantly fed with good fresh water. This well formerly belonged to the Benedictine Priory, and is known as St. Peter's Well. During the shock the water was thrown out of the well, and that which refilled it was muddy, and it continued discoloured for about two hours.

Two seafaring men here stated that the shock appeared to travel from N.E., one describing how he saw women run screaming from houses to N. or N.E. of him at the instant that he first felt the shock.

Returning upon our previous path as far as the "Rose" at *Peldon*, we came to *Moor Farm*, where a piano standing on the S.E. side of a wall running S.S.W. to N.N.E. had remained steady at its N.N.E. end, but moved seven inches from the wall at the S.S.W. end. A table lamp fell towards E.S.E., and a small clock was thrown from the mantel-piece a distance of about 5 ft.

Between this and *Langenhoe* Church there are very few buildings, and the only damage observed was at *Peet Tye Hall*.

Langenhoe.—The church here suffered very severely; the battlements from the E. side of the tower fell through the roof of the church, and those from the W. side were thrown to the ground. The tower appeared much shaken; there were several large cracks in the walls of the church, and part of the end of the chancel was thrown outwards. *Langenhoe Hall* was shaken, and a chimney stack fell, but no especial damage was noted. *Langenhoe Rectory* is in a bad state; although not an old building, there are several cracks in the walls, and the chimney stacks were so shaken as to require immediate removal; the whole house appears to be considerably strained, and it is stated that scarcely any of the doors would open or shut. The rector states that the cracks in the gravel paths mentioned in the newspapers are due to the dry weather, and had appeared before the occurrence of the earthquake.

At *Fingringhoe*, there were several stacks damaged, and two much twisted; the church was a good deal cracked (but not so much as *Peldon* or *Langenhoe*), and there were one or two portions of masonry in a very unsafe condition. *Fingringhoe Hall* & *East Donyland Hall* were in process of repair.

At *Rowhedge*, probably half the chimney stacks were thrown down,

and along the river front, perhaps 75 per cent., and one or two gables had been thrown down ; there was a considerable variety of structure, but the new and good brickwork had suffered nearly as much as the old.

At *Wivenhoe*, the damage was widespread and resembled the effects of the Regent's Park explosion ; the destruction was greatest in the lower part of the town fronting the river, and here 60 to 70 per cent. of the chimney stacks were thrown down. Several of the houses on the river side on what may be called the quay were, without exaggeration, wrecked ; in one house the gable end facing S.W. was thrown out, but perhaps the worst case may be thus summarised. The floor was so heaved up as to render walking on it difficult in places ; there were several cracks in the walls ; a stack fell and destroyed a part of the back premises ; a gable fell out to N.E., and part of the front wall facing S.W. was thrown down.

The battlements on the N. and W. sides of the church tower were thrown down, and a large crack extended from the top of the tower about half way down. The Independent Chapel, a very large one, had been surmounted by a balustrade and cornice ; nearly the whole of it was thrown down.

At a small but substantial building belonging to *Wivenhoe Hall*, and just outside the village, an entire gable had fallen to N. (about 100 feet of brickwork) ; at *Wivenhoe Hall*, a well-built mansion, heavy chimneys fell in a N.E. direction, and the parapet showed a distinct crack on the N. aspect, but none on the S. ; along the road towards *Colchester* fallen stacks were frequent, the proportion decreasing as *Colchester* was approached.

We must, however, give details of what occurred in other places, and the most convenient mode of doing so will be to take the records arranged in counties, and in the sequence usual in our publications.

MIDDLESEX.

The shock was felt in most parts of *London*, especially in the *Strand*, *Fleet Street*, the *City*, also in *Hampstead*, *Crouch End*, *Hornsey* and *Enfield*. Clocks were stopped in several localities, but all details respecting them will be transferred to the *Essex Field Club*.

SURREY.

There are two records of its being felt near *Brixton*, and the photographic records of the magnets at *Kew Observatory*, show that they were shaken at 9.17 or 9.18 a.m. At *Frimley* tea was tipped out of the west side of a cup.

KENT.

At *Rochester*, *Strood* and *Sheerness* the shock was violent, e.g., at *Strood* the Board School was so shaken that the masters dismissed the scholars. At *Sheerness* and at *Herne Bay* house bells rang, and at

Greenwich Observatory the photographic records of several of the instruments show vibration about 9.20 a.m. The shock was also felt at *Chiselhurst, Beckenham, Tunbridge Wells* and *Maidstone*, at the last town a long gas pendant was set swinging.

SUSSEX.

The shock was felt slightly at *Brighton*, at *Hastings* and at *St. Leonards*; at *Eastbourne* a ceiling was cracked.

HAMPSHIRE.

At *Freshwater* bed-hangings were set swinging, and at *Portsmouth* light articles of furniture were shaken.

BERKSHIRE.

Shock felt at *Reading*, and also in the village of *Sulhamstead*, six miles S.W. of *Reading*.

HERTFORDSHIRE.

King's Langley.—Light articles shaken, and curtains set swinging.
Royston.—Shock felt, but no damage done.

BUCKINGHAMSHIRE.

Marlow.—Bed rocked, and pictures swung about. Some persons in a boat in *Temple Lock* were much puzzled by the sensation, and thought they had run foul of something. The shock was also felt at *Taplow* and *Princes Risborough*, and very distinctly at *Wyfold Court* on the top of the *Chiltern Hills*.

OXFORDSHIRE.

At *Oxford* the vibration was very slight, and at *Tetsworth Castle, Watlington*, the shock was felt in several of the apartments.

NORTHAMPTONSHIRE.

The shock was felt in *Northampton*, and slightly in other parts of the county.

CAMBRIDGE.

In *Cambridge* the shock was felt, and the rumble of the explosion heard, doors were opened, and light articles shaken. It was felt at *Ely* and *Wisbeach* also.

ESSEX.

As this is the county in which almost all the structural damage occurred, it is necessary to take it in detail, and we therefore group the facts under the respective towns and villages, taking them in alphabetical order. The word "Report" against any place, implies that it was one of those our own report, which will be found on pages 51 to 55.

Abberton.—Report.

Alresford.—A large portion of the tiles have been shaken off the

chancel of the church; several chimneys were overturned at the rectory, and chimneys also fell at the school, and at various houses in the parish.

Ardleigh.—The shock here felt much like that in a bad railway carriage running over an ill-made piece of line; the church bells rang, clocks were stopped, and several chimneys were broken.

Berechurch.—The fields were said to rise and fall like a wave, but no damage is reported.

Birch.—This seems just on the outskirts of the area of damage; a few chimneys were broken, and tiles loosened, but the restoration will only be a matter of a few pounds. A clock which had a heavy pendulum, but which was not going, was started.

Bishop's Stortford.—Considerable oscillation, furniture shaken, house bells rung, but no structural damage.

Braintree.—No structural damage, but a violent shock, several doors were thrown open, house bells rung, pendant gaseliers set swinging N.W. to S.E., and the safety valve of a boiler raised and steam allowed to blow off.

Brightlingsea.—Part of the top of the tower was shaken down and fell through the roof of the church, walls were cracked and chimneys overthrown in several parts of the town, but no serious damage occurred.

Buckhurst Hill.—Shock very slight, but a clock stopped proved the time to be between 9.18 and 9.18.30 a.m.

Chelmsford.—No structural damage, but the shock was rather severe, e.g., a horse was thrown down, the signalman was thrown against the levers in his box, doors were set swinging, and many clocks were stopped.

Clacton.—Shock scarcely perceptible.

Coggeshall.—Several chimneys overthrown.

Colchester.—Report.

Dedham.—The church tower seen to oscillate, bells rung and chimneys overthrown at several houses.

East Donyland.—This parish has suffered severely—the gable top of the chancel of the church fell, the school and the rectory had chimneys damaged. Donyland Hall has its front cracked, all the chimneys but one overthrown, breaking up the roof, every room but one is damaged, and in one are four cracks, into each of which a hand could be put. Donyland Lodge was left in such a state that there was only one room in which a fire could be lighted.

Earls Cone.—Considerable vibration, but no structural damage.

Feering.—Roof of school slightly damaged, children much frightened, and one boy fainted.

Fingringhoe.—Report.

Great Baddow.—Strong shock, large yard clock stopped.

Great Bentley.—Shock severe, but no damage reported.

Great Bromley.—Two chimneys overthrown at the rectory.

Great Horksley.—Strong vibration, house bells rung, but no structural damage.

Great Wigborough.—Church so damaged by falling of pinnacles, by shaking of tower, which now leans over the nave, that the architect advises entire rebuilding. Schools and many farm-houses damaged. A horse thrown down.

Halstead.—House bells rung, some glass overthrown and broken, but no serious damage.

Harwich.—One person thrown down, house bells rung, but no structural damage.

Havering.—This village being on a bed of clay 200 to 700 ft. thick, the shock was not felt, though it was at Romford, three miles off, on the gravel.

Kelvedon.—A lady thrown against a wall, a parrot shaken off its perch, the bells in most houses rang, but no structural damage.

Langenhoe.—Report.

Layer Breton.—Church damaged, but reports differ as to the amount of injury. Chimneys overthrown at the rectory, and some other houses.

Laver de la Haye.—The battlements of the church tower, and a quantity of the rubble coating, were dislodged and thrown into the graveyard, a portion of the apex of the south aisle was thrown off, and also the stone cross at the end of the nave. Many chimney stacks in the parish were either rent or thrown down.

Laver Marney.—Church tower shaken, but no serious damage.

Lexden.—Damage slight, being limited to a few displaced chimney pots and tiles.

Little Waltham.—Sharp shock, but no damage.

Little Wigborough.—The church damaged, parts of the masonry thrown down. The vicar says, "Church completely riddled, and must be rebuilt."

Maldon.—House bells were rung, doors opened and shut, and clocks stopped, but no structural damage.

Manningtree.—Several clocks stopped at the railway station, and the station-master thrown out of his chair, house bells rung, and crockery broken, but no structural damage.

Mersea East.—There is some difference in the reports as to the damage in this part of Mersea Island, but all statements agree that it was slight.

Mersea West.—Report.

Messing.—Large cracks in several parts of the church, and chimneys overthrown at some of the cottages.

North Woolwich.—Sharp shock but no structural damage.

Old Heath.—School slightly damaged; and also nearly every house in the parish; altogether in this little place there are 40 or 50 chimneys thrown down.

Peldon.—Report.

Ramsey.—Violent oscillation; the Vicar says, "I have experienced

earthquakes in Malta often, but they were not more threatening than this one." No damage done.

Romford.—Houses shaken, and pictures set swinging.

Roxwell.—Bells rung, but no structural damage.

Salcot.—Church damaged.

Southend.—Sharp shock, bells rung, small articles thrown down, clock stopped, but no structural damage.

Strood Green.—Report.

Thorpe le Soken.—Sharp shock, but no structural damage.

Walton on the Naze.—Shock felt, but no damage.

Wickham Bishop.—Clock stopped, two chimneys thrown down, and one had to be taken down.

Witham.—Violent shock, nearly all the house bells rang, small articles thrown down, clocks stopped, but no structural damage.

Wivenhoe.—Report.

Wix.—Houses shaken, clocks stopped, but no structural damage.

SUFFOLK.

Barham.—Shock just sufficient to ring the house bells.

Beccles.—Shock felt.

Boxford.—Bells were rung, and several clocks stopped.

Bury St. Edmunds.—Slight shock, but some bells rang.

Claydon.—Shock began between 9.17.45 and 9.17.55. Windows rattled, and house bells rang.

Framlingham.—Slight shock, no damage.

Haughley.—Shock only slight, but some bells rang faintly ; time between 9.17.50 and 9.18.10 a.m.

Ipswich.—Violent shock, small articles (*e.g.*, cups of coffee) thrown over, clocks stopped, a donkey thrown down, house bells rung, &c., but no structural damage.

Henley Road, Ipswich.—I presume few persons had the opportunity of observing the clouds on the morning of April 22nd, just previous to the shock of earthquake, which I had, so I venture to send you my observations made at the time.

I was lying in bed with my face towards a large window watching the clouds in the north-east part of the sky, and observed them thus for a quarter of an hour, measuring their movements by bars of the window panes, and had decided in my mind that the wind was in the S.E., from the direction the clouds went, hoping we should have it warmer, when all at once the clouds appeared to go and pass in every direction, and mix up together in a remarkable manner. This completely roused my attention, and I looked at a large chestnut tree in the park, saw all the leaves moving, saying to myself, "Whatever are you shuddering for ; there is no wind." Only the leaves moved, not the tree, which stood on a side hill, facing the south.

Then came the awful rumbling sound under the bed, which heaved up. I started upright, saw the north wall of the room bend in and outward, and the pictures on that wall flapped. Those on the other walls only shook and moved, while everything in the room that could jingle did so. A clock on the

north wall did not stop. I saw the small trees in rows from east to west, in the arboretum, shaking, not as if by wind, but as by a hand quickly shaking their stems. Also a tall plant in a pot in my room shook violently all over. The bells in the kitchen all jingled, and other things clattered, but no damage anywhere. My window looks towards the east, and the north wall is an outside wall. I made the observations, of the clouds, the leaves shaking, then the noise, all distinctly, though in quick succession, one after the other, but in how short a time I can't tell, but the clouds decidedly were the first to show any strange movement.—ELLEN BIDDELL.

Layham.—Strong shock, house bells rang, and clocks stopped.

Nayland.—A small cross thrown off the gable of the congregational chapel.

Stowmarket.—Sharp shock but no damage.

Sudbury.—Considerable vibration, a few bells rang, but no damage reported.

Woodbridge.—Shock slight, damage *nil*.

NORFOLK.

Fakenham and Lynn.—Shock felt, but no damage.

Norwich.—The hospital buildings all rocked about 9.18 a.m., apparently from S. to N.

Yarmouth.—Shock quite unmistakeable, some bells rang.

GLOUCESTERSHIRE.

Bristol.—Shock distinctly felt in the lower part of the city.

Stroud.—Shock sufficiently strong to set a card swinging.

WARWICKSHIRE.

Birmingham.—The vibration was felt in many places, and at the Central Restaurant, glasses were shaken off the shelves.

Leamington.—Shock distinctly felt, bed rocked, also a heavy Chinese table.

LEICESTERSHIRE.

Ashby Parva.—I was in bed (being an invalid), but writing at the time. My chronometer is temporarily out of gear. At 9.19 G.M.T. by my watch, and several clocks in the house (none of which can be trusted separately to a minute or two), I heard a roaring noise in the E., which made me look to a window facing E. by S. Almost simultaneously, heard a fall of soot and some pieces of mortar, and then became conscious that my bed was swaying, or being slightly tilted, apparently from S. to N. (or N. to S.) The shock I computed to last five seconds, and the oscillations—to which I paid careful attention, having had experience of earthquakes long ago—seemed about 2 per second; I lay perfectly still, instead of looking at the watch. Of those members of my household who were on the ground floor, none felt anything. Two servants, occupied in separate rooms on the same floor as I was on myself, heard the noise, and complained that they were seized with giddiness. The shock seemed to me to be marked by far less noise—I mean subterranean noise—but by what one would call “more swing and far less tremor,”

that is, by oscillation of greater length than that of October, 1863, which I felt (much more violently than others in England) at Sellack, in Herefordshire, where some houses were injured on that occasion.—W. CLEMENT LEY.

Husbands, Bosworth and Market Harborough.—Sharp shock, but no damage.

Leicester.—Shock rather sharp, causing slight panic in one factory—no damage.

RUTLAND.

Uppingham.—Shock was felt all round here, but not in this town.

LINCOLNSHIRE.

Long Sutton.—Some men were at work upon the church steeple, when it rocked so much that, thinking it was going to fall, they descended.

Boston.—Severe oscillation at 9.20 a.m., but no damage; the shock was felt also at *Wainfleet, Skegness, and Spilsby.*

DERBYSHIRE.

Derby.—Sharp shock, shaking windows, &c., at 9.20 a.m.

Brassington, Wirksworth.—Bed shook as if a dog were under it.

CHESHIRE.

Altrincham.—Shock distinctly felt.

FRANCE.

Boulogne.—Shock felt in several parts of the town at 9.30 a.m. Paris time (= 9^h.20^m.39^s Greenwich time).

BELGIUM.

Ostend.—Room shook and bed oscillated two or three times from N.W. to S.E.

We are extremely glad to state that the task of thoroughly discussing and reporting upon the mass of correspondence with which we have been favoured, of fully examining the damage done in Essex, and generally of preparing the report upon THE earthquake, has been undertaken by the Essex Field Club, a powerful local scientific society, in whose province the subject naturally falls.

Immediately upon receiving information that the Council of that Society was prepared to carry out the investigation thoroughly, we promised to transfer to it as soon as this article had been published, all the materials which we had been able to collect, and much of which it has been impossible to utilize here.

We have, however, given a selection of facts, and it only remains to concentrate in a few lines the conclusions which we think may be deduced from them, or perhaps we should say, from the whole of the data we have yet seen, both that printed and that which is going to the Essex Field Club :—

1. The shock occurred between 9h. 17m. and 9h. 18m. a.m. on April 22nd, and there does not seem to be evidence of its reaching the most distant localities, *e.g.*, those 150 or 180 miles distant more than about two minutes later.
2. The shock was felt over an area about 250 miles from E. to W., and about 200 miles from N. to S., *i.e.*, about 50,000 square miles. This area (*see general map*) should be studied in comparison with a map coloured geologically.
3. Structural damage is confined to Essex (except two or three insignificant trifles in the south of Suffolk), and the greatest intensity is limited to an area about 9 miles from E. to W., and about 5 miles from S. to N., *i.e.*, about 45 square miles, or less than one-thousandth of the area over which the shock was felt. (*See Special Map.*)
4. In the centre of this area there is one extending five miles westward from the meridian of 1° E., and from two miles to seven miles south of Colchester, within which area of 25 square miles there is hardly a house or a cottage that is not damaged. Fortunately, it is a thinly-peopled agricultural district; had it been otherwise, the wreck of buildings and the loss of life would have been fearful.
5. The statements as to the direction of the movement of the shock are extremely discordant; and some of the evidence afforded by cracked and overthrown buildings *seems* contradictory, but our present impression is that the shock was nearly vertical under the parish of Peldon, about six miles south of Colchester.
6. The shock was indisputably accompanied by sound.
7. We have no information as to the precise sum which would be required to reinstate all the public and private buildings, and the damaged contents of the latter, but we have ourselves seen dozens of cases which £100 would not cover, and several for which five times that sum would not suffice, but the majority of cottage cases would perhaps average £5 a-piece. Moreover, many of the inhabitants who were most shaken have been thoroughly unnerved.
8. Space and time alike preclude our giving the details of clocks stopped, but in the Metropolis there is no marked preponderance of evidence as to any direction. In Colchester, most of those stopped had their pendulums swinging E.-W. In the district of maximum disturbance, nearly all were stopped, irrespective of their position.

JANUARY, 1884, IN THE UNITED STATES.

(Continued from page 36.)

"The minimum temperatures in Montana, Dakota, and Minnesota on the 4th, and during the 5th and 6th, over the central valleys and Southern States, were generally the lowest recorded since the establishment of the Signal Service Stations. Over north-eastern Montana and the northern parts of Dakota and Minnesota the minimum temperatures were— 40° and below on the morning of the 4th. Very low temperatures also occurred on the 24th, 25th and 26th in the lake region, where, at the most northerly stations, they were lower than those on the previous dates.

DAKOTA.

"*Huron*.—On the 3rd the maximum temperature was $-4^{\circ}4$; minimum, $-22^{\circ}5$. On the 4th, the temperature fell to -38° , which is said to be the lowest ever recorded. On that date the temperature did not rise above -26° . A minimum temperature of -38° was also recorded on the 5th.

"*Bismurck*.—The 4th was the coldest day experienced for many years; mean temperature for the day, $-34^{\circ}3$; minimum, -40° ."

ILLINOIS.

"*Rockford, Winnebago County*.—The temperature on the 4th, -40° , is the lowest known for forty years."

"*Peoria, Peoria County*.—The temperature on the 5th fell to -27° , the lowest recorded during the last 29 years."

"*Edgington, Rock Island County*.—The weather on the 3rd, 4th and 5th was the coldest experienced since 1856. The thermometer indicated -34° on the morning of the 5th. Many persons were frost-bitten."

"*Riley, McHenry County*.—The minimum temperature, $-30^{\circ}5$, on the morning of the 5th, was the lowest that has occurred during the last twenty-one years. The mean for that date, -23° , is, with the exception of that for January 1, 1864, the lowest daily mean recorded during the last twenty-one years."

"*Collinsville, Madison County*.—The minimum temperature of the 5th, -23° , was the lowest recorded since January 1, 1864."

INDIANA.

"*New Albany, Floyd County*.—The 5th was the coldest day that has been experienced for thirty-five years. At 6 a.m. the temperature was -23° ; at noon, -10° ; and at 7 p.m., -12° ."

"*Sunman, Ripley County*.—On the morning of the 5th the thermometer indicated a temperature of -24° , which is the lowest recorded for the last thirty years."

IOWA.

"*Council Bluffs, Pottawattomie County.*—At 10 p.m. of the 4th the thermometer read -24° , the lowest observed for twenty-five years."

MINNESOTA.

"*Minneapolis.*—The thermometer at noon of the 4th read -30° , the lowest temperature experienced for twenty-five years."

MISSOURI.

"*Pierce City.*—The temperature at 7 a.m. of the 5th was -22° ; at 2 p.m., -4° ; 9 p.m., -9° ; daily mean $-11^{\circ}6$. Mr. J. J. Spilman states that that was the coldest day that has occurred since 1847."

"Professor Francis E. Nipher, Director of the Missouri Weather Service, reports:—'The lowest temperature recorded in *Saint Louis* was $-23^{\circ}4$, which is half a degree colder than the previously observed minimum in January, 1873. In the State the temperature has fallen still lower. The lowest minimum reported was -33° at *Sedalia*, *Warrenburg* and *Kirkville* reporting -32° ; *Boonville* and *Harrisonville*, -31° ; *Miami*, -30° ; and *Savannah*, -27° . The highest minimum temperatures reported were -16° at *Cairo, Illinois*, $-23^{\circ}5$ at *Saint Louis*, and $-24^{\circ}2$ at *Keokuk, Iowa*."

"The following notes on the low temperature of the 5th are given by the observers:—*Saint Charles*, the 5th was the coldest ever observed here; *Oregon*, coldest since January 18th, 1857, when the thermometer registered -30° ; *Iron-ton*, coldest weather yet observed here, thermometer read -23° ; the coldest heretofore was -17° ."

OHIO.

"*Findlay, Hancock County.*—The thermometer read -20° on the 5th, which is the lowest observed since 1855, when it read -22° ."

"The following record furnished by Mr. G. W. Harper, of *Mount Auburn, Cincinnati*, shows the lowest temperatures since 1856:—1856, January, -14° ; 1857, January, -13° ; 1879, January 3rd, -16° ; 1880, Nov. 19th, -12° ; 1884, January 5th, -20° ."

"*North Lewisburg, Champaign County.*—The temperature of the 25th, $-23^{\circ}5$, was the lowest experienced for 50 years."

WISCONSIN.

"*Sussex, Waukesha County.*—The 4th was the coldest day that has occurred during the last 20 years, the daily mean temperature being $-24^{\circ}5$."

EDITORIAL.

BELIEVING that it was desirable to give the whole article upon the earthquake of April 22nd in one month, we have been obliged not only to increase the number of pages, but also to hold over nearly all the articles on general meteorology.

SUPPLEMENTARY TABLE OF RAINFALL, APRIL, 1884.

[For the Counties, Latitudes, and Longitudes of most of these Stations,
see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	'90	XI.	Carno, Tybrith	1'49
„	Margate, Birchington...	1'50	„	Corwen, Rhug	1'93
„	Littlehampton	1'50	„	Port Madoc	1'32
„	Hailsham	1'71	„	I. of Man, Douglas .....	...
„	I. of W., St. Lawrence.	1'16	XII.	Stoneykirk, Ardwell Ho.	...
„	Alton, Ashdell.....	1'65	„	Melrose, Abbey Gate...	1'55
III.	Winslow, Addington ...	1'16	XIII.	N. Esk Res. [Penicuick]	1'10
„	Oxford, Magdalen Col...	1'69	XIV.	Ayr, Cassillis House ...	1'19
„	Northampton	1'52	„	Glasgow, Queen's Park.	'72
„	Cambridge, Beech Ho...	1'17	XV.	Islay, Gruinart School..	1'61
IV.	Southend	1'00	XVI.	St. Andrews, Newton Bk	1'32
„	Harlow, Sheering	1'16	„	Balquhider, Stronvar..	2'30
„	Diss	1'46	„	Dunkeld, Inver Braan..	1'20
„	Swaffham	1'16	„	Dalnaspidal H.R.S.	2'44
„	Hindringham .....	...	XVII.	Keith H.R.S.	'95
V.	Salisbury, Alderbury ...	1'73	„	Forres H.R.S.	'49
„	Warminster	2'16	XVIII.	Strome Ferry H.R.S. ...	2'46
„	Calne, Compton Bassett	1'82	„	Lochbroom	'92
„	Ashburton, Holne Vic..	3'28	„	Tain, Springfield.....	'47
„	Holsworthy, Clawton...	1'97	„	Loch Shiel, Glenaladale	1'93
„	Lynmouth, Glenthorne.	1'60	„	Invergarry	1'83
„	Probus, Lamellyn	1'94	XIX.	Lairg H.R.S. ....	...
„	Wincanton, Stowell Rec.	2'74	„	Forsinard H.R.S.	'63
„	Taunton, Fullands	1'46	„	Watten H.R.S.	'53
VI.	Bristol, Clifton	1'12	XX.	Dunmanway, Coolkelure	2'44
„	Ross	1'43	„	Fermoy, Gas Works ...	1'40
„	Wem, Sansaw Hall.....	1'16	„	Tralee, Castlemorris ...	1'89
„	Cheadle, The Heath Ho.	1'64	„	Tipperary, Henry Street	1'42
„	Worcester, Diglis Lock	1'34	„	Newcastle West	1'39
„	Coventry, Coundon	1'94	„	Miltown Malbay.....	1'56
VII.	Melton, Coston	1'54	„	Corofin	1'07
„	Ketton Hall [Stamford]	1'37	XXI.	Carlow, Browne's Hill..	1'24
„	Horncastle, Bucknall ...	'90	„	Navan, Balrath	1'39
„	Mansfield, St. John's St.	2'06	„	Mullingar, Belvedere...	1'32
VIII.	Macclesfield, The Park.	1'24	„	Athlone, Twyford	1'53
„	Walton-on-the-Hill.....	1'16	XXII.	Galway, Queen's Col...	1'31
„	Lancaster, South Road.	1'17	„	Clifden, Kylesmore .....	...
„	Broughton-in-Furness ..	...	„	Crossmolina, Enniscoe..	1'28
IX.	Wakefield, Stanley Vic.	1'46	„	Carrick-on-Shannon ...	'76
„	Ripon, Mickley	2'25	XXIII.	Dowra .....	...
„	Scarborough.....	1'83	„	Rockcorry.....	1'44
„	East Layton [Darlington]	1'84	„	Warrenpoint .....	...
„	Middleton, Mickleton ..	2'36	„	Newtownards	1'00
X.	Haltwhistle, Unthank..	1'52	„	Belfast, New Barnsley ..	1'34
„	Shap, Copy Hill	2'01	„	Cushendun	1'00
XI.	Llanfrechfa Grange ...	1'22	„	Bushmills	1'49
„	Llandovery	2'32	„	Stewartstown	1'71
„	Solva	1'75	„	Donegal, Revelin Ho....	...
„	Castle Malgwyn	2'09	„	Buncrana	1'53
„	Rhayader, Nantgwillt..	2'44	„	Carndonagh	1'88

APRIL, 1884.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					Days on which -01 or more fell.	TEMPERATURE.				No. of Nights below 32°	
		Total Fall.	Difference from average 1870-9	Greatest Fall in 24 hours.		Max.		Min.		In shade	On grass		
				Dpth	Date.	Deg.		Date	Deg.			Date.	
inches	inches.	in.											
I.	London (Camden Square) ...	1·02	— 1·00	·36	6	14	68·4	2	29·9	23h	4	12	
II.	Maidstone (Hunton Court)...	1·17	— ·68	·47	27	15	...	...	...	...	...	...
III.	Strathfield Turgiss	1·64	— ·27	·55	6	11	65·9	2	22·9	23	11	15	
III.	Hitchin	1·33	— ·62	·37	6	13	63·0	2	22·0	18i	11	...	
IV.	Banbury	1·78	— ·23	·47	6	14	64·0	3	24·5	23	8	...	
IV.	Bury St. Edmunds (Culford) ..	·96	— ·83	·25	6	16	66·0	2	21·0	23	13	...	
V.	Norwich (Cossey)	1·99	+ ·13	·50	6	19	68·5	2	28·5	20j	6	11	
V.	Weymouth (Langton Herring) ..	2·36	— ...	·56	1	12	...	...	...	...	...	...
"	Barnstaple	1·55	— ·83	·31	2	11	63·0	9b	37·0	27k	0	...	
"	Bodmin	2·22	— 1·11	1·12	4	8	57·0	6	31·0	24	1	13	
VI.	Cirencester	1·85	— ·55	·51	1	11	...	...	...	...	...	...
"	Church Stretton (Woolstaston) ..	1·84	— ·48	·90	3	13	61·0	3	30·0	18l	7	13	
"	Tenbury (Orleton)	1·59	— ·58	·27	5	15	63·2	8	25·2	23	7	12	
VII.	Leicester	1·77	— ...	·32	6	20	67·5	3	26·2	23	3	16	
"	Boston	1·20	— ·69	·35	12	18	67·0	2	30·0	24	2	...	
"	Grimsby (Killingholme)	1·55	— ·21	·21	12	21	64·0	2	31·0	24	1	...	
"	Hesley Hall (Tickhill)	1·34	— ...	·21	11	17	67·0	3	22·0	24	7	...	
VIII.	Manchester (Ardwick) .....	...	— ...	...	...	...	...	...	...	...	...	...
IX.	Wetherby (Ribston Hall) ...	1·69	— ·82	·59	2	10	...	...	...	...	...	...
"	Skipton (Arneliffe)	2·76	— ·30	·52	1	18	68·0	2	27·0	23	6	...	
X.	North Shields	2·16	+ ·16	·28	1	23	61·0	4	29·2	26	4	7	
"	Borrowdale (Seathwaite)	4·15	— ·79	1·10	5	19	63·2	3	28·5	25	...	...
XI.	Cardiff (Ely)	1·58	— ·76	·45	3	11	...	...	...	...	...	...
"	Haverfordwest	2·47	— ·35	·64	1	11	58·0	10	27·1	22	7	17	
"	Plinlimmon (Cwmsymlog) ...	1·54	— ...	·39	3	9	...	...	...	...	...	...
"	Llandudno	1·19	— ·69	·42	3	11	57·0	5c	31·2	18	1	...	
XII.	Cargen [Dumfries]	1·21	— 1·08	·28	2	11	59·8	9	30·0	25	4	...	
"	Hawick .....	...	— ...	...	...	...	...	...	...	...	...	...
XIV.	Douglas Castle (Newmains) ..	·88	— 1·00	·35	3	7	...	...	...	...	...	...
XV.	Lochgilhead (Kilmory)	1·30	— 1·33	·46	30	11	62·0	10d	29·0	13m	8	...	
"	Oban (Craigvarren)	1·54	— ...	·59	30	12	60·5	3	35·0	1, 12	0	...	
"	Mull (Quinish)	2·03	— ...	·92	30	14	...	...	...	...	...	...
XVI.	Loch Leven Sluices	1·10	— 1·11	·20	1a	8	...	...	...	...	...	...
"	Arbroath	1·49	— ·42	·41	2	12	53·0	4c	32·0	10n	2	...	
XVII.	Braemar	2·45	+ ·37	1·13	5	18	59·2	3	24·8	10	12	28	
"	Aberdeen	1·49	— ...	·38	1	23	56·0	3c	29·0	27	4	...	
XVIII.	Skye (Sligachan)	4·27	— ...	2·77	31	8	...	...	...	...	...	...
"	Culloden	·51	— ·84	...	...	...	58·0	4	31·0	21	2	17
XIX.	Dunrobin	·44	— ...	...	...	...	56·0	3	30·0	1	2	...
"	Orkney (Sandwick)	·76	— 1·11	·23	30	15	54·8	3	33·3	28	0	7	
XX.	Cork (Blackrock)	1·93	— 1·17	·64	4	15	71·0	13	32·0	19	1	...	
"	Dromore Castle	2·46	— ...	·56	1	14	60·0	26	32·0	18o	3	...	
"	Waterford (Brook Lodge) ...	...	— ...	...	...	...	...	...	...	...	...	...
"	Killaloe	2·08	— ...	·62	25	10	63·0	29	29·0	24	7	...	
XXI.	Portarlinton	1·20	— ·83	·44	4	12	60·0	9	29·5	17	5	...	
"	Dublin (Fitz William Square) ..	1·53	— ·58	·86	4	11	59·3	7	33·9	1	0	8	
XXII.	Ballinasloe	1·01	— 1·25	·45	4	12	57·0	10f	29·0	24	5	...	
XXIII.	Waringstown	2·30	+ ·41	·62	3	11	66·0	9	29·0	24	6	17	
"	Londonderry (Creggan Res.) ..	1·60	— ...	·50	3	14	...	...	...	...	...	...
"	Omagh (Edenfel)	1·29	— ·71	·29	3	13	57·0	6g	32·0	7p	4	9	

+ Shows that the fall was above the average ; — that it was below it.

a And 3, 23. b And 18, 25. c And 8. d And 12. e And 6, 30. f And 29. g And 9, 10, 11.
 h And 24. i And 22. j And 23, 24, 26. k And 28. l And 22, 23. m And 28. n And 27.
 o And 21, 22. p And 10, 19, 28.

METEOROLOGICAL NOTES ON APRIL.

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.

STRATHFIELD TURGISS.—During the early part of the month growth was suspended in the vegetable world by the cold N.E. winds; beyond this the cold did no harm; the wheat plant on poor clays looked yellow, but on the whole the check was salutary. Swallow first seen on 1st, marten on 10th; cuckoo first heard on 12th, nightingale on 14th.

BANBURY.—Mean temp. $44^{\circ} \cdot 3$, $1^{\circ} \cdot 5$ below the average; high wind on 16th and 17th, L on 2nd, distant T on 8th, H on 13th, 18th, and 30th.

CULFORD.—A most variable month, commencing with quite summer weather, and ending with sharp frosts: most disastrous to the fruit crop.

COSSEY.—The prevalence of E. wind made this an ungenial month, and the growing corn was injured by the sharp frosts; swallows seen on 11th.

WOOLSTASTON.—A cold month, with harsh E. winds and frosty nights, checking all vegetation; mean temp. $43^{\circ} \cdot 9$. A terrific storm of H with T, and vivid L occurred on 3rd; the hailstones were fully as large as hazel nuts, some of them remaining unmelted till the following morning; much damage was done by the H, which lasted about 10 minutes, and a house was struck by the L; a similar storm, but of much less violence occurred on the 28th; cuckoo not heard till 24th.

ORLETON.—Considerable quantities of R fell daily during the first week, with distant TSS on 2nd and 3rd, and the temp. till the 10th was above the average; on the 9th the wind changed to the N.E., where it remained persistently strong and cold till the end of the month with a low temp., and a sky generally clouded; severe frosts occurred on several mornings. The mean temp. of the month was $3^{\circ} \cdot 5$ below the average of 23 years; the latter portion of the month favourable for the cultivation of the land. Swallows first seen on 7th; cuckoo heard generally on 20th; the smaller summer birds did not appear till the end of the month; damson trees were in blossom about the 6th, and cherry trees about the 15th.

LEICESTER.—The month commenced mild and damp, but in the second week became dry and cold, N. and N.E. winds prevailing to the end; warm genial weather was much needed at the close of the month.

BOSTON.—Frosts on the 23rd and 24th did very serious injury to the fruit crops.

GRIMSBY, KILLINGHOLME.—The polar current prevailed through the month, giving dry cold weather, unfavourable for fields and gardens; it gave way at the close, when a welcome change took place. The frosts seriously injured much of the fruit blossom.

HESLEY HALL [TICKHILL].—A cold month, very trying to weak persons, and doing much damage to the fruit blossoms; milder weather set in at the close. T on night of 2nd.

WALES.

HAVERFORDWEST.—The month commenced stormy, wet and cold, after which a dry period set in, with bright sunshine frequently, and harsh, dry N. and N.E. breezes, the result being that all the grass and keep for cattle throughout the country seemed to disappear as by magic; the effects on the human constitution were also disastrous. White frosts prevailed throughout the month, and the mean temp. was below the average; the blackthorn blossomed in profusion.

LLANDUDNO.—A fine spring month on the whole, though perhaps too dry, there being scarcely any R between the 6th and 27th. Although the mean temp. was nearly 3° below the average, there was only one night of frost, and

the range both diurnal and monthly was considerably less than the average. E. winds prevailed during a great part of the month, though their keenness was somewhat tempered by the large amount of sunshine.

SCOTLAND.

CARGEN.—Cold easterly winds prevailed during the greater part of the month; mean temp. $1^{\circ}7$ below the average; duration of sunshine 50 hours less than the average; T and L on 3rd and 5th, T on 2nd.

OBAN, CRAIGVARREN.—A very fair month, and warm for the season, with unusually dry weather, but a low bar. After almost uninterrupted drought for 21 days, a change set in on the evening of the 29th, with heavy R and H and S on the hills; crops were very backward, owing to the drought.

MULL, QUINISH.—A dry and sunny, but rather cold month, very favourable for spring cultivation; wind from E. to N. until 28th.

BRAEMAR.—The weather was favourable, but very cold E. winds prevailed throughout; the high hills were entirely covered with fresh S, and several severe frosts occurred during the latter part of the month.

ABERDEEN.—With the exception of the first three days, when the rainfall was heavy, the weather throughout the month was showery, with a prevalence of S.E. winds; the total rainfall, however, was nearly an inch below the average. Aurora seen on two nights.

SLIGACHAN.—A fine dry month; the first ten days warm and genial; from 10th to 20th the weather was very dry, with cold hard E. winds, which checked all vegetation; the latter part of the month was more genial. The night of the 30th was very stormy with R, H, T and L, and a great many lambs perished.

CULLODEN.—The month generally was dry, and R was wanted at the close; vegetation late, and making little progress, but not injured by frost.

SANDWICK.—April was free from such gales as occurred in the previous month, and was very dry; but the prevailing E. and S.E. winds, coupled with the drought during the latter part, gave a severe check to vegetation. Aurora on 11th and 24th.

IRELAND.

BLACKROCK.—The month generally was favourable for farming operations; dry E., N.E. and S.E. winds prevailed in the middle and latter part of the month, with some sunshine. Vegetation backward.

DROMORE CASTLE.—The beginning of the month was mild, but towards the middle cold hard E. winds set in, checking vegetation; but it made rapid progress during the last six or eight days.

KILLALOE.—Rainfall below the average; sharp E. and N.E. winds prevailed from the 5th to the end of the month, with bright clear weather.

DUBLIN.—A cold, dry month, the wind blowing almost constantly from easterly points of the compass was of a particularly dry and searching character. Mean temp. $1^{\circ}7$ below the average of 20 years. Sleet and S on 1st, L on 4th, fog on 8th, 9th, 11th and 24th.

BALLINASLOE.—The month generally was fine, but with very cold, harsh winds, retarding vegetation.

EDENFEL.—The month was a dry and favourable, though somewhat ungenial seed-time; vegetation backward.